IEA DSM Task 16:

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

Including National Perspectives of Task 16 Experts

Discussion Paper

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1 Abstract

Energy-Contracting is a many times proven 'delivery mechanism' to implement demand side energy efficiency and (renewable) supply projects in buildings and industries. However market volume is behind expectations in comparison to market potential forecasts and its contribution towards energy policy goals.

There is plentiful empirical evidence (e.g. from public institutions putting out tenders for ESCos to bid on) and growing awareness among stakeholders, that successful energy service market development requires a strong commitment and a 'driving position' on the client side. In this paper we want to find out, what the challenges and barriers are on the client side of the energy service market, when setting out to procure energy services? Which know-how, procedures and organizational change processes are needed? And how can (potential) clients be enabled to do so?

The analyses reveals a need for a broad and interdisciplinary range of activities and know-how such as project development and communication skills, interdisciplinary feasibility studies, life cycle cost analyses, "make or buy" decisions, structuring of business and financing models, procurement specifications and procedures, legal advice and contracts up to quality assurance, measurement and verification (M&V) of the project performance.

As a solution, we have found that so called 'Facilitators', who mostly consult on behalf of a client, can play an important and enabling role and have successfully done so. Besides enabling project development, another important advantage of this buyer-led approach is to foster competition between ESCos, other EE suppliers but also financiers. Likewise important, the Facilitator approach provides a fair and level but also knowledgeable playing field for this competition. Another Facilitator role is to serve as an intermediary between clients and ESCos '(corporate) cultures', interests and expectations in different phases of the project cycle.

However we also want to raise awareness among Facilitators and other stakeholders, that the identified organizational needs for change require approaches beyond economic rationale or environmental awareness. Instead psychological and organizational change processes need to be put on the agenda, even though this may be new territory for most energy efficiency professionals.

Project facilitation cost in the more developed facilitation markets turned out to be on average at about 3 % of the investment cost for the demand side measures, decreasing with project sizes. In a first approximation this is about one half order of magnitude below standard engineering cost. However this up-front investment often constitutes an obstacle for project development and we would like to raise the attention of policy makers to this opportunity to support market development. It was also repeatedly mentioned by clients and Facilitators, that through an intensive (but fair) com-

petition between suppliers, the advantages achieved with regard to prices and quality outweigh the initial facilitation cost by far.

To our knowledge, the figure of the Facilitator is hardly mentioned outside Europe or in the literature. The goal of this paper is to create a scientific reference of the project and market Facilitator case for further discussions. Furthermore we want to demonstrate the added value of a wider application of Facilitators for ESCo market development and provide guidance for facilitation services and activities as well as policy recommendations.

Methodically, the research builds on an analyses of a typical energy services project life cycle, primarily from the perspective of a client, taking a 'negotiated procedure' as the procurement model. Existing 'Facilitator' services and activities were identified through interviews with ESCo clients, Facilitators and ESCos in six European countries and Korea. This was also the source for an economic analyses of project facilitation cost, which relies on empirical data from 32 "real world" projects. For the analyses of change processes, we refer to Kurt Lewin's model of change and take a first approach to apply it to client organizations and its individuals who want to outsource demand side energy projects.

We believe the Facilitator approach will need to be multiplied and better funded to foster ESCo market development. It will also need to become a standard procedure in public and private sector administrations in order to support structuring and procuring of comprehensive energy service projects. This is particularly true, if the market is to develop from individual projects, led by highly motivated individuals, to mass roll-outs of comprehensive building refurbishment portfolios. Only then will the energy services industry be able to provide more significant contributions towards energy policy goals.

2 Introduction

The concept of Energy-Contracting - also variously referred to as 'ESCO Services', 'Energy-Services (ES)', 'Energy Efficiency Services (EES)', 'Contract Energy Management (CEM)' etc. - is a many times proven "delivery mechanism" to implement energy efficiency and (renewable) supply projects in buildings and industry. Even though market volume has increased in many European and other countries, e.g. in Germany by about 10%/a [VfW 2011], the current achievements are behind the expectations of energy policy goals and market studies, in particular for the Energy Performance Contracting (EPC) model.

In recent years awareness among stakeholders has risen, that successful ESCo market development is often driven by the client side, e.g. by public institutions putting out calls for proposals for ESCos to bid for. In fact, these processes were frequently enabled by so called "Facilitators", which acted as independent intermediaries between ESCOs and their (potential) clients – mostly consulting on behalf of the client side. This perception of a buyer-led approach led us to focusing more on the client perspective on energy service markets when thinking of ways how to foster market development.

This view recently also appears to be reflected in the Horizontal Provisions of the European Union's Energy Efficiency Directive, that "Member States shall support the proper functioning of the energy services market" by "enabling independent market intermediaries to play a role in stimulating market development on the demand and supply sides." [2012/27/EU]. Also service providers, e.g. represented in the German ESCo association VfW acknowledge the role of energy agencies and independent consultants to support clients to develop ESCo projects and demand support to establish more project developers [VfW-AK ESC 2012].

