

DSM Spotlight

The Newsletter of the International Energy Agency Demand-Side Management Programme December 2013



task 16 ESCo Project and Market Development: A Role for Facilitators to Play

This article is the second in a series on Facilitators in the ESCO market. The IEA DSM Programme is delving into this topic through its work in DSM Task 16: Competitive Energy Service (Energy Contracting, ESCo Services). This article is based on the Task 16 report "ESCo Market Development: A Role for Facilitators". The objective of this publication is to 1) create a scientific reference baseline for project/market Facilitators, which can be used for further discussions, 2) demonstrate the added value for a wider application of Facilitators in ESCo market development, and 3) provide guidance for facilitation services and activities as well as policy recommendations.

What is a 'Facilitator'?

A Facilitator is an independent intermediary between ESCOs and (potential) clients. The job of a Facilitator is to help its client develop, structure and procure energy service projects. A Facilitator also serves as a mediator between the client and ESCo to help navigate differing "business cultures", interests and expectations during the phases of the project cycle.

What Services Do Project Facilitators Offer?

To answer this question, the experts in DSM Task 16 analysed the results of a market survey in terms of the life cycle of a project.

continued on page 2

Note from the Chairman

Energy Efficiency an Economic Driver

The USA has been a DSM partner since the start of the IEA DSM Programme. Their representative, the US Department of Energy (DOE), supports many initiatives to achieve energy efficiency. Not only are the Clean Energy Ministerial, IRENA and IPEEC a part of their network to reduce energy consumption, but also research organizations including national labs and specialised consultancy companies and industries. What we tend to overlook, however, is that the DOE also sponsors organizations like the American Council for an Energy-Efficient Economy (ACEEE).

Now saving energy is not that difficult, but to prove you're doing it in a beneficial way, that's harder. The American Council for an Energy-Efficient Economy (ACEEE), however, is doing just that – with example upon example of projects.

ACEEE was established in 1980 as a non-profit organization and has been working these past 30 years to advance energy efficiency policies, programmes, technologies, investments, and behaviours. At the 7th National ACEEE Conference on Energy Efficiency as a Resource held this past September in Nashville, Tennessee, ACEEE once again showed that you can truly earn money by being energy efficient. Conference papers

continued on page 7

PARTICIPATING COUNTRIES

Austria
Belgium
Finland
France
India
Italy
South Korea
Netherlands
New Zealand
Norway
Spain
Sweden
Switzerland
United Kingdom
United States

SPONSORS

RAP
European Copper Institute

Project Development Phase

In the project phase the Facilitator can offer a variety of different consultancy services.

- **Initial financial analysis** of monetary saving potentials and net present value of future saving cash flows. Sometimes the analysis is based on an opportunity cost model. A financial approach was described as more successful with business managers, who are not interested in detailed technical solutions. This approach may be used as the basis for a decision to investigate in more detail the feasibility of a project.
- **Initial technical analysis** for the appraisal of technical and economical performance indicators and benchmarking as a first estimate of potentials. This approach is often used as a first step in communication with a client's technical managers.
- **Technical/economical/ecological comparisons** of different efficiency or supply measure options on the basis of life cycle cost analysis, payback times and other economic evaluations.
- **Facilitation of "make or buy" decisions** by comparing the pros and cons, but also the requirements of outsourcing versus in-house implementation.
- **Workshops with clients and their stakeholders** to present the opportunities, risks and requirements of ESCo models and to define the project specific goals and framework conditions as well as the components of the energy service package. Another outcome of a workshop is improved communication between the different stakeholder groups and individuals to resolve possible conflicts of interest.

The job of a Facilitator is to help its client develop, structure and procure energy service projects.

- **Project pre-structuring and business model development** to define the goals and framework, to select facilities, to develop a scope of service and interfaces and to adapt an ESCo business model.
- **Financial pre-structuring** to select and adapt a financial model taking into consideration equity, third party contributions and subsidy programs.
- **Interdisciplinary feasibility studies** to assess technical, economical, financial, organizational and legal feasibility of the envisioned project. These often serve as the basis for a go or no-go decision on the preparation of a detailed project and a call for proposals.

Across the different tasks, a Facilitator's job is to coordinate communication between all the stakeholders involved and to secure interdisciplinary project management, and if necessary, offer continuous "hand holding" with a client. The project development phase ends with the decision to start the procurement process and allocate the resources or to end the project. Many of the services noted above are needed again later in the project cycle, for example, life cycle cost assessment for tender evaluation, technical and financial project

structuring, fine-tuning of the contract model, and last but not least of course, communication and project management.

