



IEA Technology Collaboration
Programme on Demand Side
Management Technologies and
Programmes

Fiftieth Executive Committee Meeting
Pre-Meeting Document (PMD) – Part 1

5 – 6 October, 2017
The Hague, Netherlands



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MATTERS FOR THE EXECUTIVE COMMITTEE

<p>Proposal Task 17 - Integration of Demand Side Management, Distributed Generation, Renewable Energy Sources and Energy Storages – Phase 4 – Responsive prosumer networks.</p> <ul style="list-style-type: none">➤ Approve the Proposal and Work Plan for Phase 4
<p>Concept paper: How to ‘do’ behaviour change in DSM. The A to Z of behaviour change</p> <ul style="list-style-type: none">➤ Approve the Proposal and Work Plan and commence work in April 2018
<p>Task 16 – Phase 4 – Innovative Energy Services – Life-Cycle cost; ‘Deep Retrofit’; Simplifies M&V; (Crowd)-Financing & Energy Services Taxonomy</p> <ul style="list-style-type: none">➤ Approve the Task Status Report➤ Provide guidance on future work after June 2018, if desired by ExCo
<p>Task 25 – Business Models for a More Effective Market Uptake of DSM Energy Services</p> <ul style="list-style-type: none">➤ Approve the Task Status Report➤ Accept potential workshop in Korea in 2018➤ Approve new work proposed for Phase 2
<p>Task 24 – Behaviour Change in DSM: Helping the Behaviour Changers – Phase 2</p> <ul style="list-style-type: none">➤ Approve the Task Status Report
<p>Programme Visibility Report</p> <ul style="list-style-type: none">➤ Approve the Status Report
<p>DSM University</p> <ul style="list-style-type: none">➤ Approve the Status Report
<p>Task Zero</p> <ul style="list-style-type: none">➤ Approve the Task Zero Status Report
<p>PMD Part 2: Financial Report 2017 and Budget 2018</p> <ul style="list-style-type: none">➤ Approve the financial report 2017 and Budget 2018

AGENDA

IEA Demand-Side Management Energy Technology Initiative Fiftieth Executive Committee Meeting 5-6 October, 2017 – The Hague, the Netherlands

Thursday 5 October

09:00 – 10:00

Operating Agents Meeting
Visibility Committee Meeting

10:00 – 10:30

1. GENERAL BUSINESS/WELCOME

1a. Welcome – *Rob Kool*1b. **ExCo approval** of the Agenda1c. **ExCo approval** of the Forty Ninth ExCo meeting Minutes – Dublin, Ireland

DOC A

1d. Status of the Implementing Agreement

1e. IEA Relations

- Secretariat news

DOC B

- Contacts with possible sponsors/new participants

– *Rob Kool*- IA relations, BCG and ECG, – *Rob Kool*

- Report from the Project Preparatory

- Committee (PPC) – *Rob Kool*- Operating Agents meeting report – *Rob Kool*

10:30 – 11:00

Coffee break

11:00 – 12:30

2. NEW WORK

2a. Updated Proposal: Task 17 Phase 4 – Responsive prosumer networks - *René Kamphuis, TNO, the Netherlands*

DOC C

2b. Update: How to ‘do’ behaviour change in DSM – The A to Z model of behaviour change – *Sea Rotmann, New Zealand, Beth Karlin, USA*

DOC D

2c. Big Data

The proposed New Tasks discussion will aim at one of the following decisions:

1. Decide to **initiate the new Task** based on work done to date.
2. Decide to initiate the **Task Definition** for a new Task. Interested countries must be prepared to assign the appropriate expert(s) to participate in that process.
3. Decide that additional work is needed on the **concept paper**. Interested countries must be prepared themselves, or to assign the appropriate Experts to help further develop the concept.
4. Decide to pursue the subject in co-operation with other parties within the IEA or elsewhere
5. Rejection (or moth-balling)

12:30 – 13:30

Lunch

3. CURRENT TASKS – LOAD LEVEL CLUSTER

13:30 – 14:00	3a. Task 16 – Phase 4 – Competitive Energy Services – Task Status Report – <i>Jan W. Bleyl, EnergeticSolutions, Austria</i>	DOC E
14:00 – 14:30	3b. Task 25 Business models for a more effective market uptake of DSM energy services. Task Status Report – – <i>Ruth Mourik, DuneWorks, the Netherlands</i>	DOC F
	3c. Task 25 Business models for a more effective market uptake of DSM Energy services. Phase 2 – <i>Ruth Mourik, DuneWorks, the Netherlands</i>	DOC G

14:30 – 15:00

Coffee break

4. CURRENT TASKS – LOAD SHAPE CLUSTER

15:00 – 15:30	4a. Task 24 Closing the Loop – Behaviour Change in DSM: Helping the Behaviour Changers – Phase II. Task Status Report – <i>Sea Rotmann, SEA - Sustainable Energy Advice, New Zealand</i>	DOC H
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15:30 – 16:00

5. PROGRAMME VISIBILITY

	5a. Programme Visibility Report <i>Sea Rotmann</i> – <i>Sea Rotmann</i>	DOC I
16:00 – 16:30	5b. Development of the DSM University – <i>Hans Nilsson</i>	DOC J

16:30

Hosted site visit followed by dinner

Friday 6 October

09:00 – 10:00

6. ADMINISTRATIVE MATTERS

	6a. Task Zero, status report	Distr. Later
	6b. Financial Report 2017 – <i>Even Bjørnstad</i> Accountax Status Report Status of Common Fund payments	PMD Part 2
	6c. Plans for the Fifty First ExCo meeting April 2018	
	6d. Plans for the Fifty Second ExCo meeting	
	6c. Vote for Chairman	DOC K

10:00 – 10:30

Coffee break

11:00 – 12:30

7. PRESENTATIONS by ExCo members and Observers

8. DISCUSSION: Strategy of the IEA DSM TCP

APPENDIX TO THE AGENDA “Issues for the decisions and the process to reach decisions”

The delegates are URGED to prepare their responses to presentations carefully and primarily by contacting possible stakeholders before the meeting. The format for these proposed New Tasks will be a brief presentation that focuses on the:

- **Motivation** for the proposed work (what issues does it tackle?) what is it trying to achieve? Who is the target audience?;
- **Objectives;**
- **Approach** to accomplishing the proposed work;
- **Expectations/Results and Deliverables**
- **Dissemination plan** – what will need to be done to get the results adopted? Who will do it?
- **Required resources**

Concept and Task Definition Papers (Process and phases)

Before a new Task is starting the concept has to be defined and presented in order to attain the interest of possible participants.

PHASE 1: IDENTIFY NEW ACTIVITIES

Resulting in a CONCEPT PAPER (2-5 pages) containing

- Motivation
- Objectives
- Approach
- Expectations/Results

PHASE 2: DEFINE NEW ACTIVITIES

Requiring an EXPERTS MEETING to propose

Table 1. Task Work Plan Resource needs: Task or cost sharing

Table 2. Dissemination, Task Information Plan

CONTENTS OF PROPOSALS FOR NEW WORK

The document that will propose the new work to the Executive Committee could be organized and have the

Following contents:

1. Background and motivation
2. Objectives
3. Issues for the new work (scope)
4. Structure (sub-tasks)
5. Management (responsibilities of the Operating Agent, Subtask leaders and Experts)
6. Deliverables (for whom, target groups)
7. Time Schedule and milestones
8. Funding and Commitments (Resources needed)
9. Meetings plan
10. Information activities
11. Co-operation with other IA's, the Secretariat and other interested parties
12. Country contributions to funding and Tasks

Annexes: Detailed description of Subtask

REPORT FROM THE IEA SECRETARIAT

1. IEA Secretariat

Accelerating and broadening outreach

A priority of the IEA is to strengthen and accelerate co-operation with non-member countries (partner countries). Chile and Mexico are Accession countries (in the process of becoming members of the IEA).



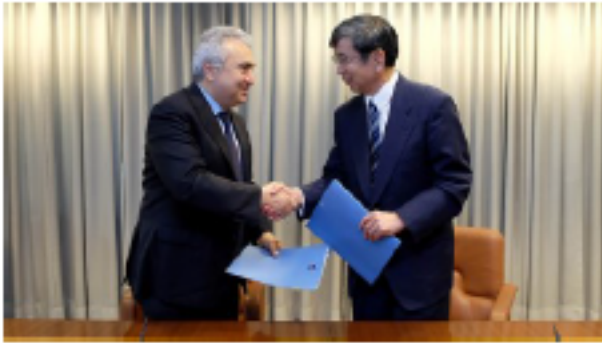
Association countries deepen the partnership between the IEA and these countries for a more sustainable and secure energy future. The Association programme provides a platform for the IEA to engage more extensively with partner countries including on energy security, energy data and statistics, and energy policy analysis. It also enables partner countries to participate in a variety of activities, including IEA committees, and training and capacity-building activities. There are now six Association countries: China, India, Indonesia, Morocco, Thailand, and Singapore.

Examples of strengthened co-operation include an Indonesian Ministerial-level event (<https://www.iea.org/newsroom/news/2016/february/co-host-iea-helps-open-bali-forum-with-launch-of-centre-of-excellence-for-clean-energy.html>) held February 2016, which opened the way to creation of an Indonesian Centre of Excellence. Six TCPs contributed to an expert level workshop “Bridging the Gap, Promoting Global Partnership”. The IEA and China have launched the process of establishing a joint energy centre in Beijing and have deepened ties with an extensive three-year work programme (<https://www.iea.org/newsroom/news/2017/february/iea-and-china-deepen-ties-with-extensive-three-year-work-programme.html>).

Morocco recently signed a joint three-year programme of work <http://www.iea.org/newsroom/news/2017/june/morocco-and-iea-sign-three-year-work-programme.html> with the IEA to deepen cooperation in the areas of energy security, energy efficiency, renewable energy, capacity building and data and statistics.

This year’s **World Energy Outlook** (<https://www.iea.org/workshops/world-energy-outlook-2017-high-level-workshop-on-energy-and-development.html>) due for publication on 14 November, will focus on energy and development. A high-level workshop was held to discuss the key issues linked to energy poverty, strategies for the goal of energy for all by 2030, the role of centralised vs. decentralised energy, economic

growth and broader implications of achieving universal access to modern energy in terms of the nexus between energy, development, water and climate. For more information on the WEO, see www.worldenergyoutlook.org/.



The IEA and the **Asian Development Bank** have committed to step up co-operation by formalizing an agreement through a memorandum of understanding. The IEA and the ADB will expand cooperation on energy technology assessments, energy data and statistics, energy efficiency, supply, demand and investment modelling, renewable energy deployment, and energy security analysis.

TCP forum: <http://www.iea.org/tcp/forum> username Forum password network

2. Committee on energy research and technology (CERT)

TCP Universal Meeting 2017

The IEA is convening the 2nd universal meeting of TCPs on 9 October 2017 in Paris, back-to-back with a meeting of the CERT. The aims of the meeting are to:

- _identify top opportunities to further strengthen TCPs
- _brainstorm on ways to enhance communication of TCP accomplishments
- _further support TCP efforts to engage with governments, academia and industry stakeholders as well as with other multilateral initiatives

This meeting is expected to result in an actionable plan to strengthen TCPs further, including as a key input for preparations into the IEA Ministerial on 7-8 November 2017. Invitations were sent mid-June to CERT delegates, Working Party Chairs, TCP Chairs and Operating Agents, as well as to Partner country representatives. The meeting promises to be conducive of engaging discussion and to provide unique opportunities for networking. If you have not already done so, please indicate your attendance as soon as possible to LisaMarie.GRENIER@iea.org.

IEA Medium-term Strategy for Energy Research and Technology 2018-2022

At its meeting on 19-20 June, the CERT approved the **IEA Medium-Term Strategy for Energy Research and Technology 2018-2022**. The purpose of this Strategy is to offer a clear vision and mission statement for the technology-related activities of the IEA Secretariat and the Energy Technology Network.

The MTSERT builds on the three pillars of the vision for a modernisation of the IEA endorsed at the IEA Ministerial meeting in November 2015:

- _opening the doors of the Agency to emerging economies
- _evolving the Agency's mandate on energy security
- _strengthening the Agency's role as a key international hub for knowledge and expertise in clean energy, including energy efficiency

The MTSERT will be considered by the IEA Governing Board at the forthcoming meeting on 26-27 September, after which time it will be made available on the Forum.

IEA Ministerial Meeting 2017

The 2017 IEA Ministerial Meeting will take place on 7-8 November 2017 in Paris, chaired by Sweden's Minister for Policy Co-ordination and Energy, Hon. Ibrahim Baylan. The theme of the 2017 Ministerial is Bolstering Energy Security for Sustainable Global Growth. Ministerial-level invitees include:

- **IEA Member countries**
- **Accession countries:** Chile and Mexico
- **Association countries:** China, India, Indonesia, Morocco, Singapore and Thailand
- **Partner countries:** Brazil and South Africa

In addition, CEOs from 30 top global energy companies have also been invited to attend. IEA Ministers will also engage with their counterparts from emerging economies on the evolving role of the IEA and options to build a stronger foundation for future joint work based on shared interests and objectives.

Clean Energy Ministerial (CEM) / Mission Innovation (MI)

China hosted the 8th **Clean Energy Ministerial (CEM8) in Beijing on 6-8 June 2017**.

IEA experts, including IEA Executive Director Fatih Birol, participated in a large number of CEM-related sessions and side-events spanning a wide variety of topics, including carbon storage, electric vehicle deployment, and flexible power plants. CEM8 was co-located with the 2nd Mission Innovation Ministerial (MI-2). While the CEM focuses on scaling the deployment of clean energy technologies and solutions that are available today, MI focuses on accelerating clean energy research and innovation. As part of the initiative, participating countries have committed to seek to double their governments' clean energy research and development (R&D) investments over five years to 2021.

Christian Zinglarsen is the first Head of the new CEM Secretariat, established at the IEA. He previously served as Deputy Permanent Secretary at the Danish Ministry of Energy, Utilities and Climate, with responsibility for the energy policy portfolio. He was also the Danish representative and Vice-Chair of the IEA Governing Board.

New CERT guidelines for the Request for Extension and Communications Framework

The revised CERT guidelines for a TCP Request for Extension (RfE) are now applicable to all TCPs.

The RfE consists of the following Supporting Documentation:

- **End-of-Term Report:** Accomplishments over the past term with a focus on outcomes; 5 pages maximum (two-page Annual Briefs may also be attached).
- **Questionnaire:** Qualitative (list of activities carried out during the period and lessons learned), and Quantitative (one page); should not exceed 6 pages.
- **Strategic Work Plan:** Focusing on remaining barriers, new work streams and membership; 2 pages maximum.

Detailed documentation and templates are available on the Forum under Requesting a Term Extension.

Request for extension (RfE)

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Reduce administrative burden | <ul style="list-style-type: none"> ☑ Reduce length of documents and focus on key outcomes, messages |
| <ul style="list-style-type: none"> ▪ Enhance accountability | <ul style="list-style-type: none"> ☑ Simplify evaluation system |
| <ul style="list-style-type: none"> ▪ Improve transparency | <ul style="list-style-type: none"> ☑ Share feedback with all stakeholders |
| <ul style="list-style-type: none"> ▪ Improve usefulness of information gathered | <ul style="list-style-type: none"> ☑ Quantitative and qualitative indicators of work programmes, membership |
| <ul style="list-style-type: none"> ▪ Improve interaction between CERT, WPs, and TCPs | <ul style="list-style-type: none"> ☑ Communications Framework |

If you have any questions on the RfE please contact Carrie.pottinger@iea.org.

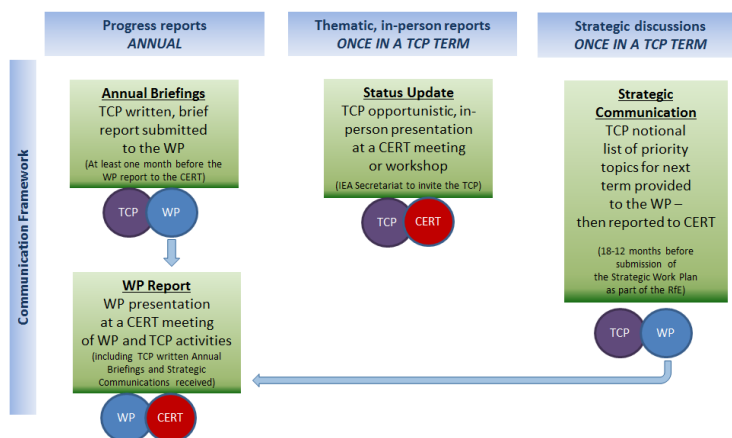
Communications Framework

The new Communications Framework (CF) was adopted by the CERT in February 2016, and became fully applicable from June 2017. As a companion to the request for extension process, the aims of the CF are to:

- Enhance communication between the CERT, WPs and the TCPs
- Provide opportunity for discussions of TCP strategies
- Strengthen the role of the Working Parties (WPs)

The CF consists of four parts:

- TCP annual written briefings to the relevant Working Party (Annual Briefing)
- TCP in-person oral report to the CERT meetings or workshops (Status Update)
- TCP strategic communication with the CERT through the Working Party (Strategic Communication)
- Working Party periodic oral report to the CERT (Working Party Report)



If you have any questions on the CF please contact Carrie.pottinger@iea.org.

3. Working parties

The annual **Energy Efficiency Week** provides an opportunity for the EUWP, **Energy Efficiency Working Party (EEWP)** and the International Partnership for Energy Efficient Co-operation (IPEEC) <http://www.ipeec.org> to share information and identify areas for co-operation. As part of the week's activities, the EEWP, EUWP and IPEEC will hold a joint workshop on 20 September to examine the challenges governments face in implementing energy efficiency policies and programmes to accelerate the development and deployment of energy-efficient technologies, and the added value and opportunities of international cooperation. The goal is to identify gaps, overlaps and strategic opportunities across the landscape of these multilateral activities, as well as recommendations for concrete next steps that could add value to delegates' programmes and policies.

The recent workshop *Scaling-up renewables through decentralised energy solutions* <http://www.iea.org/workshops/scaling-up-renewables-through-decentralised--energy-solutions-.html> was organised by the **Working Party on Renewable Energy Technologies (REWP)** with participation of selected end-use TCPs. The workshop report is available here <http://www.iea.org/media/workshops/2017/rewpworkshop2017/Summary.pdf>.

The **Fusion Power Co-ordinating Committee (FPCC)** held a strategic discussion and webinar on the "Promise of Fusion – innovation and the role of industry", to gain insights into the remaining challenges towards realisation of fusion as an energy source in support of DEMO, the strategic objective of the FPCC for the period 2015-2017. Presentations and a link to the webinar are available here <http://www.iea.org/workshops/the-promise-of-fusion---innovation-and-the-role-of-industry.html>.

The most recent meeting of the **Working Party on Fossil Fuels (WPFF)** was hosted by METI and took place in Tokyo on 28-29 June. The meeting was followed by a technical visit to the Isogo power station in Yokohama.

4. Technology Collaboration Programmes (TCPs)

New! Clean Energy Education and Empowerment TCP (C3E TCP)

At the 8th Clean Energy Ministerial (CEM8) meeting in Beijing, Sweden and Canada announced the decision to establish a new IEA TCP: the **Technology Collaboration Programme on Clean Energy Education and Empowerment (C3E TCP)**. The C3E aims to raise awareness, share best practices, establish a network for information exchange, and commit to action across borders to encourage women and to empower them to become leaders in the sphere of clean energy. Italy has since joined the C3E TCP, while Chile, Finland and the United Arab Emirates are considering participation. If you would like to learn more about the C3E, contact Alexandra.Nowak@iea.org and Cecilia.Tam@iea.org.

Recent TCP closures

TCP on a Climate Technology Initiative (CTI TCP): While the CTI TCP closed on June 2017, the Private Financing Advisory Network (PFAN), the main activity of the TCP, has adopted a new organisational and governance structure. UNIDO, in collaboration with REEEP, will henceforth host PFAN.

TCP on Renewable Energy Technology Deployment (RETD TCP): Following the withdrawal of two members in 2016 and early 2017 due to budget constraints, it was considered impossible to continue with less than five member countries and so the decision to terminate the TCP on 30 June 2017 was made. Three projects, currently under development, will be completed.

Results of the TCP Survey

Thank you once again for your contribution to this effort which resulted in a record 90% response rate. All TCP responses can be found on the Forum, together with a summary by the IEA Secretariat. The survey results were provided to each of the Working Parties, including charts and graphs and actionable next steps. For more information, contact Carrie.pottinger@iea.org.

Best practice

Does your TCP have any best practice to share? Looking for ideas, inspiration, or tips? The Best Practice section on the Forum covers Management, Raising awareness, Funding mechanisms, Membership, Annual reports, and Requests for extension. A few examples include:

- **SHC TCP:** Newsletter to ExCo members and task leaders, videos
- **4E TCP:** Policy briefs in a variety of languages
- **HEV TCP:** A system of pre-funding for projects to reduce lead time

TCP webinars are now posted on the IEA WEBSITE

Be sure to send your webinar announcements and URLs of past webinars to Diana.Louis@iea.org.

Frequently asked questions

The short FAQ brochure on TCPs provides an overview of the IEA and TCPs. It is designed to support your efforts to reach out to new members. It may be posted on your TCP website (ExCo, annex/task, workshop, conference), sent to potential partners via email, or printed to hand out during TCP-sponsored workshops or conferences.

Use of the Technology Collaboration Programme (TCP) brand

The Branding FAQ posted on the Forum answers the following questions:

- Why has the term 'Technology Collaboration Programme (TCP)' been introduced?
- Does the term 'Implementing Agreement' still exist?
- Do we need to update the name and/or references in our legal text?
- When will the term TCP be used?
- Should we use 'TCP' in our own communication efforts?
- How can we implement the term TCP with our current title?
- Why is there a short name and an acronym?
- Will there be a new logo for the TCPs?
- Should we still use a disclaimer to explain our relationship to the IEA?
- Will we be receiving additional guidance on implementing the TCP name and brand?

Tips for communicating

In this era of information overload communicating quickly – and effectively – is more important than ever. The short presentation Tips for Communicating provides concrete examples of how to prioritise the information presented, synthesise key messages and to use the right social media depending on the goals you want to achieve. If you have any questions do not hesitate to contact Carrie.pottinger@iea.org.

Possible spam alert - web domain names

Several TCPs have recently been contacted by Chinese “web registry offices” (www.cnweb-registry.org; www.chinaregistry.net) regarding the purchase of web domain names in China. The e-mails received often propose domain names which contain all or part of the TCP’s existing web address, indicate that another entity is looking to register the domain name and ask you to provide further information about your activities.

It is unusual to be contacted in this way by a registry office and a number of online resources question the authenticity of such requests, providing example e-mails which are very similar to the ones received by TCPs to date. Unless you have reason to believe that the request is genuine and/or unless the proposed domain name is critical for your operations, the best course of action may be to ignore any such requests.

If you have additional questions, please do not hesitate to contact impag.legal@iea.org.

5. IEA Publications

Energy Technology Perspectives 2017 and Tracking Clean Energy Progress 2017

In June 2017, the 2017 edition of **Energy Technology Perspectives (ETP)** was launched at the 8th CEM meeting in Beijing. This year’s edition of the IEA’s comprehensive publication on energy technology focuses on the opportunities and challenges of scaling and accelerating the deployment of clean energy technologies. For the first time, ETP 2017 looks at how far clean energy technologies could move the energy sector towards higher climate change ambitions if technological innovations were pushed to their maximum practical limits.

The analysis shows that, while policy support would be needed beyond anything seen to date, such a push could result in greenhouse gas emission levels that are consistent with the mid-point of the target temperature range of the global Paris Agreement on climate change, i.e. 1.75°C, while the global energy system reaches net zero emissions by 2060. The analysis also indicates that regardless of the pathway chosen for the energy sector transformation, policy action is needed to ensure that multiple economic, security and other benefits to the accelerated deployment of clean energy technologies are realised through a systematic and coordinated approach. More information on ETP 2017, including data visualisations, can be found under www.iea.org/etp2017.

Linked to ETP 2017, the IEA’s **Tracking Clean Energy Progress (TCEP)** report was released in May. Each year, TCEP assesses the latest progress in technology and market developments, tracks overall progress towards the ETP’s 2DS by 2025, and recommends further actions. TCEP this year shows that only 3 of 26 identified clean energy technologies are on track to meet a sustainable energy transition (one more than last year). 15 technologies showed only some progress, and 8 are significantly off-track and in need of renewed action. The TCEP report is available at the following URL <http://www.iea.org/publications/freepublications/publication/TrackingCleanEnergyProgress2017.pdf>.

Other publications

An overview of recent and forthcoming IEA publications can be found below. For free publications a download link is provided. For publications for sale, IEA TCP participants are entitled to a 30% discount on IEA publications (contact the IEA bookshop

books@iea.org, with a copy to your Desk Officer), with your request and your role within the TCP.

Publication	Free/For sale	Launch
Market-based Instruments for Energy Efficiency	Free	Available
Tracking Clean Energy Progress 2017	Free	Available
Energy Technology Perspectives 2017	For sale	Available
Global EV Outlook 2017	Free	Available
The Future of Trucks	Free	Available
World Energy Investment Report 2017	For sale	Available
Renewables 2017, Market report series	For sale	4 October 2017
World Energy Outlook 2017	For sale	14 November 2017

DSM TASK 17 Integration of Demand Side Management, Energy Efficiency, Distributed Generation and Storage – Phase 4 – *Responsive prosumer networks*

NEW

Author: René Kamphuis (TNO, the Netherlands)

Version: 2017-04-07 DRAFT v02

Introduction

Phase 3 of Task 17, regarding applying DG-RES, DR and storage in electricity grids, came with a set of conclusions and recommendations [1]. These pertain to new business models and roles of actors in a re-regulated electricity value chain, new tariff structures and transaction mechanisms and new ICT technology options, which facilitate user and actor awareness of energy and electricity use.

The Paris treaty regarding reducing worldwide emission of greenhouse gases has accelerated the energy transition. The transition follows the “trias energetica” with first an increase of energy efficiency, moving to renewable generation and reducing emission for fossil fuels as the third option. The energy transition is also reflected by the European commission in November 2016 leading to the “winter package” of recommendations and directives for energy [2]. The window of opportunity for applying smaller scale resources (from the small commercial and end-customer segment) in the energy system can be seen to become wider in the near future although the existing grid accommodation capacity in some areas reaches its limit. Traditional retail and commercial consumers are in an evolution process to ‘prosumers’ and traditional electricity commodity retailers have to provide additional services in new business models to survive.

Phases 1-3 of task 17 have collected a valuable amount of information on technologies important for the current energy transition. Key energy transition components as demand response, distributed generation and storage technologies have been extensively analyzed and assessed from a technological perspective as well as from the perspective of operational or commercial electricity market usage in the grid. Cost/benefit models have been analyzed in several national contexts. However in all phases, it also was observed, only a part of the technical and economic potential can be uncovered. An acceleration is desired in line with the points addressed in the conclusion as to uncovering the full potential of demand side flexibility.

In the past five years Smart Cities concepts have been attributed a key role bringing together information and communication technology, urban planning and operation, optimization of energy and E-mobility related applications like comfort and energy management in buildings and mobility [3], [4]. Information and communication technologies increase aggregation possibilities and low-cost of IoT connected devices

increase integration and valuation of the energy process information in the total system. On international and national levels, research programs have been defined and the first pilot projects already have been concluded. This development fits in key concepts in further uncovering the individual flexibility potential and to more powerful aggregation mechanisms and energy consumption/generation process integration levels, that can be validated and verified in the same way as large production facilities and or industrial DR resources.

Furthermore, transactive energy systems as a facilitator of Peer-to-Peer (P2P) trading between prosumers and consumers are coming-up as are the platforms for value-exchange without intermediary partners like blockchains.

Phase 4 in Task 17 builds further on the conclusions and recommendations of the previous phases and places them in an extended network perspective viz.

- The electricity system operational and commercial market network context.
- The community aggregation and ICT network context
- The prosumer/supplier/buyer transaction network context


In this project, valuation of aggregation mechanisms of small and intermediate scale PV systems, electric vehicles, electric and heat storage systems, heat pumps, micro-CHP in combination with energy management systems and first and second generation smart meters for implementing new transaction and tariff models will be assessed. Besides, the existing experience base of conducted and ongoing pilot projects that combine these aspects will be extended and analyzed. The application and realization of finalized projects in participating countries with respect to the specific regional differences and requirements are placed in focus.

Phase 4

Scope

The October 2016 ExCo-meeting strategic discussion in the DSM-program did yield a clear requirement for an interdisciplinary approach between technological and behavioral scientists in an innovation eco-system context. Task 17 Phase 4 will try to follow this in the DSM-program portfolio by considering three aspects:

- **Responsive.** Responsive here reflects pro-activity and reactivity of the technological energy producing or consuming end-nodes but also of the (aggregated) users in providing responsiveness to different types of stakeholder requests in the energy commercial system and physical infrastructure.
- **Prosumer.** Prosumer, here, reflects part of the energy transition viz. the increased and, from a grid stability perspective, possibly disruptive production capabilities of small dispersed producers and also the increasing use of the electricity grid due to the increased electrification with HVAC (heat pumps) and electric mobility (EVs).
- **Networks.** The scope of networks considers the role of the physical grid, the aggregator and the, mostly rural, community/smart city dimension. Physical



aggregation as well as virtual aggregation are considered.

Task subdivision

The following subtasks further structure the activities to handle this emerging DG-RES and demand side challenge:

Subtask 14: Context analysis, use cases and SmartCity pilot positioning

Subtask 15: Metering, monitoring and coordination methods required to increase prosumer responsiveness

Subtask 16: Coupling to innovative user feedback, billing and transactive energy schemes

Subtask 17: Conclusions and recommendations

Country Experts input:

Country experts are requested to provide specific information about ongoing country specific developments related to the objectives in each individual subtask. Furthermore they aid in organizing national workshops to inform stakeholders as to the progress of the project and the findings. Country expert activity is estimated to be 200-300 hrs for the 2-year duration of the project.

Operating Agent activities:

The operating agent organizes the events, structures the discussion and analyses the country specific inputs. Deliverable outlines and an overarching and detailed storyline is set. Contributions of participating countries are joined into a consistent package with conclusions and recommendations. After the first and second year international dissemination meetings will be organized, if possible aligned to conferences in the field. Participant country specific activities will also be supported.

Phase 4 subtasks

Subtask 14 – Context analysis, use cases and Smart City pilots positioning

In modern societies, digitalization of all kinds of processes takes place at an increasing pace. This also holds for the electricity sector. Commercial value creation can be achieved with an increasing penetration level of small-scale energy monitoring. Also at the management and control level, using connectivity of customers to the mainstream Internet, possibilities increase. Communicating, smart, meters generate power and energy measurements with 10 second and 15-minute resolution, which can be used for local and global commercial optimization. The potential of this metering infrastructure is only partially used.