The best known case in Europe for a client-driven ESCo market development is the "Energy Saving Partnership" in Berlin [SenStadt+BE 2002], but likewise estimable, other federal states in Germany such as Bremen [energiekonsens 2012], Hessen [Hessenenergie 2012], Niedersachsen [EA.NRW 2012] or the "Interkommunale Energiespar-Contracting (IKEC) in Baden-Württemberg [KEA 2012] have successfully developed and procured sometimes very innovative ESCo projects and programs. In Austria, the "Federal Contracting Campaign" has led to ESCo projects for some 550 buildings, bundled in 17 pools [BIG 2011, quoted after ESCo Outlook 2012]. On the federal state level the Upper Austrian "Energy-Contracting Program" has yielded 56 projects up to now [ESV 2011, quoted after World ESCo Outlook 2012], and the Landesimmobilien-Gesellschaft mbH (LIG), the real-estate holding and management agency of the regional government of Styria is implementing an "Integrated Energy Contracting" Program [Bleyl 2011]. Other examples are the "RE:FIT" program in London [RE:FIT 2012] or the "EPEC" project in Sweden, which is a knowledge platform and has contributed to the development of the procurement process in energy performance contracting [EPEC, 2006]. This list does not claim to be comprehensive, but

shall demonstrate the widespread diffusion of the client-led approach in Europe. However, despite the rather large number of proven cases (not all of them being invariably successful off course), the overall market development is behind expectations, e.g. in order to achieve 2020 energy saving goals.

The literature provides various indications for obstacles of energy efficiency technologies (e.g. [Marino et al. 2011], [Sorell 2007]). Often these are described in rather general terms as lack of "financing", "information", "know-how" or "resources" and others, which explain their rather slow market diffusion more or less well in our experience. Literature also offers some recommendations on how to overcome these barriers. However, we found very little documentation or analyses of the role of project and market Facilitators for ESCo market development in the literature [VfW-AK ESC 2012], [Bleyl, Seefeldt 2012]. The goal of this paper is to fill this gap and to

1. create a scientific reference of the project and market Facilitator case for further discussions,
2. demonstrate the added value for a wider application of Facilitators for ESCo market development and
3. provide guidance for facilitation services and activities as well as policy recommendations.

The underlying goal is to increase understanding of the opportunities and barriers of Energy-Contracting as a delivery mechanism for performance based energy efficiency and supply services in order to support ESCo market development and to increase its contribution to achieving energy policy goals.

The research questions can be summarized as follows: which know-how, procedures and organizational change processes are needed on the client side of the energy service market? And secondly, how can Facilitators enable (potential) clients to structure and outsource comprehensive demand side energy projects to ESCos?

This paper is structured as follows: We set out by describing the various interdisciplinary questions, challenges and tasks a potential ESCo client faces on the energy service market. We then give a detailed overview of typical activities Facilitators perform along the project life cycle to support clients. Here we differentiate between specific project facilitation and more general market facilitation activities. This is followed by economic analyses of project facilitation cost in relation to investment cost. Before summarizing and drawing conclusions, we also reflect the development of ESCo projects in public and private administrations against the need for organizational and psychological change management.

We do not cover in detail any specific facilitation topics such as selection of procurement procedures and ESCo models or life cycle cost analyses, nor any technical aspects of energy efficiency measures in this paper. Generally, we assume that the reader has a basic knowledge of the Energy-

Contracting (EC) approach as well as comprehensive demand side energy projects in buildings and industry.

Acknowledgements

This work was carried out in the framework of the International Energy Agency's Demand Side Management Implementing Agreement. Its Task 16 on "Competitive Energy Services (Energy-Contracting, ESCo Services)" brings together experts on Energy-Contracting from countries around the world, who join forces to advance ESCo models and markets [IEA DSM Task XVI 2012]. Questions or remarks are very welcome. You can reach the authors through EnergeticSolutions@email.de or use the individual contact details on the back pages.

IEA DSM University in collaboration with Leonardo ENERGY have put up a webinar on Facilitators, which can be accessed through this link: http://www.leonardo-energy.org/webinar/esco-market-development-role-facilitators-play.

3 Methodology

Answers to the research questions are provided by drawing on different resources and methodologies. To identify know-how and processes needed to outsource comprehensive energy service projects, we have analyzed a typical energy services project life cycle, primarily from the perspective of a client. As a procurement model, we take a 'negotiated procedure', which is often applied in European public ESCo markets to select a best bidder. The analyses of 'Facilitator' services and activities for ESCo project and market development is based on interviews with existing ESCo clients, Facilitators and ESCos in six European countries and Korea. In each country between three and five open interviews were conducted . The guiding questions were 1. What kind of consultancy services are offered?, 2. What kind of organizations are involved? and 3. What kind of funding is used? The results are again structured along an energy service project life cycle. The Facilitator approach is applicable to both public and private sector clients and independent of a particular energy service business model (ESC or EPC).