Procurement Phase

Basically Facilitators offer to manage the entire procurement process on behalf of a client. This typically encompasses activities, such as:

- **Selecting a procurement procedure** based on the estimated project value, analysis of the predominant nature (goods, supply or services) of the contract to be signed, and if the scope of service allows, for a competition of technical and economic solutions.
- **Defining the qualifications**, selection criteria and award criteria for the ESCo company.
- **Drafting the tender documents**, which for complex energy service projects includes functional specifications for the technical, economical, organizational, financial and legal requirements and framework conditions of the service package. In addition, the tender documents typically consist of a model contract, general comments on the award procedure and a proposal template.
- **Designing the ESCo contract** to be signed by client and ESCo.
- In the case of a **Negotiated or Competitive Dialogue Procedures** organizing the negotiation rounds and after every round of negotiation then evaluating the proposals to arrive at the best bidder.

continued on page 3

Another service that can be provided to ESCOs and their clients is an independent ESCo offer appraisal. This service includes recommendations to financial institutions (FI) and a guarantee to clients to continue project operation in the case of an ESCo failure. ESCo associations in Germany and Switzerland offer this.

Construction Phase

Facilitators sometimes assume building owner representation and project management tasks for the implementation supervision and commissioning. These services are often agreed to in separate contracts.

Service Delivery Phase

During this phase, independent measurement and verification by a third party is often provided. This may include the drafting of M&V plans and controlling quality assurance. Also verifying invoices and mediating between client and ESCo may be on the agenda. These tasks run continuously over the project term and are often agreed to in separate contracts.

As an intermediary between the client and ESCo, Facilitators may provide guidance to ESCOs on energy related client needs and requirements either for specific projects or general information and exchange of innovative energy services models or cooperation opportunities. Sometimes a client's expectations towards ESCOs and energy service models also need a 'reality check' in order not to overburden the model. Or a Facilitator may need to find consensus on adapting the energy cost baselines to changes in building/plant use. Facilitators can also help solve billing and M&V issues.

Who Offers Facilitator Services?

The IEA DSM Task experts have identified different

types of regional and local energy agencies (EA) that act as Facilitators. However, only a small percentage of the 422 European EAs registered with ManagEnergy have active experience in ESCo project facilitation. And, national type EAs tend not to be involved in project specific facilitation activities, exceptions being, for example, the Fedesco Knowledgecenter and the German Energy Agency (dena). Smaller consulting companies, energy audit compaines and some legal advisors (e.g., Ernst & Young and Deloitte) also offer full or partial services in combination with experienced energy service consultants. Since there is still a steep learning curve this field is primarily supported by consultants dedicated to energy services.

What Would It Cost To Hire A Project Facilitator?

IEA DSM Task 16 conducted an economic analysis by comparing the empirical data of project Facilitator consultancy costs from some 32 ESCo projects. These cost data were analysed in relation to the investment cost and other relevant project indicators of the respective ESCo projects.

The data in Figure 2 provide some first indications of project facilitation cost in relation to investment cost. It is understood that the costs of different projects may not be directly comparable due to project size, complexity of the technical systems (e.g., heat only or electricity, water, steam, etc.), availability of data, and scope of the facilitation services performed, but the data serve as a starting point when looking beyond a country's borders.

In the more developed project facilitation markets of Austria, Germany and parts of Sweden, Task experts found typical Facilitator costs to be on average 3% of the EE investment cost (and in some renewable supply projects with a spread between 1% and 14%). In absolute numbers, average facilitation costs in Austria and Germany

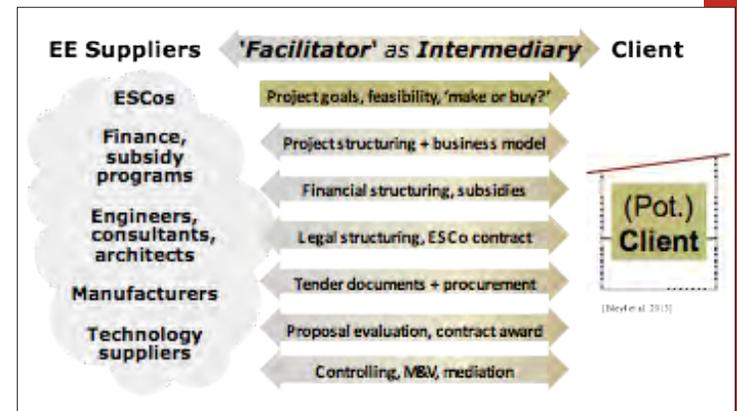


Figure 1. The Project 'Facilitator' enables and links the client and suppliers as intermediary.