Instrumentation of MV (Medium Voltage) grids allows more granular grid operation, based more and more on near real-time monitoring of data originating from lower voltage levels in the grid. To keep the electricity grid stable and allowing higher DG penetration levels, traditional SCADA (Supervisory Control and Data Acquisition) systems used for monitoring and control in DSO (Distribution System Operator) control centers are gradually extending their scope from the primary substation level (serving some 50000 customers) to the secondary substation level (1000 customers) and even the LV-transformer level (50 customers).

A key role in this transition is attributed to electricity flexibility and flexibility aggregation. ICT enables flexible aggregation topologies. Apart from self-consumption as an option, aggregation, in this sense, may be done (simultaneously) on the locational level, confined to a certain area, or on the global level, sharing certain optimization objectives like commercial portfolio optimization in the market or pairing renewable production and consumption in communities.

These technologies cannot be massively rolled out in one step. Pilot tests with Virtual Power Plants (VPPs), originally started 10-15 years ago within contexts of up to 50 to 100 customers. Scaling up at this moment takes place especially in Smart City contexts with support from EU research programs and national initiatives. Smart City concepts also stress the importance of integrating information and energy streams and also designs and layouts of physical grids in the context of DG-RES and energy storage embedding.

Detailed objectives:

- Define the existing context, common practices and state-of-the-art in the sector as-a-whole and on a per-country basis
- Analyze and refine the role and level of aggregator and aggregation in common use cases
- Derive the energy transition and Smart City context based on the EU and individual country perspective

Deliverables:

IEA-DSM-17.4.14: "Context analysis, flexibility aggregation and Smart City initiatives"


The operating agent number of person hours is estimated to be 320 hrs.

Subtask 15 – Metering, monitoring and coordination methods required to increase prosumer responsiveness

An important conclusion of the work in Task 17 Phase 3 was, that end-user tariff components only have a distant link to the impact of the consumption and production of electricity of the electricity system as a whole. The electricity market cost mapping mostly is calculated from synthetic profiles derived from an averaged set of electricity consumers or producers. In this way, end-user demand response actions, that generate flexibility, cannot be rewarded on an individual basis. Reconciliation using real measured profiles, based on the smart meter readings, makes it possible to map this price component more precisely on the actual power profile of the customer. In a number of countries, experiences with these types of reconciliation already exist.

For the transport and distribution components of the end-user electricity price also a similar mapping mismatch of real cost to tariffs occurs. Asset recovery based tariffs like connection capacity fees are common. Also tariffs, based on the maximum capacity used in a certain period, also hardly form a suitable component for rewarding end-user demand response. Distribution grids, previously having a one-design-fits-all-principle, with the current increased electrification of energy streams, are becoming more-and-more diverse. Functionality ranges from extended residential areas with high penetration of heat pumps to cities with large capacity requirements for (fast) charging of EVs. These changes require distribution tariffs with better opportunities to reward "grid-friendly" user behavior.

A third electricity price component is government energy taxes and subsidies. Several tax levying and subsidy schemes exist on the electricity commodity. At some occasions renewable in-feed comes to saturation limits. On the market level, subsidized priority in-



feed of wind energy can lead to lower day-ahead prices that reduce the allocated amount of low-CO₂ fossil generators. Also, curtailment schemes for PV, needed for grid stability, are complex to implement due to loss of accompanying subsidies. In some cases this component has a different and even opposite effect in achieving the original, desired target. Priority in-feed of wind and net metering of PV need alternatives to reach their original objectives.

A considerable part of the increase of flexibility delivery will take place via automated controls operated via “soft” coordination algorithms and techniques (e.g. openADR) also establishing and maintaining the virtual power plant objectives and connections. The interaction of these information architectures with possible tariff scheme component modifications has to be determined and evaluated.

Detailed objectives:

- Develop view on how to come to a better mapping of commercial tariffs on DR and DG customer behavior
- Make inventory on current and future distribution grid asset management, operation modes and associated tariff scheme components
- Develop view on possible new tax and subsidy schemes
- Assess the relation to already existing and future automated control schemes

Deliverables:

IEA-DSM-17.4.15: “Metering, monitoring and coordination methods required to increase prosumer responsiveness”

The operating agent number of person hours is estimated to be 250 hrs.

Subtask 16 – Coupling to innovative user feedback, billing and transactive energy schemes

In the small commercial and end customer energy sector, depending on the volumes, financial transactions and accounting take place with monthly or in most cases yearly intervals. This creates a large feedback time. Currently, energy management apps on smart phones, in combination with smart meters allow instant, day-to-day feedback on energy usage. Currently these systems do not allow transforming this information into financial transactions. The Gridwise alliance, a consortium of energy service providers and technology developers in the US, has defined a transactive energy framework, that aims to split large overall transactions between stakeholders in commercial and grid operation into micro-transactions. The scheme enables multiple parallel transactions between actors in the electricity system to reconcile portfolio and grid management operations and services. In the Netherlands, the USEF (the Universal Smart Energy business Framework) consortium was designed a reference implementation, which is currently tested in the field. During the past years also block-chain based transactive energy models have been proposed. These allow more accurate mapping of liabilities and responsibilities of actors involved in electricity distribution and transactive schemes. The first of these scheme designs are currently in the testing phase. These schemes are expected have a large impact on small-scale renewable energy systems. In this task this translation, paralleling transaction schemes in the B2B-sector, are inventoried and assessed.

Detailed objectives:

- Make an inventory of existing feedback, reconciliation and billing systems for electricity
- Assess a number of pilots, that have been implemented on micro-transaction based approaches
- Develop common view on feedback and billing innovation

Deliverables:

IEA-DSM-17.4.16: “Innovative user feedback, billing and transaction schemes”

The operating agent number of person hours is estimated to be 250 hrs.

Subtask 17 – Conclusions and Recommendations

Conclusions and recommendations will be arrived at in close interaction with the experts' opinions and will at least provide a ranking based on impacts, costs and likely future penetration of suggested frameworks.

Deliverables:

IEA-DSM-17.4.17: “Conclusions and recommendations realizing responsive prosumer networks”

The operating agent number of person hours is estimated to be 200 hrs.

Collaborations and Dissemination

Collaboration with internal and external activities in the field will be continued.

IEEE-Standards Association, IEC and Cenelec

OAs currently are within the IEEE- IEC- and Cenelec Standards Association Industry Connections.

ISGAN

This Task considers the end-user view of ICT technology and smart meters in energy grids. Synergy is to be expected with ISGAN TCPs 2 (SmartGrid case studies) and 7 (SmartGrid transitions), which consider the political considerations and strategies. Good connections already exist as one of the Task 17 phase 3 OAs is the Austrian representative for ISGAN in TCP 2. These connections will be further extended and possibilities for joint dissemination events will be actively pursued.

National Stakeholder Groups

An essential pre-requisite is national dissemination of project results. Per participating organization stakeholders resonance platforms are active checked upon.

Other IEA-DSM Tasks

Task 16 Innovative energy services

Task 23 The Role of Customers in Delivering Effective Smart Grids

Task 24 Closing the Loop – Behaviour Change in DSM: from theory to policies and practice

Task 25 Business models for a more effective market

Time schedule, budget and resources

IEA-DSM TASK 17 - Phase 4	Q4 17	Q1 18	Q2 18	Q3 18	Q4 18	Q1 19	Q2 19	Q3 19
Subtasks								
Subtask 14 - Context								
Subtask 15 - Metering, monitoring and billing								
Subtask 16- Billing and transactive								
Subtasks 17 - Conclusion and recommendations								
Expert meetings								
Biannual country expert meeting								
Workshops								
Workshops with stakeholders and experts								
Reports								
Subtasks reports								
Final report								

The estimated budget and resources needed are summarized below.
Management and feedback on OA-activities

	OA/hrs
Operating Agent bi-annual meetings with country experts	40
ExCo-meetings bi-annual	20
Number of occurrences	5
Travel and subsistence (800 Euro per meeting)	7200

Operating agent (cost shared)

OA-Activity	OA/hrs
Subtask 3.14	320
Subtask 3.15	250
Subtask 3.16	250
Subtask 3.17	200
Sum (hrs):	1020 + 325
Travel and subs.:	7200

The efforts for the operating agents are travel costs and personnel costs / resources necessary for editing and analyzing country specific inputs for the reports. Total cost of phase 4 is in the order of 160 k€ and will be covered by task fees per participating country. As in other tasks in the annex, the task fee is defined by the number of participants and a measure of the size of the electricity system of the country. It is assumed that the minimum number of participating parties is 5.

With an increase of the number of countries, some extra coordination overhead is included.

Total operating agent costs per country				
Number of countries	5	6	7	8
Costs per country	32k€	30k€	27k€	24k€

References

- [1] "Task 17 – Integration of Demand Side Management, Energy Efficiency, Distributed Generation and Renewable Energy Sources." [Online]. Available: <http://www.ieadsm.org/task/task-17-integration-of-demand-side-management/>. [Accessed: 31-Aug-2016].
- [2] European commission, "Commission proposes new rules for consumer centred clean energy transition," 30-Nov-2016. <http://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition>
- [3] "Digital single market." <https://ec.europa.eu/digital-single-market/en/smart-cities>
- [4] Amsterdam municipality, "Smart cities." <https://amsterdamsmartcity.com/map>

Document D

HOW TO 'DO' BEHAVIOUR CHANGE IN DSM. THE A TO Z OF BEHAVIOUR CHANGE - "People-Focused Work Stream"

Dr. Sea Rotmann

Dr. Beth Karlin

Motivation for this work

"You must really continue the work you do! Going deeper into academia now I can see how much valuable work you have done with Task 24 - co-creation is on everyone's lips and close to nobody understands what is needed to actually get it to work. This is why the experimental second part of Task 24 was so valuable - you (and we who participated) could really see what can work, and what definitely doesn't. Few people have such experience." Svetlana Gross, outgoing Swedish alternate ExCo and Task 24 supporter, via email.

"The edge of the DSM TCP is that it's the only one in the IEA that really focuses on the human side of the energy system. It is really important that you continue to tell this story." Michele de Nigri, EUWP Chair at the Dublin ExCo meeting in May 2017.

I have included these quotes because they make a really important point which encompasses the motivation for this work stream: we still know relatively little about the human dimensions of demand-side management compared to the more technical aspects and we need to both continue expanding on this work and tell our stories about it (better). What we knew when Task 24 first began in 2012 was largely academic theory (which Task 24 explored in Phase I) that can be difficult to translate into actionable, measurable praxis. However, the application of behavioural science to government programmes has blossomed in the years since, enabling us to collect a number of case studies about early-stage research and application in this area. Such synthesis served a vital role in both compiling evidence and connecting and engaging an emerging international research community.

This is why Phase II and its field research, testing the tools we have developed in real-life examples, was such a powerful addition to the DSM Programme's work. This Task enabled us to discern best practices from among the researchers and stakeholders identified in Phase I and build out preliminary models for how the field can continue to move forward. We learned a lot of new things - what works, and what doesn't; how the Task tools and approaches are applicable in many different sectors and countries; how to leverage a large, global expert network; and how to facilitate real multi-stakeholder collaborations. And while this Task is soon coming to an end, the real work on human behaviour and societal change in the DSM Programme has only just begun. In this work stream, we plan to build on the community and case studies compiled in Phase I and the preliminary models and tools developed in Phase II to work with a suite of partners to develop and test an internationally-validated process for behaviour change programmes that can be applied by stakeholders across the DSM landscape for years to come.

Background

Task 24 – Behaviour Change in DSM

Task 24, which is running from January 2012 to April 2018, has been highly successful, showcasing the important area of *Behaviour Change in DSM*. It is the only IEA TCP Task or Annex that concentrated entirely on behaviour change, and may be the first global research collaboration to do so.

Over 300 behaviour change and DSM experts from over 20 countries are engaging and collaborating with the Task, in various forms. Their support has included participation in Task 24 workshops; co-authoring conference papers and peer-reviewed publications; supporting National Experts with report-writing or case study analyses; networking; peer review; and subject expertise in almost every sector, discipline or energy behaviour imaginable. The names and biographies of over 245 of these experts can be found on the invite-only *Subtask 5 Task 24 Expert Platform*. There are also over 145 videos and presentations of many successful Task 24 workshops and events on the Expert Platform (see Appendix A for a list of all workshops and conferences undertaken during the Task to date). Over 60 publications have been published to date (see Appendix B for all publications of the Task to date).

Feedback on Task 24 has been outstanding - experts are continually joining, enabling us to collect additional case studies and undertake participatory field research into this important area from a truly global perspective.

Phase I – Closing the Loop: From Theory to Practice

Task 24 was initiated in January 2012 (official start July 2012) and was financially supported by 10 countries in total (Netherlands, New Zealand, Sweden, Norway, Switzerland, Belgium, Italy, Ireland, the US and Austria). It also has received significant in-kind (expert) support from the UK, Spain, Portugal, UAE, France, Australia, South Africa, Canada, Japan, Germany and the US.

Over 60 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 from 15 countries. They have been analysed and an interactive 160pp '*Monster*' report and Wiki (www.ieadsmtask24wiki.info) have been developed (*Subtask 1*). Several in-depth case studies for *Subtask 2* have also been collected - in [Austria](#), [Norway](#), [Sweden](#), [New Zealand](#), [the Netherlands](#), and [Switzerland](#).

We also addressed the all-important question of how to best evaluate successful long-term behaviour change outcomes (*Subtask 3*) from the perspective of the various '*Behaviour Changers*' (in industry, government, research, the third and the service sectors) who are our target audience. A '*beyond kWh tool*' has been developed, following an [in-depth literature review](#) on evaluation methodologies, by researchers from the Californian [See Change Institute](#) (SCI). We have also developed an [in-depth positioning paper](#) and [factsheets](#) on three specific intervention tools from the building retrofit area that focus on double-loop learning.

On finalising Phase I, we have provided country-specific recommendations and to do's/not to do's from stakeholder feedback collected during workshops, from our National Experts and during case study analyses (*Subtask 4*). The Task has also written a report on behavioural insights for [ESCo Project Facilitators](#) for IEA DSM Task 16 and published several articles, peer-reviewed conference papers and blogs¹.

Phase II – Helping the Behaviour Changers

Many important lessons were learned in Phase I of Task 24. Perhaps the most important one was that there was also no *behavioural* silver bullet - no one model of understanding or theory of change that can be applied to human energy behaviour in all situations and sectors. Instead, the energy system is complex and, once you add in the human dimension, also exceedingly *messy*. This messiness should not deter us to strive to tell a different story of how our energy system and its complex interrelations between people, technology and policy works. We have found that a better understanding of the *human* aspect of energy use, including behavioural and societal drivers, barriers and contexts, can greatly improve the uptake of energy efficiency and DSM policies and programmes. This is not to say that technology, market and business models are not important aspects of the Energy System. Instead, we posit that "*the Energy System begins and ends with the human need for the services derived from energy (warmth, comfort,*

¹ For a full publication list see: <http://www.ieadsm.org/task/task-24-phase-1/#section-8> and Appendix A

entertainment, mobility, hygiene, safety etc.) and that behavioural interventions using technology, market and business models and changes to supply and delivery of energy are the all-important means to that end”.

This core principle of ‘flipping’ the way we view the energy system from the technocratic to the human lens led us to design several tools and frameworks of how to achieve a *Collective Impact*² among a variety of different players with conflicting mandates, stakeholders, restrictions and tools. The main framework (*Subtask 8*) is called the ‘Behaviour Changer Framework’ - also dubbed ‘the magic carpet’ (due it being printed on a large piece of cloth) by a major Californian electricity utility during the Behavior, Energy and Climate Change (BECC) conference in 2015 (see [Rotmann, 2016](#) for a detailed description).

We have taken the ‘magic carpet’ and many other Task 24 tools, such as the *Subtask 9* ‘Beyond kWh’ tool (developed by project partners *See Change Institute*), and our in-depth look at storytelling in energy research (which culminated in the Task Operating Agent [co-editing a Special Issue on storytelling](#) in a highly reputable social science journal), on a journey around the world. Our tools and approaches were tested in participatory field research settings in dozens of workshops in over 10 countries, involving hundreds of Behaviour Changers from government, industry, research, the third and service sectors (*Subtasks 5 & 7*). We looked at diverse topics and sectors (*Subtask 6*) such as:

- Building Management Operators in major hospital networks (Canada and the US),
- Using libraries as Middle Actors to loan out energy saving kits (Ireland),
- P2P neighbourhood solar sharing schemes (New Zealand),
- ICT in Higher Education (the Netherlands)
- How to increase uptake in a new mobility app (Austria) and
- Green leasing in commercial office buildings (Sweden).

In addition, we used the magic carpet to discuss, as part of international conference workshops:

- Split incentive issues for residential landlords in France ([ECEEE summer study 2015](#)),
- Reducing energy use by 20% in restaurants in Fort Collins ([BECC conference 2015](#)),
- Our three case studies from Sweden, NL and NZ ([BEHAVE conference 2016](#)),
- Reducing energy use by staff in Wellington Zoo (Energy Cultures conference 2016),
- Air pollution in the city of Graz ([ECEEE summer study 2017](#)).

What we learned from testing the ‘magic carpet’ and our other tools with a wide variety of *Behaviour Changers*³ from many different sectors, was that the *Collective Impact Approach* truly works. The general idea is to approach any behavioural problem by first, identifying, and then, facilitating, the right Behaviour Changers from each sector to collaborate on:

- 1) *Visualising the current system* in all its complexity and messiness
- 2) Identifying a *common goal* that all players – and the End User! – want to achieve
- 3) Creating a *common measurement system*, based on the *multiple benefits* for each player
- 4) Designing a *continuous communication system* with *mutually-reinforcing activities*
- 5) Supporting a *strong, neutral backbone organisation* that helps facilitate the process
- 6) *Designing, implementing, evaluating* and re-iterating (if necessary) a common intervention
- 7) *Analysing results* and comparing them with other case studies elsewhere
- 8) *Global dissemination* and cross-cultural/country comparisons.

We believe that the tools developed in this Task provide practical value to any (energy)

² See [Kania and Kramer \(2011\)](#)

³ The term ‘*Behaviour Changers*’ identifies relevant actors in the government, industry, research, third and service sectors who can affect the conditions for energy saving and efficiency behaviours in energy ‘*End Users*’. They may have expert knowledge needed for how to promote energy savings; or have information about the occupancy and energy use of buildings throughout the year; or are developers of energy-efficient appliances; or have influence on decision-making that affects current policies and practices; etc. These actor-types are the main behaviour change agents addressed in the Task, in addition to the *End User* whose behaviour they ultimately try to change. Each of these actors play an important role, but none of them can create systemic change in isolation.

behavioural problem in any sector or country. Another unique feature of the Task is that it is completely *neutral*, affording it the role of *trusted Facilitator* – it does not represent a country, energy sector, or research discipline and does not promote any specific ‘models of behaviour’. Instead, it works with all interested countries, sectors and disciplines, assisting Behaviour Changers to find the most appropriate, tailored solutions in collaboration with other relevant Behaviour Changers and the *End User* (whose behaviour we are ultimately trying to change).

The easiest way to visualise Task 24 research is to see its function like a multi-tool (Fig 1). Where basic research (e.g. multi-country research contracts funded by H2020) may be a large chef’s knife, and applied, institutional, academic research is a smaller but sharper paring knife, Task 24 is like a Swiss Army knife, with many different tools for various audiences, behavioural problems, sectors and countries. It offers a unique nexus of theory, policy and practice and has a global brand and dissemination reach via its umbrella organisation, the International Energy Agency.

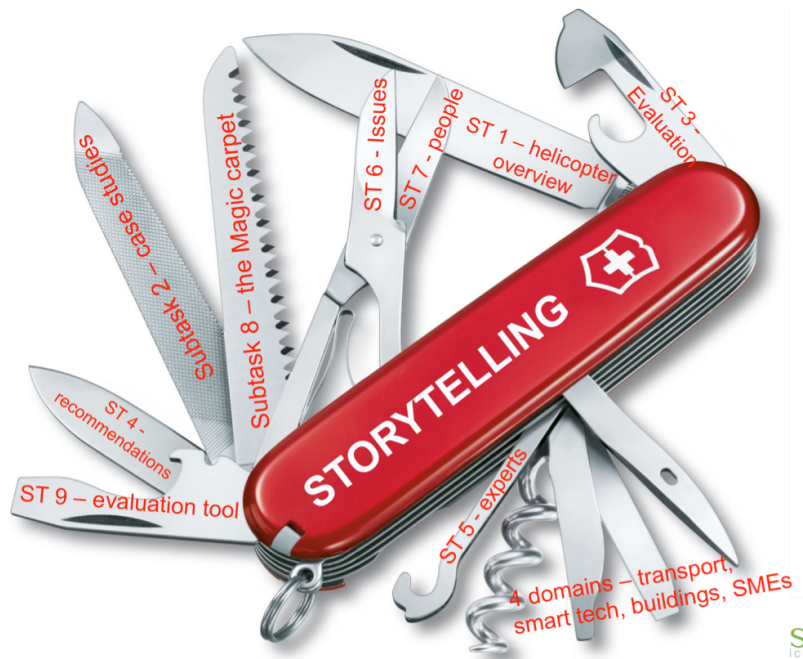


Fig 1. Task 24 visualised as a Swiss Army knife. Note: ST indicates ‘Subtask’

The See Change Institute approach

See Change Institute (SCI) is developing a “playbook” that provides programme implementers, managers, and evaluators a “how-to” process for integrating behavioural science into both new and existing demand-side management interventions. This playbook will be released in early 2018 and will include step-by-step processes and best practices for programme design with guidance for leveraging social science into customer-facing communications and interventions.

The SCI *Building Blocks of Behaviour Change* process (Figure 2) has three key steps:

1. **Target:** This step includes conducting literature review and customer research (i.e. focus groups, interviews) to gain insights on target **AUDIENCE** and **BEHAVIOUR**. Tangible outcomes are a problem /mission statement for the intervention and clearly operationalised target audience segments and behaviours.
 - o **Audience:** Who is the target audience?
 - o **Behaviour:** What is the intended behaviour?
2. **Design:** This step encourages iterative design and testing of **CONTENT** and **DELIVERY** strategies to build out the intervention strategy and implementation plan. It combines user testing and A/B testing to gain both qualitative and quantitative insights on how and for whom the intervention works.

- **Content:** What behavioural strategies are used? How are messages framed?
 - **Delivery:** What mediums, messengers, and timing are used to deliver the intervention?
3. **Apply:** This step moves from planning to implementation and assures that programme execution includes rigorous **EVALUATION** to measure key performance indicators and allow for both programme summative (did it work) and formative (how can it be improved) evaluation.
- **Evaluation:** How can the success of the intervention or programme be measured?

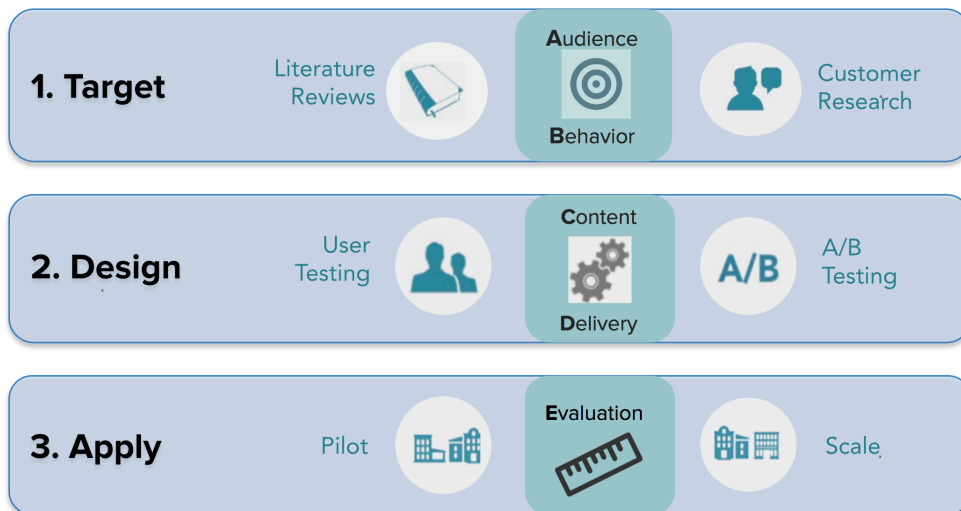


Figure 2. See Change institute Building Blocks of Behaviour Change process

An additional tool developed by SCI provides support for the EVALUATION step in the process. Called the “Beyond kWh Toolkit”, it includes a set of scales that can be used to collect self-reported data as a part of evaluation of behavioral interventions. It builds from preliminary instruments drafted as part of Task 24 by refining and psychometrically-validating scales for:

1. *Norms* (e.g., efficacy, social norms)
2. *Practices* (e.g., onetime, habitual)
3. *Material culture* (e.g., appliance stock)
4. *Context* (e.g., demographics, housing),
5. *User experience* (e.g., ease of use, engagement)

A full survey instrument with these scales can be completed via computer, paper or phone in 10-15 minutes.

The See Change Institute (SCI) Process blends insights and best practices from behavioural science, human-centered design, and community-based social marketing to optimise how we solve problems. It is a comprehensive yet straightforward approach that identifies key issues at both the applied (Implementer) and empirical (Researcher) sides of a project, as well as identifying the outputs that should result at each step. At the highest level, the SCI process answers the *Who, How, and What* of a proposed solution(s) through a series of clear actionable steps to **Target** (Audience and Behaviour), **Design** (Content and Delivery), and **Apply** (Evaluate) behavioural interventions and programmes. Task 24 tools provide the additional steps of answering the *Why, So What and Now What* using the tested *collective impact approach* and facilitation of multi-stakeholder collaborations on real-life issues that demand better behavioural interventions:

- **WHY** – identify relevant Funders and Implementers and their *Why*
- **WHO** – define audience and End User behaviour
- **HOW** – design content and delivery
- **WHAT** – deploy and evaluate
- **SO WHAT** – develop and tailor full process of behaviour change into different modules
- **NOW WHAT** – overall summary and where to go next

A new model of behaviour change

The proposed research for this new work stream will apply the tested Task 24 tools with SCI's *Building Blocks of Behaviour Change* process and *Beyond kWh Toolkit* to real-life DSM problems in a variety of countries, sectors, and behaviours and conduct both process and outcome evaluation to assess what works and how the tools can be applied at scale. It will showcase the IEA DSM Programme's wider knowledge and work on the human side of energy as part of a "People-Focused Work Stream" which is not coupled with a specific Task. We will:

1. Create an overarching international standard of how to 'do' behaviour change in real life by showcasing how it is 'done' in (best) practice;
2. Promote and showcase the IEA DSM Programme's work on the 'human' side of energy.

Hence, we call this the *A to Z (model) of behaviour change*.

Objectives

Our objective is to codify and standardise best practices and processes identified during Phases I and II of Task 24 through field trials and participatory action research with programme *Implementers*⁴. It will clearly outline the steps needed to make 'Behaviour Change in DSM' truly work in real life and to showcase the IEA DSM Programme's important work in this area. The focus will be not only on tools developed by Task 24 in Phases I and II but also on disseminating other people-focused IEA work such as e.g. DSM Tasks 23 and 25 and EBC Annex 66 as well as other global research efforts in this area (building on the 300+ behaviour change experts already engaged with the Task). It will also incorporate and extend a framework for research-based behaviour change programmes developed by project partner SCI.

The outcome will be a clear process of how to 'do' behaviour change research in real life, tailored to the needs of different countries, non-state actors from different sectors and different end user behaviours. It will also cement the IEA DSM Programme as the 'go-to' TCP for customer-driven and end user-focused research and insights.

Because of this unique approach that combines field research with broad dissemination (compared with how we usually design and focus DSM Tasks), we propose a different model of funding meant to:

- Reduce the pressure on individual countries having to provide all the funding and expert capability to support a more narrowly-focused Task;
- Enable all ExCo countries and partners to participate in this important people-focused DSM research; and
- Stimulate non-state actor engagement and critical co-funding in this crucial next step of field research and trialling of real-life pilots.

Scope

Due to its diverse audience drawn from multiple sectors, disciplines and domains, Task 24 has continued to maintain a balance of being practical and understandable by a highly variable audience whilst also having academic validity. The tools and reports that were developed for this Task thus had to incorporate the following criteria:

- Relevance to *decision-makers* in government agencies, energy agencies and policy makers on the international, national, and local level;
- Broad appeal to a *global audience* spanning largely OECD countries and including developed and developing countries from northern and southern hemispheres across five continents;
- *Country-context* specific, as it informed how tools were tailored and recommendations were provided. This included cross-cultural comparisons in several reports;

⁴ With the term *Implementers* we refer specifically to the project managers who will actually implement a pilot or intervention. These may be the same as our *Funders*, but are often a different actor (from the same, or a different organisation). Both are types of *Behaviour Changers*, from any of the 6 Behaviour Changer sectors (see footnote 3, above). The *Research Team* we refer to here is us and any other Project Partners.

- *Multiple sectors* as target audiences for case studies and pilots in Task 24. They included *hospitals* (US and Canada); *DSOs* (NL and NZ); *the residential sector* (SE, NL, NZ, IT, US, AT, IE); *transport* (SE); *higher education* (NL); *SMEs* (BE) and the *transport sector* (AT);
- *Models and theories* from all research disciplines studying behaviour change in energy. Analysis was grouped into three main disciplinary approaches: *psychology*, *economics* and *sociology*;
- Inclusion of creative, entertaining and engaging features and *storytelling* as the overarching ‘language’.

It should be clear from this list of criteria that Task 24 had an almost impossible mandate, yet enthusiastic feedback to date (including continued funding from countries and non-state actors; new experts joining the expert network; being invited to become technical steering committee and panel members of key behaviour and energy efficiency conferences; and co-editing a special issue in *Energy Research and Social Science*, among others) has suggested that the Task has managed to achieve this feat. It has become a global voice for *Behaviour Changers* and shown the importance of taking a whole-system, collaborative approach to behaviour change. That is why this important work should continue, preferably under the IEA (DSM) banner, to ensure its global applicability and roll-out and to promote and build on its good brand. However, this work has also clearly outgrown the more narrow ‘Task’ framework of our TCP.

Due to the nature of the work focusing on *proof of concept*, i.e. *Participatory Action (Field) Research* and piloting, rather than being largely a synthesis of country experts’ research interests and outputs, the usual Task framework may not be the most appropriate for this extended focus of work. It has also become clear in Phase II of Task 24 that most of the *Behaviour Changer Funders* and *Implementers* who undertake behaviour change pilots and programmes are not found on the state level but in the non-state sector. They have the finances, motivation, leadership buy-in and fewer political pressures compared with e.g. some of our governmental ExCo members. The ExCo will still be the overarching steering committee of the research, but instead of focusing on only a few financially-participating countries, the whole ExCo will play an important function and role in steering the people-focused work stream of the IEA DSM Programme. This includes a greater focus on, and dissemination of work that is currently being conducted by all participating ExCo members in this important area.

