



*IEA Implementing Agreement*  
Demand-Side Management  
Technologies and Programmes

**FORTY THIRD  
EXECUTIVE COMMITTEE  
MEETING**

**PRE-MEETING  
DOCUMENT (PMD)  
PART 2**

*17 – 21 March 2014  
Wellington, New Zealand*

# ATTACHMENT A




## Report from the IEA Secretariat

Information on recent developments within the IEA Secretariat

February 2014

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### 1. Executive Office

- **New Deputy Executive Director of the IEA**, Kenneth J. Fairfax, took up his duties on 1 October 2013. Mr. Fairfax will also direct the Office of Global Energy Policy and oversee the engagement with partner countries and other international organisations, an integral part of the Agency's efforts to provide all stakeholders – from policy makers to business leaders – with a truly global view of the world's energy system. In a career that spanned over 25 years at the U.S. Department of State, Mr. Fairfax was U.S. Ambassador to Kazakhstan and has held economic, management and consular positions in Iraq, Vietnam, Poland, Ukraine, Canada, the Russian Federation, Korea and Oman. He also held the post of Director for Nuclear Materials at the U.S. National Security Council.  

- **The IEA Ministerial Meeting** took place in November 2013. Noteworthy outcomes included signature of a joint declaration by key Partner countries Brazil, China, India, Indonesia, Russia and South Africa expressing mutual interest in pursuing enhanced engagement. IEA Member countries issued a statement acknowledging the important role the energy sector must play in limiting climate change and high-level industry representatives participated in all but the final Ministerial session. Both governments and industry welcomed the opportunity for increased interaction.
- **Report to the Governing Board.** The Deputy Executive Director presented a report on the work of the Implementing Agreements (IAs) to the Governing Board at its meeting on 10-11 October. His presentation, *State of Play of Technology Co-operation through the Implementing Agreements*, was well received with comments stressing the added value and importance of the work of the IAs. The note to the Governing Board is part of a comprehensive review report of the IAs by the IEA Secretariat with the purpose of:
  - \* Preparing a short assessment of the value added of the IAs;
  - \* Continuing efforts to increase visibility of substantive results of IA work and to encourage policy relevant messages;
  - \* Communicating the value and work of the IAs to the Governing Board.

### 2. CERT

- The 67<sup>th</sup> CERT meeting will take place on 25-26 February 2014 and will be led by the new Chair, Alicia Mignone of Italy.
- **IEA Medium-Term Strategy for Energy Research and Development 2013-2016.** The CERT has been working to develop an Agency strategy for energy research and development, in order to give shape to what the CERT does and therefore serve as a reference to guide the work of the energy technology network. The CERT Chair will present the final document to the Governing Board for consideration in March 2014.
- **Gaps in International Collaboration.** The International Low-Carbon Energy Technology Platform is developing a project on gaps in international energy technology collaboration which will begin with a workshop in Paris on 27 February, immediately following the CERT meeting. The aim of the project is to map existing technology initiatives and present an analysis of overlaps, gaps and strategic opportunities for international or regional collaboration leading to publication of an *Insights Paper*.

Contact: [Jean-Francois.Gagne@iea.org](mailto:Jean-Francois.Gagne@iea.org)

### 3. Energy Technology Perspectives

- ETP 2014 is undergoing the final stages of production. External consultations have been carried out, and internal reviews are being finalised for production readiness. The expected launch will be at the Clean Energy Ministerial in Seoul, Korea.

ETP 2015 plans are starting, with a proposed focus on providing better visibility of the potential of energy technology innovation, encompassing all stages of Research, Development, Demonstration and Deployment (RDD&D) processes, to enable an economically viable low-carbon energy system, to increase policy maker confidence in the feasibility of achieving climate change mitigation targets ambitious enough to meet both short and long-term objectives, in support of the upcoming negotiations of COP 21 in Paris. A joint SLT-CERT workshop is planned for June to seek senior committee buy in to the proposed topics.

Contact: [Jean-Francois.Gagne@iea.org](mailto:Jean-Francois.Gagne@iea.org)

### 4. Communication.

The Secretariat has undertaken significant efforts in the past year to raise awareness of IA work. These efforts include:

- **Energy Technology Initiatives publication.** We thank you again for your input to this publication which was made available at the IEA Ministerial. The publication was downloaded nearly 900 times in the first month and serves as an important tool for showcasing IA work, particularly in regards to outreach activities <http://www.iea.org/publications/freepublications/publication/name,43513,en.html>.
- **IA pages on the IEA website.** A new landing page has been created on the IEA website <http://www.iea.org/techinitiatives/> and individual IA pages follow the format of *Energy Technology Initiatives*. This allows for standardisation of the visual format that can be regularly updated with new projects, and gives more prominence to the IAs as part of the

Energy Technology Network. IA information will now also be integrated into the IEA work in each sector/technology area.

- **IMPAG.** The new IMPAG website is almost complete and will include a number of new features including one on best practices which will enable you to share your work with other members of the network. We will be contacting you soon with more information on this.
- **Minutes:** A reminder to please forward a copy of the ExCo minutes to the IEA Secretariat after each meeting. This is most helpful for updating our records.

Contact: [diana.louis@iea.org](mailto:diana.louis@iea.org)

## 5. Recent IEA publications

As an IEA Network partner, you can request a discount on the top left column of our bookstore page, please see <http://www.iea.org/w/bookshop/b.aspx?new=10>



*Technology Roadmap: Energy Efficient Building Envelopes* was released on 18 December 2013. Visit the publications page for more information: <http://www.iea.org/publications/freepublications/publication/name,45205,en.html>



Released in October 2013 the *Energy Efficiency Market Report* joins the IEA market reports for oil, gas, coal and renewable energy, highlighting the place of energy efficiency as a major fuel. This is an annual publication. <http://www.iea.org/w/bookshop/add.aspx?id=460>

**Forthcoming IEA publications:**

- CHP & DHC Collaborative:
  - \* Analysis report: *The Role of CHP and DHC in the future energy system*
  - \* Compendium report: *Co-generation and District Heating and Cooling Solutions for a Clean Energy System* (will be an annex report to the *Clean Energy Ministerial Tracking Report*)
- Energy Efficiency Indicators Manual (1/2Q2014)
- Technology Roadmaps:
  - \* Energy Storage (1/2Q2014)
  - \* Hydrogen
  - \* Nuclear (update)
- *The Power of Transformation* (launch via webinar on 26 February), will summarise the results of the third phase of the Grid Integration of Variable Renewables (GIVAR) project.

6. **New membership:** Should you require guidance in identifying appropriate organisations or individuals in Partner countries that may be interested in membership please contact [carrie.pottinger@iea.org](mailto:carrie.pottinger@iea.org).

**DOCUMENT C**

# **Strategic Plan 2014 - 2019**

18 – 19 March 2014  
Wellington, New Zealand

*Prepared by Rob Kool and Hans Nilsson*

## **STRATEGIC PLAN 2014 - 2019**

In December 2013 the CERT invited the DSM IA to send additional information to the EUWP in order to get an extension until 2019.

The ExCo is invited to discuss the attached material that will supplement the request for an extension and ask the Chairs to finalise the material based on the discussion in due time to be processed by the IEA EUWP and CERT.

The ExCo is also invited to consider the possible future Tasks listed in the appendix and ask the PPC to activate the project development catalogue (“planning basket”).

# STRATEGIC PLAN 2014 - 2019

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## PREFACE

Demand Side Management is a long standing concept to contribute to energy efficiency.

In the early nineties, the DSM Implementing Agreement was founded. Ever since the people and organisations involved have been working on defining, shaping and executing research within the scope of DSM.

By the very nature of Demand Side Management (DSM), this Implementing Agreement has been, and will always be a somewhat strange duck in the pool of the technology network since focus is on the management required to put several different technologies in place to deliver the services that enable the users to “do more with less”. This can be done with different combinations of technologies.

Linking technology, developing best-practice models and increasing deployment of technology is the real challenge. These technologies were often developed in collaboration with other Implementing Agreements. To reach our goals, the development of business models and knowledge of individual and societal behaviour are key elements.

Research that combines the technology with research on how to implement it is the core of our business. These are challenges that can't be done successfully without proper monitoring and evaluation.

Many of our projects are successful outreach activities which complete the scope of this Implementing Agreement..

Demand side management is a concept, not a thing. Concepts can be interpreted in different ways. This certainly goes for DSM in different parts of the world and with different types of markets and different traditions for management.

A strategic work plan is the place to (re)define what we consider to be the content of the DSM concept. A scope we like to define as Integrated Demand Side Management (IDSM).

A concept which has strong added value to the “family” of Implementing Agreements and the IEA work.

This document has been prepared for the IEA EUWP and CERT in addition to the DSM's application for a next 5-year term.

## DSM PARTICIPANTS.

<b>Austria</b>	Boris	Papousek	Ordinary member
<b>Belgium</b>	Francois	Brasseur	Ordinary member
<b>Finland</b>	Jussi	Mäkelä	Ordinary member
	Pekka	Koponen	Alternate
<b>India</b>	Ajay	Mathur	Ordinary member
	Mr.	Alok	Alternate
<b>Italy</b>	Walter	Grattieri	Ordinary member
	Antonio	Capozza	Alternate
<b>Korea</b>	Jin-Ho	Kim	Ordinary member
<b>Netherlands</b>	Rob	Kool	Ordinary member
	Harry	Vreuls	Alternate
<b>New Zealand</b>	Paul	Atkins	Ordinary member
	Sea	Rotmann	Alternate
<b>Norway</b>	Andreas K.	Enge	Ordinary member



	Even	Bjørnstad	Alternate
<b>Spain</b>	Susana	Banares	Ordinary member
<b>Sweden</b>	Maria	Alm	Ordinary member
	Hans	Nilsson	Alternate
<b>Switzerland</b>	Markus	Bareit	Ordinary member
	Klaus	Riva	Alternate
<b>United Kingdom</b>	Tom	Bastin	Ordinary member
<b>United States</b>	Larry	Mansueti	Ordinary member
<b>Sponsors</b>			
<b>Copper Alliance</b>	Hans	De Keulenaer	Ordinary member
	Philip	Zhang	Alternate
<b>Regulatory Assistance project (RAP)</b>			
	Richard	Cowart	Ordinary member
	Rick	Weston	Alternate
<b>IEA Desk Officer</b>	Diana	Louis	Temporary

## 1. INTRODUCTION

In November 2012, at the EXCO meeting in Espoo, Finland, the EXCO discussed the previous work plan, and the evaluations that were held.

Based on the outcome it was decided to apply for a 5-year extension and to continue the work that has been done so far.

A discussion led to a draft work plan.

In September 2013 the EUWP decided to advise the CERT to grant a 2-year extension.

In October 2013 the EXCO decided to challenge this advice, and continued to work on both the strategy and the work plan.

In December 2013 the CERT invited the DSM IA to send additional information to the EUWP in order to get an extension until 2019.

Based on the discussions with CERT, EUWP and some Implementing Agreements, the EXCO of IEA DSM agreed at the EXCO meeting in March 2014 in New Zealand on this adapted strategy and work plan.

## 2. RATIONALE

The six steps to energy efficiency are well described in the WEO 2012, and all apply to this Implementing Agreement.

- **Visible** (*The energy performance of each energy end-use and service needs to be made visible to the market.*)
- **Priority** (*The profile and importance of energy efficiency needs to be raised.*)

- **Affordability** (Create and support **business models, financing vehicles and incentives** to ensure investors in energy efficiency reap an appropriate share of the rewards)
- **Normal** (Energy efficiency needs to be normalised if it is to endure. Resulting **benefits from learning and economies of scale** help make the most energy-efficient option the normal solution.)
- **Real** (Monitoring, verification and enforcement activities are needed to verify claimed energy efficiency.)
- **Realisable** (Achieving the supply and widespread adoption of energy efficient goods and services depends on an adequate body of **skilled practitioners** in government and industry.)

**Add: Graph**

### 3. STRATEGIC DIRECTION

The DSM Strategic Plan covers a five-year period from March 2014 to February 2019, and builds on the achievements, and lessons learnt during the previous terms.

Reviews of the first term<sup>1</sup> indicate that:

- DSM IA has been effective in achieving its stated objectives.
- The existing Contracting Parties regard participation in the DSM IA as cost-effective.
- Other public and private sector organisations value the role that DSM plays in supporting the co-ordination of international energy efficiency policies.

Since the development of the last DSM IA Strategic Plan, international ambitions in the field of energy efficiency have grown, and play a more central role in the approach by the IEA as a whole, as shown in their publications WEO and ETP.

.As a such, the DSM ExCo believes that the DSM IA can be effective as a result of developing and promoting the **measures** indicated in this section, which are designed to achieve the following aims:

- to achieve large-scale energy efficiency improvements by deployment of improved technologies and the insight of social studies.
- to develop, improve and promote business and operating models that enable the (energy)market to deliver energy in a clean, undisrupted and economic effective way.
- to support applied research as necessary to fill technology gaps on the previous two points, in order to increase the deployment of technology.

#### 3.1. CERT AND EUWP STRATEGIES

DSM IA's End of Term Report (2008-13) demonstrated a close alignment with the current strategies of the IEA, CERT and EUWP, particularly in the following areas:

- Provide energy end-use technology policy advice.
- Engagement with relevant organisations.
- Strengthening of technology network, by playing an active role in EUWP bodies like BCG and ECG.
- Review relevant IEA secretariat draft publications.

<sup>1</sup> See end of term report 2008-2013

During the next term, DSM will continue to expand these activities, as identified below, and to strengthen communication with the EUWP, to remain consistent with the aims of the CERT and EUWP.

### 3.2. DSM AIMS AND OBJECTIVES

The vision of the IEA DSM Programme during the period 2014-2019 is that:

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<sup>2</sup>

Within this vision the main issues of the DSM Programme are:

1. Security of supply: It is important to have measures, such as “demand response”, to reduce peaks and/or level loads over a time period. Reducing energy demand is also a means to diversify supply since it is easier to find alternative supply for a lower level of demand and thereby being less dependent on large-scale generation and distribution systems. Distributed generation could be a solution to a “demand side problem” and should be considered in achieving the goals of a Least-Cost system. Since the 2008-2013 work plan part of this work is done by the ISGAN IA, but the role of the end user is not within the scope of that Implementing Agreement. In the period 2008 – 2013 a number of countries decided to phase-out nuclear energy which will increase the DSM necessity even more.

2. Reduction of green-house gas emissions: Reducing the demand and/or shifting demand from a system supplied with a carbon-intensive fuel to a “carbon-lean” system is a way of achieving environmental targets notably the climate targets that are codified in the Kyoto Agreement and the Conference of the Parties that followed. Energy efficiency is, like in the previous point, an economically highly valuable topic. Striving for energy efficiency can be a goal in itself, independent from the previous point

The main objective of the Programme is to deliver to its stakeholders:

- materials that are readily applicable for them in crafting and implementing policies and measures.
- the Programme also delivers technology and applications that either facilitate operations of energy systems or facilitate necessary market transformations.

In short this leads to the following objectives:

1. Minimise
  - a. Costs and
  - b. Emissions (in particular GHG)
2. Empower customers/users and facilitate their choice of sustainable solutions
3. Maintain or maximise
  - a. Reliability (of services)
  - b. Security
  - c. User/stakeholder values (of services)

This requires a system with “High-value Distributed Energy Resources (DER)”<sup>3</sup> or “IDSMS – Integrated Demand Side Management”<sup>4</sup>.

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<sup>2</sup> Explanatory note: Demand side options have to be expressed in terms of, and made available as, equal to supply side options in order to facilitate a comparison. An energy system with a low demand requires less energy and facilitates the expanded use of renewable energy. The lower demand and the greater use of renewable resources should be promoted as a way to arrive at sustainable supply.

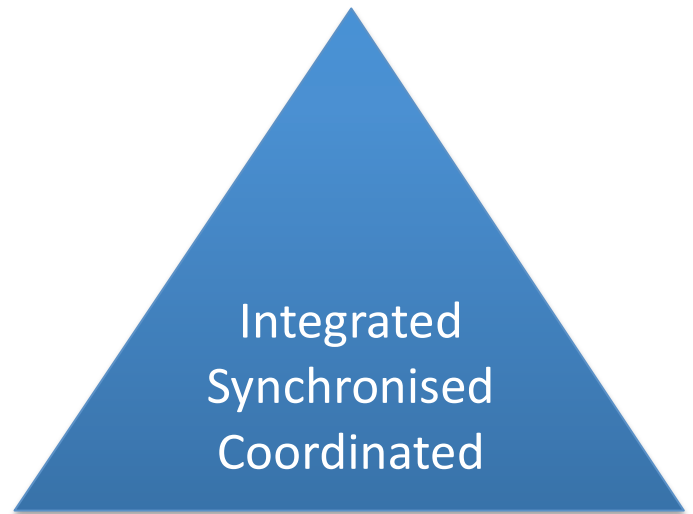
<sup>3</sup> Resources are both physical (fuel and technology) and human. The user is one of the resources.