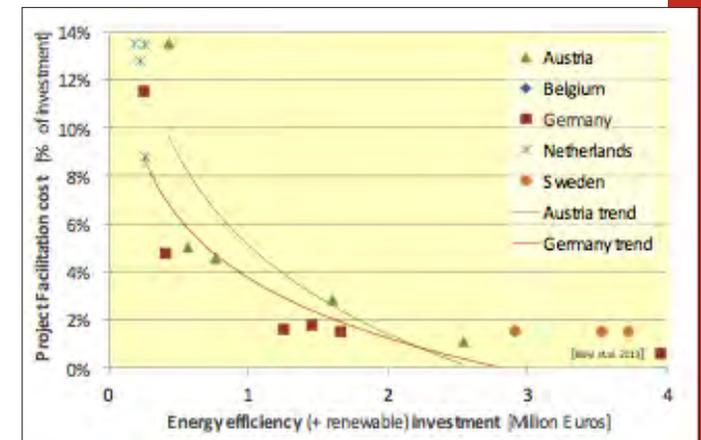


Figure 2. Project facilitation in relation to energy efficiency (and partly renewable) investment cost.

continued on page 4

are EUR 30,000 (with a range between EUR 16,000 – 58,000) whereas the average in Sweden is at about EUR 60,000. Facilitation costs also appear to have little correlation with project size, which means the percentage value decreases for bigger projects. The cost for controlling invoices, M&V or baseline adjustments during the operation phase are typically not included, but are agreed on in separate contracts.

Exceptionally high cost values (those outside the range of plotted values in Figure 2 to improve the resolution of the main data field) were found in emerging ESCo markets in Belgium and the Netherlands with values between 9% and up to 60% of the investment cost. These costs mainly reflect high shares of initial development expenditures, estimated at a factor of 3-10 times higher than compared to further down the learning curve.

In terms of funding facilitation costs, the following options were observed:

- Payments by client (similar to regular engineering or consultancy project fees).
- Contract relationship with client, but payment of facilitation cost by best bidder ESCo as outlined in the tender documentation.
- In some projects, a share of the remuneration was performance based, for example, a percentage participation in the savings achieved.

...only a small percentage of the 422 European energy agencies registered with ManagEnergy have active experience in ESCo project facilitation.

A number of countries and regions have subsidy programmes to support facilitation activities. For example, South Korea offers SMEs up to EUR 10,000. And, the German 'Bundesstelle für Energieeffizienz' (BfEE) is currently considering a Facilitation subsidy program. In the survey, subsidies for project facilitation were frequently quoted as a good means to overcome project development obstacles.

The next article in this series will be published in the February 2014 DSM Spotlight. So check back to read about the conclusions and outlook from this study. For information on DSM Task 16: Competitive Energy Services (Energy Contracting, ESCo Services) visit the [DSM website](#) or contact the Operating Agent, Jan W. Bleyl EnergeticSolutions@email.de.

This article is based on the paper, "ESCo market development: A role for Facilitators to Play" by Jan W. Bleyl, IEA DSM Task XVI c/o Energetic Solutions; Nathalie Adilipour, Swedish Energy Agency; Markus Bareit; Charles-Henri Bourgois and Johan Coolen, Factor4; Ger Kempen, Escoplan; Kim, Kil-Hwan and Jang, Hye-Bin, Korea Energy Management Corporation; Cho, Sung-Hwan, Jeonju University; and Lieven Vanstraelen, Fedesco Knowledgecenter.

task 24

Bridging Sectors with Storytelling



The IEA DSM Task, Closing the Loop - Behaviour Change in DSM: From Theory to Practice is investigating case studies from four domains (SMEs, smart metering, building retrofits and transport) in the participating countries. The case studies were collected and analysed according to social science methodologies, but when the Task experts tried to discuss the findings they found that there were a lot of misunderstandings and miscommunication due to the different jargon used in different sectors (e.g., government, industry and the third sector) and between different research disciplines. The one common 'language' that could bridge these divides was storytelling, in its many forms.