Management, roles and responsibilities

The proposed management of this work is by keeping the highly-experienced and established Task 24 Operating Agent, [Dr Sea Rotmann](#) (SEA – Sustainable Energy Advice Ltd, NZ) as the main contact with the IEA DSM ExCo. The See Change Institute, led by CEO [Dr Beth Karlin](#) will serve as primary Project Partner, testing the *Building Blocks of Behaviour Change process* and *Beyond kWh* toolkit, which have been developed in 2015-2017 with funding provided by two California Investor Owned Utilities (IOUs) – *Pacific, Gas, and Electric* (PG&E) and *Southern California Edison* (SCE). See Change Institute has been a very generous and supportive in-kind partner of Task 24 (and the ‘unofficial’ US National Expert) for over 4 years. Other project partners and highly-engaged Task 24 experts, will continue to be part of this work on a per-need (based on the country, sector and/or expertise needed) basis.

The responsibilities of the OA include:

- Overall management of the Work Stream, including coordination, liaison between Subtasks, flow of information between participants, and communication with the ExCo;
- Providing Status Updates at each ExCo meeting, Annual Reports, and the Final Report;
- Attracting funding for field research pilots from at least 3-5 (non-state) actors and finding relevant international comparison studies for cross-cultural analysis;
- Disseminating the results of the work, including wider promotion of the IEA DSM Programme’s “People-Focused Work Stream”. This involves showcasing results from other IEA Tasks or Annexes associated with researching the End User, publicising relevantly-themed DSMU webinars, representing the “People’s Side” at IEA Secretariat events (like the recent [IEA Global Conference on Energy Efficiency](#) in June 2017) and

promoting the wider work of our experts within the IEA, from whose research we can draw valuable learnings from;

- Chairing workshops, meetings and presenting at conferences, webinars and lectures;
- Research analysis, writing and publishing of peer-reviewed articles and technical reports;
- Responsible for the management of work performed under all assigned Subtasks, including meetings, status reports, deliverables, and budget oversight;
- Maintaining close contacts with research related to this Work Stream that is conducted in other TCPs or in other international organisations and research collaborations, including relevant H2020 programmes.

The responsibilities of the Project Partner include:

- Working with the OA to attract / obtain funding for field research pilots from at least 3-5 (non-state) actors;
- Leading design, analysis and evaluation for all funded field research pilots (using the *Building Blocks of Behaviour Change* process and *Beyond kWh* Toolkit);
- Leading academic write-up and publications;
- Responsible for the management of work to be performed under all assigned Subtasks, including the meetings, status reports, deliverables, and budget oversight; and
- Supporting the OA in ExCo feedback and IEA-related work especially around finding and showcasing the people-focused work of project partners and research contacts.

Expected benefits for IEA DSM

This proposed model goes beyond the traditional Task structure, where a small number of countries fund individual Tasks with rather narrow research objectives. Instead, it proposes to promote and align the IEA DSM Programme's 'people-focused work stream' and outputs (including what has been done as part of the DSM University) with other international research efforts in this space, with an oversight steering committee consisting of the entire DSM ExCo.

This will provide ExCo members with:

- A strong platform for the IEA DSM Programme to stand out among the largely-technology focused TCPs;
- Leading the charge for engaging communities, End Users and other Behaviour Changers in whole-system collaborations that focus on structural issues which we need to change to accommodate climate change and energy efficiency targets;
- Gain improved political buy-in for their countries' policy development, through coordination with the IEA Secretariat and other international bodies interested in this area of research (e.g. G20, Horizon 2020, eceee, ACEEE, BEHAVE, BECC...);
- Reduced pressure to find funding for an individual Task – e.g., no requirement to find and pay a National Expert;
- Ability to collaborate with non-state actors across multiple countries / sectors that have the resources and mandates to conduct large-scale behavioural field trials;
- Greater buy-in and oversight into steering a very important work stream of the DSM Programme;
- More flexibility for the Operating Agent/Project Stream Leader to engage with non-state actors and non-IEA DSM countries to collect a wider range of research and insights, including into developing countries.

Benefits for Behaviour Changers to join this work stream

Non-state actors who are in active development of a behaviour change programme or intervention will be invited to join the project as "implementation" partners. These Funders and *Implementers* will work closely with the *Researchers* (OA and Project Partner/s). The Researchers will walk the Implementers through the steps on the top half of the diagram (see Figure 3) and will be responsible for the activities on the bottom half of the diagram. At the end, the Implementers will have conducted a behavioural pilot intervention or programme and the researchers will have completed both a summative and formative evaluation with guidance on how to replicate and/or scale-up their pilot.

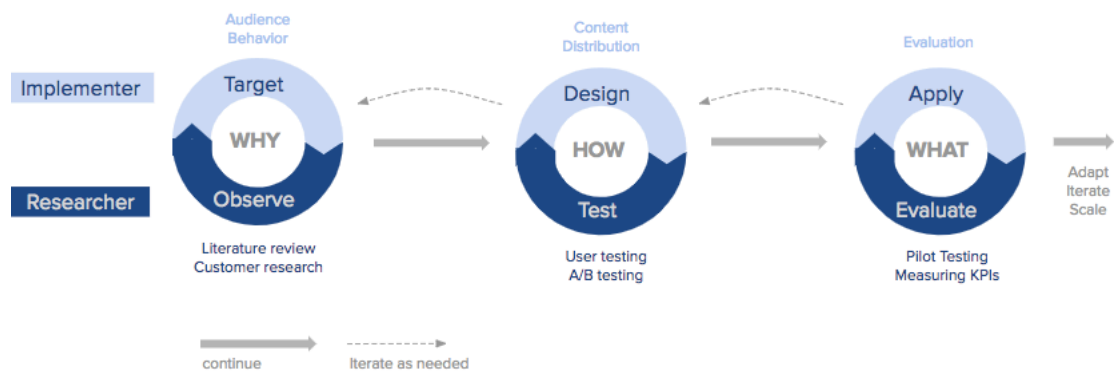


Figure 3. Process for Implementer (Behaviour Changer) and Researcher collaboration

Opportunities for Global Networking and Collaboration

- Implementers will become part of the combined Task 24 and SCI expert platforms with 100s of Behaviour Changers from all sectors (Industry, Government, Research, Intermediaries and the Third Sector) and over 20 countries.
- They can bring their own DSM issues and get cutting-edge, tailored advice and research support for the entire chain of designing, implementing, evaluating, reiterating and disseminating behavioural interventions that work;
- They will gain access to, and participate in the [IEA DSM University](#) including developing and disseminating their case studies in promoted webinars, peer-reviewed publications and technical reports;
- They will gain access to global dissemination and country comparisons via the highly-reputable IEA network.

Access to Cutting-Edge Tools and Resources

- Behaviour Changers will gain improved knowledge and understanding on what different models and theories of behaviour change are available and when and how to best use them in practice;
- They can learn from and share, directly and via the IEA DSM network, best practice case studies and stories;
- They can gain great, practical examples and expert guidance of how to use storytelling in policy and practice;
- They can get access to, and expert support for, the tools that were tested and developed by Task 24 and SCI;
- They will get expert facilitation and backbone support to develop the *Collective Impact Approach* in practice, tailored to their stakeholders, mandates and needs.

Co-creation and Promotion of New Solutions to Old Problems

Behaviour Changers will gain access to a highly respected global brand. This includes being invited to collaborate on joint behaviour change publications in DSM including, but not limited to:

- Re-framing the big issues together, for example, how to better understand and engage the 'human' aspect of the energy system and how to overcome inherent systemic restrictions and conflicts, nationally and internationally;
- Becoming part of co-creating the [Behaviour Changer Framework](#), using a *Collective Impact Approach* and *Storytelling* as overarching methodologies;
- Learning how to apply the *Building Blocks of Behaviour Change* process to design, and the *Beyond kWh* tool to evaluate better interventions;
- Reducing duplication of efforts by learning from real-life field research so we can move from individually-focused, programme-level approaches to collaborations aimed at the common goal of achieving systemic, societal changes with collective community and citizen participation at its core.

The detailed proposal

Structure of the work stream

Subtask 0 – Administration, management and logistics

Subtask Number	0
Start Date	Month 1
End Date	Month 24
Activity Type	Project Coordination, ExCo feedback, reporting

Objectives

- Overall project coordination and management, including contact relationship management;
- Attendance of ExCo meetings, conferences and reporting to IEA DSM ExCo;
- Organising financial, contractual and other administrative issues and relationship and contact management.

Deliverables

Overall project organisation and management (OA); Status reports (OA); Annual reports (OA); Participation in IEA DSM ExCo meetings (OA); Task flyers – at the start, during and at the conclusion of the project (OA); IEA DSM Website updates; Communication with related IEA tasks and other projects (OA and Project Partner/s).

Roles and responsibilities (outlined in detail above)

The OA will lead this Subtask, with support from the Project Partner(s) where needed.

Subtask 1 – Expert network and dissemination

Subtask Number	1
Start Date	Month 1
End Date	Month 24
Activity Type	Networking and dissemination activities

Background

Task 24 has developed a strong and successful expert network of over 300 Behaviour Changers from 20+ countries. See Change Institute also has a very strong expert network, particularly in North America. We will combine our networks to engage a global expert network of Behaviour Changers to participate, financially and in-kind, in this work stream.

Objectives and Deliverables

- Combine and grow our international expert network;
- (At least) one international conference or workshop for all Behaviour Changers engaged in this work stream to showcase strong End User-focused stories and case studies;
- At least two scientific, peer-reviewed papers in high-impact journals;
- Technical reports, peer-reviewed conference papers, lectures, seminars, DSMU webinars etc.
- Continued 'match-making' and promotional activities for members of the expert network.

Roles and responsibilities

The OA will lead this Subtask, with support from Project Partner(s) where needed.

Subtask 2 – the Why

Subtask Number	2
Start Date	Month 2
End Date	Month 15
Activity Type	Identifying and engaging Behaviour Changers

Background

On top of our current expert network who largely supports us in-kind, we also need to engage Behaviour Changers who can financially support and provide capacity and resourcing to conduct strong field research trials (*Funders and Implementers*).

Objectives

We expect to attract at least 3-5 Funders and Implementers over the two years of this trial (we already have a strong list of 10 possible contenders in the private, public and third sectors in North America, Europe and New Zealand). They will contract us to design, analyse and disseminate field trials and pilots for them. These case studies will be disseminated via the IEA DSM Programme. The Task 24 *Behaviour Changer Framework* will be used to identify *the Why* of each Behaviour Changer. We will also continually engage with, and identify other Behaviour Changers who can benefit from this work or who can contribute to it in-kind (for example, by providing comparative country case studies, interviews and stakeholder feedback). These are part of our current expert network and include some of the world's leading academic centres and energy efficiency institutions.

Deliverables

- 3-5 fully-funded field research trials. We will apply, test and continue to improve the *Behaviour Changer Framework* and other tools developed by Task 24 and SCI.

Roles and responsibilities

The OA and Project Partner will collaborate on identifying funders / implementers to partner with us. Contract administration will be shared.

Subtask 3 – the Who

Subtask Number	3
Start Date	Month 2
End Date	Month 6 and 18
Activity Type	Define Audience and End User Behaviours

Background

This is the “A and B” step described above (see Fig. 2) in SCI's *Building Blocks of Behaviour Change process*. It includes identifying the **Target: AUDIENCE** and **BEHAVIOUR**.

Objectives

This step includes conducting literature review and customer research (i.e. focus groups, interviews) to gain insights on target audience and (intended) behaviours.

Deliverables

Tangible outcomes are a problem /mission statement for the intervention and clearly operationalised target audience segments and behaviours.

Roles and responsibilities

The Project Partner SCI will lead this step for all funded research pilots with support from the OA.

Subtask 4 – the How

Subtask Number	4
Start Date	Month 3
End Date	Month 18
Activity Type	Iterative design and testing of content and delivery

Background

This is the “C and D” step described above (see Fig. 2) in SCI’s *Building Blocks of Behaviour Change* process. It focuses on iterative **Design** and testing of **CONTENT** and **DELIVERY** strategies to build out the intervention strategy and implementation plan.

Objectives

This step combines user testing and A/B testing to gain both qualitative and quantitative insights on how and for whom the intervention works.

Deliverables

Detailed insights and reporting on:

- o Content: What behavioural strategies are used? How are messages framed?
- o Delivery: What mediums, messengers, and timing are used to deliver the intervention?

Roles and responsibilities

The Project Partner SCI will lead this step for all funded research pilots with support from the OA.

Subtask 5 – the What

Subtask Number	5
Start Date	Month 4
End Date	Month 22
Activity Type	Evaluation and analysis

Background

This is the “E” step described above (see Fig. 2) in SCI’s *Building Blocks of Behaviour Change* process. It focuses on **Applying** the design in an actual field trial and includes the all-important **EVALUATION**.

Objectives

This step moves from planning to implementation and assures that programme execution includes rigorous **EVALUATION** to measure key performance indicators and allow for both programme summative (did it work) and formative (how can it be improved) evaluation.

Deliverables

Continued testing and development of ‘Beyond kWh’ tool including development and testing of different modules (i.e. outside of the residential feedback sector it has originally been developed for). This could lead to an international standard of how to evaluate successful behavioural outcomes (see Task 24’s Subtask 9). Also includes detailed analysis and report-back of:

- o Evaluation: How can the success of the intervention or programme be measured?

Roles and responsibilities

The Project Partner SCI will lead this step for all funded research pilots with support from the OA.

Subtask 6 – the So What

Subtask Number	6
Start Date	Month 6
End Date	Month 24
Activity Type	Insights, stakeholder evaluations and collation of work

Background

This Subtask will focus on collecting insights and learnings of what worked, and didn’t work following the Collective Impact Approach.

Objectives

Task 24 has collected a wealth of learnings about what works and what doesn't when facilitating multi-stakeholder collaborations on complex subjects in many different sectors, countries and topics. This work will build on these, and new insights from the field research and case studies collected here.

Deliverables

Stakeholder evaluations, stories and insights from applying the collective impact approach using the *Behaviour Changer Framework* and *SCI Building Blocks for Behaviour Change* process. Collation of different modules and development of international standards to form overarching guidelines, tools and recommendations for how to 'do behaviour change from A-Z'.

Roles and responsibilities

The OA will lead this Subtask, with support from the Project Partner(s), where needed.

Subtask 7 – the Now What

Subtask Number	7
Start Date	Month 18
End Date	Month 24
Activity Type	Overarching summary & recommendations for future research

Background

Each field research trial will result in different stories, case studies, interventions and barriers. But there will be some overarching findings and recommendations from each country, Behaviour Changer sector and top area of DSM focus.

Objectives

This Subtask will collate all the different insights, results and stories into an overarching summary story. In addition, a lexicon of behaviour change definitions and terminology, which will help bridge the silos created by sectoral and academic jargon, will be developed.

Deliverables

Overarching summary of learnings, collation of different modules and international standards, behaviour change lexicon and recommendations for future work.

Roles and responsibilities

The OA will lead this Subtask, with support from the Project Partner(s), where needed.

Deliverables

Subtask	Deliverable	Deliverable Name	Deliverable Type
1	D1	Expert network and dissemination	Various
2	D2	The Why - Behaviour Changers & Implementers	Workshops
3	D3	The Who – Problem & Mission Statements, ToC	Reports
4	D4	The How – Optimised design/pilot	Roadmaps
5	D5	The What – Evaluation beyond kWh & energy	Metrics, Analysis
6	D6	The So What – A to Z of Behaviour Change	Online Guidebook
7	D7	The Now What – Summary and next steps	Report & Lexicon

Funding and Resources

We have discussed different models for funding this work stream at the 49th ExCo meeting in Dublin, when Dr Sea Rotmann presented a [short concept paper](#) of this work. Model 1, called the "Entrepreneurial Model" gained by far the most support from the ExCo and it was also our preferred model. This is a small refinement of Model 1, reflecting the additional discussions and feedback from the ExCo.

Model 1 – Entrepreneurial Model:

We are asking for a small contribution from each ExCo member: €3,500 p.a. (**€59,500 total** for 17 members). We ask for this to be funded out of the common fund at first, to test this concept. This is not dissimilar to how the *DSMU* and *Task Zero* are funded. It will ensure that there is enough baseline money to fund administration and logistics of the work stream. This funding will also contribute to the significant time and effort involved in identifying, engaging with, and disseminating other people-focused work, from the DSM TCP, and other IEA and non-IEA experts (as long as it is aligned with our DSM vision and mission as identified by our ExCo steering group). This will include not only disseminating work that has already been published, but also helping relevant experts to turn it into stories of global relevance which will have additional influence with policymakers, industry and the third sector. These ‘stories’, in various forms, will be published by the DSM TCP, via our website.

Each field research trial will both test the overall model / process and provide an additional individual case study with both process and outcome evaluation measures (when possible). Each will be funded in full by a (non-state) actor (aka *Funder*) who wants to answer specific behavioural questions which focus on a specific sector and DSM problem (one example is the Task 24 ST11 work with *Carolina Health Services*, in the US; a second is the *PG&E Step Up Power Down* pilot that is being conducted in 2017 with SCI). While a detailed cost breakdown for Subtasks 2-5 (which walk through the *ABCDE process*) will be developed with each *Implementer*, there will be a range of options based on the level of support needed:

1. **Bronze:** *Magic Carpet (WHY), literature review (TARGET), project recommendations (DESIGN), and post-pilot debrief (APPLY), dissemination (SO WHAT) €25,000;*
2. **Silver:** *Magic Carpet (WHY), Literature review + customer research (TARGET), project recommendations (DESIGN), and summative evaluation (APPLY), dissemination (SO WHAT), international comparison (NOW WHAT) €70,000; and*
3. **Gold:** *Magic Carpet (WHY), Full intervention, which includes literature review + customer research (TARGET), project recommendations + user/AB testing (DESIGN), and formative + summative evaluation (APPLY), dissemination (SO WHAT), international comparison (NOW WHAT) (€120,000).*

All field research activities include global dissemination and access to the international expert network. Each field trial is expected to last between 6-18 months.

This approach – with administrative and dissemination costs funded by the DSM common fund and direct research costs funded by (non-state) actors - will ensure a continued stream of highly-relevant, cutting edge behaviour change field research insights for the DSM TCP. It will also ensure buy-in from the whole ExCo and provide each ExCo member a place on the steering committee overseeing and guiding this work. Individual ExCo members will not have as much say which sectors and DSM problems the work will address (compared with, e.g. Phase 2 of Task 24). However, they can still propose sectors of strategic interest to the DSM TCP and provide contacts in their own countries to attract co-funding to the work. *No in-kind “Task Sharing” commitment or National Expert is needed.*

This model will also ensure that this important and highly visible work stays in the IEA DSM and will continue to attract new experts, dissemination and visibility opportunities (like the 75+ conference proceedings, key notes and peer-reviewed publications, technical reports, films, podcasts and articles published so far) and new potential funders and countries to the IEA DSM Programme.

This is our preferred funding model as it provides us with:

- The support and guidance from the full ExCo as steering committee;
- The ability to follow our own networks and shape our field research on an as-needed basis;
- The flexibility of tailoring the work according to the amount of funding and pilot research studies we receive; and
- The continued promotion of behaviour change and people-focused work in DSM through this TCP.

Timeline and milestones

This work is planned for two years, from April 1, 2018 to March 31, 2020; an extension will be discussed and proposed if additional work is needed after this time. Main milestones will be to:

- Identify 3-5 (non-state) actors participating in action research pilots that will be fully, independently funded;
- Develop roadmaps for each pilot research study;
- Work with programme implementers to Target, Design, and Apply research pilots with different sectors, audiences and behaviours (e.g. the hospital sector and commercial office building sector);
- Write final reports and recommendations for each pilot study as well as reports on the ongoing refinement of the “Building Blocks of Behaviour Change” process, “Beyond kWh” Toolkit, “Behaviour Changer Framework” and other Task 24 and SCI tools;
- Contribute to an online guidebook, international best practice standard and lexicon for behaviour change.

Meetings and information activities

These cannot be prescribed up front, other than the continued work with the DSM ExCo and IEA Secretariat and a closer alignment with other TCPs. As Task 24 continually over-delivered on dissemination activities (see Appendices A and B for all meetings and publications of Task 24), we can guarantee that this will be one of the core strengths of this work stream.

Collaboration with others

Task 24 and SCI both are known for their strong networks and collaboration activities. We will build on these to develop even stronger and enduring collaborations with other global experts, within and outside of the IEA family, who focus on “people-focused work” of interest to our DSM Programme. The ExCo steering group will be able to provide invaluable guidance as to which topics, sectors and countries to focus on for further collaboration.

ExCo decision

We ask the ExCo to support this work stream to commence in April 2018.

Appendix A. Task 24 meetings and conferences

Task 24 Expert Workshops, webinars and stakeholder meetings (Phase I)

Date	Place	# of Experts	# of Countries	Type of meeting	Government	Industry	Academic
10/4/12	Utrecht, NL	23	4	XM	4	9	10
10/4/12	Graz, AUT	5	2	SHM	4	1	1
11/4/12	online	13	6	XM	2	2	9
3/5/12	online	6	5	XM	1	1	4
30/8/12	Utrecht, NL	20	1	SHM	2	12	6
7/9/12	Brussels, BE	24	8	XM	3	8	13
9-10/ 10/12	Oxford, UK	65	9	XM	3	13	39
26/10/12	online	6	5	XM		2	4
12/11/12	online	6	5	XM		2	4
17/12/12	Wellington, NZ	10	1	SHM	8	1	1
20/12/12	Utrecht, NL	22	1	SHM	1	14	7
7/2/13	online	6	5	XM		2	4
15/2/13	Wellington, NZ	50	4	XM	15	15	20
22/5/13	Graz, AUT	10	2	SHM	9	1	
27-29/5	Trondheim, NO	20	8	XM	1	3	17
15/6/13	Milan, IT	15	2	SHM	14	1	
17/6/13	Dubai, UAE	30+	3	SHM	5	15	other (kids)
21/8/13	Wellington, NZ	6	1	SHM	4	1	1
10/10/13	Stockholm, SE	12	2	SHM	4	1	7
15/10/13	Luzern, CH	30	9	XM	3	12	15
17/10/13	Brisbane, AUS	12	2	SHM	10	2	
17/12/13	Wellington, NZ	40	1	SHM	30	4	6
17/03/14	Wellington, NZ	55		XM	25	15	15
05/09/14	Oxford, UK	18		XM	2	3	13
Feb & July 2014	Wellington, NZ	5		SHM	3	2	
12/5/14	Brisbane, AUS	12		SHM	10	2	
3/10/14	Milan, Italy	10		SHM	7	2	1
13-14/14	Graz, Austria	40		XM/SHM	20	5	15
24/10/14	London, UK	12		XM	5	2	5

XM = Experts meeting

SHM = Stakeholder meeting

In green = national expert workshops and webinars

Phase II – Expert and stakeholder meetings

Date	Place	# of Experts	Type of meeting	Govt	Industry	Academic
27/05/15	Toronto, Canada	13	SHM	2	9	2
03/06/15	Eceee summer study	50	Experts	10+	5+	30+
11/06/15	Stockholm, SE	8	SHM	3	4	1
14/06/15	London, UK	12	SHM	3	2	7
23/09/15	Wellington, NZ	12	SHM	3	6	3
19/10/15	Sacramento, US	15	Experts	2	4	9
21/10/15	Sacramento	31	Experts	4	9	18
26/10/15	Toronto, CA	15	Experts	2	11	2
2/11/15	San Francisco	30	SHM	4	24	2
Nov 2015	Paris, France	40	Experts	15	15	10
Nov 2015	Dublin, Ireland	>60	SHM	20	20	20
Dec 2015	Brisbane, AUS	10	SHM	7	3	
Feb 2016	Eindhoven, NL	25	SHM			25
Feb 2016	Wellington, NZ	12	SHM	3	6	3
Mar 2016	Stockholm, SE	10	SHM	4	3	3
Apr 2016	Dublin, IE	12	SHM	6	3	3
Jun 2016	Wellington, NZ	8	IEA	4	2	2
Jul 2016	Wellington, NZ	35	SHM, EX	10	10	15
Sep 2016	Coimbra, PO	70+	EX			
Oct 2016	Stockholm, SE	10	SHM	4	4	2
Oct 2016	Charlotte, N.C.	15	SHM	1	12	3
Jan 2017	Dublin	15	SHM	8	5	2
Feb 2016	Charlotte, N.C.	20	SHM		16	4
Mar 2017	Netherlands		SHM			
May 2017	Stockholm	10	SHM	4	3	
May 2017	Graz	15	SHM	1	12	
May 2017	Dublin	10	SHM	8	2	
Sep 2017	Graz	20	SHM		16	
Nov 2017	Stockholm		SHM			
Nov 2017	Wellington	30	SHM			
Mar 2018	Charlotte, N.C.	20	SHM	8	5	2

Seminars and conferences Task 24 was presented at (Phase I)

Date	Place	Total # Experts	# of countries	Type of meeting
8/5/12	Linköping, SE	20	2	Presentation to University
29-31/8/12	Basel, CH	~300	15+	Task Presentation at 3rd Intl Sustainability Conference
19/9/12	Helsinki, FI	20	3	Task Presentation to Finnish Experts
20-21/9/12	Helsinki, FI	~250	15+	Task Presentation and session chairing at BEHAVE conference
24-25/10/12	Berlin, GER	100s	10+	Attendance at EEIP 'Energy Recovery in Industry: Opportunity for energy efficiency' conference
13-14/2/13	Wellington, NZ	100+	6	National Energy Research Institute conference 'Energy at the Crossroads'
13/3/13	Paris, FR	30+	28	Presentation to IEA Secretariat Behaviour Workshop 'Choices, Decisions and Lifestyles Roundtable'
24/4/13	Utrecht, NL	50+	12	DSM Workshop 'The NL Polder Model', 2 presentations
7/6/13	Hyères, FR	450+	45	IEEE summer study, 1 presentation, 3 informal sessions
8/7/13	Nisyros, Greece	100+	10+	Task 24 presentation by Swiss expert at ELCAS
7/10/13	Copenhagen, DE	100+	15+	IEEE ISGT conference - also leading Consumer Behaviour panel
16/10/13	Luzern, CH	30+	10+	IEA DSM Workshop
8/10/13	Stockholm, SE	8	2	Presentation at Technical Institute Stockholm
11/10/13	Brisbane, AUS	25	2	Skype lecture to Qld University energy efficiency course
20/11/13	Sacramento, US	500+	15+	BECC Conference presentation
20/11/13	Sacramento, US	25+	6	Transport panel at BECC conference
2/12/13	Flanders, BE			Smart Grid conference
12/12/13	Bonn, DE			Expert Roundtable on Energy Efficiency & Behaviour in Developing Countries, German Development Institute
18/3/14	Wellington, NZ	>100	12	NERI conference
12/5/14	Brisbane, AUS	15	2	Lecture at International Energy Center
9/8/14	Washington DC, USA	<100/10000	>25	APA conference
4/9/14	Oxford, UK	<300	>20	BEHAVE conference
11/9/14	Berlin, GER	180	>15	IEPPEC conference
10/10/14	Brisbane, AUS	>10	2	IEC Skype Lecture
23/10/14	Sheffield, UK	>40	2	Seminar at Sheffield Hallam Uni
21-22/1/15	Milan, IT			ESCO lecture
14/1/15	DSM University (online)			Task 24 webinar

Phase II – Seminars, lectures and conferences

Date	Place	Total # of Experts	Type of meeting	Govt	Industry	Academic
26/05/15	Toronto, CA	40+	Seminar	10	25	5
11/06/15	Stockholm, SE	20	Seminar	20		
13/05/15	DSM University	>100	Webinar			
02 to 06/06	eceee summer study	500	Conference			
19/10/15	BECC	700	Conference			
28/09/15	Australia	20+	Lecture			
Nov 2015	Dublin	>60	Mini conference	20	20	20
Dec 2015	Australia	20+	Lecture			20+
Dec 2015	Eindhoven, NL	30	Lecture	10	20	90
Feb 2016	Wellington, NZ	50+	Workshop		50+	
Apr 2016	Vienna, AT	>150	Workshop			
Jul 2016	Wellington, NZ	>250	Conference			
Aug 2016	Monterey, US	>1500	Conference			
Sep 2016	Australia	20+	Lecture			20+
Sep 2016	Coimbra, PO	30	Lecture			
Oct 2016	Stockholm, SE	80	Conference			
Feb 2017	Charlotte, N.C.	12	Expert panel		8	4
Feb 2017	Wellington, NZ	>50	Conference			
Oct 2017	Sacramento	700	Conference			
Oct 2017	Australia	>20	Lecture			
Dec 2017	DSMU	300	Webinar			

Appendix B. Task publications

Task 24 Publications, films and reports

- IEA DSM [Initial Positioning Paper](#) on Behaviour Change*
- IEA DSM Task 24 [Final Workplan](#)*
- IEA DSM Spotlight Issues (6 stories so far)*
- IEA DSM Task Flyer 24 (updated and final)*
- [IEA DSM website Task 24](#)*
- Positioning paper and minutes from Brussels workshop*
- [Positioning and definitions paper](#) and UKERC report from Oxford 2012 workshop*
- 25 minute [professional film](#) summarising Oxford workshop
- [Template](#) for Models of Understanding Behaviour via Case studies in 4 domains
- IEA DSM Task 24 Pecha Kucha presentation (powerpoint/film)^
- 6 participating countries' Pecha Kucha presentations (powerpoint/film)^
- [Interviews of experts' own energy stories](#) (film, over 30 so far)^
- NZ World Café report-back (film/presentations/documents)^
- [ECEEE summer study \(2013\) paper on Task 24 by Rotmann and Mourik](#)*
- [ELCAS \(2013\) paper by Carabias-Hütter, Lobsiger-Kagi, Mourik and Rotmann \(2013\)](#)*
- BECC (2013) presentations on Task 24 and transport behaviour^
- [Overview of definitions](#) and how they were derived (powerpoint)*
- Overview of models of understanding behaviour (powerpoint/film)^
- NL, Swiss and NZ stakeholder analyses (Excel)^
- Implementation bloopers (powerpoint/film)^
- 10 presentations on various aspects of behaviour change models (powerpoint/film)^
- Interview with www.energynet.de (podcast)
- ["The Monster" Analysis of Subtask 1](#) (160pp report, wiki)*
- [The Little Monster storybook](#) (self-published booklet)*
- Green Growth Article (2013)*
- [Presentation](#) to Energy Savers Dubai, UAE June 2013
- Presentation and 3 informal workshops at eceee June 2013
- Task 24 presentations at RSE (Milan, Italy); Leeds University (UK); Linköping University (Sweden); Stockholm Technical Institute (Sweden); Grazer Energy Agency (Austria); Energy Efficiency and Conservation Authority and Ministry of Business, Employment and Innovation (both New Zealand); UCLI (USA); International Energy Center (Australia); Queensland Government (Australia); Sheffield Hallam University (UK)^
- Conference and workshop presentations at Utrecht DSM workshop (NL); eceee (France); ELCAS (Greece); IEEE ISGT (Denmark); Luzern DSM Workshop (CH); BECC conference (US); BEHAVE conferences (Finland and UK); Espoo DSM Workshop (Finland)^
- [Energy Expert Stories](#) short film
- Filmed presentations from Storytelling workshop in Wellington ([youtube](#))
- [ESCo Facilitators report](#) and [5 page summary](#) for Task 16*
- Articles for Energy Efficiency in Industrial Processes Magazine (<http://www.ee-ip.org/>)
- [Evaluation Paper for IEPPEC](#)*
- [Task 24 – Subtask 3: eceee 2015 summer study evaluation paper](#)
- [Task 24 – Subtask 3: From calculated to real energy savings performance evaluation: an ICT-based methodology to enable meaningful do-it-yourself data collection](#)
- [Task 24 – Subtask 5: eceee 2015 summer study storytelling paper](#)
- Six ST2 country case study reports (NL, NZ, SE, NO, AT, CH)*
- Eight ST4 country recommendations*
- Three ST3 reports*