## 4. SCOPE

Maximum impact will be realised if distributed generation, demand response and energy efficiency are not only synchronised, but even integrated in a coherent approach. This is the “Integrated Demand Side Management” (IDSM), that this Implementing Agreement is trying to achieve.

The DSM toolbox holds the necessary tools for both these technology issues and can:

- Reduce the demand peaks, especially when utilisation of power comes close to its limits of availability
- Shift the loads between times of day or even seasons
- Fill the demand valleys to better utilise existing power resources
- Reduce overall demand (strategic saving) in the context of delivering the required energy services by use of less energy (and not a reduction in services).
- Provide strategic growth especially to shift between one type of supply to another with more favourable characteristics, for example, in terms of the environment



In addition to this there is a need to understand and handle the mechanisms that are required to decide upon and put DSM in place. This is about planning (to determine and target the potential) and about market acceptance to get an uptake of the technologies and the necessary change in behaviour.

The potential for cost-effective energy efficiency is already well established. The IEA WEO 2012 estimated it to be of such significant importance that it could both reduce the emissions of GHGs and at the same time reduce the bills for energy use.

The potential per se is therefore not the issue. The problem is to get sufficient acceptance for energy efficiency measures by the users of energy. Any huge number multiplied with zero will stay zero!

Acceptance, understanding and uptake have been too low to release the potential in full. DSM means working on both these issues in order to get a full result by a large-scale deployment of energy efficiency.

**Result = Potential \* Acceptance**

This combination of technological and market transformation issues is what defines the scope for DSM. Below captured in a simple matrix, that allows us to position the work.

### 4.1. ANNEXES & PROJECTS

In its long history, the Demand Side Management Implementing Agreement has managed a number of Tasks. Sometimes a Task is completed in full within the available needs and capabilities at that time.

Often, our results lead to more questions or challenges. The IA EXCO then chooses to extend a running Task, instead of simply defining a completely new Task.

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<sup>4</sup> Integration of Load Management (DR), Load Level (EE), Distributed Generation (DG), Storage and Renewable Energy (RES)

To achieve a full portfolio, the DSM IA uses the matrix below to define new work. *Completed tasks are shown in italics and current in bold text.*

		Market Transformation issues		Instruments for market transformation	
		Potential (Planning)	Acceptance (Business Models, Behaviour)	Delivery Mechanisms	Policy
Technological issues	Load Level	<i>5, 20</i>	<b>7, 15, 16, 24, 25</b>	<i>1/sub9, 3, 6, 22</i>	<b>9, 10, 18, 21</b>
	Load Shape	<i>13, 19</i>	<b>2, 14, 23</b>	<i>8, 11,</i>	<i>4</i>
	Distributed Generation (RES)		<b>16 (part)</b>	<b>17</b>	

## 4.2. RESEARCH AREAS

Application of the above motivates particular focus and priority on the following areas for research and development.

### A. Distributed Energy Resources in (smart) cities

With a higher degree of decentralisation more of the crucial developments in the building of systems will take place in municipalities, cities, regions. This would also be a logic follow-up of the IEA DSM Task 9.

### B. Market Design to enable DER-systems

Institutional settings are important to improve and make use of the flexibility of systems and the integration of resources depends on how responsibilities and incentives need to be designed.

### C. Market design to incentivise industry compliance

Both utility and industrial customers will have to be more active in the dissemination of DER systems. This deals with both business models and rules for trading of obligations.<sup>5</sup>

### D. Utilities best practices to develop DER business

Utilities develop new business activities that may be very different and would be worth to analyse and compare

Annually, the EXCO evaluates possible Tasks within the framework and the research areas. This results in a long list of topics, which is added as Appendix 1

## 5. EXCO MEETINGS & FEE STRUCTURE

To be added by Anne:

- 2 meetings a year
- Common fund
- - Electronic voting

## 6. CONTRACTUAL AND MANAGEMENT REQUIREMENTS

- To be added by Anne
- Task sharing
- Role & responsibility of OA's

## 7. DSM MANAGEMENT

To be added by Anne: Chair, 2 Vice Chairs, Visibility Committee, Executive Secretary & roles

Annual reports

## 8. DSM LEGAL TEXT

To be added by Anne

## 9. IEA FRAMEWORK

To be added by Rob: collaboration

### 9.1. CONTRIBUTION TO TECHNOLOGY EVOLUTION/PROGRESS

The complexity of combining a multitude of technologies to a functioning cost-effective system requires a broad set of skills from technology to economics, politics and behavioural sciences. It therefore also requires several contact surfaces with many disciplines.

Ongoing technology developments emphasises the complexity sine (a) ICT progress is fast and moves into (b) smarter appliances and (c) energy supply is miniaturised and allows for distributed generation in small local scale.

To cover all these aspects the IEA DSM Programme is now developing a "DSM-University" in order to disseminate its result better but also to do so in close contact with relevant parts of the IEA community.

### 9.2. CONTRIBUTION TO TECHNOLOGY DEPLOYMENT/MARKET FACILITATION

Who will add this?

### 9.3. CONTRIBUTION TO ORGANISATIONAL AND BEHAVIOUR CHANGE

The DSM Implementing Agreement is one of the only Implementing Agreements that focuses strongly on the role of human behaviour in the energy system. Task 16 is currently delving into the role of Facilitators to enable the uptake of EScO services and energy performance contracts. Their main challenges and opportunities will lie in the organisational behaviour and change management space. Task 23 established the importance of the role of consumer behaviour on the smart grid, including acceptability and compliance issues. Task 24 puts human behaviour (both individual and societal) in the center of energy use - there would be no energy system if it wasn't for human needs for services supplied by energy-using technologies. Hence, behaviour is both the underlying issue, and the solution to a transition to a sustainable energy system. Technology, market forces and supply play important roles in this transition, but are a means to the end rather than the beginning and end of a possible solution. Our 'behavioural Tasks' are hugely important in improving a greater understanding of what makes the energy end user (individual or organisational) 'tick', why they use energy the way they do,

how this could be influenced with various interventions from the 'Behaviour Changers' in industry, policy, the community and research and how a largely habitual use can be changed and embedded as new and improved habits and cultures.

#### 9.4. POLICY RELEVANCE

Discuss at the ExCo

- Refer to IEA WEO

#### 10. CONTRIBUTION TO INFORMATION DISSEMINATION

The IEA DSM Implementing Agreement is doing a solid job in disseminating our important findings. However, there are always ways to keep improving. Our website, which continues to receive over 1 million unique hits per year will be upgraded to a much more user-friendly, 'Web 2.0' site. Our use of social media (already via Twitter, LinkedIn and Facebook groups) will continue to increase. Task 24 is a trailblazer in utilising both social networks, social media tools and creative ways of dissemination (for example, film, Pecha Kuchas, cartoons, storytelling etc.). We have created a DSM University and started to run a highly successful series of webinars with our Operating Agents. All our Operating Agents do a good job presenting their Task findings at international conferences and in peer-reviewed publications and conference proceedings, as well as blogs and columns. We have very strong links with highly influential energy efficiency (social) media mavens, NGOs and other interest groups.

#### 11. ENGAGEMENT WITH IEA MEMBER AND PARTNER COUNTRIES

The steps to define engagements with IEA are the same as the ones that define "integrated" DSM: coordinated, synchronised and integrated.

To coordinate, the actions are to inform the other members of the IEA family, pinpoint the possible links and inform participants

Synchronised

POSSIBLE FUTURE TASKS

	Issue	Relates to reserach area (see 4.2)			
		A (DER smart cities)	B (Market design for DER)	C (Market design for compliance)	D (Utilities best practice)
	<p><b>Market Design issues</b></p> <p><i>Objective – Explore how EE and DSM can mitigate energy price increases and how capacity markets impacts different DSM activities</i></p>	X	X	X	X
	<p><b>Rate-design</b></p> <p>Perform a comprehensive analysis of various economic incentives and fiscal measures, including pricing systems, tariffs and levies. Develop new tools for international comparison of the impact of different tariff systems and energy labels on GHG emission reduction.</p> <p><i>Problem - Rate designs do not encourage EE; need to use time of day tariffs; electric prices could be good signal, need to incorporate externalities and incentives for EE</i></p> <p><i>Objective – Study various rate design strategies and recommend best practices for designing rates to reduce demand and peaks</i></p> <p><i>Approach – New Task</i></p>		X	X	X
	<p><b>Security of supply</b></p> <p>Study how energy systems respond to crisis - What happens during a crisis; what do users actually do, do they do load levelling and what impact does this have on reliability and security</p>	X		X	X



	<b>Portfolio development - Impact study</b>  Study how economies can reduce electricity growth by 10 or 20 percent in 10 years by energy efficiency and DSM measures. How can governments put up targets and meet them	X	X		
	<b>Models and initiatives for boosting technologies</b>  Aggregated Procurements, Dynamic top-focused standards, Clearinghouses for programmes and projects e.g. CDM/JI related	X	X		
	<b>Energy Efficiency ownership (new aggregators)</b>  <b>New aggregators and need for aggregators</b>	X		X	X
	<b>Networking and initiatives to reinforce services and promotions</b> (ESCOs, Marketing, Municipality involvement)  Address a wider aspect of local responses to energy system problems aside from demand side activities, energy and end use activities	X			
	<b>Directive on energy services (EU)</b>  Regulatory matters related to energy efficiency - What areas of energy efficiency is best regulated and what should be purely market-based		X		
	<b>Lack of Awareness of DSM</b> – Link with Ownership and Aggregators. The IEA DSM-Programme award of excellence could be taken up again. The “State of DSM in the world” also. Another idea was to create a DSM clearinghouse	X			
	<b>Bottom up evaluation</b>			X	
	<b>Monitoring and Verification</b> – Workshop	X			X
X	<i>Labelling of systems and high-end standards (Old task 12)</i>	X			
	<b>Tax policies and incentivising by taxes</b>	X	X		
	<b>Planning tools</b>	X	X		
	<b>Optimizing Investments</b>	X	X		

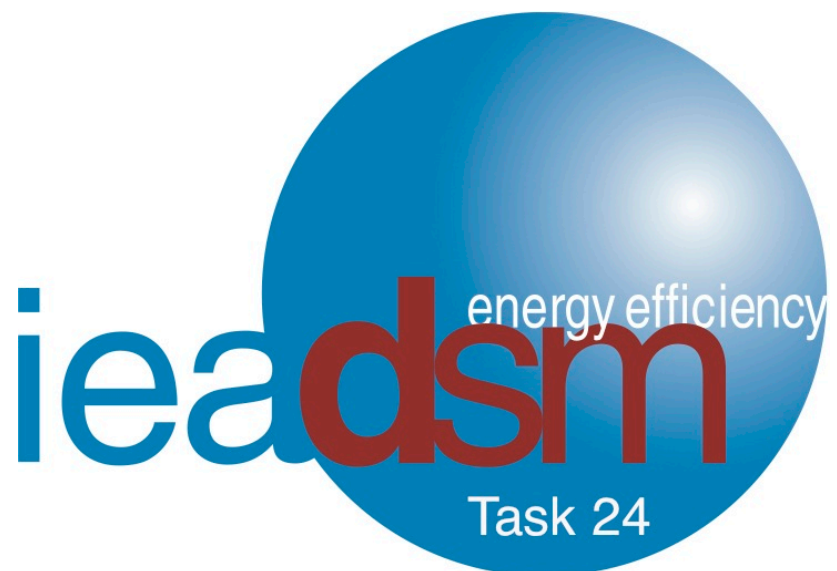
	<b>Distribution needs</b>			X	X
	<b>Windfall profits</b>		X		
	<b>Demand response (legal property right) certificates</b>	X			
	<b>Financing related to ESCOs</b>		X		
	<b>Branding of Energy Efficiency</b>		X		

# IEA DSM TASK 24

PROPOSAL FOR EXTENSION

## HOW TO CHANGE THE BEHAVIOUR OF THE BEHAVIOUR CHANGERS

Proposed by Operating Agents  
Dr Sea Rotmann (SEA - Sustainable Energy Advice,  
NZ)  
Dr Ruth Mourik (DuneWorks, NL)



## BACKGROUND

Task 24 was initiated in January 2012 (official start July 2012) and is currently financially supported by 9 countries (Netherlands, New Zealand, Sweden, Norway, Switzerland, Belgium, Italy, Austria and (hopefully soon) South Africa). It also has received strong in-kind (expert) support from the UK, Spain, Portugal, UAE, France, Australia and the US. Over 250 behaviour change and DSM experts from over 20 countries are involved to greater or lesser extent in various aspects of this Task and over 200 are participating in the Task 24 Expert Platform ([www.ieadsmtask24.ning.com](http://www.ieadsmtask24.ning.com)), which is our Subtask 5. Ten highly successful expert workshops have been held to date - 3 stakeholder workshops in the Netherlands and one in Austria, and 6 expert workshops discussing Subtasks 1 - 4 (in Brussels, Oxford, Wellington, Trondheim, Stockholm and Luzern). Several webinars between the national experts have also taken place and there are over 100 videos and presentations of these events on the Expert Platform, including a professional 25 min film on the Oxford workshop, which was the largest to date.

Over 40 case studies showing the successful (or not so successful) use of diverse models of understanding behaviour in the areas of transport, SMEs, smart meters and building retrofits have been collected to date from 14 countries. They have now been analysed and an interactive 160pp 'Monster' report and Wiki have been developed (<http://bit.ly/task24monster>). A short version of the 'Monster' report is available at <http://bit.ly/Littlemonster>. Several case studies for Subtask 2 have been collected - in Austria, Norway, Sweden, the Netherlands and Switzerland. Subtask 3 has been workshoped at the Trondheim and Luzern workshops and the eceee 2013 summer study in an informal session. The Task has also participated in a cross-over informal session at the eceee on helping ESCo Project Facilitators for Task 16 and is currently writing a report on the topic for Task 16. Feedback and publicity of Task 24 has been outstanding - new, highly engaged experts are joining on a weekly basis, enabling us to collect relevant case studies from a truly global perspective. We are also addressing the all-important question of how to best evaluate successful long-term behaviour change outcomes from the perspective of the various 'behaviour changers' (industry, government, intermediaries, research, the third sector) who are our target audience. We propose to create a decisionmaking tool to ensure that these stakeholders will be able to benefit from the recommendations from Subtask 4 (to do's and not to do's tailored to country needs and stakeholder analyses).

We believe that the reason why energy efficiency is still 'the greatest market failure of our time' is because the approaches are too technocratic, letting technology, market forces or energy supply dictate interventions geared at behaviour change. We pose that a better understanding of the *human* aspect of energy use, including behavioural and societal drivers and barriers and external and internal contexts, will greatly improve the uptake of energy efficiency and DSM policies and programmes. But for this, we first need to change the behaviour of the behaviour changers, so that they can design, implement and evaluate better programmes and policies to change end user behaviours.

We have been told again and again, that our Task is very timely and important and that it asks the right questions from the right audience. From feedback collected in our workshops and from our experts we know that we are very successful in:

- **Bringing together a vast range of highly engaged experts from every sector involved in changing energy-using behaviours ('the behaviour changers') and breaking down silos:** research, funders, government (local, regional, national, international), SMEs, utilities, industry, technology developers, NGOs, energy advisors and consultants, transport specialists, tradespeople, building physicists and architects, DSOs, TSOs, ESCOs, community groups, transition towns etc.
- **'Matchmaking' behaviour changers from different sectors, countries and interests** - We have had several people from industry and government invited to give their presentations from our workshops in different fora, eg at Universities; we have had technology developers join forces after realising they would otherwise duplicate their efforts; we have promoted up-coming businesses whose technology is now being trialled in pilots in other countries; and a behaviour change consultant from the UK came to New Zealand to work on our NZ national expert's research project. We have also helped a technology developer improve his new smart phone feedback software based on behavioural findings from Task 24 and trialled his other technology

innovation in our Trondheim workshop. We have been told that the social network of our experts is of huge value to them beyond Task 24.