WHEN WORLDS COLLIDE - A STORY OF PUSH AND PULL

Once upon a time... Finn fjord, a small, family-owned business far north of Norway's Arctic Circle decided to become the world's first carbon neutral ferrosilicon plant.

Every day... its owners and clever staff pondered how to go about this immensely difficult task (seeing ferrosilicon plants use an enormous amount of power for their smelting processes).

But, one day... they found a way to make use of the excess heat and offgases from their production to power a steam turbine, which would produce electricity for the company, reduce their demand significantly and vastly increase their energy efficiency.

Because of that... they struck an agreement with Enova, the Norwegian government enterprise responsible for promotion of environmentally friendly production and consumption of energy, that they would receive a sizable grant which would help them implement their grandiose idea.

But then! They discovered that there were a lot of technical difficulties in getting the technology to work, resulting in a year's delay of work and a significant budget overrun. Still, when it was finally started, the new boilers immediately lowered demand by a very large amount, thus proving the feasibility of the project.

Because of that... other, larger, multi-national companies are now making use of Finn fjord's innovativeness to improve their own efficiency, but of course at much less risk. This has unlocked significantly more funds from Enova, which makes sense from the Government agency's perspective as they use public money to fund these projects. The less risky a project - the easier it is to justify using taxpayer money. However, it does not seem fair from the forerunners' perspective, as Finn fjord took on most of the risk and developed and trialled the technology in the first place.

So, ultimately... there was a clash between two Norwegian policies - one stimulating increased energy efficiency, the other stimulating innovation. This also showcases the difficulty in deciding how to bridge the 'valley of death' - with government push or market pull?

But finally, the end result was very successful, with energy savings of up to 35% for an upfront investment with a payback time of 7-8 years. Norway's ferrosilicon plants are fast becoming the most environmentally friendly in the world, thanks to our small family business with its big ideas (and some help by the government). The end.

The example above from Finn fjord, is storytelling in its most literal form. We also tell our participating countries' stories, different sector's stories, energy experts' own energy stories and the stories of the different models of understanding behaviour change that often underpin demand side management policy, programme or project design. Storytelling takes the 'sting' out of language, which often has very specific meanings to specific audiences (it is quite frightening how much dispute there is among the social sciences on the terms 'behaviour' or 'practice', or how differently 'demand side management' can be understood by different sectors). A story also evokes a feeling, an almost subconscious way of 'getting it' which often carries the message (or the 'moral' of the story) better - despite its more metaphorical or simplistic description - than a 160 page social science or policy report ever could.

We have collected many stories from around the world - a lot of them started as 'hero stories', where, for example, a clever energy efficient technology was going to save the world. Most often, they turned into 'learning stories' where straightforward intervention approaches based on an understanding that humans

continued on page 6



mostly act economically rational were often found to be lacking or insufficient. Sometimes, they turned into 'love stories', for example when an energy efficiency programme ended up having huge health benefits or other social improvements. And sometimes, they turn into 'horror stories' where bad programme design or perverse outcomes might mean that some very unintended consequences happen. We will continue to experiment with storytelling and its impacts. We also have cartoons, videos, podcasts and... 160 page social science reports.

If you are interested in finding out more about Task 24 or the stories we can tell, drop us a line at drsea@orcon.net.nz. We would also enjoy hearing other great stories, and telling them to our international expert community.

This article was contributed by Sea Rotmann, (drsea@orcon.net.nz) co-Operating Agent for IEA DSM Task 24. For more information on this Task visit the [Task website](#).

A DSM UNIVERSITY

The IEA DSM Programme has volumes of results, access to leading experts in the field, and a desire to share its knowledge and experiences with a broader audience. What better way to do this than through a "DSM University". The university would reach out to not only targeted audiences, but also those with a general interest in one or more aspects of Demand Side Management. This university concept is in the development stage, but the potential is already being seen by those involved.

A DSM for Every Need

Demand Side Management is increasingly being used in very different circumstances and for different purposes. This wide use is a positive trend and one on which the IEA DSM Programme looks to support. We will try to serve all those interested regardless of their circumstances in terms of market organization, tradition, access to technologies, etc.

DSM is unique because it refers to all kinds of technological and behavioural changes to the energy system originating from the demand side of the market. The purpose of DSM can be multifold, but large-scale energy efficiency improvement is certainly a primary goal. To manage this broad topic, the DSM University will focus on six themes.