* indicates reports that are on the [IEA DSM Task 24 website](#)

^ indicates presentations and films etc. found on the invite-online [online expert platform](#)

Phase 2 publications

(not highlighted are reports for National Expert use only or yet-unpublished reports):

Subtask publications:

- [Task 24 – Phase II: Work Plan](#)
- Subtask 6&7 – Draft Report The Netherlands: Executive Summary plus Annexes
- [Subtask 6&7 – Case Study Analysis – ICT Use in Higher Education – The Netherlands](#)
- Subtask 6&7 – Draft Report New Zealand
- Subtask 6&7 – Draft Report Sweden
- [Subtask 6&7 -Background for Green Leases in Commercial Office Buildings – Sweden](#)
- Subtask 6&7 – Draft Report Ireland
- Subtask 6&7 – Draft Report Austria
- [Subtask 8 – How to Create a ‘Magic Carpet’ for Behaviour Changers](#)
- Subtask 8 – *The A to Z of Storytelling in Task 24* (to be published)
- Subtask 8 – *Decision-making Tree for the ‘Monster Report’* (to be published)
- [Subtask 9 – ‘Dimensions of Energy Behavior: Psychometric Testing of Scales for Evaluating Behavioral Interventions in Demand Side Management Programs’](#)
- Subtask 10 – Overarching story (to be published)
- Subtask 11 – Designing a Behavior Change Programme for Hospital Facilities Staff (to be published)

Peer-reviewed publications:

- [Subtask 6 – K. Janda, S. Rotmann, M. Bulut and S. Lennander \(2017\), *Advances in green leases and green leasing: Evidence from Sweden, Australia, and the UK*, ECEEE Summer Study Proceedings, Hyères, France.](#)
- [Subtask 8 – S. Rotmann \(2016a\), *How to Create a ‘Magic Carpet’ for Behaviour Change*, ACEEE Summer Study Proceedings, Monterey, USA.](#)
- [Subtask 8 – S. Rotmann \(2016b\), *How to Create a ‘Magic Carpet’ for Behaviour Changers*, BEHAVE Conference, Coimbra, Portugal.](#)
- [Subtask 8 – S. Rotmann \(2017a\), “Once upon a time...” *Eliciting energy and behaviour change stories using a fairy tale story spine*, Energy Research and Social Science, Special Issue on *Storytelling in Energy and Climate Change Research*.](#)
- [Subtask 8 – S. Rotmann \(2017b\), *Task 24: Co-creating behaviour change insights with Behaviour Changers from around the world*, ECEEE Summer Study Proceedings, Hyères, France.](#)
- [Subtask 8 – M. Moezzi, K. Janda and S. Rotmann \(2017\), *Using stories, narratives, and storytelling in energy and climate change research*, Energy Research and Social Science, Special Issue on *Storytelling in Energy and Climate Change Research*.](#)
- Subtask 8 – S. Rotmann (in prep), *How magic carpets, monsters and fairy tale stories came to define a global research project on energy behaviour change*
- [Subtask 9 – B. Karlin, R. Ford and C. McPhearson Frantz \(2015\), *Exploring Deep Savings: A Toolkit for Assessing Behavior-Based Energy Interventions*, IEPEC Conference, Long Beach, USA.](#)
- [Subtask 9 – B. Karlin, R. Ford and C. McPhearson Frantz \(2016\), *Evaluating Energy Culture: Identifying and validating measures for behaviour-based energy interventions*, IEPEC Conference, Amsterdam, Netherlands.](#)

Articles, blogs, Spotlight etc:

- [Task 24 – Phase II Flyer](#)
- [Spotlight September 2015 – Task 24: Helping the Behaviour Changers](#)
- [Spotlight December 2015: New Publication – Task 24 Subtask 2: The ‘Energy Hunt’ in Austria](#)
- [Spotlight June 2016 – Task 24 and Annex 66: A beautiful collaboration is emerging](#)
- [Spotlight March 2017 – Task 24: Creating ‘Magic’ with non-state actors](#)
- [Spotlight June 2017 – Dr Sea Rotmann: DSM Day in Dublin – Behavioural insights on energy efficiency in the residential sector](#)
- Spotlight Sept 2017 – Hot of the Press! A new Special Issue on Storytelling
- [Energy News – Energy Projects need to center on End Users](#)

Workshop Minutes:

- [Subtask 6 and 7 – ECEEE Summer Study Task 24 workshop minutes \(2015 and 2017\)](#)
- [Subtask 6 and 7 – BECC conference Task 24 workshop minutes \(2015\)](#)
- [Subtask 6 and 7 – BEHAVE conference Task 24 workshop minutes \(2016\)](#)

- Subtask 6 and 7 – Canada Workshop minutes
- Subtask 6 and 7 – Sweden workshop minutes
- Subtask 6 and 7 – Ireland workshop minutes
- Subtask 6 and 7 – Netherlands workshop minutes
- Subtask 6 and 7 – New Zealand workshop minutes
- Subtask 6 and 7 – Carolinas Health Services workshop minutes (USA)
- Subtasks 6 and 7 – Combined workshop minutes

Online sharing and administration of Task 24

- Widely disseminated via @IEADSM on twitter (also @DrSeaRotmann and @RuthMourik), IEADSM [linkedin](#) and [facebook](#) groups; ECEEE and EEIP columns and various energy and behaviour linkedIn groups
- Weekly publication of [Behaviour Change & Energy News](#) by Dr Sea Rotmann
- Expert platform www.ieadsmtask24.ning.com
- Task 24 dropbox (www.dropbox.com) to share templates and collected models etc
- Task 24 wikipedia (www.ieadsmtask24wiki.info)
- Task 24 youtube channel (<http://www.youtube.com/user/DrSeaMonsta/videos?flow=grid&view=0>)
- Task 24 slideshare (<http://www.slideshare.net/drsea>)

Publications by See Change Institute and Dr Karlin

[Can be found here](#) and [here](#).

TASK 16 – INNOVATIVE ENERGY SERVICES PHASE IV – LIFE-CYCLE COSTING; 'DEEP RETROFIT'; SIMPLIFIED M&V; CROWD-FINANCING & ENERGY SERVICES TAXONOMY

Operating Agent:

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1. Summary

In Task 16 “Innovative Energy Services”, energy service experts and partners from countries around the world join forces to advance know how, experiences and market development of performance-based energy services. We view energy services as a market-based ‘delivery mechanism’ in order to implement energy efficiency and renewable energy projects in the context of energy policy and climate change goals.

Main subtasks are country-specific National Implementation Activities, an Energy Services Expert Platform for mutual exchange and support as well as national & international dissemination activities including the DSM University. Furthermore national & international stakeholder workshops are organized to discuss energy service topics relevant to the host country and to present and disseminate results of Task 16.

The Think Tank is the common research platform with previous publications such as the ‘Integrated Energy-Contracting’ business model, the ‘Facilitator’ concept, ‘Simplified Measurement & Verification’ of energy savings, Comprehensive Refurbishment of Buildings (‘deep retrofit’) business models or ‘Deep Energy Retrofits: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors’. In Phase IV “*Life-Cycle Cost; ‘Deep Retrofit’; Simplified M&V; (Crowd)-Financing & ES Taxonomy*”, which started in July 2015 and will end in June 2018, the Think Tank is working on Life-Cycle Cost appraisals, ‘Deep Retrofit’ of buildings; Simplified Measurement & Verification of savings (sM&V); (Crowd)-Financing for EE & RE projects and on energy services taxonomy.

For more information or to explore options how to collaborate, please feel free to contact the Operating Agent Jan W. Bleyl under +43 650 7992820 or EnergeticSolutions@email.de.

2. Objectives and accomplishments since last report

Subtask 19 – Energy Service Expert Platform

Objective: The platform is the internal and external communication hub of Task 16. It consists of the national experts, the operating agent, invited guests and cooperation partners. The platform hosts the internal experts meetings as well as public stakeholder workshops and other seminars.

Progress towards Subtask objectives

- A series of teleconferences with Task 16 experts to discuss and prepare a joint paper on life cycle cost benefit analyses of building deep energy retrofit in combination with Multiple Benefits

- Execution of the 20th experts meeting, held on 28-29 May 2017 in France. The main agenda items were presentation and discussion of national implementation activities, discussions on current Think Tank topics (Deep Energy Retrofit, Life cycle cost appraisals, Multiple Benefits) and dissemination activities

Subtask 19 + 23 – Stakeholder workshops (national & international)

Objective: The expert platform hosts a series of public national or international stakeholder workshops. They are held either back to back with expert meetings or as national stand alone events to discuss energy service topics relevant to the host country of the meeting and to present and disseminate results of Task 16.

Progress towards Subtask objectives

- Paper presentation as well a number of informal workshops at the ECEEE summer study

Subtask 20 - Think Tank for innovative Energy Services

Objective: Applied research, development and testing of innovative, performance-based energy service models and support tools => publication of the results.

Progress towards Subtask objectives

1. Joint paper *Building Deep Energy Retrofits: Using dynamic cash flow analyses and Multiple Benefits to convince investors* accomplished. Published and presented at ECEEE summer studies 2017. In close cooperation with all Task 16 experts and IEA ECB Annex 61. Furthermore the paper was selected for publication in a special edition of the Energy Efficiency journal
2. Some progress on our *Simplified Measurement and Verification Using Quality Assurance Instruments: A Proposed Concept for Energy, Water and CO₂-Saving Projects* paper: The manuscript was returned from journal 'Applied Energy' editor and invited for enhancement and re-submission for peer-review and (hopefully) publication to the journal. In close cooperation with EfficiencyOne, Nova Scotia, Canada. We also received an invitation for publication of the sM&V paper in the planned IPMVP journal which will be exclusively dedicated to measurement and verification topics.

Subtask 21 - Coaching of individual National Implementation Activities (NIA)

Objective: Support implementation of country specific national activities to develop know how and energy service markets

Progress towards Subtask objectives

- Implementation of the individual NIA plans to develop know how and energy service markets were followed up, the experts gave presentations and exchanged experiences and good practices during the last platform meeting and through teleconferences in between meetings

Subtask 22 – Dissemination and cooperation

Objective: Dissemination of Task 16 results and experiences through presentations, stakeholder workshops, publications, cooperation with other ES projects and the DSM University

Progress towards Subtask objectives

Publications and presentations at various national and international conferences and seminars were given, e.g.:

- Life cycle cost benefit calculation training: 1. for Greek bankers (July '17) and 2. South African project developers (August '17)
- ECEEE presentation on DER and MB (June '17)
- Integrated Utility Service (IUS) presentation and report on new business models for small island states in the Caribbean (in cooperation with GIZ and CARICOM) (June '17)

- Continuation of know how transfer and supervision for a start-up ESCo in Croatia => 1 MW_{el} wood chip gasification + CHP for heat & green electricity supply project (5,5 Mio EUR investment) and other RE and EE investments (crises management ongoing)
- Co-operation with other ongoing energy service projects and institutions:
 - ECB Annex 61 => 'Deep retrofit' business models
 - Linköping University => ES taxonomy and other topics
 - FH Pinkafeld - applied science university and TU Vienna => Master class and lecture on energy services

Subtask 23 - Management and Reporting

Objective: Project management and reporting

Progress towards Subtask objectives

- Regular management and reporting work. Preparation of Phase V (if initiated by ExCo)

Experts meetings/seminars/conferences held in past six months

Experts meetings

Date	Place	# of Experts	Type of meeting	Government	Industry	Academic
May 28-29	Belhambra, France	5	Experts meeting	1	4	0
April - Aug '17	Series of Telcos on sM&V paper	2-3 (each)	Experts meeting	0	2-3 (each)	0

Seminars/Conferences/Workshops

Date	Place	Participants	Type of meeting	Government	Industry	Academic
31. May	France	35	present.	10	15	10
12. June	Vienna, Austria	8	Lecture	3	5	0
03+04. July	Athens, Greece	24	Seminar	4	19	1
14-18. Aug.	South Africa	30	Meet./WS.	5	25	0

Publications/reports produced in the past six months

- *Building Deep Energy Retrofits: Using dynamic cash flow analyses and Multiple Benefits to convince investors.* Published and presented at ECEEE summer studies 2017 (in cooperation with IEA ECB Annex 61)
- Spotlight contributions

3. Objectives for the next six months

Subtask 19 – Energy Service Expert Platform

- Preparations for the 21th experts meeting in spring 2018 (exact date and location tbd, possibly back to back with ECEEE industrial summer study 11–13 June 2018 in Berlin)
The main agenda items will be presentation and discussion of national implementation activities, discussions on current Think Tank topics (Deep Energy Retrofit, Life cycle cost appraisals, Multiple Benefits) and dissemination activities
- Continue to hold expert platform teleconferences (e.g. on selected Think Tank topics such as life cycle cost analyses and multiple benefits)

Subtask 19 + 23 – Stakeholder workshops (national & international)

- Preparation of Task 16 inputs for a national 'Facilitator' workshop in the Netherlands (www.rvo.nl/epc-facilitators), to be held on October 6th in Utrecht.

- Preparation and presentation of a 2nd opinion for the selection of an EPC pilot project for the Swiss Federal Office of Energy and its collaborating ministries

Subtask 20 - Think Tank for innovative energy service models and support tools

1. Further development of our paper on *Building Deep Energy Retrofits: Using dynamic cash flow analyses and Multiple Benefits to convince investors* for publication in the Energy Efficiency journal (the ECEEE paper was invited for publication in a special edition of the Energy Efficiency journal). Joint work together with all Task 16 experts and inclusion of cooperation with researchers from the Central European University, Hungary on valuation of Multiple Benefits on the microeconomic level.
Preparation of a DSM university on the above paper.
2. *Simplified Measurement and Verification Using Quality Assurance Instruments: A Proposed Concept for Energy, Water and CO₂-Saving Projects*. Further development and follow-up of re-submission for peer-review and (hopefully) publication to the journal 'Applied Energy'. In close cooperation with EfficiencyOne, Nova Scotia, Canada

Subtask 21 - Coaching of individual National Implementation Activities (NIA)

- Continue implementation of individual NIA plans to develop energy service know how and markets.
- To follow up, experts will give detailed presentations and exchange experiences and good practices during the next platform meeting and through teleconferences in between meetings

Subtask 22 – Dissemination and cooperation

Publications, presentations or workshops planned:

- Facilitator workshop Utrecht, the Netherlands (06. Oct. '17)
- Life cycle cost benefit calculation training for project developers and bankers in the Caribbean (Sept. '17) and Asia (Nov. '17)
- Integrated Utility Service (IUS) pilot phase for small island states in the Caribbean (in cooperation with GIZ and CARICOM)
- Life-Cycle Cost workshop for evaluation of energy efficiency and renewable projects – presentations (Vienna, Nov. 2017)
- Task 16 Leonardo ENERGY DSM University webinar “Building Deep Energy Retrofit: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors” on 23. Nov. '17
- Continue co-operation with other ongoing energy service projects and institutions:
 - ECB Annex 61 => Deep retrofit pre-feasibility and bankable project analyses
 - Linköping University => ES taxonomy and other topics
 - TU Wien => Lecture on performance-based energy services
 - Fh Pinkafeld (University of applied sciences) => Masterclass on energy services

Subtask 23 - Management and Reporting

- Regular management and reporting activities + search for one or two more participating countries

Experts meetings/seminars/conferences planned in the next six months

Planned Experts meetings

Date	Place
ongoing	series of teleconferences
spring '18	tbd (ECEEE Berlin 06/18?)

Planned seminars/conferences

Date	Place
06/10/17	Facilitator WS, Utrecht

06+07/11/17	Vienna, Austria (Seminars)
11/10/17	TU Vienna (Lecture)
Oct. or Nov. '17	Stakeholder WS, Switzerland
28+29/11/17	Austrian Energy Agency (lectures)
Dec. '17 - Jan. '18	FH-Pinkafeld, Austria (Lecturing)

Reports/Publications planned for the next six months

- *Building Deep Energy Retrofits: Using dynamic cash flow analyses and Multiple Benefits to convince investors.* invited for publication in a special edition of the Energy Efficiency journal
- *Simplified Measurement and Verification Using Quality Assurance Instruments: A Proposed Concept for Energy, Water and CO₂-Saving Projects:* (hopefully) publication in the 'Applied Energy' journal
- Contributions to IEA DSM University, Spotlight and other shorter formats

4. Outreach of the Task – Success stories

In July 2017, a life cycle cost benefit (LCCBA) calculation training for demand side energy efficiency and renewable projects was held for 24 Greek professionals, most of them from the banking sector. The overall goal was to support 'bankable' project development and financing capacities in Greece for demand side projects. The workshop introduced the LCCBA and dynamic investment calculation concepts. The main focus was on practical, hands-on modeling and discussion of participant's own projects. The training was organized and financed by the German Development Corporation GIZ.

5. Ideas for new work

It should also be noted, that Task 16 will terminate in June 2018, unless the ExCo decides to request another continuation.

As an input to the ExCos thoughts on possible future work of the TCP, we would like to flag the topic of Multiple Benefits (MB) again. As we probably all agree, MBs offer very interesting perspectives on demand side energy efficiency and renewables and the opportunity to identify drivers and strategic allies for DSM programs and projects.

This approach is further encouraged by our work: In our recent paper we have developed a rather straight forward methodology how to factor MBs into a building Deep Energy Retrofit investment calculation by taking a look from a bottom up case study perspective. This approach could probably be transferred to other DSM topics as well. Results are turning out to be very interesting (among others with regard to the split incentive dilemma, where to put priorities and also for policy design).

This recent work reinforces our conviction that it is worthwhile and needed to put more applied research into MBs and that the DSM TCP could and should put it back on its agenda. If desired by the ExCo, Task 16 would be happy to help revitalize Task 26 (or in any another format).

6. Finance

An overview of the current budget situation (total budget, cumulative and %-spending as well as remaining budget) is displayed in the following table:

Subtasks <i>unit</i>	Total budget <i>EUR</i>	Cumulative spending <i>EUR</i>	% spent <i>%</i>	Remaining <i>EUR</i>
19 Energy Services Expert Platform	22.000	17.160	78%	4.840
20 Think Tank for innovative Energy Services	73.920	59.840	81%	14.080
21 Coaching of National Implementation Activities	14.520	11.440	79%	3.080
22 Dissemination & Cooperation (international + national)	15.840	13.200	83%	2.640
23 Management & Reporting (to ExCo)	37.840	26.840	71%	11.000
Subtotals	164.120	128.480	78%	35.640
Travel costs	14.700	11.025	75%	3.675
Other costs	2.880	1.500	52%	1.380
Totals	181.700	141.005	78%	40.695

Budget and cost accumulation by item (in EUR excl. VAT as of 1 September 2017)

The current Task 16 – Phase IV budget is 181,700 EUR (comprised of 3 participants x 3 years x 15,000 EUR/year + Belgium for 2 years x 15,000 EUR + GIZ for 1st year only x 15,000,- EUR + surplus of 1,700 EUR from Phase III).

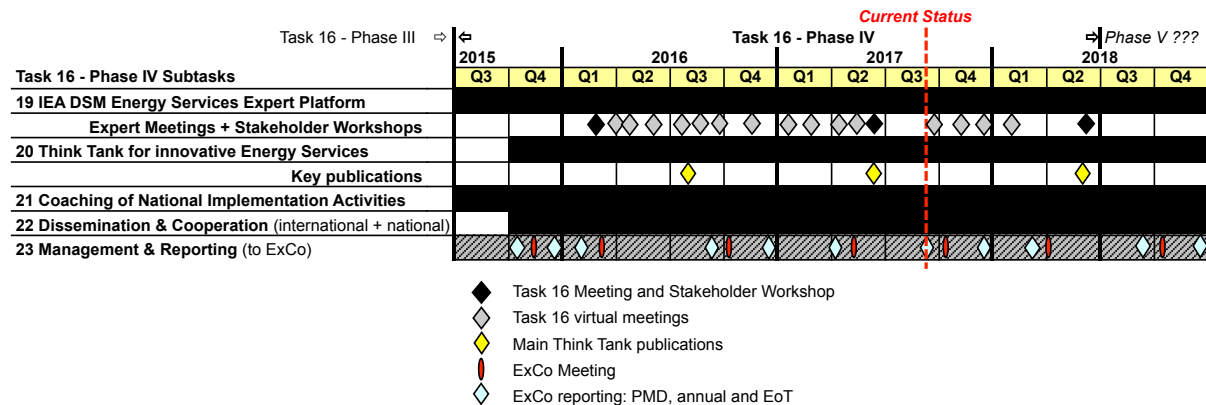
The spending of the last reporting period was 37,676 EUR adding to a total expenditure of 141,005 EUR, which equals 78% of the total budget.

The income during last reporting period was 15,000 EUR (against 30,000 EUR billed). This adds to a total realized income of 121,700 EUR (67% of total budget).

7. Activity Time Schedule

Task 16 Phase IV has started operation on 01 July 2015 and will end 30 June 2018

Task 16 - Phase IV Timetable (as of September 2017)



All scheduled events and reporting targets have been met.

8. Matters for the ExCo

Recommend the ExCo to approve the Task Status Update Report.

Provide guidance on future work after June 2018 please, if desired by the ExCo.

9. Participating countries

Belgium (*since July 2016*), EfficiencyOne Nova Scotia, Canada (*in kind*); Germany (*in kind cooperation with Annex 61 (Deep Retrofit)*); GIZ (*until April 2016*); The Netherlands; Norway; Switzerland (*in alphabetical order, as of Se Document G*)

TASK 25: BUSINESS MODELS FOR A MORE EFFECTIVE MARKET UPTAKE OF DSM ENERGY SERVICES

Operating Agent

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1. Summary

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

2. Objectives for the last six months

This Task started November 1st 2014 and phase 1 will end December 31st 2017.

Subtask 0: Pre-scoping

Completed.

Subtask 1

This subtask is dealing with all management issues.

Progress towards Subtask objectives: Ongoing for all objectives.

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

We performed an inventory of different existing business models, both in the participating countries and also including global examples of successful business models. In the different participating countries we analysed what business models exist, and what frameworks (market and policy) accompany them.

Progress towards Subtask objectives: completed for all objectives except the ones listed below.

- We are discussing with South Korea if it is worthwhile to organise a country workshop with service providers and clients in South Korea. If it is decided to do a workshop this will take place in the spring of 2018.

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

We developed 4 strategies and business models for potentially effective business models and services in co creation with national stakeholders, e.g. suppliers and clients. We did so in face to face workshop with the national experts and other relevant stakeholders and based on the

analysis in subtask 2. Next to the written deliverables we also developed the second version of the beta version of the online toolkit Fit2Serve for business developers where all lessons learnt are included in a self-assessment form. The tool will only be delivered as beta version in phase 1 of this task. A completion of the tool is foreseen for phase 2. In a paper written for ECEEE 2017 we highlighted guidelines with necessary policies and strategies of different stakeholders, and their timing, to encourage market creation and mainstreaming of selected business models in participating countries. Finally we are supporting additional 'piloting' activities in Austria and Sweden, where the toolkit Fit2Serve is to be tested with entrepreneurs.

Progress towards Subtask objectives: completed for all objectives except the ones listed below.

- We plan to write one final brief positioning paper (deliverable 6) on the topic of policy system, economic system and the development of energy efficiency services. We aim to finalise this paper by the end of November 2017, but might extend this deadline until beginning of 2018.

Subtask 4: dissemination and expert engagement

In this subtask we performed multiple activities and this task will be ongoing till the end of the Task.

Experts meetings/seminars/conferences held so far

Experts meetings so far (including past six months)

- 2015 January 8th Online webinar kick off Task 25
- 2015 March 10th Eindhoven Netherlands, Subtask 2
- 2015-2017 Many telco and skype meetings with individual experts
- 2015 Expert meeting Sweden December
- 2016 Expert meeting Switzerland January
- 2016 Expert meeting Austria January
- 2016 Expert meeting Stockholm March
- 2016 National expert meeting with representatives from Sweden, Norway, Austria, Netherlands, ECI and South-Korea, October 14th, Brussels-Belgium
- 2017 National Expert meeting at ECEEE summer study France with all experts except for South Korea who could understandably not come to this meeting, June.
- 2017, Expert meeting Norwegian experts, September 14th

Seminars/Conferences

Date	Place	Participants	Type of meeting	Number of attendees, always mix of government, industry, academia
30-03-2015	Cape Town	mixed	Conference	>100
October 2015	Halifax Nova Scotia	mixed	workshop	>20
12-13 November 2015	Paris, France	mixed	IEA workshop on influencing business behaviour	>45
November 2015	Dublin-Ireland	mixed	Short meeting To entice Ireland to participate in Task 25	2
19-11-	Webinar Task 25 DSM University	mixed	webinar	>150

2015				
December 2015	Stockholm Sweden	mixed	workshop	16
January 2016	Bern Switzerland	mixed	workshop	20
January 2016	Graz Austria	mixed	workshop	13
March 2016	Stockholm Sweden	mixed	DSM day	>150
March 2016	Stockholm Sweden	entrepreneurs	Expert workshop	14
May 2016	Linz-Austria, coinciding with Smart Grid Week	mixed	IEA meeting where our Austrian national expert presented the Task 25 work	?
September 2016	Behave conference Coimbra, Portugal	mixed	conference	>30
September 2016	Leadership Summit WGBC	mixed	conference	>200
October 2016	DSM Day Brussels	mixed	DSM day on Demand response and flexibility	>100
October 2016	Green World Building Council conference on renovation	mixed	conference	>200
January 2017	Webinar DSM university	mixed	webinar	?
April 2017	ESCO conference	mixed	Oral presentation	>100
May 2017	DSM day Ireland	mixed	Oral presentation	>100
May 2017	Interreg project meeting	mixed	brief presentation	>20
June 2017	ECEEE summer study	mixed	Oral presentation in Panel 1 (main room)	>60
June 2017	IEA Ministerial Energy Efficiency IEA Conference	mixed	Preconference panel debate on people, policy, technology; and next day mingling with many delegates	>100

Written reports produced (including in the past six months)

- Literature review user centric design in business models
- Report: Thesis with analysis of Dutch shortlisted cases and impact of user centered design and service orientation on business models
- Newsletter: Task 25 newsletter
- Report: Global analysis of business models, longlist and shortlist

- Newsletter: Spotlight issue on results of analysis
- Article: in the Swedish Magazine Energy Efficiency on the Task 25 work in Sweden.
- Report: D2 And D5 combined report with typology and description of existing services and business models in each participating country and their framework/ecosystem; Completed for all countries including Korea (before exco meeting October 2017)
- Report: D3 report with review of global business models and services in non-participating countries and their framework/ecosystem; delivered by CREARA
- 3 Papers: together these constitute D4: comparative analysis and key factors for success:
 - the ECEEE conference paper on the comparative analysis
 - paper submitted to the Journal for Cleaner Production on user centered design in energy efficiency businesses
 - Paper for special issue Energy Efficiency Journal on business models, capabilities and context.
- Newsletter: Spotlight article on findings so far in task 25
- Report: Contribution to the Energy Efficiency Market Report of IEA 2016

3. Objectives for the next six months

Phase 1 of the Task will conclude by the end of November 2017, two activities might take place after the official conclusion of Phase 1: see below.

Subtask 1 Task management: ongoing management

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

Potentially we will plan a workshop in South Korea in 2018

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

- Finalise the second version of the online toolkit Fit2Serve.
- Finalise D6 (brief positioning paper)

Subtask 4 expert platform

- Ongoing

Experts meetings/seminars/conferences planned in the next six months

Planned Experts meetings

Date	Place
October 12 th 2017	Presentation Task 25 at the IEA GRD meeting Copenhagen
October 25 th 2017	Netherlands, presentation Task 25 as part of the famous Dutch Design week
2017, tbd	Presentation at the Dutch Top Sector Innovation meeting to be planned between RVO and TKI

Reports/Publications planned for the next six months

- Positioning paper D6.

4. Outreach

See our dissemination activities

5. Ideas for new work: Phase 2 Task 25

See separate proposal for Phase 2 of Task 25

6. Finance

- Austria, Sweden and Switzerland, Norway, Netherlands have paid 100% of their contribution
- Copper institute has been delivering in-kind
- A pre-seed payment of 7500 euro was received in 2014 and paid back
- Korea joined the task, first payment received. Second invoice sent and guarantee that it will be paid before October 2017.

7. Activity Time Schedule for time and tasks left

- At the Canada 2015 ExCo it was decided to extend the Task with 1 year, with no additional payments required, but to accommodate later entries. The Task will run till December 31st 2017.

Subtask 1: Management of the task	May 2017	June	July	August	September	October	November
1.1 advisory board							
1.2 Annual Advisory Board (AB) meetings, exco meetings							
1.3 Overall project and financial and administrative duties							
Subtask 2							
2.5 Identifying existing business models and frameworks in participating countries SOUTH KOREA							
2.9 organising workshops In South Korea and Norway							
2.10 reporting results							
Subtask 3							
3.1 Developing toolkit and workshop format							
3.2 positioning paper							
3.3 piloting toolkit with some BM in Sweden (potentially)							
Subtask 4							
4.2 Dissemination to academic journals, participation in conferences, creation of outreach material							
4.3 Connection to and utilisation of IEA expert platforms							

9. Matters for the ExCo

1. Approval of Task Status Update Report.
2. Accepting potential workshop Korea in 2018.



10. Participating countries

1. Switzerland
2. European Copper Institute
3. Austria
4. Sweden
5. Norway
6. Netherlands
7. South-Korea

IEA DSM TASK 25-PHASE 2 BUSINESS MODELS FOR A MORE EFFECTIVE MARKET UPTAKE OF DSM ENERGY SERVICES FOR SMEs AND COMMUNITIES – NEW TASK WORK PLAN PHASE 2

Summary of Phase 1 of Task 25

In 2014, the Demand Side Management programme (DSM) run by International Energy Agency (IEA) started this research project on new business models for energy efficiency services (IEA, 2014). This research is part of a growing body of research aimed at understanding what is causing the apparent lack of market uptake of Energy Efficiency. (IEA 2015) new business models for energy services are considered to be a key delivery mechanism for Energy Efficiency and savings. (Boons and Lüdeke - Freund, 2013). A growing understanding is that in many business models underlying Energy Efficiency services, the supplier perspective is dominant. Too little attention is given finding appealing values that go beyond financial savings and profitability, values only appealing to a certain number of people (Hiernerth et al., 2011) (Arevalo et al, 2011) (Gentile et al., 2007; Vargo & Lusch, 2008). The premises behind this observation is that the current system (the established system) is technocratic and push oriented and a more user centered approach will be more effective in creating market uptake (Tolkamp et al 2017). This is directly related to the fact that service value is being co-created with the end user. No user means no service. Business models and energy services focusing on the customer perspective and their unique buying reasons for energy efficiency are considered to be the next step in creating a larger market uptake for energy efficiency (Nilsson et al 2012) (Hiernerth et al, 2011). The capability to identify user needs has been found to indeed correlate positively with profit generation and the increase in market share among other indicators, in other sectors (Janssen, 2015).