- **Publicising our Task and the IEA DSM Implementing Agreement.** We are highly engaged in social media and write columns and blogs which have a very large, global energy efficiency audience. We are known, including in the IEA Secretariat and ISGAN, as the 'go-to' people/Task involved in behaviour change and DSM. We have had two peer-reviewed papers accepted and given Task presentations in some of the largest behaviour change and energy conferences all over the world. We have also been asked to chair panels on consumer behaviour at the IEEE ISGT conference, at the BECC conference on a special transport panel, given a keynote at the German Development Institute's conference and become part of the technical steering committee and panel leader for the next BEHAVE conference in the UK this September.
- **Developing creative ways of disseminating our work.** This includes very strong use of social media and social networks, but also a much more visual and creative way of dissemination: videos, Pecha Kuchas, podcasts, graphic stories, infographics, photos and short films combining various elements. Our overarching approach to dissemination of this Task is *storytelling*. We collect each participating country's energy story, as told by its experts; we also collect the energy story of individual behaviour changers from all sectors to showcase various issues that are central to the various models and theories. We also get behaviour changers from the different sectors to tell their sector's energy stories as ways of defining a specific problem. We also force our experts to focus on the most important aspects of each model or case they discuss by developing 'tweetable' (ie 140 characters or less) summaries for each example. Each case study we have collected has its own short story. And each model of behaviour has been explained in a story format from the point of view of the end user. These are good ways to ensuring that we can tell a good story without getting lost in too much detail or inter-disciplinary jargon.
- **Engaging our expert network to support our work in the various Subtasks.** On top of our excellent national experts, who provide the bulk of the information collected for our Task, we are able to draw upon a wide range of experts from other countries that are happy to provide case studies, feedback and support and who come to our workshops at their own cost. UKERC Meeting Place sponsored a highly successful 2-day workshop in Oxford with over €40,000; and the UAE Energy Savers organised a big meeting in Dubai for Task 24. Experts from 14 countries have supplied us with case studies so far.
- **Having a very wide scope, befitting the complexity of the topic.** DSM in our Task is defined as: 'Interventions (top-down and bottom-up policies, programmes and actions) developed and performed by behaviour changers (government agencies, utilities, DSM implementers) that seek to influence the ways end users consume *energy at home, at their workplace or whilst travelling*. In the short-term, it may *not always lead to a total reduction in energy consumption* (although this is the medium to long-term goal), but to the most efficient and environmentally friendly use of energy to derive the services that underpin social and economic wellbeing (eg comfort, mobility, entertainment, cleanliness, production etc).' Behaviour change practically encompasses all DSM policymaking and programme design - everything from legislation to regulation to subsidies to the rollout of smart meter feedback technology or EVs is ultimately geared at changing customers' or energy end users' behaviours. We aim to get insights and learnings into the role of the individual, social context, technology, actors and institutions, behavioural change processes, social change, relevant conditions and factors affecting behaviour change, context particularities and monitoring and evaluation which has been undertaken in real-life examples.

But despite these many successes, there still remains a lot of work to be done. We have only just begun to scratch the surface of this most complex of problems: *Why do people behave the way they do, when it is not rational, costs them money and causes discomfort and even bad health, when they say they are willing to do something but act completely different, and unnecessarily waste energy and resources despite being largely aware of the importance of acting on global concerns such as climate change? And more importantly - why are the people designing behaviour change programmes and policies (the behaviour changers) continually falling into the same traps, using the same models and frameworks which have shown to only have limited success?*

We know all the questions, but still have only few concrete answers. The most important findings that we have from our work to date are that:

- There is no simple answer, model or tool that will provide the 'silver bullet' that people hope for - there are only few hero stories, and many more learning stories in this field. Collaboration and shared learning is key to develop better approaches and stories.

- The behaviour changers' most commonly used models of changing energy-using behaviour, namely providing incentives and information (based on neoclassical economics), are hardly ever enough to achieve long-term habit changes
- Individuals or households may not be the right agents for interventions to change energy, we may have to affect systematic changes of energy practices, e.g. such as the practice of line drying, or doing the laundry. We also need to develop more interventions geared at schools, SMEs, offices etc
- The behaviour changers who are starting to use these more systemic, sociological approaches are often not policymakers, but intermediaries designing interventions in a more bottom-up fashion
- We do need to build on national knowledge from different behaviour changers in order to provide bottom-up support for top-down interventions
- For all this, we need a shared learning platform that provides all the best practice and up-to-date knowledge from behaviour changers across borders and sectors.

These are some of the reasons why an extension of Task 24 is necessary and highly pertinent. The behaviour changers engaged in our Task are calling for more support on all these issues. It would be a huge waste to lose the momentum and engagement developed in this Task without bringing it towards further solutions to unraveling the complexity we are dealing with here. We would argue that this issue has been overlooked for too long, seeing what incredible potential for DSM and energy efficiency remains to be unlocked in the behavioural wedge (at least 30% of total energy use). Skip Laitner, formerly from ACEEE, estimated that 86% of all energy used in the US is wasted (ie only 14% of the US energy use being efficient). If one compares the amounts spent on technology research and development (including elusive silver bullets such as the hydrogen economy, nuclear fusion and CCS) with the tiny amounts spent on researching the human aspects of energy use, we get an idea why some of these questions remain unanswered. An extension for this Task will go quite a way towards improving our collective, global knowledge and actively designing, implementing, evaluating and iterating successful interventions in policy, programmes and pilots.

## PROPOSED NEW WORK

# 5 – Expert platform

6–

Who are the Behaviour Changers?

7–

What do Behaviour Changers most need to change?

8–

What tool/s do Behaviour Changers need to affect change?

9–

How to help change the Behaviour Changers?

Subtask 10 (Voluntary) – Implementation, Iteration, Evaluation

## Objectives of Task 24 (Extension)

The main objective of this Task is to create a global expert network and develop tools to allow Behaviour Changers (from policy, industry, intermediaries, research and the third sector) to:

- I. Create and enable an [international expert network](#)
- II. Identify and build on countries' [networks of Behaviour Changers](#) from all sectors
- III. Develop the [top DSM priorities](#) of each country in collaboration with all Behaviour Changer sectors to identify the most (politically, technologically, economically and societally) appropriate DSM themes for large-scale change
- IV. Develop ways to [aid Behaviour Changers' decisionmaking](#) of how to choose the best models of understanding behaviour and theories of change based on best practice and shared learning
- V. [Train Behaviour Changers](#) to understand different approaches to behaviour change and aid collaboration and shared learning amongst national and international experts

## Expected Outcomes

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

- ✓ Participation in the IEA DSM International Expert Platform and strong engagement with your own national Behaviour Changer networks from all sectors
- ✓ Maintaining an ongoing platform of shared learning, best practice examples and know-how with a growing database of global knowledge and examples of behaviour change programmes, models and outcomes
- ✓ Development of a common 'language' to aid break down silos and overcome inter-disciplinary jargon
- ✓ Development of a decisionmaking tool that lets Behaviour Changers use the right models to design interventions
- ✓ Mutual feedback, training and experience exchange for country- and context-specific issues including Behaviour Changers' different mandates, drivers and restrictions when designing interventions
- ✓ Better ability to get funding and collaborations involving Behaviour Changers from different sectors
- ✓ Collaborations aimed at systemic, societal changes rather than small-scale, short-term individual changes
- ✓ Ability to monitor, evaluate and prove ongoing success of behaviour change outcomes beyond kWh
- ✓ Contribute to an IEA DSM University.

## Continued: Subtask 0: Task Management

Subtask number	0
Start date or starting event:	Month 1
End date of Subtask	Month 36
Subtask title	<b>Project coordination, ExCo feedback and reporting</b>
Activity Type	Management and administration

### Objectives

- Overall project coordination and management, including contact relationship management
- Attendance of ExCo meetings, conferences and reporting to IEA DSM ExCo

This Subtask will focus on overall project management, attending ExCo meetings and report-back to the IEA DSM ExCo members, organising financial, contractual and other administrative issues and publicising the Task. It will also involve some workshops and webinars to finalise the Task definition and expert input/output.

**Outputs include:** Overall project organisation and management (OAs); Task Status reports (OAs); Annual reports (OAs); End of Term report, if applicable (OAs with inputs from NEs); Participation in IEA DSM ExCo meetings (OAs); Task flyers – at the start, during and at the conclusion of the project (OAs); Communication with related IEA tasks and other projects (OAs).

### **Task Management and Distribution of Responsibilities**<sup>1</sup>

The Operating Agents (OAs) are responsible for the overall performance, time schedule, information transfer, reporting etc of Task 24 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 Annual Reports;
- Disseminating the results of the work;
- Chairing the Task meetings and setting the agenda. Assistance at each meeting will be provided by the National Expert 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 organising 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 organisations; organising other meetings as presented in the work plan.

### Task 24 Operating Agents

Dr Sea Rotmann (SEA, NZ) and Dr Ruth Mourik (DuneWorks, NL) are the two co-Operating Agents of Task 24, with Dr Sea Rotmann undertaking primary duties such as invoicing, reporting and contracting.

Each National Expert (NE):

- Will provide the OAs 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;
- Will organise three expert meetings and/or training workshops in his/her home country over the course of the Task and attend at least one international conference;
- Will contribute to the Task 24 expert platform and their own national platform;
- Supports the OAs in disseminating the results of the work, including among their networks.

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<sup>1</sup> Note that the responsibilities described here apply to other Subtasks as well



The participating countries will assign appropriate national experts (NEs) to Task 24 on their notice of participation.

### Task sharing and expected person months/days per partner<sup>2</sup>

Subtasks	SEA	DW	NL	XX	XX	XX	XX	XX
Administration	2.5 months	0.5 month						
Definition workshops	2 days	1 day	1 day	1 day	1 day	1 day	1 day	1 day
ExCo meetings incl reporting	1 month	10 days						
<b>total</b>	<b>3.5 months</b>	<b>1 month</b>	<b>1 day</b>	<b>1 day</b>	<b>1 day</b>	<b>1 day</b>	<b>1 day</b>	<b>1 day</b>

### Continued: Subtask 5: Expert Platform

Subtask number	5
Start date or starting event:	Month 1
End date of Subtask	Month 30
Subtask title	<b>Social Media Expert Platform</b>
Activity Type	Networking, dissemination

### Background

We have developed a hugely successful international expert platform, which includes over 200 behaviour change experts from 21 countries to date. New experts are invited to join the platform every week. The platform uses social networking tools to foster collaboration. It contains all videos, presentations, photos, reports, discussions, events and Subtask groups of Task 24. It also links to a Wiki and dropbox for file sharing, as well as slideshare, youtube, linkedin, facebook and twitter groups.

### Objectives

- Continued running, maintenance and improvement, as necessary, of social expert platform
- (At least) one international conference for all Behaviour Changers engaged in Task 24

### Deliverables

D 6: Social network expert platform and meeting place for (invited) DSM and behaviour change experts and implementers. This platform includes a wide range of social media tools to foster greatest ability to interact, share and discuss. Experts can upload blogs, videos, photos, documents, slides and their biographies. They can chat, start groups and discussion fora, invite other experts and tweet or facebook from the site. It is meant to provide a 'matchmaking' service to enable trans-national, inter-disciplinary teams of experts and end users to collaborate and bid for funding. This platform may in future be hosted on the DSM-IA Task 24 website. It's current web address is [www.leadsmtask24.ning.com](http://www.leadsmtask24.ning.com)

D 7: At least one international conference for all Behaviour Changers involved in Task 24.

### Task sharing and expected person months/days per partner

Subtasks	SEA	DW	NL	XX	XX	XX	XX	XX
Maintenance, upgrade	15 days							
Engagement in the expert platform	3 months	1 month	10 days	10 days	10 days	10 days	10 days	10 days
International conference (incl prep and travel)	20 days	10 days	3 days	3 days	3 days	3 days	3 days	3 days
<b>total</b>	<b>&gt;4 months</b>	<b>1.5 months</b>	<b>13 days</b>	<b>13 days</b>	<b>13 days</b>	<b>13 days</b>	<b>13 days</b>	<b>13 days</b>

<sup>2</sup> OA contributions are based on 6 countries joining the Task Extension

## SUBTASK 6 - Who are the behaviour changers?

Subtask number	6
Start date or starting event:	Month 3
End date of Subtask	Month 12
Subtask title	<b>National DSM Experts and Stakeholder Analysis</b>
Activity Type	Networking, workshops, empirical analysis

### Background

Subtask 5 has collected - and will continue to do so - a large range of Behaviour Changers from all sectors and stakeholder groups, from over 20 countries. Their short bios, websites and interests can be found on the invite-only Expert Platform ([www.leadsmtask24.ning.com](http://www.leadsmtask24.ning.com)). We will continue this platform into the Task Extension but also propose to develop national expert platforms for each participating country with more detailed information on the various Behaviour Changers, their affiliations, their past and current work, their sectors and interests and what they are most concerned about regarding DSM and behaviour change. We posit that, even though countries have strong networks and knowledge of who the behaviour changers in policy and research are, they are not so strongly developed once it comes to industry, technology developers, intermediaries and the third sector. In order to be able to design and implement systemic behaviour change interventions geared at social practices or lifestyle changes, these Behaviour Changers who come with a more practical and bottom-up perspective, are imperative.

The difference and added value to the International Expert Platform is that we want to create much more in-depth relationships with and between the Behaviour Changers in each country. We have done that very successfully in our own countries with stakeholder workshops in NL and NZ and in the UK that went beyond the brief of Task 24. From the numbers of current participants on the International Expert Platform it becomes clear that not all the top DSM experts/Behaviour Changers from each of the participating (in bold) and non-participating countries are represented: USA - 14, **Austria - 6**, Australia - 6, **Belgium -15**, Canada -2, France - 8, Germany -1, Greece -3, **Italy -1**, Mexico -1, **Netherlands - 35**, **New Zealand - 34**, **Norway - 3**, Portugal -1, **South Africa - 1**, Spain - 3, **Sweden - 10**, **Switzerland - 16**, Thailand - 1, UAE - 2, **UK - 41** (Please note that not all experts we have been in contact with or who came to our workshops or have provided us with case studies, are on the expert platform). We have found that systemic, more societal approaches that include bottom-up and top-down components are by far the most effective. However, they take a lot more than one stakeholder/Behaviour Changer group to make them work.

The way things are currently done in most countries is that one government agency funds and/or designs and implements a behaviour change programme. This often follows the thinking of neoclassical economic theory, ie *Homo economicus* who will change their behaviour once given a (financial) incentive and information of why it is important. These approaches almost always fail to deliver what is expected of them in terms of uptake and energy savings. Breaking down some of the silos between the Behaviour Changers and making them work together using shared learning and storytelling and a solid understanding of each of their mandates and restrictions (and how they may clash with or support others' needs), is what this Task excels at. This Subtask will provide a list of their names, interests and needs, past and present work and main learnings and case studies that will inform Subtask 7. These are the Behaviour Changers that will be invited to the training sessions in Subtask 9 in each country in order to foster collaboration and shared learning and use the recommendations that come out of Task 24 in practical applications.

Part of the work for Subtask 6 will be (bi)annual national stakeholder workshops, where active matchmaking, shared learning and collaboration between these 5 Behaviour Changer sectors will be fostered and encouraged. This will include identifying the top DSM issues for each country (see Subtask 7), a decisionmaking tool for Behaviour Changers (Subtask 8), training sessions for Behaviour Changers (Subtask 9), and (voluntary) efforts to develop, implement, evaluate and iterate pilots, programmes or policies on the countries' top DSM issues (Subtask 10).

### Objectives

- Identify the most important Behaviour Changers focusing on DSM and/or (energy) behaviour change in each participating country (this includes the residential, business and transport sectors)
- Collect detailed information on their specific interests, organisations, past and current work - including lists of reports and other references which will form a (inter)national repository of most relevant DSM and behaviour change work
- Develop national stakeholder dialogues in each participating country by holding (bi)annual workshops and/or webinars (1-2 days per country per year, all up maximum of 6 days per country - note some of this time includes work from Subtasks 7 and 9)
- Foster mutual engagement, collaboration and shared learning amongst Behaviour Changers from different sectors
- Collect examples of successful matchmaking stories to illustrate benefits of shared learning and collaboration among all stakeholder sectors

### Deliverables

D 8: National networks of Behaviour Changers from all 5 sectors (government, industry, research, intermediaries, the third sector) and domains (residential, business, transport)

D9: Repository of all relevant DSM work per country

### Task sharing and expected person months/days per partner

Subtasks	SEA	DW	NL	XX	XX	XX	XX	XX
Identify Behaviour Changers	3 months	1.5 months	5 days	5 days	5 days	5 days	5 days	5 days
Workshops/webinars (incl prep and travel)	2 months	0.5 months	5 days	5 days	5 days	5 days	5 days	5 days
Repository of Behaviour Changers' work	1 month	0.5 months	2 days	2 days	2 days	2 days	2 days	2 days
<b>total</b>	<b>5 months</b>	<b>2.5 months</b>	<b>12 days</b>	<b>12 days</b>	<b>12 days</b>	<b>12 days</b>	<b>12 days</b>	<b>12 days</b>

## SUBTASK 7 - What do Behaviour Changers most need to change?

Subtask number	7
Start date or starting event:	Month 6
End date of Subtask	Month 18
Subtask title	<b>Top DSM Issues per Participating Country</b>
Activity Type	Workshops, empirical analysis

### Background

As part of the Subtasks 2 and 4 of the current Task 24, many DSM issues are being identified that lack in-depth understanding and are in need of further research, particularly on the national level, to account for context specificities. Most countries have not clearly identified these top questions with the input from the whole variety of Behaviour Changers. There will be some high priority DSM issues that Policymakers have (politically motivated or otherwise eg informed by international obligations), Researchers will have published some papers with (national) lists of behaviour change actions and their potential impacts, and the Industry will have (most likely confidential) priorities of their planned DSM spending and investment. However, it is highly unlikely that there was strong involvement from the Third Sector and Intermediaries both of whom are imperative for any bottom-up engagement in behaviour change programmes or that the Research, Industry and Policy sectors have developed their priorities in collaboration.