1. Logic of DSM. Overview of DSM and the motivations for its application. The target audience is decision-makers and people who want to see how issues connect to each other.

2. Governance. Incentives, cost/benefit analysis, planning, evaluation and regulation as well as institutional issues, such as 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.

4. Flexibility (Load Shape). Technologies and applications in Demand Response systems as well as customer benefits and participation.

5. Integration. System integration of energy efficiency, storage and RES.

6. Business models. Models focused on delivering energy services.

The DSM University plans to reach its varied audience through multiple avenues – webinars, topic reports, issue reports, blogs and e-learning.

Stay tuned for more information and check for updates on the DSM website, www.iea-dsm.org

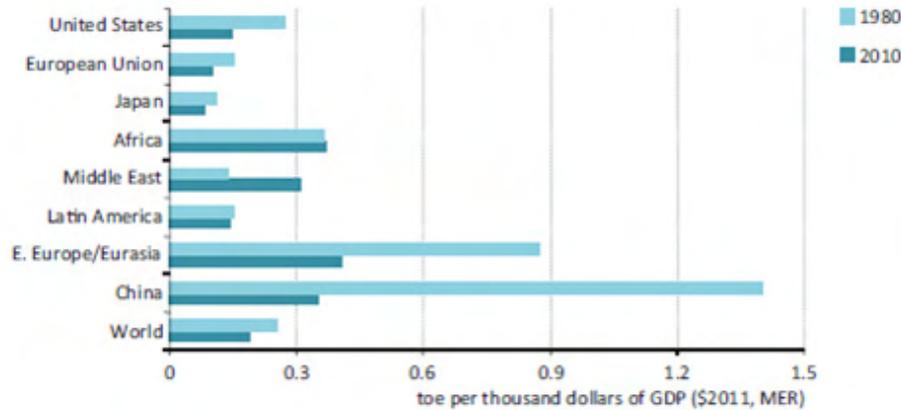
FACT OR FICTION: Either Way It's Reality

The story goes that Thomas Edison originally wanted to sell the light from the electric bulbs that he invented, not the energy supplied to them. His investors, however, convinced him that it was easier to measure a kWh than a Lumen. This separation of the service (the light) from the electricity supply has functioned as a demotivation for utility companies to show interest in the quantity and quality of electricity end use ever since. DSM wants to restore this broken equilibrium.

Chairman's Note from page 1

and discussions demonstrated that energy efficiency is thriving as the lowest-risk, lowest-cost, cleanest utility system resource virtually everywhere in the US. Just visit the ACEEE website to find a long list of good examples – www.aceee.org and www.aceee.org/conferences/2013/eeer/program.

Energy Intensities by Regions



World Energy Outlook © OECD/IEA, 2012

Energy intensities are converging: the ratio among the highest and lowest values has declined from a factor of nine in the 1980s to just under five currently.

What does the IEA DSM Programme have to do with this? Well first of all, DSM is often presented as the key to a successful energy efficiency programme. The concept of Integrated Demand Side Management is often used, which looks at the integration of three interdependent approaches – Distributed Generation,

Demand Response and Energy Efficiency. With the growing rate of renewable energy in the system, the need to address these interdependences is becoming a necessity. These conclusions, based on actual projects, support the IEA's research presented in the 2012 World Energy Outlook that shows the energy intensity values in the different regions of the world.

Although there are other important economic factors, such as labour costs and feedstock prices, energy cost is a major driver in the global market. In this Programme, we are working on Integrated Demand Side Management and our Tasks span the three approaches. And so by being in close contact with ACEEE, ECEEE (it's European sister organisation) and similar organizations, our experts can collaborate and the Programme can ensure that the results of our work are reaching a broader audience.

Follow IEA DSM on



Visit the DSM Programme's website for easy access to reports, news and contact information.

www.ieadsm.org

The DSM Spotlight is published several times a year to keep readers abreast of recent results of the IEA Demand Side Management Programme and of related DSM issues. IEA DSM, also known as the IEA Implementing Agreement on Demand Side Management, functions within a framework created by the International Energy Agency (IEA). Views, findings and publications produced by IEA DSM do not necessarily represent the views or policies of the IEA Secretariat or of the IEA's individual member countries.

For information on the Programme, its work and contact addresses, visit our website at www.ieadsm.org

No. 51, December 2013
Editor: Pamela Murphy
KMG Group, USA