The key question guiding our work was if indeed these new types of business models and energy services are more effective than the so far rather technocratic and technology push approach type of business models. And if the dynamic capabilities of entrepreneurs and providers of services that facilitate a focus on this customer perspective and tailor their services (Teece, 2011) indeed contribute to a more effective uptake of the product and service. These dynamic capabilities relevant to user centered service development include sensing, conceptualizing, orchestrating, stretching and scaling (Den Hertog et al. 2010). We also investigated if a better alignment of the business model with context was helpful in delivering energy efficiency more effectively because a business model design is strongly influenced by context, e.g. existing legislation and available subsidies, other bottlenecks and constraints, and various players within the current energy production and consumption system. (Bidmon and Knab, 2014; Provance, Donnelly, and Cara Yannis, 2011; Geels and Schot 2010; Huijben and Verbong 2013; Mormann 2014). For a more substantial context analysis for each of the participating countries we refer to the country reports.

The creation of a user centered business model and value proposition, the dynamic capabilities of the entrepreneur/enterprise in navigating the context and user related issues and finally, the context in which the business model and service is deployed were therefore at the core of our empirical analysis.

These findings are based on an analysis of 46 business models in the Netherlands, Sweden, Norway, Austria, Switzerland and South Korea as part of the IEA Demand Side Management

Task 25, Together with national experts, we first drew up a longlist⁵ of more than 350 Energy Efficiency propositions we could find in the participating countries using a quick scan on internet and using the networks of the energy agencies involved. We focused on a mix of retrofitting, lighting, smart solutions and total solution (one-stop-shop) products and services. We explicitly excluded Energy Service Companies (ESCO) and Energy Performance Contracting (EPC) services for non-residential segments because these were already investigated in Task 16 of the IEA DSM. Based on initial information collected in this longlist we made a selection of propositions that would be further analysed to understand their business model, the accompanying entrepreneurial dynamic capabilities and their interaction with context. The selected propositions were chosen to represent variety in success (market share and market uptake) and in alignment or challenging relationship with the broader context (policy, consumer attitudes, regulations), thus representing either a clear fit or stretch relationship with context (Huijben 2015). The selection allowed for comparison of similar smart service, retrofitting, total solution and lighting propositions, operating in different political, institutional, technological, socio-cultural contexts.

We started fleshing out 46 business models using the business model canvas and customer value canvas designed by Osterwalder and Pigneur (2010). During this analysis of the business models, in each of the participating countries we organised a workshop with the entrepreneurs being analysed and other stakeholders from industry, academia and the policy arena to discuss our initial findings. What became quickly apparent is that the canvasses are a snapshot, while the underlying business is a very dynamic and complex entity which operates in a system, which is also very complex, with its own dynamics, something the research field has been researching extensively (Boons, F., & Lüdeke-Freund, F., 2012), but for the purpose of drawing out basic information about the business model and the value proposition the canvasses by Osterwalder, Pigneur and Clark (2010) were sufficiently adequate. To incorporate the more dynamic view on the business model we investigated the entrepreneur's journey for each of the 46 propositions as well, which is a description of the business and how it has evolved over time by means of interviews with either the CEO of the companies or the most relevant employee. Also, we identified how the system influenced this development by performing a context analysis by means of literature analysis of relevant material on the context, including grey literature such as websites (i.e. Eurobarometer, Eurostat), and or interviews with key representatives for industry, government, NGO, academia, business and other sectors. In order to collect our data the authors and national experts interviewed all entrepreneurs both on their business, their dynamic capabilities and their perspective on the system they operate in, and we focused on the user centeredness of the business model and the entrepreneur (Tolkamp et al. 2017). As such the data is a mix of self-reported material and material collected on the businesses from for example internet, or provided to us by the entrepreneurs, e.g. on market share and number of clients, turnover etc. ⁱⁱ

Key findings phase 1 and outlook for future research and activities: Phase 2

The findings in Phase 1 of the research of Task 25 are more or less general for many sectors:

- There are some major differences between a business model that is supporting a product compared to the business model that is supporting a service. Those companies that have made the adjustments towards service orientation do report a better uptake and thus are more successful than companies that have a product oriented business model
- In order to conduct a service oriented business (deliver services instead of a product), an entrepreneur needs to have developed at least four capabilities at an acceptable level: sensing user needs, conceptualizing, orchestrating and scaling.

⁵ For South Korea a longlist was not necessary given that South Korea joined later and could make a concrete selection based on lessons learnt from the other countries.

- The context the business model is operating in can be supportive, but also inhibiting the growth and success. Most policies for example are inhibiting service oriented business models and do not focus on the use phase, and essential phase for services.

Four main strategies can be identified with respect to how companies deal with a lack of uptake and context issues.

- The importance of this research is:
- The three levels of business model, entrepreneurial capability and context fit or stretch are strongly interrelated and in order to be successful, the entrepreneur has to improve on all these levels.
- The description of the service 'version' of the business model canvas has not been done before, and provides a new tool for business model analysis.

Implications

The outcomes of Phase 1 of the Task 25 research for the energy market, is that it provides new knowledge on how stimulation programs should be designed, as well as which initiatives need stimulation. On both national and individual business level there new knowledge was developed on how a business model should be assessed and can be adjusted in order to become more successful in the market. As most entrepreneurs seem to be more or less unaware of their options in this area, a quick tool to scan the business model has been developed (fittoserve).

Our research in Phase 1 was not comprehensive but did allow for the exploration and identification of interesting business models and strategies for energy efficiency focused services and how these could be supported by policy and or other institutional arrangements. We are however just starting to understand what the business models delivering energy efficiency services need to do to be successful, which sectors need what type of models, and what is needed from policy makers or other institutional players in terms of support. In sum, much more research and other activities are needed.

Below we briefly discuss the different topics and activities we feel are in need of more research and then continue with a proposal for a work plan for Phase 2.

Objectives/Subtasks for Phase 2

Subtask 2a: Increasing our comparison, including other sectors and going beyond energy efficiency to also understand sufficiency/circular economy type of business models.

In Phase 1 of Task 25 we focused explicitly on the following type of business models: retrofitting (focused on residential sector and intermediaries delivering retrofitting solutions to residential sector); total solutions, again mostly focused on residential sector and some SMEs; lighting solutions, and smart services such as smart metering, home (energy) management systems. We started with a fifth category (heating), but due to lack of suitable cases in all participating countries we had to abandon this category.

As described above, the contours of matches between one of our four business model strategies and a specific sector are emerging. To increase our understanding and keep up with the emerging trends we propose to include similar business models from other countries in our analysis, for example the UK and other participating countries in the IEA DSM TCP. In addition we propose to focus on an additional number of categories of energy efficiency business models. Part of this expanding of our focus we explicitly propose to start also exploring the business models focused on sufficiency and circular economy and how energy and efficiency are

embedded in these and also include combined business models of both Energy Efficiency and Renewables.

The list below is preliminary and it can be changed or increased based on needs of interested partners:

1. Broadening the scope to understand how the framework (business model, capabilities, context) applies to other sectors, specifically:

a. Demand Response energy service business models

Successful demand response business models are necessary for a good operation of smart grids. At present, most research on these type of business models focuses on identifying the value and business opportunities for the different type of stakeholders. Paradoxically, although by definition demand response services focus on the use phase, a critical element of success, namely incorporating the needs of the actual users or alternatively the providers of flexibility, is largely undervalued and user are often wrongly represented in the design creating important mismatches in use (Breukers et al, 2017) (Sissini et al. 2017). Demand response services focused on both residential sector and larger building types such as hospitals, universities etc. are mostly designed from a technocratic and supply (utility or grid actors) perspective, having technological and system requirements lead instead of user needs. Consequently, demand response services are not often combined with other (e.g. smart) and potentially more valuable services to end-users, e.g. combined with energy efficiency or multiple benefits. An additional challenge is that the owners of the building are sometimes not the actual user of energy and thus the provider of the flexibility. Instead of focusing on the 'traditional' technocratic and supply driven type of business models we would explicitly search for alternative models, for example such as Restore; a Belgian company that aggregates multiple loads, a demand aggregator, or Community driven Virtual Power Plants where community needs are leading.

b. ICT and (open) data based energy service business models

ICT and open data are considered key drivers for future energy services around for example smart grids and smart buildings, and their transformative role is being investigated by multiple stakeholders, including even the world bank (2012). What lacks investigation however, is again how user centeredness can be incorporated in these type of business models, for example in innovative use of data to for example design neighbourhood energy management systems instead of home energy management systems, or virtual power plants, or in models where ownership of metered data remains with the end-users and the collaborate to aggregate that data and sell it.

2. Deepening our understanding about how the four different strategies relate to specific sectors.

a. ICT and automation are very different sectors compared to retrofitting or insulation, and different segments such as households, SMEs and commercial buildings might also benefit from different business models and strategies. So far we do see a pattern where retrofitting business models seem to be centered mainly on the second strategy (reframing what you push), whereas the smart service for example, are often a hybrid between the second and the third strategy (pushing something else). and we wish to increase our understanding of such matches.

3. Deepening the understanding of the retrofitting sector.

a. All countries that participated in Task 25 phase 1 reported a difficult, traditional and fragmented market for retrofitting. The market is dominated by small, very product oriented contractors and installers and as a result, the house owner is 'lost' and insulation and retrofitting does not take of (as the unmet potential shows). Despite various stimulation programs, like subsidizing the material. With the knowledge and

insights of phase one (specifically: the need to take the use phase in focus, close interaction with the end user) phase 2 can zoom in on this specific sector and design the contours of a new and effective stimulation program.

4. Contributing to the development of new service business models for the energy sector.

- a. One of the key outcomes of phase one is the service oriented version of the business model canvas. The most important differences with the product oriented version are a different focus on the client relation (continuous relation, with the transaction as a starting point), the revenue model and the partner relations. Phase 2 can focus on these new, service business model building blocks and contribute to the knowledge about such service business model:

5. Deepening our understanding of different partnering forms in new service business models in the energy sector.

- a. Many new business models are emerging where users have new roles (other than client), but are also partner and sometimes users are even the main developers of the business model. This occurs for example when dealing with peer-to-peer or when community-to-business type of models where the users become aggregators. These new roles impact the business model profoundly. Not only the partner building block of the business model changes, with new roles, new interactions between provider and user/client, but it also impacts on the revenue model: e.g. business models using new payment schemes such as blockchain such as presented by David Shipworth at the DSM academy. And the resources block of the business models change for example because of the use of (consumer) data as a primary resource and activity in the model. All these changes are profound in the business model innovation field focused on the energy sector and under researched.

6. In the business innovation field in general, but in the energy sector in particular there is a dire need for research on cases that explicitly focus on delivering more than just energy efficiency, but that help create systemic change.

- a. These type of models for example aim to combine energy efficiency, renewables but also aim for sufficiency and or circular economy. In addition this is where multiple or additional benefits find a place in the business model, and multiple value creation is at the heart of the model. These business models are a vastly understudied field in the energy field. It is imperative to understand these models and their implementation. Only a few authors focus on this element. Hiteva and Sovacool (2017) for example discuss how the justice approach can be used to innovate business modelling and also focus on value such as influence on decision-making, participation and fair process. Bocken et al. (2014) discuss new sustainable business models where both stakeholder interests, societal and environmental needs are balanced. The research for this specific topic will lead to a deeper understanding of the underlying mechanisms in this specific type of business model. These include best practices, patterns in other (non-energy) sectors and their applicability to EE services.

Subtask 3a: Deepening our understanding of the issues explaining the inertia of EE uptake

In this subtask we want to explicitly focus on the role of agencies, governments (i.e. context players) in stimulating market uptake of energy services, especially for smaller companies. Few authors are investigating the impact of particular policy instruments on the viability of specific business models (Al-Saleh and Mahroum, 2015) or how public support can help businesses become more service oriented (Plepys et al., 2014). Plepys et al. (2014) conclude that the current market is biased against forward looking business models

that do not bring immediate benefits. Secondly, powerful market players oppose these business models because they challenge the competitive advantage of mass production

But much more research is needed, especially in the energy related sciences. Questions such as: what would be effective programs to stimulate demand (insulation and retrofitting), how to solve the hopelessly fragmented market of contractors etc. are in dire need of investigation? This is essential in the success as well as the process of servitisation. In order to tailor such a program to a specific national context, this programme will be co-created with local agencies. Below we explain the above need in more detail.

Service orientation in a business model, and a focus on the use phase to allow energy efficiency to be experienced by a user, for example in terms of the comfort it provides, or control, or ease, are clear drivers for successful uptake of an energy efficiency service. Based on the analysis of the 42 cases in Sweden, the Netherlands, Austria, Switzerland, and Norway we can conclude that those service oriented business models that indeed become big are able to become big thanks to a mother company. This mother company, for example a well-established utility, a university, or holding company, provides them with the following elements: access to a well-established client base and relationship, and therefore also valuable customer data, branding, money, to set up adequate user sensing dynamic capabilities and perhaps most importantly patience and thus time. The services are explicitly not yet commercially viable and therefore need time to experiment, stretch, learn, adapt. It can indeed be witnessed that big players in the energy sector such as General Electric, Schneider Electric, but also many utilities are turning (part) of their business towards this service model approach. GE for example launched Current, a company that blends advanced energy technologies like LED and solar with networked sensors and software to make commercial buildings and industrial facilities more energy efficient and productive is already worth a 1 billion dollar in revenueⁱⁱⁱ These type of business models and players benefit from taxes but don't really need targeted policy support.

In most countries that we analysed however, most firms providing energy efficiency services are very small (often under 10 people). These businesses have a very hard time (because of lack of a mother company and thus money and time to experiment and truly sense needs and options) to become really service oriented, and to stretch the context and are not likely to follow the aware market changer or stealth changer strategy. These companies are forced to follow the smart matcher strategy. As mentioned earlier, many of these smaller businesses are very dependent on context elements such as laws, regulations, and they need to develop dynamic capabilities on how to deal with the constantly changing and inherently complex and uncertain framework conditions, and to overcome internal organisation barriers (Smith and Raven, 2012; Chesbrough, 2010; McGrath, 2010). Most SMEs have hardly any capacity and resources to experiment and develop capabilities necessary to move away from a product and technology push approach. What these smaller business need to be able to also move away from the product dominant logic, stretch and challenge the existing system and start becoming more service oriented is room to experiment.

The importance of experimenting is also evidenced by the finding that business models that constantly reinvent themselves in response to changing frameworks are more successful (McGrath, 2010; Mullins and Komisar, 2009; Chesbrough 2010; De Reuver, Bouwman, and Haaker, 2013). This experimentation and or responsiveness is however not facilitated sufficiently by existing framework institutions such as public authorities. Public authorities should nurture energy efficiency entrepreneurs more.

We have not yet performed a comprehensive analysis of which kinds of policy support would best support the four models and strategies, and thus this is the aim of the next phase of this Task 25. In the next paragraph we explore briefly what the different kinds of policy support are

that are available and what might be potential valuable support for the four models. In phase 2 we would like to explore these hypotheses.

The traditional ways public authorities can nurture SMEs is through education, information and awareness creation; regulatory and fiscal frameworks^{iv}. The push harder/unaware market changer model and strategy's biggest barrier is their own lack of awareness on where they are positioned on the product-service shift, and these type of businesses' capability to sense user needs is underdeveloped and they experience a mismatch with what many potential clients need. For this type of entrepreneurs, information and awareness raising campaigns about the paradigm shift, targeting the entrepreneurs would be valuable (Mont & Lindquist, 2003). These entrepreneurs would also benefit from self-assessment information tools. But public authorities can of course also use other policy interventions such as business support schemes that focus on building up the necessary entrepreneurial dynamic capabilities such as sensing user needs, conceptualising and orchestrating. The Energy Agencies involved in this project did indeed organise such workshops with entrepreneurs and these workshops received positive feedback from the entrepreneurs stating that they were now much more aware of the business they are in, and their position on the paradigm shift and what that entails for their business model and necessary dynamic capabilities.

The reframing what you push/smart matcher model and strategy is well able to get to the transaction moment, selling their product and service combination. Their awareness about how to create a longer term relationship with their clients, into the use phase, and thus maximise the potential for energy efficiency and savings is less developed. These type of entrepreneurs need resources to be able to experiment with conceptualising, cocreating with clients to find out what value exists in the use phase. Policy support for this type of entrepreneur can take the form of subsidies for SMEs supporting co-creation or other sensing activities, or grants or subsidies to allow for experimentation with the delivery of multiple value and more collaborative and sustainable type of business models. But support can and should also take the form of training in dynamic capabilities such as conceptualising in incubators or in chamber of commerce type of networks. Public private partnerships such as KiCInnoEnergy have an important role to play here as well, not only delivering business modelling training and support, but with a clear focus on delivering service and value in the use phase.^v

The third model and strategy aimed at pushing something else and being aware market changers might yet be more supported with other policy instruments. What these type of entrepreneurs face is need for well-developed orchestration skills, and experimental space to learn about user needs. These entrepreneurs could be helped with policy support that opens up customer relations and quantitative and qualitative data on customers that can help businesses identify valuable customer segments. Many public authorities have very relevant open data about labels, infrastructure etc. that SMEs can use to perform a first sensing of user needs, for example finding out which homes might be in dire need of insulation. Policy instruments that might be used to support the development of the orchestration skills these entrepreneurs need are for example collaboration platforms focused on linking businesses with consumer organisations, governmental agencies, NGOs and with other businesses. These can be used to help the smaller businesses find suitable partners to create bundled services which then naturally are able to more easily provide multiple (also non-energy) value. Facilitating partnerships across sectors and including public private partnerships with for example NGOs creating trust by endorsing a type of service (brand independent), certification (when it is standardised and provided by trusted institutions) could potentially also be powerful market changers supporting this third type of businesses. Yet another type of support from public authorities that could potentially be helpful to this third type of businesses is the purchasing power of public authorities. They could be launching customers for SMEs focused on delivering services where energy efficiency is experienced in use. These contracts should then be opened up to serve as demonstration sites for others to learn from and experiment in. Metcalfe and others have stated that in fact,

(innovation) policy is about creating conducive context for organizations to engage in experimentation (Metcalfe, 1995; Metcalfe and Miles, 2000). Janssen (2015:120) makes an even stronger statement and states that: "In this respect, one cannot assume this is simply a matter of having the right funding instruments and framework conditions in place; weak innovation capabilities constitute a systemic failure that is detrimental for the processes of novelty creation within markets.... The observation that many firms lack dynamic capabilities and competences to realize new services (Sundbo, 1997), can be regarded as a strong justification for policy intervention." Authors such as Janssen (2015) and Rubalcaba et al. (2010) therefore argue that policy interventions such as the provision of business services aimed at enhancing these entrepreneurial capabilities of sensing user needs, orchestration, conceptualising, scaling and stretching would therefore be appropriate policy responses.

The fourth model and strategy hardly needs support, except potentially support in creating market pull, for example through more focus on multiple benefits of energy efficiency. The role that public authorities could play in creating more focus on the use phase needs much more research. There are several avenues for research. For example, regulation of feedback on energy consumption, improved and more frequent billing and Energy Performance Contracting for the residential sector. Other interesting foci are the internalising of externalities in the electricity or gas price for example, revisiting the system where the price of electricity decreases with increased use, the sharing economy, regulations with respect to healthy indoor climate, both residential and for buildings in general, regulation about reducing sick leave for companies through better work environments (lighting, heating, acoustics, ventilation).

Subtask 4a: Training, engaging and disseminating

One key experience in Phase 1 of Task 25 is that it is imperative to transfer our knowledge and findings to the relevant actors in different countries and settings. And simply communicating through a webinar or presentation is insufficient. **This type of knowledge needs to be experienced and worked with in a real life setting, investigating real business models, real policies and real users.**

Therefore we propose to

- set up a strong training system based on subtask 3 toolkit and workshop format; and to do roadshows with participating countries and or other relevant organisations in the countries identified by the participating countries (e.g. business development agencies, advisors) to train policymakers, entrepreneurs and other relevant stakeholders in more service oriented business modelling and the necessary ecosystem changes.
- In addition we aim to organise user centered business modelling interventions in different countries (including the users of the services). Which means we organize interaction between business model/ energy service developers and actual (potential) end-users to experiment with end-user centered business models.
- We also propose to set up a MOOC based on the task, in close cooperation with Leonardo academy/DSM university.
- Of course this activity would also entail a continuation of the more standard disseminating and communicating activities such as conference participating, journal paper writing, newsletter pieces, policy brief and proactively target other technical driven implementing agreements and offer them Task25-tools and cooperation.

Expected Outcomes

The second phase of Task 25 would continually contribute to its earlier set objective of identifying existing a variety of service and use phase oriented business models providing EE and DSM services to SMEs and residential users (individuals and communities), analysing promising effective business models and services for different sectors, identifying and supporting promising national energy ecosystems in which the

most promising business models can succeed, providing guidelines to remove barriers and solve problems, and finally working together closely with both national suppliers and clients of business models. The longer term aim of this Task is to contribute to the growth of the supply and demand market for energy efficiency and DSM amongst SMEs and communities in participating countries.

The benefits for the participating countries and for the DSM TCP will encompass: (of course, benefits depend on the definite focus of Phase 2.

- **Overview of additional existing business models/** user centered approaches in the different countries;
- **Insight in best practice business models** based on a comparison of business models in the participating countries;
- **Training and exchange of valuable knowledge and learnings** between EE business developers, service providers, researchers, policymakers and clients within and between participating countries;
- **Access to relevant stakeholders, documents, and state of the art in the research field** through participation in a new network of expertise and participation of this network;
- **Best practice guidelines for policy makers and institutional stakeholders** on how to support the uptake and creation of promising business models for energy services that effectively achieve load reduction at SMEs and residential communities. | actionable and tested programme for agencies as well as other context players to stimulate the uptake of EE services in their country.
- **Developed and tested framework for effective business models for demand response/circular/...**
- **New knowledge on the working mechanisms of the service oriented business model:** how to monetise add on-services; how to co-create and co-operate with multiple stakeholders etc.

The principal deliverables for Task 25 Phase 2 will be:

- D7: overview of business model strategies (business model, entrepreneurial capabilities and context stretch or fit actions) for each investigated sector or type of business, including a comparative analysis across countries;
- D8: Overview of the different types of policy and institutional support available to the different types of business models, where relevant country context and sector context sensitive.
- D9: Training road show
- D10: Outreach and dissemination material, including at least 2 academic/journal publications, MOOC, and other outreach material highlighting the Task's work.

Subtask 1: Task Management

Start date: month 1, end date month 24

Activities

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

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
1.2 Exco meetings												
1.3 Overall project management and financial and administrative duties												

Deliverables

- Half-yearly Task status reports
- Annual reports

Subtask 2a: Increasing our comparison, including other sectors and going beyond energy efficiency to also understand sufficiency/circular economy type of business models.

Start date or starting event: Month 1, End date: Month 18

Activities

1. Developing an overview of existing energy service business models in the participating countries for the chosen categories, including all the deepening questions listed in the text earlier
2. Comparative analysis of business models in different countries. Further testing our hypothesis on the four strategies for both business model and context interaction, including all the deepening questions listed in the text earlier
3. Organising one country workshops with business representatives and other relevant stakeholders to discuss the cases.
4. Creating an international report for each type of business model investigated, comparing the national cases.

Description of activities and timing

Subtask 2a	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. Identifying and selecting business models in participating countries												
2. In-depth comparative analysis												
3. Country workshop												
4. Reporting results												

Deliverables

- D7: overview of business model strategies (business model, entrepreneurial capabilities and context stretch or fit actions) for each investigated sector or type of business, including a comparative analysis across countries;

Subtask 3a: Deepening our understanding of the issues explaining the inertia of energy service uptake

Start date or starting event: Month 1, End date: Month 22

Activities

- 1 Investigating the different kinds of policy support are that are available and what might be potential valuable support for the four models
- 2 Developing sector and business model type sensitive recommendations for policy makers and other institutional stakeholders where relevant.

Description of activities and timing

Subtask 3a	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. Investigating policy support types												
2. Developing sector and business model type sensitive recommendations												

Deliverables

- D8: Overview of the different types of policy and institutional support available to the different types of business models, where relevant country context and sector context sensitive.

Subtask 4a: Training, engaging, disseminating

Start date or starting event: Month 1, End date: Month 24

Activities

1. Set up a training road show, with one training event per participating country and a training of participating country to enable them to give the training themselves.
2. Developing a MOOC
3. Traditional dissemination to external stakeholders and academia

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
1. Set up a training road show												
2. Developing a MOOC												
3. Traditional dissemination												

To travel to conferences and relevant workshops, to publish in academic journals and to develop dissemination and outreach material a travel budget of 20k is reserved.

Deliverables

- D9: Training road show
- D10: Outreach and dissemination material, including at least 2 academic/journal publications, MOOC, and other outreach material highlighting the Task's work.

Dr. Ruth Mourik: Operating agent.

Ruth Mourik has ample experience with running and or contributing to tasks for the IEA DSM IA (Task 24 and Task 25). In addition Ruth and her team at Duneworks (www.duneworks.nl) are expert in the field of DSM and the sustainable energy transition. Her specialisation on a wide variety of end-user themes will add valuable knowledge to the field.

MA. Renske Bouwknecht: Cooperating Agent.

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

National experts

Just as in Phase 1, the national experts have an important role to play in balancing the project between an academic perspective and competence and knowledge of the specific field of energy services. The project team has a strong interdisciplinary (research) focus and the national experts will therefore be key in providing access to knowledge and experience from the field of energy services within the within the different countries. The country experts will thus be actively involved in the work, and will also serve as facilitators and multipliers in their countries. It will be valuable if the experts/participants in the task have experience from practical application of energy efficiency (service) implementation and developing business models to deliver these EE services.

Financing partners of Task work plan and other collaborations

Task 25 has been running since November 2014 and its first phase yielded valuable knowledge on new business models in the energy efficiency field, the entrepreneurial capabilities needed, the on-going paradigm shift from product to service orientation of both policy and business, and policy issues related to up-scaling. The first plans for phase 2 were presented at the ExCo meeting in Dublin, May 2017 and Task 25 was asked to submit a proposal for Phase 2.

Countries/organisations that participate in phase 1:

1. Switzerland
2. The European Copper Institute (in kind)
3. Sweden
4. Austria
5. Norway
6. South Korea
7. Netherlands

Collaboration with other IEA DSM Tasks and IAs

In Phase 1, 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. In addition Task 25 created on-going collaboration with 4E EDNA (Steve Betelich). This task will continue to seek collaboration with the other on-going Tasks in the IEA DSM TCP.

Budget and hour breakdown

= 300 hours per country+ 50 hours management total

= country contribution = 37.500

Hours	DW	Ideate	National experts	
Subtask 1	50	50	0	
Subtask 2	200	200	100	
Subtask 3	200	200	100	
Subtask 4	200	200	40	
Total Task hour investment	650	650	240	
travelling + outreach materials				20000
TOTAL TASK BUDGET	65000	65000	Depends on country rules	Euro 150000

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 240 person-hours months total.

This includes:

- Undertaking part of the research and or writing work for selected parts of Task 2 to 4
- Attending 1 national expert meeting of the Task and preparing for them
- Hosting a maximum of two country specific meeting/workshop during the lifetime of the Task
- Carrying out the national dissemination activities, plus

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¹ Suggested reading includes Gassmann O. et al. (2016), Saebi et al, (2017), Boons, F., & Lüdeke-Freund, F.(2013).

¹ For a comprehensive overview of the methodology applied see the Task 25 Annex 1 report on <http://www.ieadsm.org/task/task-25-business-models-for-a-more-effective-uptake/>.

¹ <http://www.greentechmedia.com/articles/read/ge-launches-1b-energy-services-company-current>. It is unclear how this 1 Billion translates into kWh savings being realised.

¹ Also see the toolkit for policymakers developed by the Ellen MacArthur Foundation (2015) <http://ise.innoenergy.com/>

Task 24 – PHASE II: BEHAVIOUR CHANGE IN DSM – HELPING THE BEHAVIOUR CHANGERS

Operating Agent:
Sea Rotmann

1. Summary

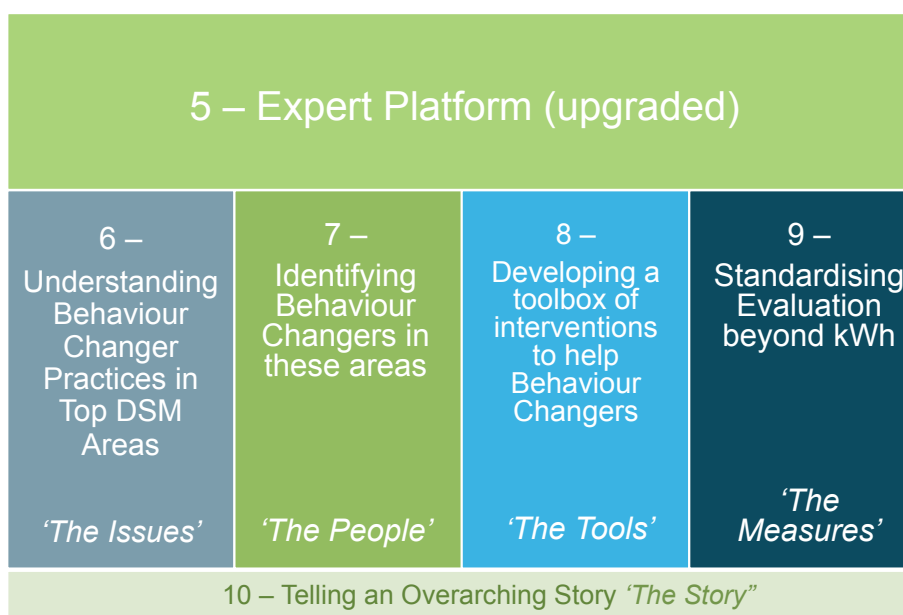
There is no behaviour change ‘silver bullet’, like there is no technological silver bullet that will ensure energy efficient practices. Designing the right programmes and policies that can be measured and evaluated to have achieved lasting behavioural and social norm change is difficult. We believe that this Task, and its extension, helped address these difficulties by developing guidelines, recommendations and examples of best (and good) practice and insights from various cultures and contexts. We rely on a large, global network of sector-specific experts (researchers, implementers and policymakers) from participating and interested countries to engage in an interactive, online and face-to-face expert platform and contribute to a comprehensive database of a variety of behaviour change models, frameworks and disciplines; various context factors affecting behaviour; best (and good) practice examples, pilots and case studies; and guidelines and examples of successful outcome evaluations. Phase I of this Task has been finalised in 2015 and Phase II (How to help the Behaviour Changers) will finalise in April 2018.