What we aim to do as added value in this Subtask is to take what lists of behavioural potentials in energy efficiency and conservation are developed in each participating country already, and bring it to the large group of Behaviour Changers from all Sectors (collated in ST 6) in order to discuss priorities, needs and rankings according to each of their insights. There will be quite different opinions around technical vs political vs economic potentials vs societal needs. For example, what may be an obvious low-hanging fruit for a researcher according to technical potential may be an

insurmountable risk for a policymaker due to political perceptions (eg if regulation of lightbulbs or showerheads is needed).

## Objectives

- Building on work from Subtasks 2 and 4, develop lists of top 3 DSM *implementable* issues per country (with country experts identified in Subtask 6)
- Review current approaches, nationally and internationally, on these top issues and provide case study examples that could illuminate some of the approaches (based on work in Subtask 1 and 2)
- Feed these cases, and the ones analysed in Subtask 1 and 2 into a broad decisionmaking tool (ST 8)
- Develop a country-specific list, together with country experts, of top 20 efficiency and conservation behaviours and their approximate technical, economic, political and societal potential in shifting or decreasing load (similar to what Gardner & Stern have done in the US)<sup>3</sup>. This will help chose which top DSM issue could be addressed in each country in Subtask 10.

## Deliverables

D 10: List of top 3 DSM issues per country, including analysis of case studies elsewhere

D 11: List of 20 efficiency and conservation behaviours and approximate contribution to a country's load management (economic, technological, political and societal potentials)

## Task sharing and expected person months/days per partner

Subtasks	SEA	DW	NL	XX	XX	XX	XX	XX
Top 3 DSM issues	1 month	0.5 months	5 days	5 days	5 days	5 days	5 days	5 days
Top 20 behaviours and potentials	2 months	1 month	5 days	5 days	5 days	5 days	5 days	5 days
<b>total</b>	<b>3 months</b>	<b>1.5 months</b>	<b>10 days</b>	<b>10 days</b>	<b>10 days</b>	<b>10 days</b>	<b>10 days</b>	<b>10 days</b>

## SUBTASK 8 - What tool do Behaviour Changers need?

Subtask number	8
Start date or starting event:	Month 12
End date of subtask	Month 24
Subtask title	<b>Decisionmaking tool for Behaviour Changers</b>
Activity Type	Algorithm, software or online application

## Background

As part of Subtasks 3 and 4, a beta tool was developed that looked at organising the case studies collected so far into a useful decisionmaking tool for recommendations to the different Behaviour Changer sectors. It was based on a decisionmaking tree, asking specific questions on the desired outcomes of behaviour change, such as:

- **What** behaviour do you want to change?
- **Why**?
- **Who**'s the target for the behaviour change?
- **Where** do they behave like that normally?
- **How** do you think you can change it?
- **Why** would you go about it like that?
- **When** do you need to get it done by?
- **How** do you measure success?
- **How** will you get these measurements?

<sup>3</sup> Gardner G.T. and Stern P.C. (2009). The Short List: The Most Effective Actions U.S. Households Can Take to Curb Climate Change. <http://www.environmentmagazine.org/Archives/Back%20Issues/September-October%202008/gardner-stern-full.html>

- **How much** \$ do you have/need?
- **How many** people are you hoping to change?
- **How long** will the effects of the change last?

It is important to address these questions from the perspective of the particular Behaviour Changers' sector. We break the Behaviour Changers who are our target audience in this Task into 5 sectors: **The Decisionmaker** (Policy); **The Expert** (Research); **The Provider** (Energy Industry and Technology Developers); **The Doer** (Intermediaries) and **The Conscience** (The Third Sector). Each one of these behaviour changers has very distinct mandates and restrictions. For example:

As **The Decisionmaker** your job is to:

- Keep your Minister happy! (S/he wants to keep voters happy)
- Analyse & design good policy, often under time pressure
- Design, implement and evaluate local, regional or national DSM programmes
- Regulate, incentivise and influence the public, individual consumers and the market
- Perform a 'public service', keep the public good in mind
- 'Make the right decisions for the wrong reasons'

Your **restrictions** are:

- You have to follow the will of the Government/Minister of the Day
- This may change rather often/be quite unstable
- It takes a long time to develop good policies and implement programmes, and things can change overnight when the Government (or its priorities) changes due to unforeseen circumstances
- Tension between public service/public good
- You have to convince Treasury to get budget for your programmes - this means cost-benefit analysis based on estimates and models and kWh savings, not 'soft benefits' of energy efficiency
- You often don't have the time to do good background analysis and undertake pilots
- Unintended consequences and perverse outcomes

## Objectives

- Build a decisionmaking tree from 100+ cases collected in Subtasks 1, 2 and 7. Following the decisiontree process using similar questions as shown above (probably with a multiple choice option), the tool will remove all case studies that do not pertain to the Behaviour Changers' specific sector, needs and type of inquiry and leave only the cases that are relevant to them.
- We will then aspire to perform a summary of recommendations giving specific examples of do's and don'ts and connect the Behaviour Changer with other Behaviour Changers that have successfully undertaken similar work.
- This could potentially take the form of an online game or an App. We are in discussion with the Computational Science Department at the University of California Irvine to get a Masters or PhD student to work on this Subtask.

## Deliverables

D 12: Decisionmaking tool

### Task sharing and expected person months/days per partner

Subtasks	SEA	DW	NL	XX	XX	XX	XX	XX
Decisionmaking tree including collecting more case studies	5 months	2.5 months	15 days	15 days	15 days	15 days	15 days	15 days
Application of the tree	2 months	1 month						
Testing of the tool	1.5 month	0.5 months	5 days	5 days	5 days	5 days	5 days	5 days
<b>total</b>	<b>8.5 months</b>	<b>4 months</b>	<b>1m</b>	<b>20 days</b>	<b>20 days</b>	<b>20 days</b>	<b>20 days</b>	<b>20 days</b>

## Subtask 9 - How to change the Behaviour Changers?

Subtask number	9
Start date or starting event:	Month 12
End date of subtask	Month 30
Subtask title	<b>Training Sessions for Behaviour Changers in Participating Countries</b>
Activity Type	Training, support

### Background

As discussed above, we are already seeing a slow shift from mainly economic and psychological approaches that only focus on the individual as behaviour change agent, to more sociological and systemic approaches that take the wider dependencies and contexts into account. However, this shift is still taking place in silos, mainly from the bottom-up and without large-scale, coordinated national efforts to design interventions that could change energy practices on the wider, societal level. We are proposing to build on the excellent work recently undertaken in the UK (so far, with policymakers only) that is focussing on fostering better understanding and implementation of wider and more systemic disciplinary theories of behaviour and practices<sup>4</sup>:

*'The literature provides two distinct perspectives on habit, coming from two different academic disciplines: psychology, and sociology. In the former, habit appears as a psychological construct, and a factor influencing behaviour. In the latter, habits appear as routine practices. These differences in describing habits go to the root of the differences between how the two disciplines think about human conduct. Social psychologists talk about „behaviour“, which originates in the individual, and is the product of their beliefs, attitudes and other motivational factors. Sociologists on the other hand talk about „practices“, which exist as entities out there in the social world, and are reproduced by the individuals who perform them.*

*Psychology and sociology offer two distinct and sometimes conflicting accounts of habit. Yet to take full advantage of the insights from these two perspectives, it is imperative that practitioners understand both, and do not privilege one over the other. This is because different behaviours will suit different approaches, and different audience groups will respond better to different kinds of intervention. For instance, those who are already motivated to change may need individualised help with „getting started“, while the unmotivated may be best addressed through practice-based programmes that do not target individuals directly. Such an interdisciplinary approach is also in keeping with best practice in behaviour change guidance, which observes that “there is no one winning model” – an adage particularly appropriate when tackling complex problems like environmental sustainability.'*

There are pros and cons in each approach and neither is more or less right than the other. The positive of individualistic, psychology-inspired approaches is that it provides a framework which establishes all the main drivers, barriers and contexts affecting individual behaviour, and offers a linear (usually from left to right) approach to changing behaviours ('if A + B + C is taken care of = Behaviour Change').

From a policy perspective the potential downsides to these intensive individual-based interventions are as follows: First, **scaleability**: can these programmes be rolled out to enable habit change across the population, and how much resource (in time and money) would that take? Second, **inclusivity**: if pre-motivation of individuals is required, what proportion of the population can be engaged in programmes of this kind? Third, **breadth of spectrum**: what strength of habits and types of behaviour can these self-change techniques work on (eg. good for commuting, less good for frequent flying).

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<sup>4</sup> Darnton, A, Verplanken, B, White, P and Whitmarsh, L (2011). Habits, Routines and Sustainable Lifestyles: A summary report to the Department for Environment, Food and Rural Affairs. AD Research & Analysis for Defra, London.

Chatterton (2011). An Introduction to Thinking about 'Energy Behaviour': A multi-model approach. A paper for the Department of Energy and Climate Change.

Also the newly created DEMAND center (<http://www.demand.ac.uk/>) which will focus on Dynamics of Energy, Mobility and Demand (started May 2013)

Instead of targeting individuals' motivations, **practice theory** calls for the rearranging of the elements that hold certain practices together. This approach does not depose that based in psychology, but provides a complementary strategy. Together, they enable us to develop an integrated suite of tools which can address habit on a number of levels.

- Social practices are by their very nature routine, or habitual. They arise from the *interaction between people and the structures of the social world* – which are revealed in the practices themselves. Instead of habit being a factor in behaviour, practice theory suggests that *habit is behaviour*.

- People are not the originators of behaviour, but the *carriers of practices* – and the practice goes on after a person has finished carrying it out. As such, people reproduce practices, which are relatively stable and recognisable entities (eg. we all know football when we see it, and hence we can reproduce it in a relatively consistent manner).

- It follows from this that if we wish to change routine practices, we may *not need to target individuals at all* for some habits. Instead we should address the elements in the social world which support a particular practice.

From the perspective of practice theory, habits are an *outcome of human conduct, not a factor determining behavioural outcomes*. The important implication for behaviour changers is that intervention strategies must seek to address the *whole practice* (where the individual and the social world meet), and not just that facet within individuals' motivation which makes them keep behaving the same. From this perspective, habit change is not about increasing an individual's conscious control over their behaviour. This is a positive in terms of the much wider scope for potentially reducing energy use when changing (national or global) practices. It is, however, also much more complex and difficult to envisage and to design interventions that can affect energy practices.

## Objectives

- Building on the national expert groups identified in Subtask 6, develop training sessions (3-6 days per country, 3 initial training days with 3 days set aside for assistance during design, implementation and evaluation of new approaches - voluntary Subtask 10) focusing on a greater interdisciplinary understanding of different models of understanding behaviour, particularly an individually-focused psychological approach vs a practice-focused sociological approach.
- Bring national Behaviour Changers from all 5 sectors together in these training sessions and enable a strong shared learning exchange of knowledge, experiences and challenges of each sector. Storytelling will be an important component of this work, including the analysis of relevant horror, learning, hero and love stories, as well as the stories of different models of understanding behaviour already collected in Subtask 1.
- Showcase the use of the decisionmaking tool (Subtask 8) and apply it to specific needs of Behaviour Changers, use it together on actual problems to embed the habit of utilising a decisionmaking tool when designing DSM programmes or policies.
- Building on the top national needs established in Subtask 7, work with Behaviour Changers to develop policies, programmes or pilots based on their improved understanding of behavioural models and contexts.
- Foster strong collaboration and ongoing networks between the 5 Behaviour Changer sectors in order to ensure a more systemic approach to programme or policy implementation is possible and will be actively pursued by the attendees and their organisations.

## Deliverables

D 13: Training module and training sessions for Behaviour Changers





## Task sharing overview

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

Provide expert time of approximately 1.2 person-months a year (maximum total 4 months per national expert - 4.5 months total if Subtask 10 is joined). This includes:

- ✓ Undertaking part of the research and/or writing work for selected parts of Subtasks 6 to 9
- ✓ Attending up to six meetings/workshops of the Task and preparing for them
- ✓ Hosting at least 3 national meetings/workshops during the lifetime of the Task
- ✓ Attending one international conference of Task 24
- ✓ Assisting with organising national training sessions with country stakeholders
- ✓ Carrying out the national dissemination activities, plus
- ✓ Actively engaging in the (national) expert platform/s
- ✓ (Voluntary) Taking part in Subtask 10 efforts.

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.

## Deliverables overview

Subtask	Deliverable	Deliverable name	Type of deliverable	Month of completion
5	D6	Social meeting place for Behaviour Changers	Online social media platform	ongoing
5	D7	International Conference for Behaviour Changers	Conference	24
6	D8	National Behaviour Changers	Online social media platform, workshops	12 but ongoing
6	D9	Repository of all relevant DSM/behaviour work per country	database	12 but ongoing
7	D10	List of top 3 DSM issues per country, including analysis of case studies elsewhere	database	18
7	D11	List of 20 efficiency and conservation behaviours and approximate contribution to a country's load management	database	18
8	D12	Decisionmaking tool	Online/Software App	24
9	D13	Training module and training sessions for Behaviour Changers	Interactive training module	30
10	D14	Support on design, implementation, evaluation and iteration of national policies, programmes or pilots	Interactive report-back of country-specific learnings developed from Task 24	36

## BUDGET

We hope to ultimately attract at least 8 countries (and/or sponsors), as this Task benefits from the maximum number of Behaviour Changers (in addition to the national experts) we can engage to draw on their knowledge and learnings. Not all of them may be part of participating countries, thus in-kind contributions of experts and countries to specific Subtasks will be welcome. Subtask 10 is a voluntary add-on module, each country will be asked (after conferring with their Behaviour Changers and National Experts) after 12-18 months if it wants to join Subtask 10. This will add an extra €15,000 per country (once-off payment).

4 - 5 countries	6 - 7 countries	8 - 9 countries	10+ countries
<b>€62,500 per country (€25,000 per annum)</b> (2 OAs, travel, platform maintenance, filming, training module, decisionmaking tool, overheads)	<b>€62,500 per country (€25,000 per annum)</b> (2 OAs, travel, platform maintenance, filming, training module, decisionmaking tool, overheads)	<b>€62,500 per country (€20,833 per annum)</b> (2 OAs, travel, platform maintenance, filming, training module, decisionmaking tool, overheads)	<b>€62,500 per country (€15,625 per annum)</b> (2 OAs, travel, platform maintenance, filming, training module, decisionmaking tool, overheads)
<b>Total budget €250,000-€312,500</b>	<b>Total budget €375,000-€437,500</b>	<b>Total budget €500,000-€562,500</b>	<b>Total budget €625,000</b>
Level of detail in deliverables: · Social expert platform · Country expert platform · Top country specific issues of 4-5 countries · Decisionmaking tool · Training modules for 4-5 countries	Level of detail in deliverables: · Social expert platform · Country expert platform · Top country specific issues of 6-7 countries · Decisionmaking tool · Training modules for 6-7 countries	Level of detail in deliverables: · Social expert platform · Country expert platform · Top country specific issues of 8-9 countries · Decisionmaking tool · Training modules for 8-9 countries	Level of detail in deliverables: · Social expert platform · Country expert platform · Top country specific issues of 10+ countries · Decisionmaking tool · Training modules for 10+ countries
<b>30 months duration</b>	<b>30 months duration</b>	<b>36 months duration</b>	<b>42 months duration</b>

Description personmonths/ costs	Cost (Euro)	personmonths Sea Rotmann per subtask	personmonths Ruth Mourik per subtask	total costs Sea Rotmann	total costs Ruth Mourik	total sum
Subtask 0	4750	3	1	14250	4750	19000
Subtask 5	4750	5	1	23750	4750	28500
Subtask 6	4750	5	2	23750	9500	33250
Subtask 7	4750	5	3	23750	14250	38000
Subtask 8	4750	6	3	28500	14250	42750
Subtask 9	4750	6	3	28500	14250	42750
<b>Total personmonths/ costs</b>		<b>30</b>	<b>13</b>	<b>€142500</b>	<b>€61750</b>	<b>€204250</b>

Description costs	Costs	
OAs travel costs	30000	costs travel Sea Rotmann and Ruth Mourik including extended stay in Europe of Sea Rotmann and frequent face to face meetings RM and SR (6 times travel SR to Europe from New Zealand)
stakeholder analyses	5000	separate meetings and costs associated with stakeholder analyses/workshops
website and data management	3500	including website, webinars, VC, social media, blogs/vlogs, database etcetera
training modules	7250	
<b>incidentals and overheads</b>	<b>€45750</b>	
<b>Total</b>		<b>€250000</b>

## TIMELINE

Based on 6 countries.

Subtasks	2015	2016	2017
Subtask 0 - Admin			
Subtask 5 - Expert Platform			
Subtask 6 - National experts			
Subtask 7 - Top DSM Issues			
Subtask 8 - Decisionmaking tool			

Subtasks	2015	2016	2017
Subtask 9 - Training sessions			
Subtask 10 - Interventions			

We are hoping to start some of this work mid 2014, in conjunction with finishing off Task 24. The first countries that join will have some of the work on Subtasks 6 and 7 already underway by 2015.

## Risk Register

The possible risks to the successful completion of this project have been assessed and mitigation approaches identified as shown below.

Risk	Likely hood	Impact	Risk Category	Risk Mitigation Measure(s)	Risk Category, post Mitigation
Lack of full range of requisite expertise, with which to deliver the required services	Low	High	Medium	Knowledge of and access to range of key stakeholders, within the wider Behaviour Changer sectors. Successful expert platform already established	Low
Inability of Operating Agent and Task Experts to work together	Low	High	Medium	Successful completion of Task 24	Low
Sudden unavailability or withdrawal of Task Experts	Medium	High	High	Participants aware of level of commitment required, no expert has pulled out of Task 24 so far. Wider network of experts means NE isn't only source of expertise	Low
Sudden unavailability of Operating Agents, other key staff member(s)	Low	High	Medium	Ability of Duneworks to re-allocate staff from wider complementary skill pools	Low
Inability to access Behaviour Changers from all Sectors	Medium	High	High	Need to rely on established networks of NEs and ExCo, spend time in each country talking to Behaviour Changers	Medium
Project delivery timescale over-runs. Added burdens from additional countries joining late	Low	High	Medium	Formal Project Management procedures; Regular reporting to the IEA DSM ExCo. Additional countries will extend timeline automatically at no extra cost	Medium
Cost over-runs, particularly on expert platforms and decisionmaking tool	Medium	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

# Status Report on IEA-DSM Task 17 – Phase 3

ExCo Meeting Wellington, New Zealand – 17./21. March 2014

## 1 Definition process

### 1.1 Committed parties

- Austria
- Switzerland
- Netherlands
- Copper alliance

### 1.2 Call for participation

Contact has been established with

- US-1: via RAP : no response
- US-2: via OA Larry Mansueti and Steve Widergren: no response yet; depending on DOE funding decisions
- Sweden: interested, but no funding decision
- Finland: definitive NO decision
- India: country experts interested and contacted ExCo

No response received

- China: ??
- South Korea: ??
- Germany via D -A-CH Cooperation ??
- Schneider-Electric ??
- RAP ??

### 1.3 ExCo Meeting

ExCo Members have to vote on starting or dropping the task.

If the necessary number of countries is not reached the size of the task will be decreased by 30k€ but the task will start.

## 2 Collaborations

- ISGAN – Annex 2 – Use cases –joined workshop proposed

## 3 KickOff Meeting 19-23 May in Graz Austria

- During the *Smart Grids Week 2014* in Graz / Austria there will be a joint **workshop on DSM** with the IEA DSM Task 17 and EcoGrid EU consortium.
- The **kickoff meeting** will be held in conjunction with these activities.  
SG Week 2014: <http://www.nachhaltigwirtschaften.at/results.html/id7475>

## 4 Next Steps

- ➔ Task status presentation at the ExCo Meeting
- ➔ Attract more countries / commitment from the countries
- ➔ Organize Workshop and KickOff Meeting



# IEA DSM TASK 25

## Business models for a more effective market uptake of DSM energy services

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DRAFT Task Work Plan

February 2014

This draft task work plan is submitted to the IEA's

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



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## Introduction

**This task will focus on identifying and creating effective business models<sup>1</sup> providing viable DSM value propositions that lead to the growth of the demand market for energy efficiency.<sup>2</sup> In addition, this task will focus on identifying and supporting the creation of energy ecosystems in which these business models can succeed.**

Worldwide, many studies are being conducted in order to understand what it is that is causing the -apparent – lack of market uptake of energy efficiency. Value Propositions for energy efficiency services are potentially key in the transition to a more energy efficient system because they have the potential to create a mass-market demand for energy efficiency. Focusing on the customer and their unique buying reasons for energy efficiency, in the form of energy services is a promising next step in creating a mass market for energy efficiency, potentially much more effective than the so far rather technocratic and technology push approach.

There is potentially a demand for these energy services because they offer customers financially sound (with good return on investment or revenues), easy-to-use or increase-of-comfort solutions. Or the customer benefits from the services with improved health, wellbeing or higher disposable income, without having to go through a complex decision making process for each element of the energy service package. Energy services are characterized by the fact that they are enabled by a commodity (gas, electricity) or/and a technology (smart meter), and delivered as a package that provides a valuable solution to a customer's problem. The package can be very diverse<sup>3</sup> and can range from audits, retrofitting, to selling or buying energy, and provide enhances value such as savings, guarantees or knowledge of use.

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.

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<sup>1</sup> With business models we refer to the rationale of how an organization creates, delivers and captures value. We work with the business model canvas as developed by Alexander Osterwalder and enhanced by others. This canvas comprises 9 building blocks: resources, value propositions, customer relationship, revenues, partners, channels, cost structure, customer segment, key activities.

<sup>2</sup> 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.

<sup>3</sup> The energy services or value propositions can range from audits, energy analysis of houses or buildings, monitoring and evaluation of savings, property or facility management, retrofitting, energy conservation, provision of services (space heating, cooling, lighting, safety, etc), selling or buying energy, financing of energy efficient equipment, energy infrastructure outsourcing, power generation and energy supply, and risk management, but also innovative financing methods, retrofitting services, energy performance contracting and ESCOs and energy performance contracting



**However, even when packaged in an added value deal for customers, many energy services still face an acceptance and uptake problem when they are to be upscaled 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). Technology alone will 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 favorable 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). 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?

Several premises 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 business models that meet the needs of their target users: 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 value propositions are being supported with (possible) viable business models, barriers on a national level and behavioural issues<sup>4</sup> impede market uptake;
4. There is therefore a dire need for healthy national systems in which viable business models can be created 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. 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 product or technology to choose or how to change their behavior. In order to solve this problem, it is not enough to provide a technology as a solution. We need services enabled by technology, provided as a clear solution to a perceived need.

### 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

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<sup>4</sup> 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.

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 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 center 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 behavioral 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.

### **Our focus**

The Task will be tailored to country specific needs and demands in terms of business models for Energy Services and the ecosystems to be analysed, but will explicitly collect, compare and share the learning's and provide a best practice list.

As a starting point, and based on the preliminary analysis and feedback on the potential needs of interested countries we can discern common interests that we would like to propose as a starting point for analysis in all countries, with the possibility of adding other foci tailored to the specifics of the countries at a later stage. We will start with the collection of the know-how of the different countries on these issues and compare the different country situations and policy measures to establish a best practice list.

The focus will be on business models focusing on providing services for energy efficiency and energy savings in the urban environment, namely focused on buildings or **districts**.

The following **segments** or key target groups will be focused on:

1. **Companies** (also small SMEs);
2. **Communities/cities** trying to set up (decentralised) energy smart districts;
3. **Households** experiencing the principal-agent (owner-tenant) problem;
4. **House-owners**.

**The first suppliers** of energy services we will focus on are the professional suppliers (electricity utilities; HEMS and BEMS vendors/developers; aggregators of Demand Side management; providers of ICT services and (intermediaries representing) social and local energy communities.

We focus on **Business models** aimed at

- making industries and businesses more energy efficient, including audits and advice services.
- smart districts, e.g. aimed at providing smart heat for district heating systems (CHP or other heating system change, integrated approach with decentralized energy sources and measures on the demand side (renovation, EE measures, epc, labelling);
- viable smart grid based services on the level of buildings, e.g. small-scale distributed power, smart grid technologies ( smart meters, HEMS, BEMS, control systems, forecasting, optimisation and interfaces) and smart appliances.

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

- Technology acceptability (related also to privacy, ownership of data and security), behavior 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 productivity, energy provider and infrastructure benefits, energy security, development goals.

## Objectives of Task

**This task sets out to identify proven and potentially successful business models for energy services for DSM on a national level, and develop effective policy strategies, stakeholder roadmaps and business models to upscale and mainstream these energy services on a national (ecosystem) level.**

The main objectives of this task are to:

1. What works, how does it work and what kind of framework conditions do we need? Identify proven and potential business models for energy services on (first phase) issues of common interest in different countries, with special focus on how to create conducive different market dynamics and policies in different countries;

2. Analyze acceptance and effectiveness of these business models in creating lasting load reduction, or generation and other non-energy benefits and in creating a market;
3. Research success and failure factors by means analyzing business models in their socio-technical or ecosystem context;
4. Develop canvas for energy service businesses to be able to more effectively develop business models and value networks able to mainstream and upscale on a national level and disseminating it through national workshops;
5. Creating a set of guidelines, and advice supporting the creation of policies to encourage market creation and mainstreaming of business models in different countries;
6. Creating and maintaining a digital platform for shared learning, best practices and know-how with national sub departments focused on bringing knowledge to the national market, including banks and other funders;
7. Develop a database (as far as possible) including (national context sensitive) useful contractual formats, business plans etc.

### Expected Outcomes

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

- Support of a market for business models for energy services that effectively achieve energy conservation, generation or load shifting of households and SMEs, by accessing the “testbed” of full-scale examples in other countries;
- Providing eye-to eye contact and exchange of experiences between business developers, service providers and their results, successes as well as failures;
- Contributing to formulation and thereby achieving energy reduction or generation targets on national and international level;
- Analysis and comparison in a common business model format that enables distinguishing of development issues;
- A list of best practices on business models and the exchange of valuable knowledge and learnings;
- Participation in the IEA DSM task 25 Expert Platform and communication with a large variety of international and national stakeholders including contacts with e.g. smartgrid developers
- Maintaining an ongoing platform of shared learning, best practice examples and know-how in DSM energy services and business models.
- A database of global knowledge and examples of successfully up scaled energy service projects and business cases;

### Deliverables

- **D0:** draft workplan;

- **D1:** Advisory committee of stakeholders from ExCo, IEA, research, commercial, community, policy and end user sectors providing strategic guidance;
- **D2:** typology of business models and accompanying services;
- **D3:** report discussing several business models energy service business models per country, in context and comparatively, and several country independent business models;
- **D4:** overview of patterns, drivers and pitfalls for different types of business models, including business models from EU countries outside of the participating countries;
- **D5:** Database of all found services and business models. Open access;
- **D6:** Country specific recommendation on how to upscale or mainstream selected business models;
- **D7:** Social media expert platform and meeting place for (invited) experts and implementers;
- **D8:** alternative ways of disseminating findings: e.g short videos, cartoons.

## Preliminary quick scan analysis of business model and energy service issues in 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 that<sup>5</sup> 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).

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<sup>5</sup> 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 de smooth acceptance of smart grid technologies

## Task 25 and Finnish DSM Developments and Priorities<sup>6</sup>

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,

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<sup>6</sup> 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 Priorities<sup>7</sup>

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

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<sup>7</sup> 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 Priorities<sup>8</sup>**

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:

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<sup>8</sup> 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 (branche) and both high and low energy users.
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### Task 25 and Swiss DSM Developments and Priorities<sup>9</sup>

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

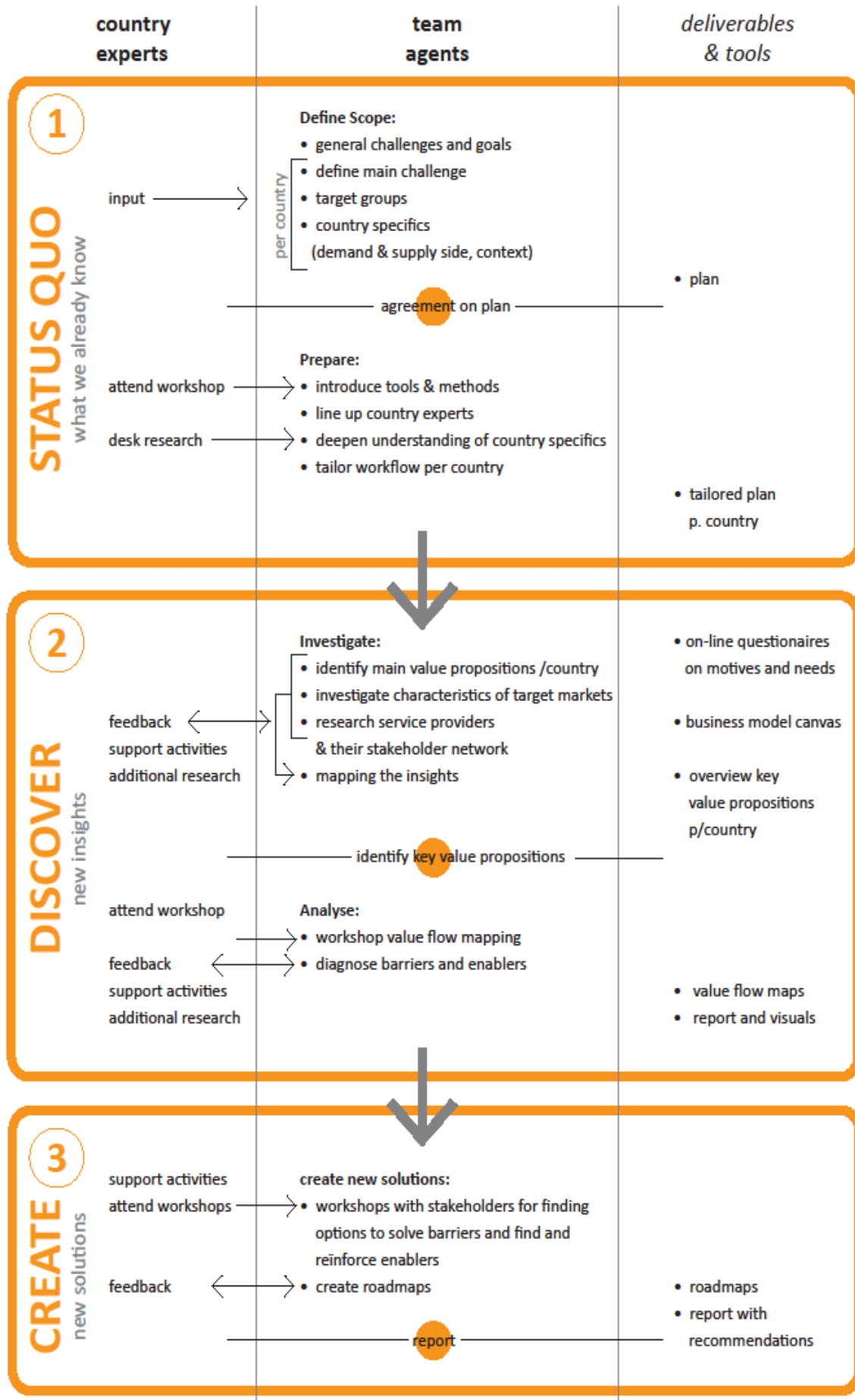
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<sup>9</sup> Based on information from the IEA DSM Annual report 2013

- 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.

# business models (IEA-DSM Task 25 ) project overview

for a more effective market uptake of DSM energy services



## Team

**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.

**Renske Bouwknecht: Cooperating Agent.** *Renske Bouwknecht* is a service innovation specialist with extensive 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 behavioral change, business models and social innovation.