Phase II of Task 24 takes the theory into practice. Building on the solid theoretical foundations of [Phase I](#), we now look at the:

- What?
- Who?
- How?
- Why? and
- So What?

We use a *Collective Impact Approach* methodology and *storytelling* as the overarching language and bring together Behaviour Changers from all sectors (industry, government, research, service and the third sectors) with the end users whose behaviour they are ultimately trying to change.

The Subtasks of Phase II



For more information, visit www.leadsm.org



2. Objectives for the last 6 months

Subtask 5

Objectives

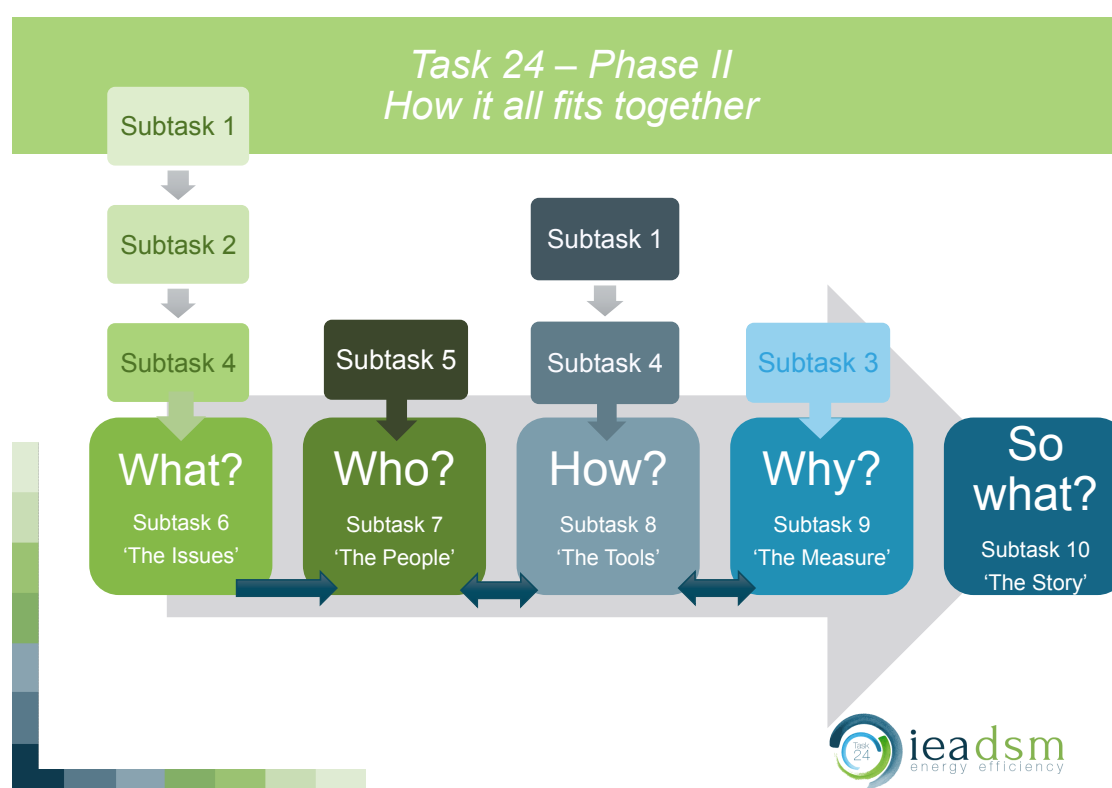
- Expert platform continually growing
- New content including presentations, videos and reports uploaded
- Continue publicising and dissemination of Task 24, including at international conferences

Progress towards Subtask objectives

Progress in last six months was highly satisfactory, we now have >245 experts on the expert platform. Its usefulness is coming to a natural end, as most information is now on the IEA DSM Task website and expert collaboration is undertaken via emails or in face-to-face or Skype meetings. We use the IEA DSM Events page to advertise workshops and conferences now. All final and draft Task reports are on the IEA DSM website, which has been updated recently. We continue having great success in matchmaking experts, spending time at each other's Universities, for example, or developing new research collaborations. Only recently, one of our US collaborators put us in touch with a recent graduate who will now start working in one of our New Zealand Middle Actor partners, the Sustainability Trust. The Task is widely known and enjoys a great reputation for this matchmaking role among behaviour change experts.

The dissemination and publicising of the Task is going extremely well, we have recently published two peer-reviewed papers for a Special Issue in the high-profile *Journal of Energy Research and Social Science* (ERSS). Dr Rotmann was also chosen to be co-editor for this [ERSS Special Issue](#) on "Storytelling and Narratives in Energy and Climate Change Research", the largest-ever Special Issue for this publication. We received 34 excellent contributions from all over the world. It has been published in the beginning of September and has already received strong support and accolades for providing a hugely valuable contribution to the subject of storytelling and energy. At the recent ECEEE summer study, the Task 24 'magic carpet' [display won the award](#) for "the most innovative and promising project or method" by the popular vote.

We were also asked to become project partners for [Clair City](#) and present Task 24 at their conference in Hungary in May 24, 2017. This large EU H2020 research project on air pollution will use the Task 24 ‘magic carpet’ framework in its stakeholder work. Our former project partner, Duneworks, is now leading the storytelling work in another H2020 research programme, called [Shape Energy](#). Their [recent publication](#) on storytelling in multi-stakeholder workshops clearly references and builds on Task 24 work. Ruth Mourik also represented Task 24 and the “people aspect” of energy use at the recent [IEA Global Conference on Energy Efficiency](#) where the question of “People, policies or technologies – which one is the most important?” was debated. Unsurprisingly (to us), the “people” aspect was [voted as the most important](#) by the global audience of top energy efficiency decision makers. We are also members of an international expert panel on behaviour change in healthcare (as part of our CHS case study), and work closely with the ACEEE behaviour unit. In addition, we were invited to become expert panel members on a panel on healthcare and energy at the prestigious Behavior, Energy and Climate Change (BECC) conference in Sacramento this October and technical steering committee members for the next BEHAVE conference in Switzerland in 2018.



Subtask 6

Objectives

- Building on work from Subtasks 2 and 4, develop lists of common top 3 DSM *implementable* issues and their potentials in each country
- Use the *Collective Impact Approach* and the Task 24 Expert Platform to research and review current approaches and practices, nationally and internationally, on these top issues and provide feedback from the different disciplinary perspectives and their collaborative discussions and negotiations from available case studies and narratives that could illuminate some of the approaches (based on work in Subtask 1, 2 and 7)
- Feed these cases, and the ones analysed in Subtask 1 and 2 into a *Toolbox of Interventions* (ST 8)

Progress towards Subtask objectives

Subtask 6 has now had over 25 workshops, in NL, NZ, CA, SE, IE, US, AT and at the ECEEE summer study (twice) and Energy Cultures, BECC and BEHAVE conferences. Another 4-5 workshops will round out this Subtask. We have started collecting lists of DSM interventions and energy efficiency and behaviour priorities in most of these countries and have created a report template, which has been filled in for Sweden, NL and NZ. We have discussed the top 3 issues during workshops and have decided on the following main interventions:

- *Powering tomorrow's neighbourhoods* via smart grid sharing in New Zealand;
- *Supporting building management operators in hospitals* to produce better documentation and communication of energy savings in Canada (on hold as the funding didn't eventuate);
- *Empowering building operators in hospitals to re-set BAS set-point overrides* in Charlotte, North Carolina (participant of Subtask 11);
- *Landlords and tenants co-designing green leases* in commercial buildings in Sweden;
- *Promoting better use of ICT in universities* in the Netherlands;
- *Using libraries as Middle Actors to distribute energy-saving kits* in Ireland; and
- *How to improve uptake in shared mobility platforms* with the goal to reduce fine air pollution in Austria.

Thus, we have shown that our tools and approaches are widely applicable to all domains we have studied in Phase 1 (building retrofits; smart technology; SMEs; transport) – and we added a few new sectors: hospitals, universities, office buildings and libraries. We have also undertaken some in-depth case study reviews on some of these interventions: the [Dutch ICT case in higher education](#) was contrasted with another Dutch University and Cambridge, UK; [green leases in Swedish office buildings](#) were compared with green lease insights in the UK, Australia, Ireland and Norway; and energy saving kit programmes using libraries as Middle Actors were compared between New Zealand, Australia, the US, Canada and Germany (in preparation).

Subtask 7

Objectives

- Identify, with help of the ExCo, National Experts and existing Expert Platform the most appropriate Behaviour Changers focusing on at least one of the top 3 DSM issues chosen by each participating country (can include the residential, business and transport sectors)
- Collect detailed information on their specific interests, organisations and past and current work, get each to tell their 'Sector Story'
- Use the Collective Impact Approach to initiate discussions between different disciplinary perspectives and sectoral contexts. An explicit focus will be on deepening the understanding of the political-institutional context Behaviour Changers are operating in and what it means for their capacity to take a more systemic approach to behavioural change
- Develop national Behaviour Changer dialogues in each participating country by holding (bi) annual workshops (1-2 days per country per year, all up maximum of 6 days per country - note some of this time includes work from ST 6 and 8)
- Foster mutual engagement, collaboration and shared learning amongst Behaviour Changers, enable them to build relationships on neutral, trusted ground
- Backbone support to set a common agenda, measurement systems, mutually reinforcing activities and ongoing communication between the Behaviour Changers
- Evaluate Behaviour Changers' impressions on the effectiveness of the Collective Impact Approach and use of narratives as a common language to overcome barriers
- Collect examples of successful matchmaking stories.

Progress towards Subtask objectives

Behaviour Changers have been identified for the top issues decided on in Subtask 6 for Canada, Sweden, Ireland, the Netherlands, Austria, US and New Zealand. Their sector stories have been told during workshops and we have initiated deep discussions around relationships, mandates,

stakeholders, restrictions and value propositions for each of the Behaviour Changers using the 'Behaviour Changer Framework' during workshops. Subtasks 6 and 7 go hand-in-hand and will be reported on together. A 150+ page Workshop Minutes document is available to all project funders.

Subtask 8

Objectives

- Use the *Collective Impact Approach* to unite Behaviour Changers from all 5 sectors on a specific DSM issue (both chosen in ST 6 & 7) and develop, in collaboration, a common agenda, shared measurement indices, mutually reinforcing activities (a 'roadmap'), continuous communication and the backbone support function necessary to make it happen. Evaluate this approach continually via stakeholder analyses
- Collect information for a *Decisionmaking Tree* to pick the most appropriate case studies and models of understanding analysed by Task 24 (ST 1, 2 and 6) and test its usability with the Behaviour Changers
- Develop the *common language of storytelling* further and provide different examples of using storytelling and narratives in practice and how to best do it in the specific areas of focus and each of the Behaviour Changers' sectors
- Identify all the tools in each Behaviour Changer's *Toolbox of Interventions*, analyse their pros and cons, risks and opportunities, where they fall short and how another tool from another Behaviour Changer could overcome this deficit
- Continued testing and development of the *Evaluation Tools* (ST 3) that can prove if a (toolbox of) intervention/s leads to actual, ongoing behaviour changes in practice. The Behaviour Changers will feed back on its potential applicability, risks and additional needs by working through (hypothetical or real life) examples chosen in ST 6 and using double-loop learning approaches to assess multiple benefits of interventions
- Collaborative development of a testable *Toolbox of Interventions* for each top DSM focus area, where each Behaviour Changer sector has clearly identified and measurable roles and responsibilities. This intervention may then be taken into a real-life setting and trialled in practice (either as ST 11 or outside of Task 24)
- The toolbox is built on *national and sectoral context specificities* but will be synthesised and tested (e.g. in the international conference (ST5)) for the general aspects that are of international validity (ST10 - the overarching story).

Progress towards Subtask objectives

The Special Issue on Storytelling for the Journal of *Energy and Social Science Research* provides [a very detailed and in-depth overview of cutting edge research](#) on storytelling, including our [own use of the fairy tale story spine](#). Our 'Behaviour Changer Framework' collaboration tool was published at the ACEEE summer study and the BEHAVE conference and won an award at the ECEEE Summer Study this year. We have successfully trialled design charettes to co-design a pilot intervention in the 2nd largest hospital network in North America, CHS, as part of Subtask 11. This work will be presented at this year's BECC conference and published with the ACEEE. Task 24, ACEEE and CHS will co-present a DSMU webinar on this exciting work on December 21. The Decision-making Tool has been drafted by Duneworks and we are collecting insights on multiple benefits of interventions in each of our country workshops.

Subtask 9

Objectives

- The goal of this research is to develop and validate a set of tools and metrics that can be used consistently for the evaluation of behaviour-based energy programmes, including but not limited to, eco-feedback, home audits, information and rebate programmes, and social games

- An in-depth assessment of current (best) practice, cultural and disciplinary idiosyncrasies, country drivers and needs and the best possible international standard (along the lines of psychometric tools like the IQ test - arguably not a perfect indicator of intelligence, but valuable in terms of enabling measurement and comparison).

Progress towards Subtask objectives

Karlin (the Principal Investigator of this Subtask) et al have published papers at the IEPEC conferences in August 2015 and 2016. These peer-reviewed papers outline the basics of the *Beyond kWh* toolkit they are developing for Subtask 9. The results from the psychometric testing were published on the IEA DSM website. This work was co-funded to the tune of ~US\$100,000 by PG&E and Southern California Edison and received very positive feedback at the BEHAVE Task 24 conference, attended by over 70 experts. As it stands, the tool will not be able to be validated in each of the participating countries as only 3 countries paid to contribute (instead of the 4 needed for the contract). However, the tool will be tailored and tested on the highly-relevant residential energy-savings kit trial in Ireland and its usability was also discussed in the Task 24 workshop in Austria in May. In addition, a version of the tool was adapted for the Swedish office sector pilot with the Swedish Energy Agency. We are proposing to find funding to develop different 'modules' for the tool, for example, in the commercial office sector (SE) or hospital sector (US and CA) with the new concept proposal for a "people-focussed work stream".

Subtask 10

Objectives

- Collate, analyse and distil all information collected in Subtasks 6-9. Develop an international, interactive handbook with guidelines and recommendations including:
- Evidence of the usefulness of following a Collective Impact Approach to solve complex whole-system, societal energy problems in practice.
- A decision-making tool from 75+ cases collected in Subtasks 1, 2 and 7.
- A practical guide on storytelling with the many examples and stories collected here.
- Overview of countries' and sectors' toolboxes of interventions, common findings and learnings.
- Overview of usefulness of the evaluation tools for each country and sector (as developed in ST 3 and ST 9).

Progress towards Subtask objectives

This Subtask will not start until end of 2017, as it is based on the completion of all workshops and Subtask 6 and 7 reports.

3. Objectives for the next 6 months

Subtask 5

Continue attracting experts to the Task. BECC conference, webinar and publishing of reports.

Subtask 6

Start writing issues reports and collate DSM lists in NZ, NL, AT, SE, IE.

Subtask 7

Will hold another 4-5 workshops in next 6 months (Netherlands (?), Sweden, Austria, New Zealand and Ireland). Will pull together most relevant Behaviour Changers in each participating country. Workshop notes all written up, workshop protocol finalised, all *Behaviour Changer Frameworks* (BCFs) animated.

Subtask 8

Continue working on storytelling and evaluation guidelines. Finalise Decision-making tree.

Subtask 9

Continue working on 'Beyond kWh' toolkit and see how we can best utilise it in AT, NZ, SE and IE.

Subtask 10

Will not commence until end of 2017.

4. Outreach

Outreach of this Task was successful and manifold. Two more papers and an informal session were presented at the ECEEE summer study. Another will be presented at the largest behaviour change conference (BECC) this year. Two H2020 research programmes and several non-state actors have engaged with, or built on our Task work.

Experts meetings/seminars/conferences held in past six months

Seminars/Conferences/Lectures

Date	Place	Participants	Type of meeting	Government	Industry	Academic
Oct 2017	Sacramento	700	Conference			
Oct 2017	Australia	>20	Lecture			

Experts and stakeholder meetings

Date	Place	# of Experts	Type of meeting	Government	Industry	Academic
May 2017	Stockholm	10	SHM	4	3	3
May 2017	Graz	15	SHM	1	12	3
May 2017	Dublin	10	SHM	8	2	0
Sep 2017	Graz	20	SHM		16	4
Nov 2017	Stockholm		SHM			
Nov 2017	Wellington	30	SHM			

5. Ideas for new work

Task 24 has put forward a concept paper for how to 'do behaviour change from A-Z', together with our project partner, [SEE Change Institute](#).

6. Activity Time Schedule

We are currently still on track to finish in April 2018, most country ST 6&7 reports and the ST8 toolkit will be finished then. However, the premature departure of our project partner Duneworks and the summer slump delaying completion of our Irish case study may mean the last reports will not be delivered until July 2018.

Based on 4 participating countries.

Subtasks	2015	2016	2017	2018
ST 0 Admin				
ST 5 Platform				
ST 6 Issues				
ST 7 People				
ST 8 Toolbox				
ST 9 Measure				
ST 10 Story				
ST 11 Pilots				

7. Finance

We have invoiced and received payment from 5 out of 5 countries for Year 1 and Year 2 and three countries for Year 3. Budgets are on-track.

8. Matters for the ExCo

Please accept this Status Update.

9. Participating Countries/Partners

Austria (only 2 years)

New Zealand

Sweden

The Netherlands (only 2.5 years)

Ireland

CHS in the US (Subtask 11 only)

Document I

IEA DSM PROGRAMME VISIBILITY COMMITTEE REPORT

Submitted by Dr Sea Rotmann, Visibility Committee Chair

Annual Report

The 2016 Annual Report, including a Theme Chapter on “What does DSM mean in your country?” was made available electronically to Executive Committee members, Operating Agents and the EUWP and EEWP by the end of January 2017 and was uploaded to the IEA DSM website. It was decided at the ExCo meeting in Stockholm, March 2016 that printed copies will not be available any longer, however the IEA would like to be able to print on demand and Anne Bengtson confirmed that a printable pdf version from the desktop publisher is already/will be provided every year. Executive Committee Members and Operating Agents were told to ensure that links to the report are distributed widely to all interested parties.

Website

The website has been updated and has been operational since July 2015. It has undergone annual maintenance and upgrades. All ExCo delegates and Operating Agents are strongly encouraged to review the whole website regularly, particularly areas relevant to their activities. It is very easy for information to become out-dated and it is particularly important to upload any new reports and publications as soon as they come out (also include them as headline news items by ticking the appropriate box). Operating Agents have considerable freedom to keep their own Task areas up to date, but other feedback, reporting of functions that appear not to work and suggestions for further improvements should be made via Anne Bengtson anne.bengtson@telia.com and/or the Visibility Committee. In particular, we would be interested to know how useful the social network links are.

Statistics

Total website hits:

September 1, 2016 to March 31, 2017: 7,168 Sessions, 4,820 users

Hits per day:

September 1, 2016 to March 31, 2017: 33.8

Average time on website:

September 1, 2016 to March 31, 2017: 2mins 38 seconds

Google Analytics

GA from September 1, 2016 to March 31, 2017 show 7,168 sessions (up from 5125) with 4,820 unique users (up from 1327) who spent an average of just under 3 minutes per session on the website, viewing an average of 2.5 pages. 65.7% of them were new visitors.

The breakdown of sessions by country is as follows:

	Country	Sessions	% Sessions
1	Russia	674	9.40%
2	United States	632	8.82%
3	United Kingdom	532	7.42%

4	Sweden	427	5.96%
5	Netherlands	325	4.53%
6	France	316	4.41%
7	China	295	4.12%
8	India	278	3.88%
9	Italy	275	3.84%
10	Belgium	274	3.82%
	All Others	3140	43.80%

Visits from Russia have increased substantially, however Russian visitors are less engaged than average, with an average session duration of just 27 seconds. Swedish users were the most engaged in the top 10, spending an average of 4 minutes and visiting 3.2 pages. Of note is a significant increase in engagement from Iran, with a 178% increase in traffic (145 visits up from 52) and an average time on-site of 11mins.

Downloaded reports for Tasks – we had 633 total downloads since Sept 1, 2016 (up from 91) of which 316 were unique files (including legal texts but excluding Spotlight newsletters which do not show up in this analysis). The top 5 topics for report downloads were: Task 17, Task 25, Task 24, EGRD and Task 13.

Maintenance

The maintenance contract for the website was up for renewal in June. The hosting charges have slightly increased and the outstanding costs have now been paid. From now on, there will be a slightly higher yearly charge to continue hosting the site, as indicated in the last report. Please note that the annual maintenance invoice is due and was made available to the new VC, Even Bjørnstad.

Issues

Members should review the website regularly and update their own work/interests, especially reports, any filmed workshops for youtube, presentations for slideshare etc. The website is only as good as there is frequently updated content available. Most updates are from Task 24 and the IEA DSM Secretary.

Spotlight Newsletter

In the past 6 months, two DSM Spotlight newsletters were published so far.

Articles in Issue 65/June 2017:

- DSM: How its definitions changed over time
- Deep Energy Building Retrofits: Using Multiple Benefits to Convince Investors
- IEA DSM at Work on Innovative Energy Services
- DSM Day in Dublin: Behavioural insights on energy efficiency in the residential sector
- DSM University

Articles in Issue 66/September 2017:

- Chairman's note
- DSM University
- US: What are the actual costs of saving energy
- Ireland: SEAI report, "Behavioural insights on energy efficiency the residential sector"
- IEA global conference on energy efficiency
- Task 24: paper in ERSS Special Issue, "Storytelling and narratives in energy and climate change research"

The next dates for submission to the Spotlight Newsletter issues are:

Issue 67/December 2017 – articles due 1 November
Issue 68/March 2018 – articles due 1 February

The Spotlight has a new look and Pam is looking for articles on DSM work in different countries and other work Operating Agents and Executive Committee members are involved in. The Programme has tremendous news to share so please continue to think about, suggest and submit future articles. The Editor is happy to work with you on an article in any form – completed article by you or someone else, information for an article that you would like for the Editor to write, a conference paper that the Editor can convert into a newsletter article or just an idea that you think would make an interesting article. If you have an article to contribute, please email it to Pam Murphy pmurphy@kmgrp.net. We are also looking for a country highlight for the December issue.

Issues

Four newsletters are proposed to be published in 2018.

Brochure

The brochure and inserts have been updated with the new logo and branding.

Task Flyers

Task flyers are up to date.

Key Publications

During the past six months several key publications have been added to the website:

- [TASK 24 – Advances in green leases and green leasing: Evidence from Sweden, Australia, and the UK](#)
- [TASK 24: “Once upon a time...” Eliciting energy and behaviour change stories using a fairy tale story spine](#)
- [TASK 24: Co-creating behaviour change insights with Behaviour Changers from around the world](#)
- TASK 16: [Building deep energy retrofit: Using dynamic cash flow analysis and multiple benefits to convince investors](#)

See latest publications: <http://www.ieadsm.org/publications/key-publications/>

Executive Committee members and Operating Agents are reminded that it is up to them to nominate publications to become “key” to the Visibility Committee Chair, Dr Sea Rotmann.

Social Media

The Implementing Agreement is getting more traction on social media. We now have a presence on:

- Facebook (IEA DSM Group) with 197 members and growing. Even though most posts are by Anne Bengtson, Rob Kool and Hans Nilsson, there are regularly posts and questions by other participants;
- LinkedIn (IEA DSM Group) closed as it was not utilised.
- Twitter (@IEADSM) with 486 followers and 1406 tweets. This is the fastest growing social media platform and has fostered a lot of great engagement, re-tweets and mentions.

Especially the Academic and Industry sectors seem to respond to this medium. Dr Sea Rotmann is posting for this group.

- IEA DSM Youtube Channel with 66 videos – 35 are Task 24 videos and 31 are DSM University webinars. We need more content from other Tasks. If we start filming some Executive Committee workshops, this would be a great channel to distribute visual information fast.
- Slideshare IEA DSM Programme Bengtson: static at 142 slideshares. Unless Operating Agents send their slides to the Secretary to upload with specific instructions to do so, the slides will become outdated.
- IEA DSM Task 24 Expert Platform - 245+ members, invite-only (www.ieadsmtask24.ning.com). Very successful multi-media platform to distribute findings from Task 24. The platform is also linked to a dropbox, a Wiki (www.ieadsmtask24wiki.info) and a Twitter.
- Templates have been developed for reports and power points, please use them and make sure to use the ones with correct fonts (NOT HelveticaNeuSt).

Communications Plan and Dissemination Strategies

The Visibility Committee Chair has written a communications plan for the Implementing Agreement and it has been signed off by the ExCo. In it, we analyse in detail our communications history, what works and what doesn't, who our audience is and how well we service them and how we can improve our plan going forward. It should ultimately include individual Task Dissemination Strategies to ensure that the website, Spotlight newsletters and social media channels are utilised well by all Tasks to report their findings and other relevant events.

Dr Sea Rotmann
Visibility Committee Chair

IEA DSM UNIVERSITY

1. Summary

The DSM University develops largely according to plan and in a steady pace where we can deliver in a way that creates confidence from users and interested parties. The “Heartbeat” of the DSM-U is the webinars that are delivered once a month.

The concept has attracted some interest from the IEA TCP family when presented at a conference in Milan in the presence also from the IEA CERT and EUWP chairs.

2. Objectives for the last six months

Webinars

There has till 2017-06-22 been arranged 33 webinars.

Leonardo changed the platform for administering all webinars where all webinars are announced (<http://www.leonardo-energy.org/calendar>) and it looks as if this has given us a wider audience (see attachment).

The webinars are recorded and both slides and supporting material is made available for registered users. There has been produced a flyer (<http://www.ieadsm.org/wp/files/DSMU-flyer-December-2016-corr.pdf>) that provides data on past webinars and on where material can be found for registration and downloading from Leonardo and from YouTube..

Contacts with the IEA Secretariat and IPEEC has been particularly fruitful and will be further developed. The University was presented and discussed at a joint TCP meeting in Milan in the presence also from the IEA CERT and EUWP chairs.

Some voices were raised that the IEA should have its own facility for webinars but it looks quite obvious that the cooperation with the Copper Institute benefits our outreach. Only the latest 9 webinars has attracted registrations from 120 countries (see attachment 1)!

3. Objectives for the next six months

Webinars

The webinars will be arranged and announced in a rolling 6 months plan.

34	Innovative Business Models for Scaling up Energy Efficiency	EESL India	Saurabh Kumar
35	PAT – An Innovative Programme to Promote Industrial Energy Efficiency	TERI India	Ajay Mathur
36	Building Deep Energy Retrofit: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors	16	Jan Bleyl
37	How to design, implement and evaluate behaviour change interventions in a sector that is often overlooked but has huge energy efficiency potentials: hospitals	24+	Rottman, Sussman, Cowan
	CANDIDATE LECTURES FOR the future		
	Applications in growing economies (Tanzania, Mongolia)	GIZ	Sven Ernedal?
	Municipalities (in Germany)	Wuppertal	Peter Henniscke ?
	Energy efficiency and renewables in Japan and China	Chalmers	Thomas Kåberger

Other guest opportunities

- a) Guest TCPs: 4E, ISGAN
- b) Policy issues: Club of Rome (Wijkman), Municipalities (Mayor NN), EE in buildings (Adrian Joyce)
- c) Planning and integration follow up on DSMU 31: Peter Lund (Helsinki University)

Attraction-knowledge

Problem: High quality content remains underexploited.

Solution: develop short policy briefs (~2 pages) post-webinar to re-promote content.

A “test” package of past webinars have been composed and sent to some universities as a teaser (Attachment 2)

“Tracks, Programmes and Certification”

Tracks: DSM for regulators, DSM for utility engineers

Future: Organising webinars into learning programs leading to certification

DSM 101: Basic elements of DSM and energy efficiency explained in short presentations that can be downloaded at any time

4. Outreach

The next issue is to find “outlets” willing to engage in making use of the material and put it into use in their regular activities. The organisations mentioned above have all shown interest but could be prompted further in particular now when our substance mass has reached some maturity.

The webinars will be more actively promoted on Facebook and LinkedIn.

5. Ideas for new work

Steps on the ladder

From this first step follows two more that successively builds the DSMU

1. Platform (to share)

Presently there have been 32 webinars most of them based on material from tasks that have been performed and some ongoing. This makes the platform for the DSMU and it has been shared with organisations that have similar objectives such as ISGAN, eceee, IPEEC, RAP and S3C (an EU project). Thereby the outreach is widened and the DSMU made relevant for bigger audiences.

The webinars are recorded and available both on LEONARDO and on YouTube. The Leonardo source also contains slides from presentations and extra material such as task-publications and articles/papers of relevance.

2. Substance (themes)

Next step, creating a substance of texts-presentations that can be replicated and used by interested parties according to their own wish, is in preparation. It goes under the workname “DSM 101” and will be a series of internet-based short courses (20-30 minutes each) on the themes for DSM:

- The logic of DSM
- Governance
- Energy efficiency - Load level (technical issues)
- Flexibility - Load shape (technical issues)
- Integration (with RES and distributed generation)
- Business models

1. **The Logic of DSM**, in which motivations and overview is presented in particular to decision makers and people who wants to see how issues connect to each other
 - a) **Strategies for DSM**
 - b) **The role of Efficiency and flexibility in systems (IDSM)**
 - c) **Actors, and their roles/relations, to make DSM a reality**
 - d) **DSM potential and costs (including rebound)**
2. **Governance (or DSM Management)**, in which incentives, cost/benefit, planning, evaluation and regulation are dealt with but also institutional behavioural issues such as barriers and biases.
 - a) **Incentives (carrots and sticks)**
 - b) **Evaluation**
 - c) **The plethora of benefits (and for whom)**
 - d) **Planning and regulation**
 - e) **Barriers and biases**
3. **Energy use (Load Level)**, technologies and measures to promote load level changes including strategic shifts of energy use to reduce carbon emissions.
 - a) **Obligations and certificates (applications and practice)**
 - b) **Network and grid issues**
 - c) **Equipment**
 - d) **Calculation**
 - e) **Business models**
4. **Flexibility – (Load shape)**, technologies and applications in DR systems and as regards customer benefits and participation
 - a) **Incentives (Pricing to reflect capacity needs)**
 - b) **Demand response practices and market segments**
 - c) **Technologies**
 - d) **Market models**
5. **Integration**, putting energy efficiency, storage and RES together to systems
 - a) **Preparing for integration**
 - b) **Practical examples**
 - c) **Incentives**
6. **Business models**, to deliver energy services
 - a) **Empowering users**
 - b) **ESCOs and EPCs**
 - c) **Municipalities**
 - d) **Market Transformation**

3. Consolidation

Finally there is a need for consolidation so (a group of) participants can rely on that the information provided has a stability and is meaningful in communication. This may call for a system of examination and that there is a responsibility for maintenance and updating. Preferably this will be established in cooperation with a university or an organisation that has reputation in the field of energy efficiency.

Several of our operating agents for different tasks have such roles and might serve as “midwives” for this final step.