**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 Center 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.

**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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## **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. It was decided that this Task is highly needed and may enter the Task Definition Phase, under Task number 25. The proposal will be further developed during 2014 in close cooperation with the currently interested countries Austria, Belgium, Finland, Netherlands, Sweden and Switzerland, and will be presented to the Executive Committee in March 2014. We invite all other countries to partake, and sufficient room for tailoring the Task to their needs will be ensured.

Countries that expressed their interest:

1. Netherlands
2. Belgium
3. Sweden
4. Finland
5. Austria
6. Switzerland
7. The European Copper Institute also expressed their interest in participating in kind and in particular on researching replicable business models for energy efficiency services.

The country experts should be actively involved in the technical work, if they wish so, for capacity building as they should then serve as facilitators and multipliers in their countries.

### ***Collaboration with other IEA DSM tasks***

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 support and follow up of country specific national implementation activities in order to foster market development, design, elaboration and testing of innovative ESCo Energy-Contracting models and elaboration and assessment of business models for Demand Response energy services for these services. Our Task 25 will focus explicitly on other types of business models and energy services but may include, in close cooperation with Task 16 ESCos not working with EPC.

We will also collaborate closely with Task 24 on the behavioral issues around business models and energy services on both the level of households and companies (e.g. building or district managers). In addition, the issues around privacy, ownership of data and security will be a common interest.

### ***Collaboration with other Implementing Agreements***

Collaboration with other parts of the IEA 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 included 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 for Task 25.

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.

### Methodologies and frameworks

We will use several frameworks to conduct the analysis: the Business model canvas, and several enhancements (e.g. the social business model canvas and the value flow model) and the socio-technical or ecosystem framework.

### Business model canvas

We will map the business models according to 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). This addition with the social business model canvas is relevant to our task 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.

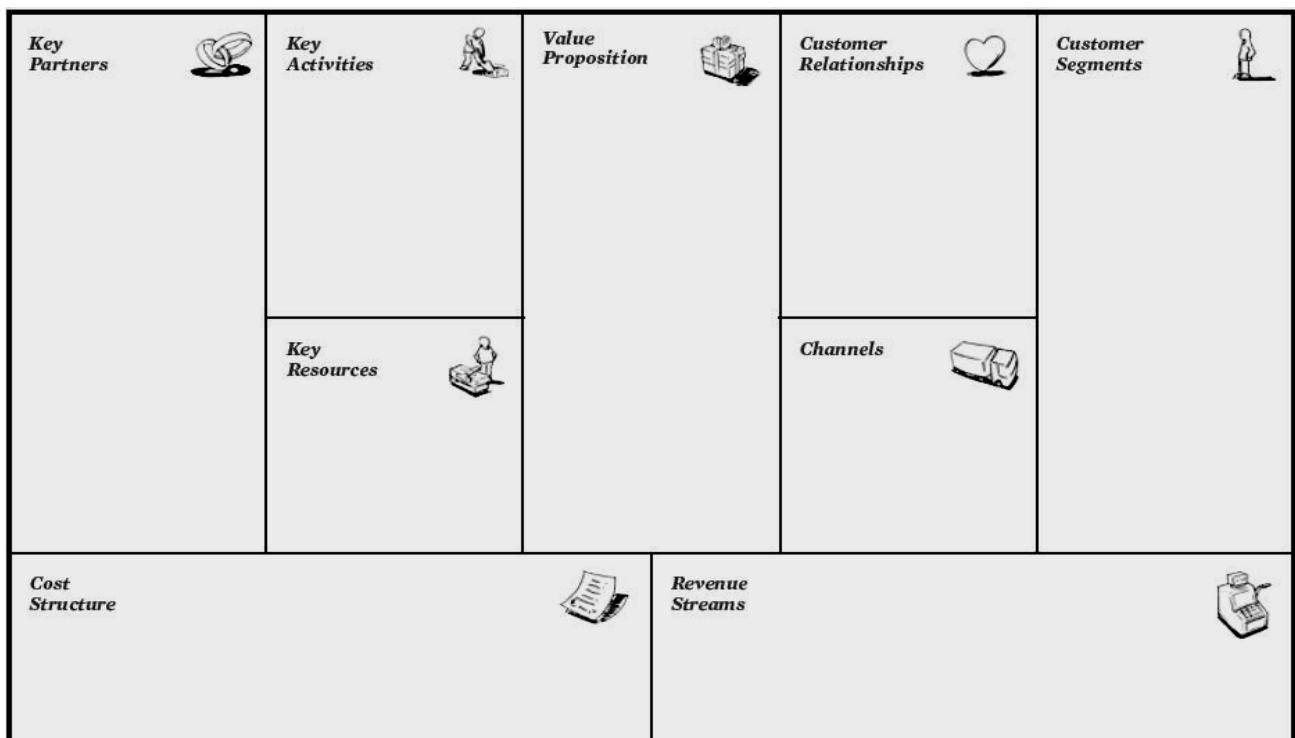


Figure 1: The business model canvas by Osterwalder

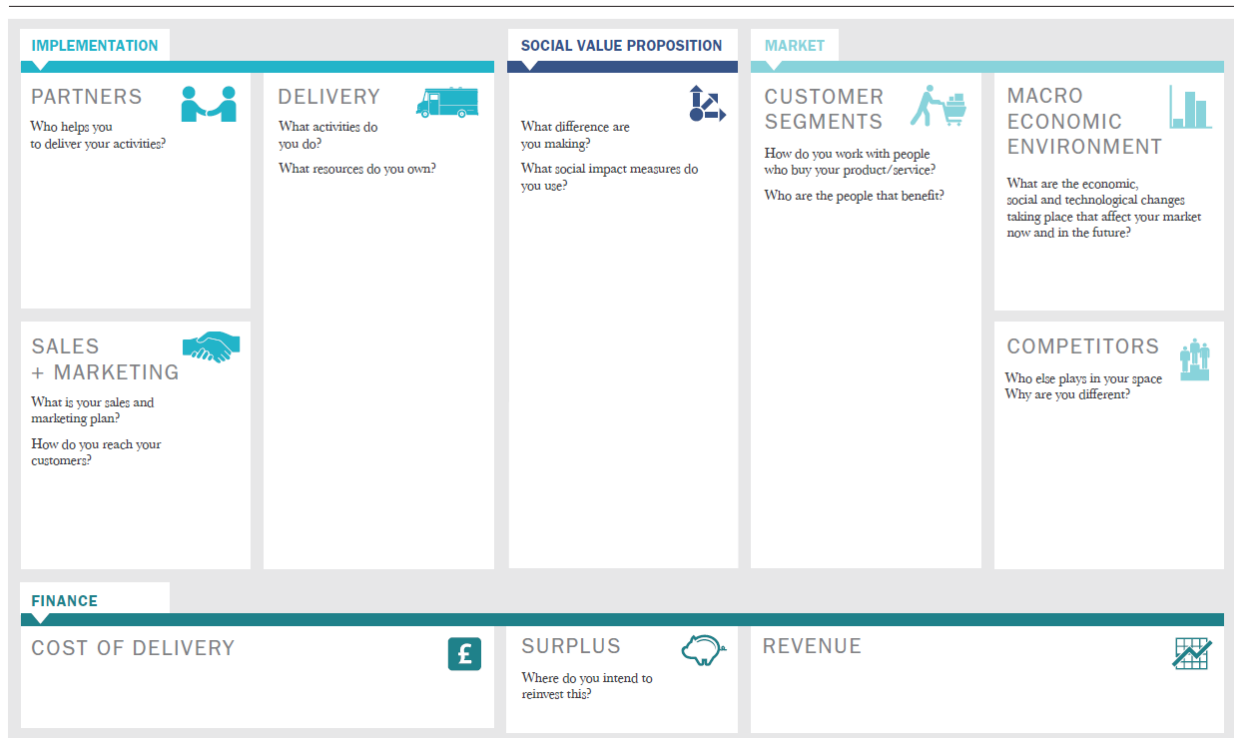
This business model canvas consists of 9 building blocks and we will focus on each of these when analyzing the selected business models:

1. Key partners
2. Key activities
3. Key resources
4. Value proposition
5. Customer relationships
6. Channels
7. Customer Segments
8. Cost structure
9. Revenue Streams

## THE SOCIAL BUSINESS MODEL CANVAS

**THE ACCELERATOR**  
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Social venture:



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Inspired by The Business Model Canvas: [www.businessmodelgeneration.com](http://www.businessmodelgeneration.com)

**Figure 2: The social business canvas model by Cheriakova (2013)**

One particular aspect of business models we will focus on is the value flow and in particular is an extension to the key partners building block of the Business canvas model Osterwalder. To analyze this value flow we will use the Value flow model (figure 3). This 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. 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)

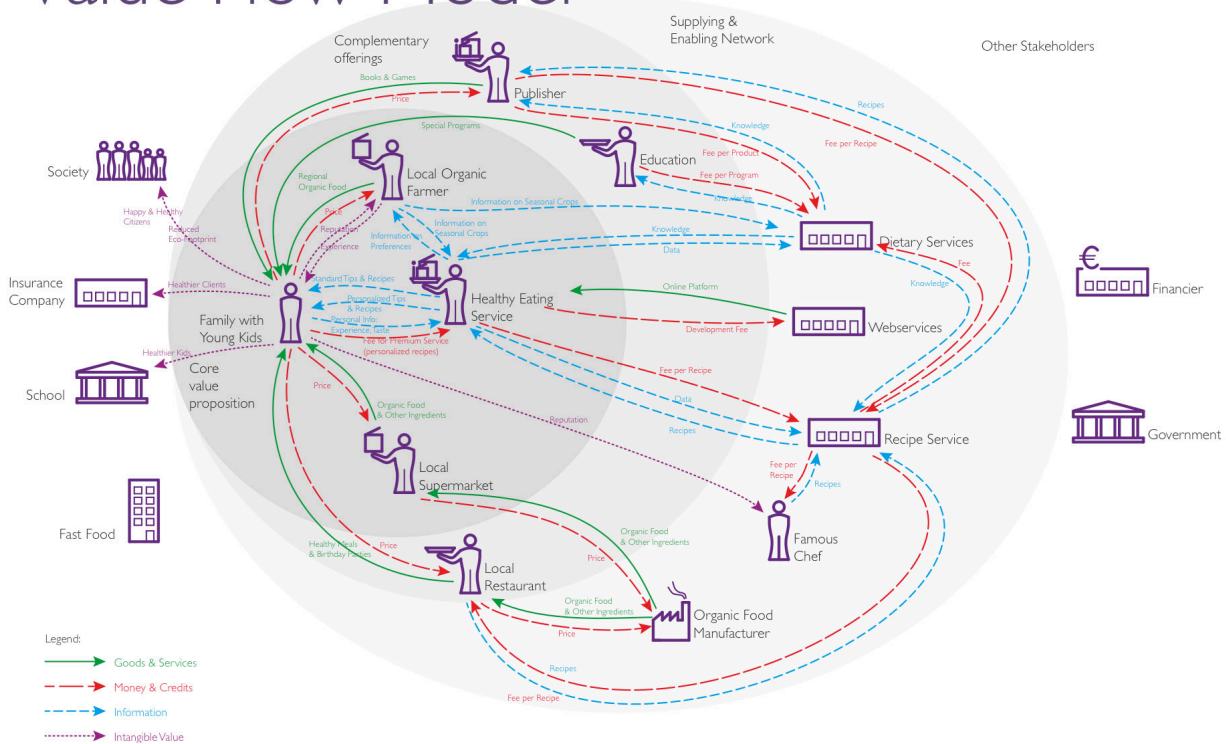
To analyse the selected business models we will build on the Quick scan for PV business model development as developed for the IEA\_PVPS Task 1 by Prof. Geert Verbong, PhD candidate Boukje Huijben and Otto Bernsen, AgencyNL

Figure 3: The value flow Model by Elke den Ouden

ELKE DEN OUDEN BV  
MEANINGFUL INNOVATION

TU/e

# Value Flow Model



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See below for an example of the type of templates to be used.

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?

### 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 favorable 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 analyze 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 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)?
- Where 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.

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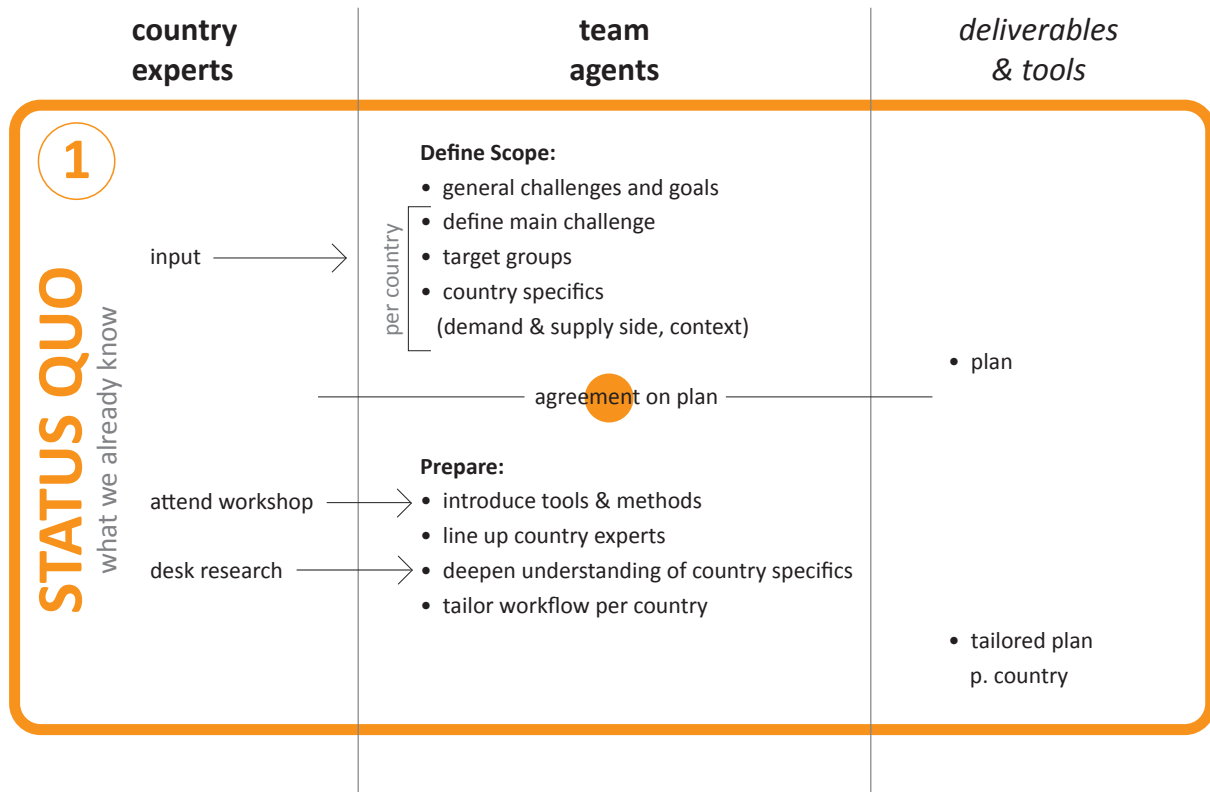
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## Subtask 0: Task Definition Phase



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

### Background to this Subtask

The focus of this task is on making a first inventory of issues of common interest regarding business models and Service Value propositions on Energy efficiency. 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 is 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.

### Objectives

- Writing workplan, in close cooperation with team (DuneWorks, Ideate, TU/e) and interested countries
- Performing a quick scan of country specifics (relevant policy and regulation, research, business models. energy targets etc)

- Attendance (virtual) of ExCo meeting in 2014

#### Description of activities and timing

Subtask 0: prescoping	2013	01-03 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 will focus 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)
0.1	12	4	0	4
0.2	20	20	0	4
0.3	4	4	0	
0.4	2	2	0	0
<b>total hours</b>	<b>38</b>	<b>30</b>	<b>0</b>	<b>8</b>
<b>budget euro</b>	<b>2850</b>	<b>2250</b>	<b>0</b>	<b>?</b>

#### Deliverables:

- **D0: draft workplan**

### 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	<b>Project coordination, ExCo feedback and reporting</b>
Activity Type	Management and administration

### Background to this Subtask

This subtask is dealing with all management issues.

### Objectives

- 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 project management 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
1.1	20	0	0	0
1.2	100	20	0	0
1.3	300	0	0	0
total HOURS	420	20	0	0
BUDGET EURO	31500	1500	0	?

### An additional budget of 10.000 is reserved for travel costs

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 Responsibilities<sup>10</sup>

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.

<sup>10</sup> 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

- Netherlands: Renske Bouwknecht and Geert Verbong Eindhoven University of Technology (TU/e)
- 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).

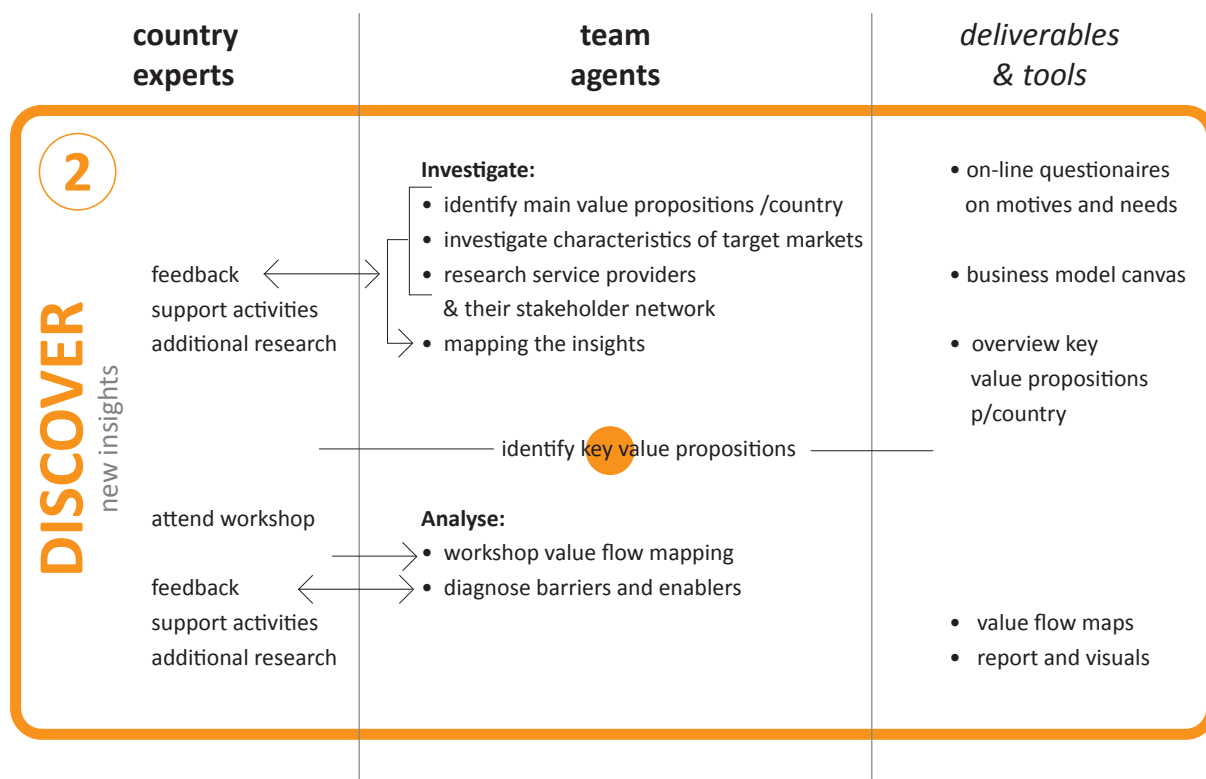
### Deliverables

- **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	<b>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.</b>
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 types of business models falling under themes of common interest to all participating countries, both in the participating countries and also including some well known global examples of successful business models. In the different participating countries we will analyse what business models exist, and what market and policy accompany them.

## Objectives

- Developing a typology of existing energy service business models based on quick scan of available business models in participating countries and beyond.
- In-depth analysis of country specific markets and policies for energy services and their influences on business models
- Identifying country specific services, service providers and their stakeholder networks and selecting top three most interesting services, providers.
- In-depth (comparative) analysis of business models and stakeholder value flow and conducive factors. Determining patterns, drivers and pitfalls
- Analyze acceptance and effectiveness of these energy services and their business models in creating lasting load reduction, shifting or generation and other non-energy benefits and in creating a market (e.g. job creation, new business development).
- Organising country workshops with service providers and clients to undertake the selection and in-depth analysis
- Creating a database with all found services and accompanying business models including useful formats such as contracts 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 Developing a typology of existing energy service business models based on quick scan of available business models in participating countries and beyond.												
2.2 In-depth analysis of country specific markets and policies for energy services and their influences on business models												
2.3 Identifying country specific services, service providers and their stakeholder networks and selecting top three most interesting services, providers.												
2.4 In-depth analysis of 3 business models and stakeholder value flow and conducive factors per country.												
2.5 comparative analysis of collected business cases												



2.6 Analysis of acceptance and effectiveness of these energy services and their business models in creating lasting load reduction, shifting or generation and other non-energy benefits and in creating a market												
2.7 Creating database with all found services and business models												
2.8 Organising country workshops to undertake the selection and in-depth analysis												

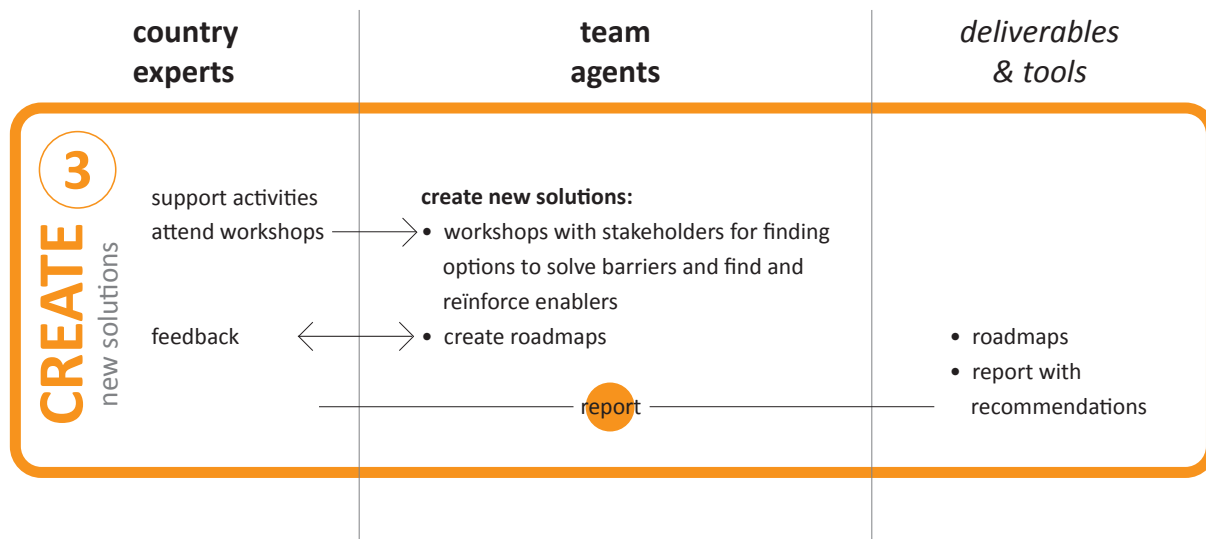
### Task Sharing and expected person hours

Subtask 2	DW	Ideate	TUE	National experts
2.1	20	20	8	20
2.2	40	100	100	0
2.3	40	40	0	40
2.4	40	200		100
2.5	40	50	40	40
2.6	100	100	0	40
2.7	40	100		0
2.8	100	100		40
total hours	420	710	148	280
budget euro	31500	53250	11100	?

### Deliverables

- **D2:** typology of services and business models;
- **D3:** report discussing 3 energy service business models per country, in context and comparatively;
- **D4:** overview of patterns, drivers and pitfalls for different types of energy service business models;
- **D5:** Database of all found services and business models. Open access.

### Subtask 3: Developing business model canvas and country specific policy guidelines for upscaling and mainstreaming business models in participating countries



Subtask number	3
Start date or starting event:	15
End date of Subtask	24
Subtask title	<b>Developing business model canvas and country specific policy guidelines for upscaling and mainstreaming business models in participating countries</b>
Activity Type	Research and development and dissemination

#### Background to this subtask

When insights are collected and barriers and impediments on a national level are identified, we can co-create workshops with stakeholders for finding options to solve barriers and find and reinforce enablers and create roadmaps.

## Objectives

1. Develop template and guidelines for professional suppliers and communities to allow for the national creation of viable energy service business models able to mainstream and upscale selected business models in participating countries
2. Creating policy guidelines with necessary policies and strategies of different stakeholders to encourage market creation and mainstreaming of selected business models in participating countries
3. Disseminating it through national workshops

## 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 canvas for upscaling/mainstreaming effective business models												
3.2 creation roadmaps for policy makers and stakeholders												
3.3 Dissemination canvas and roadmaps												

## Description of activities and methodologies

Interviews with stakeholders (specialists, stakeholders, providers, users). Co-creation workshops. (Visuals of) roadmaps and recommendations.

## Task Sharing and expected person hours

Subtask 3	DW	Ideate	TUE	National experts
3.1	100	100	100	100
3.2	100	100	40	100
3.3	100	100	0	40
total hours	300	300	140	240
budget euro	22500	22500	10500	?

## Deliverables

- **D6: Country specific recommendation how to upscale or mainstream selected business models**

## Subtask 4: expert platform

Subtask number	4
Start date or starting event:	1
End date of subtask	24
Subtask title	<b>Expert platform</b>
Activity Type	Networking and dissemination

### Background to this subtask

Social media has become a prevailing, global tool to engage with our social networks. Hence, this task will utilise the idea of social networks (and social media as a tool to engage them) to disseminate, engage, collaborate and share learnings with the experts and stakeholders from participating or contributing countries.

### Objectives

- Develop and maintain an expert platform that will mirror the social platform for Task 24 and include a wide range of social media tools to foster greatest ability to interact, share and discuss. Experts can upload blogs, videos, photos, documents, slides and their biographies. They can chat, start groups and discussion fora, invite other experts and tweet or facebook from the site. It is meant to provide a 'matchmaking' service to enable trans-national, inter-disciplinary teams of experts and end users to collaborate.

### 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												
4.2 Design of the online platform and specification of its individual components in consultation with experts												
4.3 Utilisation of ongoing expert platform												
4.4 develop films, cartoons and other material to disseminate findings												

### Description of activities and methodologies

The OA will (contract a third party to) create a social media expert platform for a large number of experts from different sectors (research, policy, implementation, plus different end use sectors). This platform will explicitly aim to create a learning culture and social network among its experts. The team will develop a stakeholder engagement plan to outline how various stakeholders are hoped to be engaged using the expert platform.

Ongoing utilisation of platform. This will only be successful if all experts engage and utilise the platform for sharing information, learnings etc. The platform is meant to introduce experts from various countries, disciplines and stakeholder groups to one another and to foster collaboration outside this Task.

### Task Sharing and expected person hours

Subtask 4	DW	Ideate	TUE	National experts
4.1	16	16	0	100
4.2	100	100	50	100
4.3	100	100	50	40
4.4	100	100		
total hours	316	316	100	240
budget euro	23700	23700	0	?

**To develop the expert platform, the videos and cartoons a budget of 20k is reserved.**

### Deliverables

- **D7:** Social media expert platform and meeting place for (invited) experts and implementers.
- **D8:** alternative ways of disseminating findings: e.g short videos, cartoons

## Final overview

Subtask 0	DW	Ideate	TUE	National experts (in this ST exco members)	
0.1	12	4	0	2	
0.2	20	20	0	2	
0.3	4	4	0		
0.4	2	2	0	0	
total hours	38	30	0	4	
budget euro	2850	2250	0	?	
Subtask 1	DW	Ideate	TUE	National experts	
1.1	20	0	0	0	
1.2	100	20	0	0	
1.3	300	0	0	0	
total HOURS	420	20	0	0	
BUDGET EURO	31500	1500	0	?	
Subtask 2	DW	Ideate	TUE	National experts	
2.1	20	20	8	20	
2.2	40	100	100	0	
2.3	40	40	0	40	
2.4	40	200		100	
2.5	40	50	40	40	
2.6	100	100	0	40	
2.7	40	100		0	
2.8	100	100		40	
total hours	420	710	148	280	
budget euro	31500	53250	11100	?	
Subtask 3	DW	Ideate	TUE	National experts	
3.1	100	100	100	100	
3.2	100	100	40	100	
3.3	100	100	0	40	
total hours	300	300	140	240	
budget euro	22500	22500	10500	?	
Subtask 4	DW	Ideate	TUE	National experts	
4.1	16	16	0	100	
4.2	100	100	50	100	
4.3	100	100	50	40	
4.4	100	100			
total hours	316	316	0	240	
budget euro	23700	23700	0	?	
<b>Total Task hour investment</b>	<b>1194</b>	<b>1076</b>	<b>248</b>	<b>524</b>	
<b>Additional budget for travelling + materials</b>					<b>30000</b>
<b>TOTAL TASK BUDGET</b>	<b>89550</b>	<b>80700</b>	<b>11100 + 10500 in</b>		<b>211350</b>

			<b>kind</b>		
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**Task 25 total budget, based on participation of 4 countries**

<b>Contribution per country total</b>	<b>Contribution per country total</b>
<b>4 countries</b>	<b>5 - 10 countries</b>
<b>Euro 52.000</b>	<b>Euro 52.000</b>
<b>24 months duration</b>	<b>36 months duration</b>

The contribution per year is irrespective of the number of participating countries because of the very tailored approach of this task, which implies that we need a fixed number of hours per year for each task, except the task definition subtask. We hope to ultimately attract at least 8 countries (and/or sponsors) to ensure the maximum level of knowledge is reached. 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.

**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.

## Task Deliverables overview

### 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, post 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	<p>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.</p> <p>All Participants will be asked to provide National Data for the project.</p>	Low
Project delivery timescale over-runs	Low	High	Medium	<p>Formal Project Management procedures;</p> <p>Regular reporting to the IEA DSM ExCo. Clearly identified Operating Agent and escalation procedures.</p>	Low
Cost over-runs, particularly on expert platform and data repository (if IEA DSM website proves insufficient)	High	High	High	<p>Formalised Project Management and review procedures;</p> <p>Project to be performed on fixed price total contract basis; Operating Agents to find additional financing for software applications, if needed.</p>	Low

IEA DSM TASK 16:  
Competitive Energy Services – Phase III

# **Energy Efficiency and Demand Response Services**

## **Task Status Report**

prepared for the 43<sup>rd</sup> IEA DSM ExCo meeting  
in New Zealand, March 8<sup>th</sup>-9<sup>th</sup>, 2014



Task XVI  
"Competitive  
Energy Services"  
[www.ieadsm.org](http://www.ieadsm.org)

Graz, Austria, February 2014

## Legend, Synopsis and Authors

This report was developed within Task 16 "**Competitive Energy Services** (Energy-Contracting, ESCo Services)" of the IEA's Demand Side Management Implementing Agreement.

International Energy Agency  
IA Demand Side Management (DSM)  
Task 16 "Competitive Energy Services"  
<http://www.ieadsm.org>



### Synopsis:

This is the 6-monthly **Task Status Report** of IEA DSM Task 16 "**Competitive Energy Services** (Energy-Contracting, ESCo Services)" - Phase III: "**Energy Efficiency and Demand Response Services**" to the Executive Committee of the IEA Demand Side Management Implementing Agreement to be included in the pre-meeting document.

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**ENERGETIC  
SOLUTIONS**

JAN W. BLEYL

With contributions from Task 16 national experts  
(contact details on back cover).

IEA DSM Task 16 - Phase III builds on work, which was previously led by Graz Energy Agency. Thank you GEA!



## Financing partners

### **Austria**

Federal Ministry of Transport,  
Innovation and Technology

[www.bmvit.gv.at](http://www.bmvit.gv.at)  
[www.energytech.at](http://www.energytech.at)

### **Belgium**

Federal Public Service  
Economy, S.M.E.s, Self-Employed and Energy  
DG Energy – External relations

<http://economie.fgov.be/>

### **Finland (until 06/2009)**

Tekes – the Finnish Funding Agency for  
Technology and Innovation

[www.tekes.fi](http://www.tekes.fi)

### **India (until 06/2012)**

Bureau of Energy Efficiency  
Ministry of Power

[www.bee-india.nic.in](http://www.bee-india.nic.in)

### **Japan (until 06/2009)**

Tokyo Electric Power Company

[www.tepco.co.jp/en/index-e.html](http://www.tepco.co.jp/en/index-e.html)

### **Korea (since 07/2012)**

Korea Energy Management Corporation

[www.kemco.or.kr](http://www.kemco.or.kr)

### **Netherlands**

Rijksdienst voor Ondernemend Nederland (RVO.NL)  
(Netherlands Enterprise Agency)

<http://www.rvo.nl/>

### **Spain (since 07/2009)**

Red Eléctrica de España

[www.ree.es](http://www.ree.es)

### **Sweden (since 07/2012)**

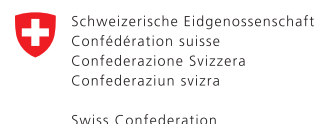
Swedish Energy Agency:

[www.swedishenergyagency.se](http://www.swedishenergyagency.se)

### **Switzerland (since 07/2012)**

Swiss Federal Office of Energy SFOE

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*The project partners wish to **explicitly thank the IEA DSM ExCo members of the participating countries** and their **financing partners** for their support.*

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*For a summary of the background and motivation, objective, and results of IEA DSM Task 16 please refer to the task work plan or the annual IEA DSM report.*

## 1 Participating Countries in Phase III

Currently the following countries have confirmed participation in IEA DSM Task 16 – Phase III (in alphabetical order):

- ✓ Austria (rejoined)
- ✓ Belgium
- ✓ Korea
- ✓ Netherlands
- ✓ Sweden
- ✓ Switzerland

Pending "maybes" have been expressed by China, Norway and Portugal.