6. Finance

	3m	6m	9m	12m	15m	18m	21m	24m	Budget (days)
Developing Products									
A. Webinars.	One every month (Scheduling by Chairs and secretary)								Moderation and communication by ECA (32)
B. 1. Task reports. 2. WEB-casts	Exists								
C. Issue-reports.		1	1	1	1	1	1	1	Duty of OAs (6)
D. Theme-Summaries.			2	2	2	2	2	2	Editing (7)
E. Blogs.	1	1	1	1	1	1	1	1	Compilation (12)
F. Key messages.			1	1	1	1	1	1	Writer (8)
G. E-learning.						x	x	x	Writer (6)
H. Expert advice.						x	x	X	-
I. DSM-U Café.	1	1	1	1	1	1	1	1	Moderation (8)
Management	2	2	2	2	2	2	2	2	(16)
Reporting	2	2	2	2	2	2	2	2	(16)
SUM									111 days at 1k\$

7. Matters for the ExCo

'Recommend the ExCo to approve the Task Status Update Report'.

Attachment 1: Where are the customers to the DSMU?

	<u>DSM</u> <u>U 25</u>	<u>DSM</u> <u>U 26</u>	<u>DSM</u> <u>U 27</u>	<u>DSM</u> <u>U 28</u>	<u>DSM</u> <u>U 29</u>	<u>DSM</u> <u>U 30</u>	<u>DSM</u> <u>U 31</u>	<u>DSM</u> <u>U 32</u>	<u>DSM</u> <u>U 33</u>
Afghanistan								1	
(AE) United Arab Emirates					2	1	4	2	1
Argentina							4	1	2
(AL) Albania	1	1	1		1				
(AM) Armenia	1								
(AT) Austria	4	2	2	2	3	6	5	10	14
(AU) Australia		1	1	1		1	2	3	11
Azerbaijan								1	
(BD) Bangladesh	2	1	2		1	1	3	1	
Belarus						1			
(BE) Belgium	32	29	31	32	22	22	28	27	22
(BH) Bahrain	1							1	
(BO) Bolivia, Plurinational State Of	1						1	1	
(BA) Bosnia And Herzegovina					1				
(BF) Burkina Faso			1				1	1	
(BG) Bulgaria		2	2	2	1		2	2	1
(BH) Bahrain		1		1					
(BR) Brazil	1	5	6	21	2	16	17	9	8
Cameroon							2		
(CA) Canada	7	6	4	10	7	7	15	15	18
Central African Republic									1
Côte d'Ivoire									1
(CH) Switzerland	4	3	4	4	1	9	11	8	14
(CL) Chile	1		2	2			6	5	3
(CN) China	1		1			3			1
(CV) Cape Verde	1	1		2	1	1	2	1	
(CZ) Czech Republic				1	1	1	1	2	1
(CO) Colombia	3	2	2	1	1	3	6	5	5
Cyprus									1
(CW) Curaçao					1				
(DE) Germany	8	9	10	5	4	14	23	25	56
(DK) Denmark	4	4	3	4	4	4	7	9	7
(EC) Ecuador					1	1	3	4	4
Ethiopia						1			
(EG) Egypt	2	1					1		
(DO) Dominican Republic	1								
Democratic Republic of the Congo								1	
(DZ) Algeria			2	1		1	2	2	2
(ES) Spain	11	7	9	5	5	4	22	17	39
(FI) Finland				1	5	1	7	6	10
(FR) France	8	7	8	5	6	11	16	19	28
(GB) United Kingdom	8	6	12	13	4	24	25	26	55
(GE) Georgia		1							
(GH) Ghana	1	1				3	2	1	
(GR) Greece	1	4	1	3	4	3	4	8	6

(GT) Guatemala	1						1	1	2
(HN) Honduras		1		1			2		
(HR) Croatia	2	2	1	1	2	1	6	4	4
(HU) Hungary	2	1	2			1	3	3	5
(ID) Indonesia			1				1	2	
(IE) Ireland	1	1	5	3	4	2	7	5	13
(IN) India	4	8	7	5	14	11	24	28	14
(IL) Israel			1		1	1	1		1
(IM) Isle Of Man			1						
(IR) Iran, Islamic Republic Of			1				2	3	2
(IT) Italy	8	8	8	5	7	6	14	14	14
Jamaica							1		
(KR) Korea, Republic Of		1				3	3	3	1
(KZ) Kazakhstan		1					1		
(JP) Japan	1		1	1		2		1	2
(KE) Kenya				1					2
Lebanon							2		
(LK) Sri Lanka	1	1	1	1		1		1	
(LT) Lithuania					1				
(LY) Libya			1						
(LU) Luxembourg	1								1
Malawi									1
Malaysia							3		1
(MA) Morocco	2	1			1	1	4	1	
(MK) Macedonia, The Former Yugoslav Republic Of	1	1	1		1	1	1	1	
(MN) Mongolia	1	1		1					1
(MT) Malta			1	1			2	1	1
(MX) Mexico	3	3	2	3	3	5	25	6	6
Monaco								1	1
Micronesia (Federated States of)							1		
Montenegro							1		
(MY) Malaysia	2					1		3	
Morocco							1		
(MZ) Mozambique	1								
Niger							1		
(NG) Nigeria	2	3	3	1	1	3	6	2	4
(NL) Netherlands	8		8	4	5	1	6	18	24
(NO) Norway		1	1				1		3
Oman							1	1	
(NZ) New Zealand	1								1
Panama							1		
(PE) Peru	2	2	2	1	1	2	4	3	1
(PH) Philippines	1					1	3		1
(PK) Pakistan					1			1	2
(PL) Poland	2	1	1	2		3	4	5	2
(PT) Portugal	5	6	10	7	7	7	13	20	11
(RO) Romania	1	1		1	2	1	4	2	1
(RS) Serbia	1	1					1	1	3

(RU) Russian Federation		2	2			1	2	1	1
Saint Lucia						1			1
Saudi Arabia						1		1	
(SD) Sudan		1				1			
Senegal						1	1	1	1
Slovakia								1	2
(SE) Sweden	4	5	6	8	10	3	15	5	12
(SG) Singapore		1	2			1	3	1	1
Somalia							1		
(SI) Slovenia	1	1			2	1		5	3
(SV) El Salvador	1				1			1	2
Syrian Arab Republic							2	1	1
Swaziland							1		
(TG) Togo					1				
(TH) Thailand	4	1	2	2	1		1	2	2
Trinidad and Tobago							5		
(TN) Tunisia	1	1	1		1	1		1	2
(TR) Turkey	2		2	2	1	1	1	6	6
(TW) Taiwan	2	2	1	2	1				
(UA) Ukraine		1	1	2		1	4	1	1
(UG) Uganda				1		1	4		
(US) United States	11	3	11	7	6	28	21	18	30
(VE) Venezuela, Bolivarian Republic Of		2					3	3	1
(UY) Uruguay	4		1	1		4		1	
(ZA) South Africa		1	2	1	1	1	5	3	4
Vietnam							1		
(ZM) Zambia			1				1	1	1
(ZW) Zimbabwe		1		1					
Registered	188	161	195	182	152	242	441	397	507
Sum countries reg	56	54	53	47	47	62	76	73	71
Sum countries abstained	60	62	63	69	69	54	40	43	49

Attachment 2 : DSM today and tomorrow. A selected package from the DSM University

The IEA DSM-Programme has been active since 1992 and has seen, and shaped, the development of Demand Side Management practices worldwide. To further disseminate the experiences made in the work we have formed the DSM University in collaboration with the European Copper Institute. The vehicle for this is to arrange monthly webinars and together with these provide reading material for users who want to dive deeper into the matter.

One of the questions often asked is where is DSM heading? In particular now when a great part of the world have embraced the idea that there is an urgent need to transform the energy systems and to find ways to ensure that the energy use is made efficient.

We have gathered some of the webinars in a package that can give an input to answering the question. How can we address the issues for next century (1), what can be done in the companies that use energy (2), how can efficiency be communicated for everyday purposes (3), selling verified energy services (4) and how can (must) business models be adapted (5). Please find a short description below.

Title	What is it about
<p>1. DSM for the 21st century http://www.leonardo-energy.org/resources/898/dsm-for-the-21st-century/ </p>	<p>DSM (Demand Side Management) has changed since it was first introduced in the 1980s as an active policy instrument to make energy systems perform better and more economically. In the years since and primarily in the early years of the new millennium technology has provided new opportunities with smarter applications, decentralised power making use of local renewable sources and with a booming IT for management. We rather talk about Integrated DSM (IDSM).</p> <p>Policy challenges to make energy systems sustainable and reduce (prevent) climate change has been more pronounced with the Paris accord as the ultimate example. Still market uptake is slow and well beyond expectations (and needs).</p> <p>It is time for DSM to shape up and deliver!</p>
<p>2. Energy efficiency: a profit center for companies http://www.leonardo-energy.org/resources/110/energy-efficiency-a-profit-center-for-companies-a-strategic-approach/ </p>	<p>Investments in energy efficiency not only result in a reduction of energy consumption —the energy benefit— but they also entail non-energy benefits such as improved product quality, reduced production time or improved comfort in sales area. Non-energy benefits significantly improve the business case of energy-efficiency investments in the business sector by raising their strategic character.</p> <p>Within this context, the aim of this webinar is to discuss a methodology to describe and analyse the industrial non-energy benefits of energy efficiency. Linking energy, operational, strategic and financial aspects, this new conceptual framework enables to move away from the common view of energy as a commodity (where the only goal is to save kilowatt-hours) to adopt a new perspective on energy and energy services as strategic value for businesses.</p>
<p>3. A brief history of energy efficiency labelling http://www.leonardo-energy.org/resources/106/a-brief-history-of-energy-efficiency-labelling-approach/ </p>	<p>Energy Labelling has progressively become a must-have in the energy efficiency policy toolbox. When implemented with care, energy labelling presents a face that energy efficiency –also known as the invisible fuel- often misses. Energy labels help end-use consumers to make more informed decisions when purchasing a product, equipment or system. Fascinating too is to see how energy labels facilitate and shape market transformation strategies when combined for instance with fiscal or financial scheme. What lessons can be learned from the implementation of the European energy labels? What are the possible options for consolidating such high -visibility policy instruments in the future? The presentation will recall the conditions of the elaboration of the first European labels, discuss achievements and share views to reinforce existing schemes.</p>
<p>4. Simplified Measurement & Verification for Energy,</p>	<p>Measurement & Verification (M&V) is a prerequisite to assess the quantitative outcomes and performance of energy, water or CO₂ saving</p>

Water & CO2-Savings

<http://www.leonardo-energy.org/resources/102/simplified-measurement-verification-for-energy-water-co2-sav-57a1d73662f4c>)

Motivation: From 'NWh' to saving cash flows.
How to simplify?

M&V is a prerequisite to:

1. assess the **quantitative outcomes** of saving measures,
2. translate physical savings into **cash flows**, e.g. for **re-financing**

But in reality, M&V of savings is:

1. always an **estimate based on calculations** => **accuracy?**
2. (perceived as) **complicated**: lack of data, resources and comparability between baseline and reporting periods...
3. a full scale M&V plan is not suitable, e.g. for **smaller projects**
4. not applied for **individual saving measures** (IPMVP options A&B) in ESCo markets (e.g. Germany, Austria)
5. often **not done at all** (particularly with in-house projects)

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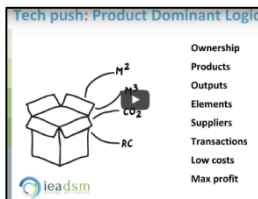
measures and to translate 'NWh' into savings cash flows for financing and other purposes.

Task 16 proposes simplified M&V approaches for electricity, heat, water or CO₂ saving measures in combination with so called quality assurance instruments to verify the functionality and quality of ECMs, but not necessarily their exact quantitative outcome.

We would like to introduce the concept and discuss applicability and limitations of these approaches.

5. What job is Energy Efficiency hired to do? A look at the business models

<http://www.leonardo-energy.org/resources/101/what-job-is-energy-efficiency-hired-to-do-a-look-at-the-prop-57a1d59d9eafd>



[energy-efficiency-hired-to-do-a-look-at-the-prop-57a1d59d9eafd](http://www.leonardo-energy.org/resources/101/what-job-is-energy-efficiency-hired-to-do-a-look-at-the-prop-57a1d59d9eafd))

This webinar focuses on first results of Task 25, a project aimed at learning about new business models and propositions that actually contribute to the market uptake of Energy Efficiency. We will discuss what type of business models and propositions work when, where and why. We will concentrate on learnings about the influence of user centric business development, the role of entrepreneur and his/her skills and the impact of wider context. Examples in retrofitting, smart energy services, heating, and lighting will illustrate the presentation.

Attachment 3: Content structure

	Business models	Integration	Flexibility - Shape	Energy Efficiency - Level	Governance	Logic	
					X		1. Evaluation
			X				2. Communication
	X			X			3. Procurement
					X		4. Planning
	X						5. Marketing
Priority (4 and 6)					X		6. Promoting DSM
	X						7. Market
			X		X		8. DSM Bidding
	X					X	9. Municipalities
	X						10. EPC
			X		X		11. TOU Pricing
					X		12. Standards
Obsolete ???			X			X	13. DR Resources
	X			X	X		14. White Certificates
				X			15. Networks
Priority 10 and 16)	X	X					16. ESCO
		X					17. Integration
					X	X	18. DSM and Climate
			X				19. Micro DR
	X						20. Branding
Priority ????				X	X		21. Calculation of
Priority (10 and 22)	X			X	X		22. EEO
Priority (19 and 23)			X				23. DSM and smart grids
			X		X	X	24. Behavioural issues
	X						25. Business models

Obsolete material
Closely related
Closely related
Never started
Closely related
Closely related
Not likely to finish

VOTE FOR CHAIRMAN

Two nominations have been received for Chairman before the ExCo meeting:

Even Bjørnstad
Peter Warren

At the ExCo meeting the below suggestion of having three Vice-Chairs will be put forward to the ExCo, and will require a vote.


The PPC, with vice chairs could serve as the interim (between ExCo meetings) board as a way to keep a basic momentum and sharing of responsibilities.

- There is a motivation to have a vice chair for finances because there will always be questions about this at the ExCO
- There should be a vice chair for ExCo support which should require contacts between ExCo-delegates and service to them to organize local activities. This vice chair could also have a responsibility for the outreach activities and in particular the DSM University
- There should also be a vice chair for development of Tasks both to communicate with the present OAs about how their Tasks could be developed in the future and to find out the need for new Tasks. This should be done in collaboration with other parts of the IEA structure in particular the Working parties (EEWP and EUWP)
- The Secretary should have the responsibility for the visibility issues since it will require a firm and executive mind to make sure that things do not slip away, but could be assisted by a vice chair for communication matters
- An OA could (or should) be assigned to the PPC to make sure that we do not forget operational issues.

Procedure for the election of Chair and Vice-Chairs

Elections shall be held for the Chair every two years, during the second ExCo meeting of the year.

- Any ExCo member is eligible to be elected Chair. Sponsors cannot be Chair.
- The requirements to serve as Chair are (1) able to spend the necessary time to plan the ExCo meetings, to respond to numerous requests from the Secretariat and elsewhere, and to provide the vision and leadership that the Programme requires; (2) broad knowledge of DSM and EE; and (3) a known ability to manage meetings.
- Nominations will be sent to the Executive Secretary prior to the ExCo meeting, the Executive Secretary will provide a specific deadline
- The Executive Secretary will confirm the willingness of each proposed person to be nominated and to serve for a two-year term, if elected.
- The list of nominees will be included in the PMD, if more than one name is listed, each



candidate will be asked to provide a one-page description of the challenge facing the Programme and how he or she plan to address them.

- Elections will be held at the end of the Second ExCo meeting of the year. Only those present may vote. Abstentions are allowed. ExCo members not present may send their vote, in advance of the start of the ExCo meeting to the Executive Secretary and those votes will be counted.
- If there is more than one candidate, a secret ballot will be used and the Executive Secretary will tally the votes and report the results.
- A majority is required to be elected.
- In case of a tie, a second vote will be held among those present and repeated until a winner emerges.
- The Chairman will be elected for a two-year term.
- The Chair may be elected for as many terms as the ExCo decides. If the ExCo is unhappy with the Chairman they must nominate someone who must win with a simple majority.

Vice Chair

- The ExCo shall have two VC whose role is to assist the Chair.
- The Chair will propose each and the ExCo will, by simple majority, approve each or not.
- If not approved, the VC candidate or candidates will be asked to leave the room and the ExCo will hear the pros and cons for each person.
- A second vote will be made to gain approval.
- If that fails, the Chair will be required to offer an alternate name or names.
- When a Chair steps down or is not re-elected, the VC term expires and after a new Chair is elected, he or she will propose new VC's for ExCo approval.

STRATEGY WORKSHOP IEA DSM 49TH EXCO MEETING, DUBLIN, IRELAND (SUMMARY)

12 May 2017

Participating countries/parties: UK, Belgium, USA, Switzerland, New Zealand, Sweden, Ireland, Nova Scotia, Norway, South Korea as well as representative from the EUWP, DSM Secretary and Advisor. Finland gave feedback to the questions per e-mail.

Action points after the discussion:

- A one-pager on the time requirements and main responsibilities for chair and vice-chairs
- A one-pager on the unique value added by the DSM TCP for communication with member states (parallel to and in line with the strategy)
- A short presentation on funding models of other TCPs (Svetlana)
- What support is needed from the EUWP/IEA? We can get it.

Meeting notes:

After a short presentation about the basic steps of the strategy development, the following questions have been asked:

Q1: *What value do you get from membership in DSM today?*

Q2: *How do you/your organisation contribute to the TCP today?*

Most of the participating countries and parties have expressed their appreciation for the international contacts, experience and insights that DSM TCP is bringing them. Networking and learning at the ExCo meetings and through participating in the Tasks has a clear value.

There has been expressed a need for a clearer definition of the value added by the TCP in order for the ExCo members to easier communicate and advocate for support/interest nationally. Today when the TCP has a broad scope (technology, market, policy and behaviour change) the communication can be experiences as diffuse.

Several countries have underlined the value of human-centred (or behaviour change) perspective, where DSM is the one TCP that is working on this perspective broadly (Ireland, Sweden, New Zealand). This was also supported by the EUWP representative.

Several countries (Belgium, US and Finland) reported mandate issues when it comes to working with behaviour change interventions, with regards to the distribution of mandates on the federal and regional/local levels.

Several countries appreciated the webinars under the DSM University.

Most countries are willing to contribute with the national networks and contacts, have either established or planned national coordination activities for the different TCPs as well as aid with communication and dissemination activities. Financing tasks in the current situation and the current structure is very difficult for most countries, several countries are currently reviewing their international engagements and/or have new governments with potentially different priorities underway. Nova Scotia pointed out that due to a different organisational model Efficiency One has a possibility for fast testing and implementation of methods and tools that are coming out as Tasks results.

The UK, supported by the EUWP representative, suggested a vision for DSM as a global hub for a systemic view on the DSM issues. DSM should be a cross-cutting programme rather than focus on electricity as there is a need for a holistic view on the energy use. Policy messages and policy relevance of the work are particularly important.



Discussion about the TCP focus

- The focus can be formulated as “Energy transition from/with a human perspective”. Issues such as sustainability and justice in the energy transition, as well as a non-growth paradigm were briefly discussed but the general opinion was to leave them outside the main focus
- The TCP should have a broad and systemic perspective on DSM. Energy use should be seen with a human need for energy as a starting point.
- The TCP should focus on replicability and scalability of actions/policies/interventions and methods; supporting real-life pilots
- The TCP should be geographically inclusive and recognise the energy access perspective
- The TCP is well-positioned to start strategic cooperation with other TCPs as a “hub” for human-centred energy perspectives

DSM STRATEGY 2017 (first draft)

Introduction

The IEA DSM TCP is requested to provide an update of its strategy till XXXX 2019 as a part of the ongoing procedure to test and validate the work for the future and to ask for a renewal of the mandate within the IEA structure of work.

In the following there is an updating and justification of the work in light of what is required by the “energy society” today when the common work to create sustainability and fight climate hazards (global warming) have been more pronounced. There is also an reflection and repetition of such guidelines that has been shown to be valid also for the future.

The material is organised as follows:

1. The challenge
2. Our role (as a TCP)
3. Our stakeholder relations
4. How to become operational

The main issues are:

Participating in a TCP is a way to get involved and achieve knowledge that is tailored to the participants own circumstances and that cannot be bought in a simple market transaction.

The vision and mission of the IEA DSM TCP is:

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

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

1. The challenge

1.1 EE First - what does it mean?

Rational logic demand efficiency

The world is basically agreeing that moving towards sustainability should be done in a logically rational way, meaning that the cheapest resources should be used first and the more expensive second. In order not to overspend this will mean that energy efficiency should be applied first (1) and once fully used the more expensive renewable resources (2) should be exploited, figure 1.

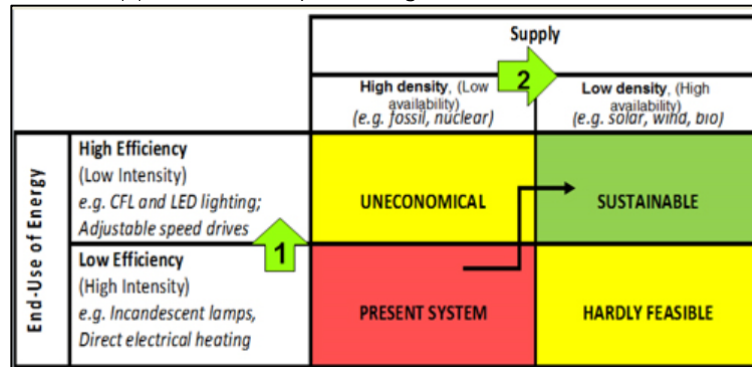


Figure 1: Merit order for moving towards sustainability

For practically most purposes energy efficiency is the cheaper solution and therefore the logical first choice, figure 2

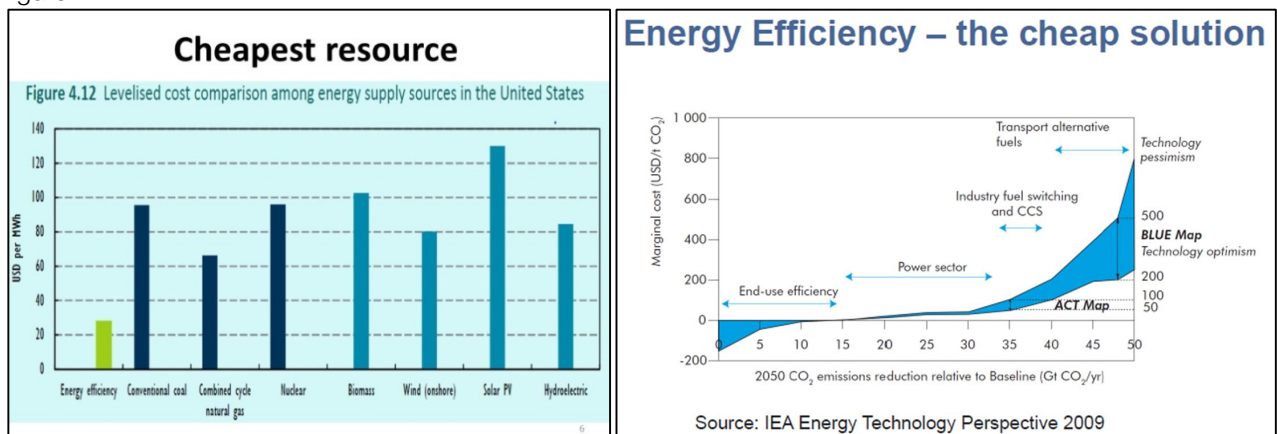


Figure 2: Energy Efficiency is the cheaper resource compared to any sort of supply (IEA 2015 Energy Efficiency Market Report) or compared to other means of GHG-abatement (IEA ETP 2009) as a “supply curve”

Sustainability may demand “sufficiency”

Furthermore in the use of resources it should be taken into consideration that many of them, even when economically used based on traditional calculation, may be overexploited since there may be hidden costs and that future research and discoveries may show scarcity.

1.2 Fundamental rethinking – how (and why)?

In reality the order is however often the opposite, decision makers put supply side measures first, and there is a need for a fundamental rethinking in everyday practice. It could appear as puzzling that such an obvious violation of intuitive economic wisdom happens but is at a closer look a natural consequence of societal tradition and organisation.

The urgency of the issue has been emphasised by the widespread acceptance and understanding of global warming which has however resulted in a drive for alternative solutions. This is on one hand good but could also have a downside when not yet fully tested solutions/technologies are forced to the market in big volumes.⁶

⁶ An example could be the fast changes to electrical cars for transportation. The associated battery technology could result in a pressure for raw materials and in a fast growth of waste batteries that need to be administered. The same thing has happened with CFL-lamps in several

Traditionally the energy system has been organised as a way to distribute power from a central resource to a multitude of users. The technology has left few choices except to buy what is offered in quantities defined by the available technology, “How many lamps of a defined size do you want?” Choice of technology (type and size) to satisfy the demand is relatively late as an option. Choice of supplier and technology for supply (renewable or other) even later.

The societal involvement on the supply side is old and natural since there is a need to regulate how common resources are used and exploited and the actions are guided towards a few actors that wish to make use of resources and/or space.⁷ Involvement on the demand side is regarded as less natural since it could conflict with individual choices.

In consequence there is still a strong tendency to overexploit resources and disregard the opportunity to “do more with less”. Not the least to disregard the “multiple benefits” that would follow from a more clever use of energy by application of more energy efficient solutions. There is a case for **Fundamental Rethinking and wider use of Demand Side Management (DSM)**. There is a need to develop e.g.:

- Incentive structures to better use (in an economic sense) of the many benefits (POLICY)
- Business models that rewards market developments (MARKET AND ORGANISATION)
- Innovations that makes new technologies more available (TECHNOLOGIES)
- Behavioural issues and their importance for a transition. (BEHAVIOUR AND ECONOMY)

1.3. DSM is an evolving concept

DSM is a universal issue but understood very differently throughout the world depending on local circumstances, priorities, business' tradition and market organisation. It has further evolved with the changes in availability, cost and performance of technologies.

“In broad terms, demand-side management (DSM) refers to actions undertaken on the demand-side of energy meters. The field has moved from defining DSM purely in terms of load management activities undertaken by utilities to a much broader definition: “Demand-side management (DSM) refers to technologies, actions and programmes on the demand-side of energy meters, as implemented by governments, utilities, third parties or consumers, to manage or decrease energy consumption through energy efficiency, energy conservation, demand response or on-site generation and storage, in order to reduce total energy system expenditures or to contribute to the achievement of policy objectives, such as emissions reduction, balancing supply and demand or reducing consumer energy bills.” (Warren, 2015)”

Tradition and current issues

In the early days of DSM the technique was further primarily focusing on application of alternative technologies that could reduce the demand but still deliver the required services (heat, power, light and cooling) to customers. With growing awareness and development it has been gradually shifting also towards behavioural changes both with customers and with business organisation as means to bring about the necessary changes.

markets where authorities pushed the alternative lamps but where unprepared to handle the waste.

⁷ There has been a strong policy support e.g. for solar and wind
<http://www.iea.org/newsroom/news/2017/june/commentarythe-success-of-wind-and-solar-is-powered-by-strong-policy-support.html>

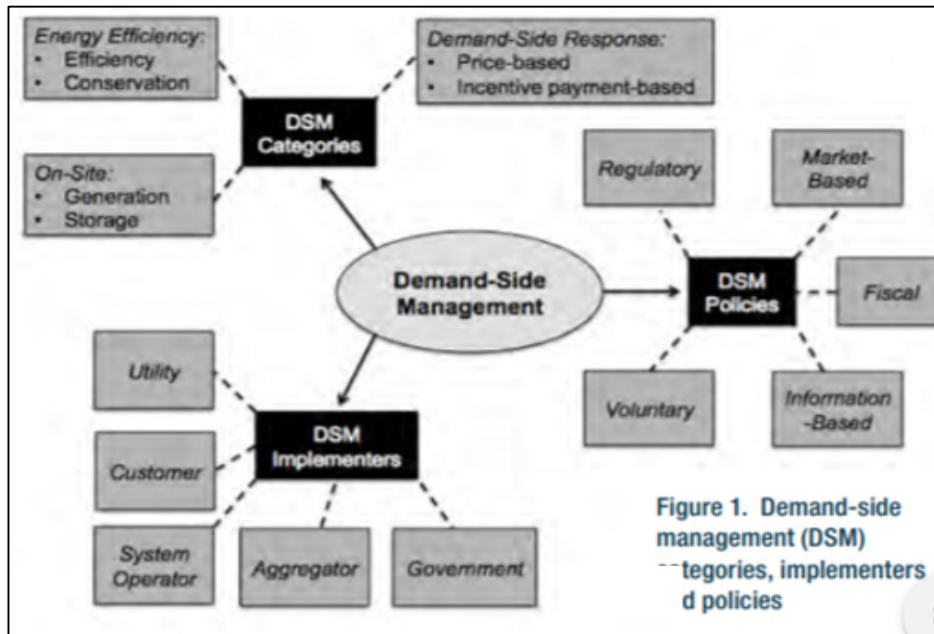


Figure 3: DSM Categories, Implementers and Policies (Warren 2015, as reprinted in DSM Spotlight 65 [http://www.ieadsm.org/wp/files/65.IEA DSM Spotlight June 2017.pdf](http://www.ieadsm.org/wp/files/65.IEA_DSM_Spotlight_June_2017.pdf))

The task for DSM was to create and ensure that the energy system was economical and robust. It should be a system that was reliable and affordable. With today's challenges and in particular the growing technical opportunities that allows consumers to actively participate also as suppliers of energy to the system and use smarter technologies these issues remain but has also got new features. Information technologies provide not only new opportunities but also new threats e.g. in terms of reliability and integrity.

Emerging issues

The IEA method for analysis is based on the ASIF-method originally developed by Lee Schipper. This method describes the resulting emission of carbon dioxide as built on the factors (see appendix 1 and figure 4 below):

$$\text{Activity} * \text{Structure} * \text{Intensity} * \text{Fuel}^8$$

For the DSM focus has been on Intensity (Kwh/Service) as the main expression on efficiency. Structure (Service/Activity) comes gradually more in focus when "sufficiency" and behaviour are considered. The problem here is not to be normative. Fuel also comes more in focus when the relation between local energy supply and demand is being considered.

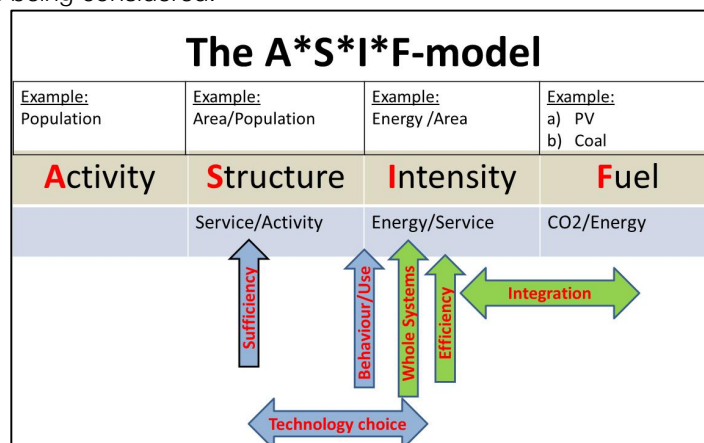


Figure 4: The ASIF-model applied to DSM

The main issue for the activities has been to improve and widen the use of efficient demand alternatives either as products (e.g. efficient motors) or as whole systems (e.g. efficient motor systems including

⁸ Compare with the Kaya-identity <http://archive.unu.edu/unupress/unupbooks/uu17ee/uu17ee00.htm>

variable speed control and piping/ducts for flow control) and gradually to integrate these efficient alternatives with efficient (decentralised supply).

In the future there could be further emphasis on behavioural economics as well as on individual behaviour and use of (access to) services as well as on “sufficiency” and choice of technologies to satisfy the needs in a way that also reduces carbon emissions.

Energy efficiency (and DSM) could further develop as regards the scope of the business, see figure 5 below.

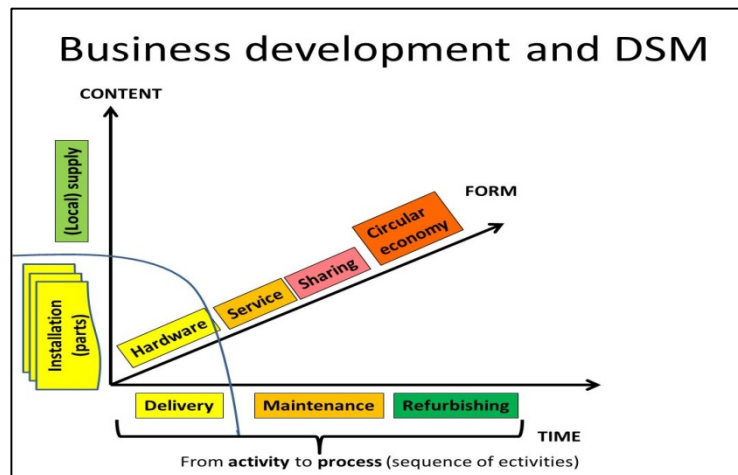


Figure 5: The scope of energy efficiency (and DSM) in a changing market context

2. Our (the IEA DSM TCP) role

2.1 What does the DSM TCP provide that is different?

Participating in and IEA DSM Programme task is different from any other method to develop knowledge in a specific area and topic. Sometimes it is argued that the knowledge an administration or a company would need could equally well be acquired from the market by engagement and hiring a company with adequate skill. Indeed there are several that have good staff and can deliver outstanding products. But often the knowledge asked and wished for, and that can be transferred to operational material and routines, is of a different nature.

A consultant can deliver raw material that may be absolutely essential for the buyer and that can be the foundation for the services, but consultants cannot deliver experience and networking contacts from others that have faced the same problem as you have! Such experience can only be delivered face to face

- Often there is a need for experience of “Best practice”. But best practice is ever so often derived from less good practices (and even failures) that are seldom reported. The only way to learn is to hear and learn from someone that has travelled down the same road and is prepared to tell about the rocky road they have been upon
- Changes and experiences often have developed with small insignificant details that are not seen when the final result is delivered and known as a SUCCESS! It could have to do with staffing, education, organisation etc. Things that can be totally crucial but overlooked once the result is there.

Participating in an IEA DSM task gives insights that can never been bought on the market. It is insights that are developed in an active networking between partners that are prepared and requested to give and take their own experiences and do so in collaboration under the leadership of an Operating Agent. Therefore the final result is also an Intellectual Property that is of higher value and can be more easily transferred to final operational result in your own daily activities!

Participating in a TCP is a way to get involved and achieve knowledge that is tailored to the participants own circumstances and that cannot be bought in a simple market transaction from a commercial company.

2.2 VISION

The main issues for countries participating in the DSM Programme are:

Security of supply

For 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 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.

Reduction of greenhouse 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 Paris Agreement on climate.

Delivery of multiple benefits and raising of energy productivity⁹

Energy efficiency is strongly connected to several benefits that the energy service provide, some of them easy to identify but most of the hard to quantify, e.g. industrial productivity, health in buildings, energy prices, poverty alleviation and job creation.

Reduction of energy poverty

In many countries energy poverty is a pressing issues when energy users can not afford the necessary amount of energy to keep their houses warm or the energy to sustain their livelihood

The DSM toolbox holds the necessary tools for all these 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

Accordingly, the vision of the IEA DSM Programme 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 systems⁹.

2.3. MISSION

The DSM-Programme should deliver appropriate and enabling tools for its participants to fulfil the vision. Countries have chosen different ways to organize their energy markets. Market and actors are nowadays more fragmented, and in many cases with a less defined responsibility for the complex whole. The execution of DSM-activities must involve new actors and make use of new technologies. In many countries there is a wish to make use of DSM in more commercial terms and to ensure that delivery of services can be commercially adapted.

⁹ 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.*

Regardless of the organisational structure there is a need for **countries to develop a regulatory regime that appoints responsibility for resource adequacy**.¹⁰ Such control of the ability to handle systems may deliver the following benefits:

- **Less Price Volatility** by improving short term price elasticity
- Improved **System Reliability** by reducing peaks and adding to safety margins
- Enhanced **System security** by reducing dependency on vulnerable supply resources
- Improved **Restoration capacity** by dispatching in/after emergency situations
- **Less costly network reinforcements** since energy efficiency measures will be active alternatives
- **Distributed generation** as alternative to transmission lines.
- Improved **operation and use of flowing renewable** sources
- **Elastic response** as complement to competition

Countries should also be able to **make assessment of the least-cost delivery of energy services that includes both the demand and supply side**¹¹, which may deliver the following benefits:

- Clear market conditions for **energy service companies** and performance contracting
- **Allocation of commitments and obligations** that mobilises the appropriate set of tools, e.g. “White Certificates”
- **Organisation and targeting of support programmes** for energy efficient products
- Improved allocation of **obligations for reduction of GHG emissions** between sectors and countries
- Improved use of **market communication mechanisms**, e.g. standards and labels
- Input to how further **research and support** mechanisms should be distributed among actors.

Closely linked to the issue of how DSM should be used, and by whom, is the overriding question: “How can DSM-measures be designed to deliver the substantial amounts of improvements necessary for fulfilment of the policy goals?”

Large scale energy efficiency requires well co-ordinated deployment measures and programmes. Therefore, some of the issues to be considered are then:

- **Impact. The capacity for DSM measures to deliver** what they promise.
- **Actors and actor relations.** Who are the new actors and what are their roles, including utilities, municipalities, agencies, regulators, ESCOs and of traditional companies working with installations and buildings.
- **Marketability of DSM.** Can DSM measures be a commodity?
- **Customer response. How to** design attractive incentives.
- **Portfolios of measures.** What measures, such as standards, labels, tariffs, fiscal measures, information, and audits should be used, when and in what combinations?
- **Technologies.** How suitable are DSM technologies and how do they apply in different situations.
- Other forms of energy. Is DSM applicable for **energy supplies** other than electricity? Should distributed generation be covered as a DSM measure?
- **Endurance of DSM measures.** Will DSM measures last and will the market change towards use of more efficient technology.
- **Capacity Building** to make use of experiences and “best practice” achievements

Therefore, it is the Mission of the DSM Programme to:

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

¹⁰ The Load Shape perspective

¹¹ The Load Level perspective

2.4. Relation among TCPs

The IEA collaboration is originally built upon the need to share (pool) research activities as a means to reduce the dependence on oil. From the very beginning this has applied to a sharing focused on technological development for both supply and demand side technology. As these technologies matured and provided more opportunities it became evident that there was also a need to share experiences that were related to the application and use of the technologies on the demand side – the soft aspects such as policies, regulations, behaviour, incentives, business models and the like.

The DSM TCP was developed as a supplement to the hardware technologically oriented collaborations, see figure 6 below.

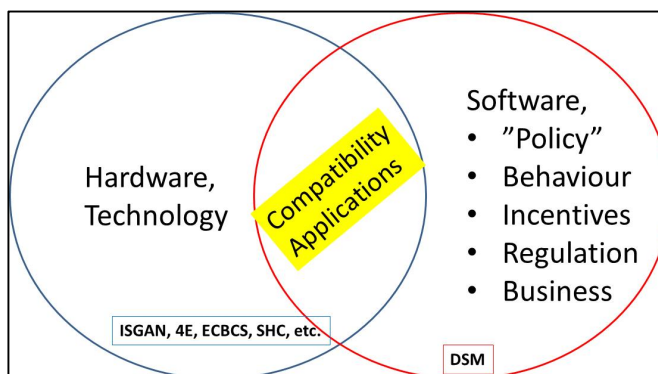


Figure 6: Relation between technologically (hardware) oriented collaboration (TCPs) and the DSM TCP

2.5 Future significance of DSM TCP?

The development of the DSM concept has been discussed in 1.3. above. Regarded from outside the spectator should find that application of DSM makes a difference in the following aspects:

- Decoupling of technological and economic development that results in decarbonisation and reduced ecological footprints. The society continues to deliver to its inhabitants full service without further deterioration of the nature and environment.
- Structural innovations that allows new concepts for services to gain ground and markets
- Market and organisational innovations are tried and used and replacing old-fashioned deliveries and are found attractive for businesses and actors of all sizes from the big ones to the small.

3. Our stakeholders

Relations - Who do we serve

3.1 Target audiences

Target Group	May want to learn about
Policymakers	<ul style="list-style-type: none"> Costs and Benefits Impact on energy systems and related matters
Managers	<ul style="list-style-type: none"> Organisations (Experts?) Governance Planning Programme structuring Implementation Methods
Programme implementers	"Tricks" of the trade

Table 1: Different actor categories, their "needs" to learn about DSM-issues

Another look at actors is by trying to find out which institutions they represent in society and the function of those. There is a need to mobilise actors both as catalysts and as operators to release the profitable potential for energy savings.

Actor	Function	Aim	Instrument
-------	----------	-----	------------

Government	Providing institutional setting and incentives/policies	Welfare (including Security and Prosperity)	Law, Taxes, Subsidies, Information, Regulation	
Municipalities	Specific institutions (e.g. planning, monitoring)	Public good	Plans and activities within a given jurisdiction	
Utilities	Provider	Business (profit)	Energy	Energy Services
Supplier (hardware and services)	Provider	Business (profit)	Goods	
User	-	Service (Light, Power, Climate)	Behaviour change	

Table 2: Actors, their function and their interest in the process to achieve energy efficiency

3.2 Partners

We will not be able to cover all aspects of DSM and will need to make use of material and experts from other institutions and companies. Such will be invited to present themselves and their material within the structure of the DSM. In some cases it would be advantageous if partners would also care to join the DSM-Programme and be more active in using the DSM actively.

3.3 Stakeholder responsibilities and benefits

The traditional structure for a TCP is to serve as an organisation of IEA member countries but also bring in companies and other entities that have similar interests and responsibilities to their own constituencies. Presently the IEA is enlarging its sphere of participants in bringing in “associate member countries” and also develop relations with similar interests such as CDM, IPEEC and others.

The DSM TCP should follow this closely and reach out to the same groups offering them to participate on equal terms.

It should also be considered to find way for temporary and limited participation in “crowdfunded” projects and or services for dissemination of knowledge in larger groups.

4. How do we become operational?

4.1 Organisation of TCPs

The Implementing Agreements were created as a part of the IEA basic idea from the early 1970s which was to “pool” resources in order to reduce the dependence of oil. The IEA was created with one analytical branch (the secretariat) and one acting branch (The Implementing Agreements). The latter should facilitate sharing and development of research in order to reduce the dependence of oil and oil producing countries (primarily OPEC). This should be done by sharing research that all members were assumed to have, mostly at universities, which would require “task-sharing”. In some cases it was assumed that there would be a need to build experimental facilities in suitable places, which would require “cost-sharing”.

The document that should regulate the responsibilities was called the Implementing Agreement and was (probably still is) the only global legally binding treaty to share intellectual property.

The governing of the IAs was supposed to be made by the ExCo who organised its internal work themselves primarily to ensure that all participants delivered according to their obligations (tasks and/or costs).

Since then

The TCPs that has the best discipline seems to be those where there is a strong university involvement.

This because the participants are more obviously depending on each other for the common result.

Those who have bigger problems are those where the participants think that they are “buying” a result and that they have a choice to either buy from the TCP or from another company.

Getting the ExCo delegates to work between the meetings seems to be the biggest challenge which includes the challenge to assign duties to them. It would of course be a good idea if they could step up to take on specific responsibilities both because it would mean that the work could be divided and the continuation could be ensured. BUT it is adventurous to depend upon that it will happen.

4.2 The way forward

The Project Preparation Committee, PPC, with vice chairs could serve as the interim (between ExCo-meetings) board as a way to keep a basic momentum and sharing of responsibilities.

- There is a motivation to have a vice chair for finances because there will always be questions about this at the ExCO. This vice chair should be responsible to follow the accounts and to prepare a budget for the coming year. He/She should report for task zero.
- There should be a vice chair for ExCo support which should require contacts between ExCo-delegates and service to them to organise local activities. This vice chair could also have a responsibility for the outreach activities and in particular the DSM University
- There should also be a vice chair for development of tasks both to communicate with the present OAs about how their tasks could be developed in the future and to find out the need for new tasks. This should be done in collaboration with other parts of the IEA structure in particular the Working parties (EEWP and EUWP)
- The Secretary should have the responsibility for the visibility issues since it will require a firm and executive mind to make sure that things do not slip away, but could be assisted by a vice chair for communication matters
- An OA could (or should) be assigned to the PPC to make sure that we do not forget operational issues
- The PPC should (in corpore) pay special attention to and suggest the development of the TCP in terms of **a) Tasks** (new and restructuring of the existing as well as of the old ones), **b) Participation** and outreach so the results can be efficiently disseminated and new participants be attracted, and **c) Financing** so participants will find sufficient value for their contribution in terms of money and time spent.

APPENDIX 1:

ASIF-method table from Energy Efficiency Indicators. Highlights 2016.

Table 1. Data and indicators included in the IEA decomposition analysis presented in this publication

Sector	End-use/sub-sector	Activity	Structure	Efficiency
Residential	Space heating	Population	Floor area / population	Temperature-corrected energy / floor area
	Water heating	Population	Occupied dwellings / population	Energy / occupied dwelling
	Cooking	Population	Occupied dwellings/ population	Energy / occupied dwelling
	Space cooling	Population	Floor area / population	Temperature-corrected energy / floor area
	Lighting	Population	Floor area / population	Energy / floor area
	Appliances	Population	Appliance stock/ population	Energy / appliance unit
Passenger transport	Passenger car; bus; rail; domestic aviation	Passenger kilometre	Share of passenger-kilometres by mode	Energy / passenger-kilometre
Freight transport	Freight road transport; rail; domestic shipping	Tonne kilometre	Share of tonne-kilometres by mode	Energy / tonne-kilometre
Manufacturing	Food; textiles; wood; paper and printing; chemicals; rubber; non-metallic minerals; basic metals; machinery; transport equipment; furniture/other manufacturing	Value added	Share of value added	Energy / value-added
Services	Services	Value added	Share of value added	Energy / value-added
Other industries	Agriculture; construction	Value added	Share of value added	Energy / value-added

(https://www.iea.org/publications/freepublications/publication/EnergyEfficiencyIndicatorsHighlights_2016.pdf)

APPENDIX 2 POSSIBLE FUTURE WORK FOR THE DSM PROGRAMME

(This is a reprint of earlier strategy appendix to serve as an inspiration for new work)

GENERAL

The Intellectual Property developed in earlier work should be safeguarded, developed and disseminated, e.g. by considering:

Access and availability of results from completed Tasks is still an important issue. The on-going change of the web site improves the availability but there is still a need to consider how some of the reports should be both easier to access by e.g. editing of the material.

Training and capacity building through the DSM University

Demonstration.

- An integral part of each Task as an information and dissemination Task
- A separate Task collecting case studies
- A separate Task to undertake demonstrations (very expensive and rather involve industry for this)

Task reformation

- Extension: (meaning) that the Task could be reassessed and continued.
- Joint Activity: that the Task could be developed together with other interested parties
- Transformation: that the Task could use its IP and be applied on other issues/technologies, e.g. starting on technology procurements again.
- Service: that the Task (and its output) could be formed as a service to be marketed to other parties

Co-operation with other Implementing Agreements

- Consider a coordinated load levelling activity with the Energy Storage Programme
- BCG-IAs, Buildings Co-ordination Group (Storage, Buildings and Community Systems, heat Pump, District Heating and Cooling, Solar Heating and Cooling, Photovoltaics
- ISGAN
- 4E (End-Use Equipment Energy Efficiency)

SPECIFIC

These are suggestions that have been raised and discussed at meetings during the last years:

- **Issue**
- **Increasing Energy prices (and Market Design issues)**

Problem – Large share of electric heating in homes and they do not like growing prices; energy intensive industry does not like high energy prices; high bills for homeowners (fuel poverty)

Objective – *Explore how EE and DSM can mitigate energy price increases*

Approach – *Workshop.*

In February 2003 there was a workshop held in Paris: “Demand Response in Liberalised Energy Markets”, which also was the trigger for a work within the DSM Programme called “Demand Response Resources” (Task 8) This should be followed up with a widening of the concept and also cover other measures. “Market Re-Design Options” and cover also White Certificates from our task 14.

- [Smart meters in Energy Services](#)
- [Security of supply](#)

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.

- [Portfolio development – Impact study](#)

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.

- [Models and initiatives for boosting technologies](#)

Aggregated Procurements, Dynamic top-focused standards, Clearing-houses for programmes.

- [Energy Efficiency ownership \(new aggregators\)](#)

New aggregators and need for aggregators.

- [Networking and initiatives to reinforce services and promotions \(ESCOs, Marketing, Municipality involvement\)](#)

Address a wider aspect of local responses to energy system problems aside from demand-side activities, energy and end-use activities.

- [Rate-design](#)

Perform a comprehensive analysis of various economic incentive 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.

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.

Objective – Study various rate-design strategies and recommend best-practices for designing rates to reduce demand and peaks.

Approach – *New task.*

- [Advanced Lighting Programmes](#)

We have to do something for lighting programmes such as e.e. the utility-sponsored roll-out programmes in many developing countries, but also for new lighting technologies that may also be more important for Demand Response and/or more useful in connection with distributed generation. Possible partners: ELI.

- [Climate Change – Energy Efficiency in the CDM projects](#)

Quantify and document the impact of EE on climate change Fungible Instruments.

- [Directive on energy services \(EU\)](#)

Regulatory matters related to energy efficiency – What areas of energy efficiency are best regulated and what should be purely market-based.

- [Lack of Awareness of DSM](#)

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 clearing-house.

- [Bottom-up evaluation](#)
- [Monitoring and Verification](#)

Workshop

- Energy Efficiency (low) impact

Link with M&V

- Transmission needs
- Standards and labelling

It was suggested that the development of the suggested new IA should be observed and then possibly discussed with them.

- Growing demand
- White Certificates

Follow up practices

- Tax Policies
- Planning tools
- Optimising investments
- Distribution needs
- Windfall profits
- Demand response (legal property right) certificates
- Financing related to ESCOs

MISCELLANEOUS ACTION ITEMS RESULTING FROM THE FORTY NINTH EXECUTIVE COMMITTEE MEETING

11-12 May, Dublin, Ireland

WHO	ACTION	WHEN
India Korea Spain	Pay Common Fund invoice for 2015	ASAP
India Spain	Pay Common Fund invoice for 2016	ASAP
Anne Bengtson	Keep reminding those who have outstanding payments to the Common Fund	On-going
ExCo members	Let Joe Miller and Anne Bengtson know when an invoice is paid	On-going
Rob Kool Sea Rotmann	Maintain contacts with China (NDRC), Thailand (EGAT), IBM (Germany), Australia, Portugal and Chile.	On-going
Hans Nilsson Hans de Keulenaer	Move forward with the DSM University according to plan – as well as continue to plan/hold webinars the first weeks of every month	On-going
Operating Agents	Update a more clear definition in Legal Annex text of their Task	ASAP
Matthias Stifter René Kamphuis	Further proposal for a Task 17 Phase 4 and present at the next ExCo meeting	On-going
Anne Bengtson Josephine Maguire	Prepare administrative details for the Forty Ninth Executive Committee Meeting in Dublin, Ireland	ASAP
Anne Bengtson	Send out invitations first week of August	8 August 2017
ExCo members	Review website regularly and suggest further developments	On-going
ExCo members	Suggest topics for the Spotlight Newsletter and provide input for those articles to Pam Murphy	On-going
All	Follow Visibility Committee Chair recommendations to update the website	On-going
Operating Agents	Prepare Task Information Plans and include in each Task Status Report.	On-going
Pam Murphy	Distribute issues of the DSM Spotlight Newsletter	March 2017 June 2017
Operating Agents	Include 1-2 slides in Task presentation, highlighting the main findings to date in respective Task(s).	Present at next ExCo meeting

Hans Nilsson	Task Zero: Prepare Task Status Report and send to Anne Bengtson for inclusion in the Pre-Meeting Document.	Friday 8 September 2017
Hans Nilsson Hans de Keulenaer	Prepare Status Report on the development of the DSM University and send to Anne Bengtson for inclusion in the Pre-Meeting Document (PMD).	Friday 8 September 2017
Jan Bleyl-Androschin	Prepare a Task Status Report for Task 16 Phase 4 and send to Anne Bengtson for inclusion in the Pre-Meeting Document (PMD).	Friday 8 September 2017
Matthias Stifter René Kamphuis	Prepare Status Report for Task 17 Phase 4 and send to Anne Bengtson for inclusion in the Pre-Meeting Document (PMD).	Friday 8 September 2017
Rob Kool	Prepare PPC progress report and send to Anne Bengtson for inclusion in the Pre-meeting Document (PMD).	Friday 8 September 2017

David Shipworth Markus Bareit Matthias Stifter	Prepare concept paper on Big Data for Energy Efficiency and send to Anne Bengtson for inclusion in the Pre-meeting Document	Friday 8 September 2017
Sea Rotmann	Prepare Task Status Report Task 24 Phase II and send to Anne Bengtson for inclusion in the Pre-Meeting Document (PMD).	Friday 8 September 2017
Sea Rotmann	Prepare a status report How to 'do' behaviour change in DSM – The A to Z model of behaviour change and send to Anne Bengtson for inclusion in the Pre-Meeting Document (PMD).	Friday 8 September 2017
Ruth Mourik	Prepare Task Status Report for Task 25 and send to Anne Bengtson for inclusion in the Pre-Meeting Document (PMD).	Friday 8 September 2017
Even Bjørnstad Anne Bengtson	Prepare Financial Report and send to Anne Bengtson for inclusion in the Pre-Meeting Document	Friday 8 September 2017
Sea Rotmann	Prepare Visibility Committee Report for inclusion in the Pre-Meeting Document.	Friday 8 September 2017
Weber Web	Provide statistics for every Task every six months and send to Sea Rotmann/Anne Bengtson for inclusion in the Pre Meeting Document.	Friday 8 September 2017
Anne Bengtson	E-mail pdf file of Pre-meeting Document for the Fiftieth ExCo meeting to the Executive Committee members and Operating Agents.	Monday 18 September 2017

PARTICIPATION TABLE

Participant	In force						Proposed Tasks/ extensions
	17 Phase 3	24 Phase 2	25		16 Ext. Phase 4		
	Integration of DSM, Distributed generation, Phase 3	Behaviour Change in DSM – Helping the Behaviour Changers	Business models and the effective market update of DSM Energy Services	DSM University	Competitive Energy Services Phase 4		
Australia				☺			
Austria	X	X	X	☺	☺		
Belgium			☺	☺	X		
Finland			☺				
India	X						
Italy				☺			
Korea			X	☺	☺		
Netherlands	X	X	X		X		
New Zealand		X		☺			
Norway			☺	☺	X		
Saudi Arabia							
South Africa							
Thailand							
Spain				☺			
Sweden	X	X	X				
Switzerland	X		X	☺	X		
United Kingdom		☺	☺				
United States	X	u		☺			
RAP *				▲			
European Copper Institute*	◄		◄				
Efficiency One		u	u	u		u	
OPERATING AGENT (OA)	Matthias Stiffer & René Kamphuis	Sea Rootmann & Ruth Mourik	Ruth Mourik	Hans Nilsson, Hans de Keulenaer	Jan W. Bleyl-Androschin		

- X = participant
- ☺ interested
- * = Sponsors
- ◄ = in-kind

GLOSSARY

Abbreviation	Explanation
APEC	Asia-Pacific Economic Cooperation
BCG	Buildings Co-ordination Group (consists of 7 Implementing Agreements)
CERT	Committee on Energy Research and Technology in the IEA
CIGRE	International Council on Large Electric Systems
CTI	Implementing Agreement on Climate Technology Initiative
DHC	Implementing Agreement on District Heating and Cooling
DSM	Implementing Agreement on Demand-Side Management
EC	European Commission
ECEEE	European Council for an Energy Efficient Economy
ECES	Implementing Agreement on Energy Storage
ECI	European Copper Institute
EEWP	Energy Efficiency Working Party in the IEA
ENARD	Electricity Networks Analysis, Research & Development
EOT	End of Term
ESD	Energy Services Directive in the European Commission
ETE	Energy Technology Essentials (3-4 page briefs)
ETSO	European Transmission System Operators
EU	European Union
EUWP	End-Use Working Party in the IEA
FBF	Implementing Agreement on Future Buildings Forum
GHG	Green House Gas
HPC	Implementing Agreement on Heat Pump Centre
ICLEI	International Council for Local Environmental Initiatives
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ISGAN	International Smart Grid Action Network (ISGAN)
JFS	Japan Facility Solutions (Japanese Sponsors participating in Task XVI)

KIER	Korea Institute of Energy Research
NEET	New and Emerging Environmental Technologies (IEA networking project - Gleneagles G8)
NDRC	National Development and Reform Commission, China
PMD	Pre-Meeting Document
PVPS	Implementing Agreement on Photovoltaic Power Systems
REEEP	Renewable Energy and Energy Efficiency Partnership
SANEDI	South African National Energy Development Institute
SANERI	South African National Energy Research Institute
SHC	Implementing Agreement on Solar Heating and Cooling
TSO	Transmission System Operators

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**DSM Implementing Agreement on Demand Side Management Technologies and Programmes
- Operating Agents**

* Participated at the Executive Committee meeting 11 – 12 May, 2017, Dublin, Ireland

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Task 24 – Closing the loop: Behaviour change in DSM – from theory to policies and practice -

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EXECUTIVE COMMITTEE MEETINGS OF THE IEA DSM ENERGY TECHNOLOGY INITIATIVE

(table excludes the European Union)

Meeting #	Date	Country	Participants	Countries on ExCo
interim	1 –2 April, 1993	Stockholm, Sweden	14	14
1	28 – 29 October, 1993	Kerkrade, Netherlands	13	14
2	24 – 25 March, 1994	Madrid, Spain	12	14
3	13 – 14 October, 1994	Washington D.C., USA	14	15
4	23 – 24 March, 1995	Schaffhausen, Switzerland	15	15
5	19 – 20 October, 1995	Fukuoka, Japan	14	15
6	21 – 22 March, 1996	Paris, France	14	15
7	31 Oct – 1 Nov, 1996	Sydney, Australia	12	15
8	10 – 11 April, 1997	Helsinki, Finland	14	15
9	10 – 13 September, 1997	Oslo, Norway	9	15
10	25 – 27 March, 1998	Seoul, Korea	10	15
11	7 – 9 October, 1998	Chester, United Kingdom	12	15
12	14 – 16 April, 1999	Copenhagen, Denmark	12	17
13	28 – 29 October, 1999	Amsterdam, Netherlands	14	17
15	3 – 6 April, 2000	Ankara, Turkey	12	17
16	12 – 13 October, 2000	Athens, Greece	13	17
17	3 – 4 May, 2001	Eskilstuna, Sweden	12	17
18	3 – 5 October, 2001	Barcelona, Spain	13	17
19	18 – 19 April, 2002	Milan, Italy	15	17
20	3 – 4 October, 2002	Graz, Austria	15	17
21	8 – 10 April, 2003	Canberra, Australia	9	17
22	14 – 15 October, 2003	Paris, France	15	17
23	15-16 April 2004	Trondheim, Norway	16	17
24	13-15 October 2004	Atlanta, United States	13	17
25	20-21 April 2005	Saariselkä, Finland	15	17
26	October 2005	Madrid Spain	14	17
27	April 2006	Copenhagen Denmark	14	17
28	October 2006	Maastricht Netherlands	9	17
29	April 2007	Seoul Korea	10	18
30	11-12 October 2007	Brugge Belgium	15	18
31	2-4 April 2008	New Delhi, India	11	19
32	October 2008	Milan Italy	13	19
33	April 2009	Vienna, Austria	11	20
34	September 2009	Chester, UK	11	20
35	April 2010	Paris, France	11	19
36	October 2010	Stockholm, Sweden	9	19
37	April 2011	Washington, USA	8	18
38	2 – 4 November 2011	Jeju Island, Korea	14	18
39	18 - 20 April, 2012	Trondheim-Tromsø, Norway	10	15
40	September 14-16 2012	Espoo, Finland	10	16
41	24 - 26 April, 2013	Utrecht, The Netherlands	11	17
42	16 – 18 October 2013	Lucerne- Rigi, Switzerland	11	17
43	17 – 21 March 2014	Wellington, New Zealand	9	16
44	15-17 October 2014	Graz, Austria	9	16
45	25 – 27 March 2015	Cape Town, South Africa	9	16
46	22 – 23 October, 2015	Halifax, Nova Scotia	9	17
47	17 – 18 March, 2016	Stockholm, Sweden	11	18
48	11 – 12 October, 2016	Brussels, Belgium	11	18
49	11 – 12 May 2017	Dublin, Ireland	13	18
50	5-6 October 2017	The Hague, Netherlands		

No's of Executive Committee meetings held in each country

Netherlands	4	Australia	2	Japan	1
Sweden	4	Denmark	2	Turkey	1
Austria	3	Italy	2	South Africa	1
France	3	Switzerland	2	Nova Scotia	1
Finland	3	UK	2	Ireland	1
Korea	3	Belgium	2		
Norway	3	Greece	1		
Spain	3	India	1		
USA	3	New Zealand	1		

ⁱ Suggested reading includes Gassmann O. et al. (2016), Saebi et al, (2017), Boons, F., & Lüdeke-Freund, F.(2013).

ⁱⁱ For a comprehensive overview of the methodology applied see the Task 25 Annex 1 report on <http://www.icadsm.org/task/task-25-business-models-for-a-more-effective-uptake/>.

ⁱⁱⁱ <http://www.greentechmedia.com/articles/read/ge-launches-1b-energy-services-company-current>. It is unclear how this 1 Billion translates into kWh savings being realised.

^{iv} Also see the toolkit for policymakers developed by the Ellen MacArthur Foundation (2015)

^v <http://ise.innoenergy.com/>