*Request to ExCo members from the operating agent: Please remember to sign and send your official letter of participation for Task 16 to the IEA head quarters (a template is available from the Executive Secretary).*

## 2 Structure of the Work and Subtasks

The Task 16 Work Plan will continue to work with its well established structure and add demand response services as an additional subtask. The five operational subtasks are:

1. IEA DSM Energy Services Expert Platform (ES-Platform, subtask 13)
2. Innovative and competitive Energy-Contracting Think Tank (Think Tank, subtask 14)
3. Demand Response services business models (DR, subtask 15)
4. Coaching of individual National Implementing Activities (NIA, subtask 16)
5. Dissemination (subtask 17)

The following scheme illustrates the general structure and workflow of the task extension:

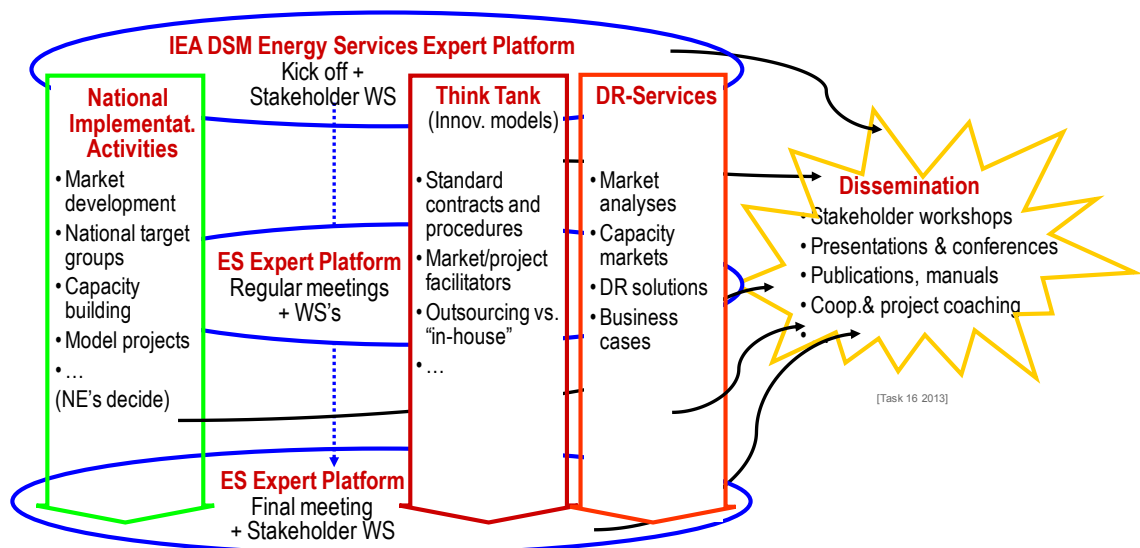


Figure 1 Task 16 - Phase III: Structure and work packages

In the left pillar, national implementing activities (NIA) such as market development and capacity building activities take place according to the individual needs and resources of the participating country. In the other two pillars, "Think Tank" and "DR-services", the experts discuss new developments and elaborate innovative energy and demand response service and business models.

The IEA DSM Energy Services Expert Platform (ES platform) serves as the link between the two pillars, as the communication tool internally and externally and as the starting point for developing services like coaching and training for the outside world (towards a "Centre of Excellence").

The results of Task 16 are disseminated in a series of stakeholder workshops, presentations at conferences, workshops and through publications.

Additionally co-operations with international organizations and assistance services may be offered.

### 3 Accomplishments since last Report

During the last period the following activities have been performed:

- ✓ Subtask 13 – **Energy Service Expert Platform**
  - The 15<sup>th</sup> experts meeting, was held near Graz, Austria from October 23<sup>rd</sup>-25<sup>th</sup> 2013. The main agenda items were discussion of national implementation activities, discussions on current Think Tank topics and dissemination activities.
  - Preparation of the 16<sup>th</sup> experts meeting, which will be held in Belgium May 7<sup>th</sup>-9<sup>th</sup> 2014.
- ✓ Subtasks 13 + 16 – **Energy Service Expert Platform + Dissemination**
  - The 15<sup>th</sup> Task 16 stakeholder workshop was held near Graz, Austria on October 24<sup>th</sup> 2013. The topic was "SmartEPC- an Energy-, Comfort- + Maintenance Performance Contract".
  - Finalize preparation of the 16<sup>th</sup> Task 16 stakeholder workshops to be held in Antwerp Belgium on May 7<sup>th</sup>. The morning session will be dedicated to "How to overcome the barriers for retrofitting large private and public building stocks" in cooperation with Belesco, the Belgium ESCo association. The afternoon session will focus on "Project and market facilitation" to be held jointly with the European 'EESI 2020' and 'Transparens' projects.
- ✓ Subtask 14 - **Think Tank:**
  - *ESCo project and market development: A role for 'Facilitators' to play. Including national perspectives of Task 16 experts.* To be published as IEA DSM Task 16 discussion paper in April 2014
  - Initiation of a joint Task 16 + 24 paper on *Practical guidance for Change Management for comprehensive energy service projects* to be published as IEA DSM discussion paper in April 2014
  - First draft for peer review for a paper on *Simplified measurement & verification + quality assurance instruments for energy, water and CO<sub>2</sub> savings. Methodologies and examples.* Accepted for publication at ECEEE Industrial Summer Study, paper ID 1-088-14, Arnhem, the Netherlands June 2014
  - Work started on Comprehensive building refurbishment ('deep retrofit')- in cooperation with IEA ECB in their new Annex 61. Task 16 will contribute business models and develop them further, building on its previous publication on the topic.

Results of the think tank work can be downloaded from the public Task 16 website ([www.ieadsm.org/ViewTask.aspx?ID=16&Task=16&Sort=0](http://www.ieadsm.org/ViewTask.aspx?ID=16&Task=16&Sort=0)).

- ✓ Subtask 15 – **Demand Response Services business models**
  - Good news - resources and experts to implement subtask 15 finally identified: 1. Austria: e7 + Energetic Solutions, 2. Korea, 3. 'VPP4DSO' - a "hybrid virtual power plant for distributions system" in Austria + Slovenia.
  - Austrian Kick off meeting for Feasibility of DR-Services business models in January 2014.
- ✓ Subtask 16 – **Coaching of individual National Implementation Activities**
  - Implementation of the individual national activity plans to develop energy service markets were followed up; the experts gave detailed presentations and exchanged good practices during the last platform meeting and through teleconferences in between meetings.
- ✓ Subtask 17 – **Dissemination**: Publications and presentations at various national and international conferences and seminars were given, e.g.:
  - Presentation of an 'ESCo university' as a pre-conference workshop to the ESCo Europe conference 2014 in Madrid in January 2014
  - 2<sup>nd</sup> Energy manager training for State Grid China on behalf of GIZ Germany: Investment grade calculation of energy service projects including provision of a detailed Excel tool, in November 2013
  - Continuation of know how transfer and supervision for a start-up ESCo in Croatia
  - Leonardo Energy Webinar: 1<sup>st</sup> IEA DSM University webinar February 4<sup>th</sup> with some 80 attendees around the world
  - Co-operation with other ongoing energy service projects (IEA ECBCS Annex 61 – Mr. Rüdiger Lohse and IEA IETS Annex 16 Energy Efficiency in SMEs – Mr. Patrick Thollander, Linköping university, EESI 2020 – lead by BEA and 'Transparens' – lead by sEV-EN) to share information and join forces
- ✓ Subtask 18 – **Management and Reporting**: Regular reporting



## 4 Goals and work plan for the next period

For the next reporting period, the following activities are planned:

- ✓ Subtask 13 – **Energy Service Expert Platform**
  - Execution of the 16<sup>th</sup> experts meeting, to be held in Belgium May 7<sup>th</sup>-9<sup>th</sup> 2014. The main agenda items will be discussion of national implementation activities, discussions on current Think Tank topics and dissemination activities.
  - Preparation of the 17<sup>th</sup> experts meeting, planned to be held in Seoul, Korea in fall 2014 (exact date tbd)
- ✓ Subtasks 13 + 16 – **Energy Service Expert Platform + Dissemination**
  - Execution of the 16<sup>th</sup> experts meeting, to be held in Belgium May 7<sup>th</sup> 2014. The morning session will be dedicated to "How to overcome the barriers for retrofitting large private and public building stocks" in cooperation with Belesco, the Belgium ESCo association. The afternoon session will focus on "Project and market facilitation" to be held jointly with the European 'EESI 2020' and 'Transparens' projects
  - Preparation of the 17<sup>th</sup> Task 16 stakeholder workshop to be held in Seoul, Korea in fall 2014 (exact date and topic tbd)
- ✓ Subtasks 14 + 15- **Think Tank and DR Services business models**
  - Finalization of paper on *Simplified measurement & verification + quality assurance instruments for energy, water and CO<sub>2</sub> savings. Methodologies and examples.* to be published at ECEEE Industrial Summer Study, paper ID 1-088-14, Arnhem, the Netherlands June 2014
  - Publication of *ESCo project and market development: A role for 'Facilitators' to play. Including national perspectives of Task 16 experts* as IEA DSM Task 16 discussion paper in April 2014
  - Finalization of a joint Task 16 + 24 discussion paper on *Practical guidance for Change Management* to be published in April 2014
  - Continue work on business models for comprehensive building refurbishment ('deep retrofit') in cooperation with IEA ECB Annex 61
  - DR-Services: Identification of Korean experts and subtask kick-off in Korea. Data collection on DR-potentials in selected end-use sectors, implementation cost and balance power market products in preparation of DR-ES business models. *Ideas for other resources or cooperation opportunities from ExCo members are still welcome.*

- ✓ Subtask 16 – **Coaching of individual NIAs**
  - Implementation of the individual national activity plans to develop energy service markets will be followed up; the experts gave detailed presentations and exchanged good practices during the last platform meeting and through teleconferences in between meetings.
- ✓ Subtask 17 – **Dissemination:** Publications and presentations planned at:
  - ESCo introduction training in Lahore, Pakistan (March 2014)
  - Publication of a Task 16 discussion paper on '*Facilitators*' including national perspectives (April 2014)
  - Publication of a joint Tasks 16 + 24 discussion paper on '*Practical guidance for Change Management*' (April 2014)
  - Continuation of know how transfer and supervision for a start-up ESCo in Croatia
  - Publication of '*Simplified M&V paper*' @ ECEEE Industrial Summer Study (June 2014)
  - 1<sup>st</sup> ESCo manager training for South Africa on behalf of GIZ Germany: Investment grade calculation of energy service projects including provision of a detailed Excel tool (3. quarter 2014)
  - Continue co-operation with other ongoing energy service projects (IEA ECBCS Annex 61 – Mr. Rüdiger Lohse and IEA IETS Annex 16 Energy Efficiency in SMEs – Mr. Patrick Thollander, Linköping university, EESI 2020 – lead by BEA and 'Transparens' – lead by sEVEN) to share information and join forces
  - Another Leonardo ENERGY IEA DSM University webinar?
- ✓ Subtask 18 – **Management and Reporting** (in addition to regular work): no particular activities foreseen

## 5 Project Time Table

The project time table and current status is shown below:

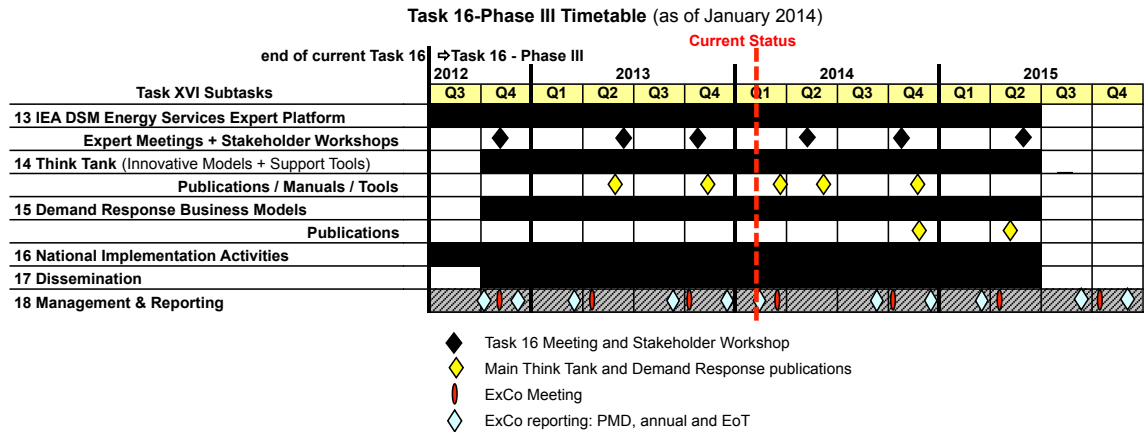


Figure 2 Task 16 time table

Time wise we have spent 19 months out of the 36-month project duration.

All scheduled events and reporting targets have been met.

## 6 Financial Report

Due to Austria's new commitment to rejoin Task 16, the budget is slightly increased. The adapted budget is now based on 5.7 participating countries (5 countries for entire term and 1 country for 2/3 term).

The additional budget of 30 kEUR has been allocated in equal terms to:

1. Subtask 14: An additional publication on "Practical guidance for 'Change Management'" in cooperation with Task 24 (subcontracted)
2. Subtask 15: Feasibility of demand response energy services business models

The adapted budget results as displayed in the following table:

(Budget and cost accumulation by item in EUR excl. VAT as of January 2014)

<b>Subtask</b>	<b>Total budget €</b>	<b>Cumulative spending €</b>	<b>% spent</b>	<b>Remaining €</b>
13 Energy Services Expert Platform	<b>36.000</b>	<b>6.800</b>	<b>19%</b>	<b>29.200</b>
14 Energy Services Think Tank	<b>72.000</b>	<b>17.200</b>	<b>24%</b>	<b>54.800</b>
15 Demand Response ES Business Plans	<b>12.200</b>	<b>1.200</b>	<b>10%</b>	<b>11.000</b>
16 Coaching of National Implementation Activities	<b>12.800</b>	<b>1.800</b>	<b>14%</b>	<b>11.000</b>
17 Dissemination (Internat. + Nat.)	<b>13.000</b>	<b>2.800</b>	<b>22%</b>	<b>10.200</b>
18 Management & Reporting	<b>42.000</b>	<b>6.400</b>	<b>15%</b>	<b>35.600</b>
<b>Subtotal</b>	<b>188.000</b>	<b>36.200</b>	<b>19%</b>	<b>151.800</b>
Travel costs	<b>28.000</b>	<b>4.300</b>	<b>15%</b>	<b>23.700</b>
Printing&other	<b>9.000</b>	<b>600</b>	<b>7%</b>	<b>8.400</b>
<b>Total</b>	<b>225.000</b>	<b>41.100</b>	<b>18%</b>	<b>183.900</b>

Figure 3 Budget

After 19 months (out of the 36 month project duration) 47% of the budget has been spent.

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### Austria

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Grazer Energieagentur [www.grazer-ea.at](http://www.grazer-ea.at)

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### Belgium

Fedesco: [www.fedesco.be](http://www.fedesco.be)

EnergInvest (since 07/2010): [www.energinvest.fr](http://www.energinvest.fr)

Factor4 (since 07/2010): [www.factor4.be](http://www.factor4.be)



### Finland (until 06/2009)

Motiva Oy: [www.motiva.fi](http://www.motiva.fi)



### India (until 06/2012)

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### Korea (since 07/2012)

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### Netherlands

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Swiss Federal Office of Energy SFOE: [www.bfe.admin.ch](http://www.bfe.admin.ch)