The economic analyses of project facilitation cost relies on empirical data from 32 "real world" ESCo projects in different European countries and from South Korea, out of which 28 were based on an EPC business model, four IEC and one ESC project. In addition we had one aggregated data set from Switzerland for saving measures in some 2,300 companies in the context of CO2 target aggreements. For the analyses of the change process we refer to Kurt Lewin's model of change [Lewin 1963] and take a first approach to apply it to change processes to enable client organizations and its individuals to outsource demand side energy projects.

The above analyses is supplemented by desktop research and practical experiences from members of 'Task 16', the energy service task of the International Energy Agencies' Demand Side Management Implementing Agreement [IEA DSM Task XVI 2012] and from Germany.

4 Procuring Energy Services – a clients perspective

The goal of this section is to identify know-how, processes and skills needed to successfully outsource comprehensive energy service projects, primarily from the perspective of a (potential) client. To do so we follow a typical energy service project life cycle. On a timeline, four main phases are distinguished: 1. Project development, 2. Procurement, 3. Construction and 4. Service delivery and operation.

By way of example, the figure below summarizes the main process steps for clients and ESCos following a negotiated procurement procedure, which is often applied in European public ESCo markets to select a best bidder for comprehensive energy service projects.

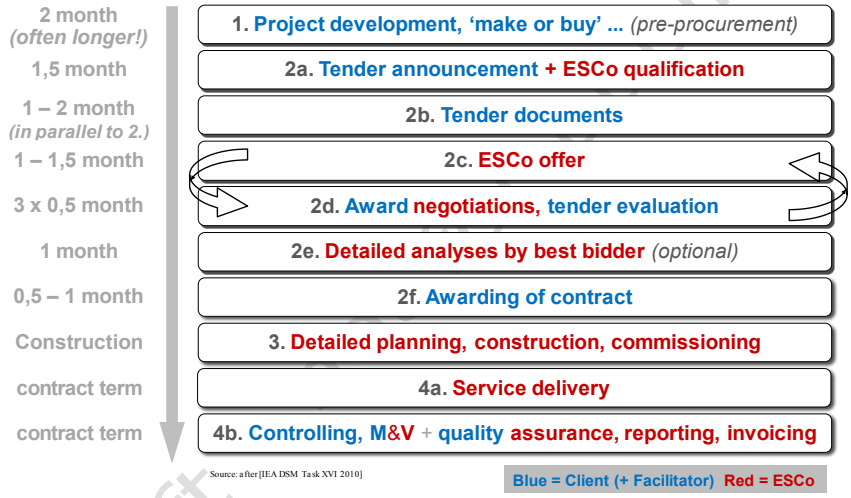

Figure 1 Outsourcing energy projects: Overview of workflow (client and ESCo) and typical lead times

This approach is applicable to both basic energy service business models Energy Supply and Performance Contracting – in fact the selection of the business model should be part of the project development phase.

Based on the above work flow, the main, non-technical challenges a client needs to resolve in order to structure and procure comprehensive energy service packages are derived and can be summarized as follows:

1. Project development phase:
   - During the project development phase, first of all the concrete project goals and resources available need to be established in consultation with the key stakeholders, which requires good communication skills. Also the facilities are identified and the scope of service and interfac-

es defined, typically based on an interdisciplinary feasibility study1. The client needs to take a basic 'make or buy' decision, weather to outsource or not. In case of outsourcing, the ESCo business model (e.g. ESC or EPC) needs to be selected and adapted to the project. Last but not least project financing requires structuring, which necessitates budget arrangements and sourcing (opex, capex ...). All the above tasks require good social and interdisciplinary project management skills.

- In order to justify decisions for capital intensive measures with long pay-back periods, the economic appraisal requires a life cycle cost evaluation. This is still not common practice and tools or experience are not often readily available.
- Financing requires multi-year commitments and sourcing from capital as well as operational budgets. To do so in the public sector, budget law provisions and budgeting procedures need to be adapted.
- Contractually, ESCo contracts typically encompass a mixture of works, supply and services components with long contract terms, which may raise concerns of contract security and others.

Many of the above listed skills are actually needed in other phases of the project cycle as well, examples being economic life cycle cost appraisal for the assessment of the ESCo offers, the detailed structuring of the financing or the adaption of the contract model to the final project design and best bidder. Also communication and interdisciplinary project management skills are needed throughout the project cycle.

2. Procurement phase (2a – 2f in Figure 1):
   - For the tender announcement, the selection of a procurement procedure requires an estimation of the project value and a decision on company qualification and selection criteria. For the proposal evaluation project specific award criteria are needed.
   - Instead of procuring individual pieces of the project package, the entire project cycle is outsourced, typically to one general contractor. Corresponding to the comprehensive nature and outsourcing of financial, technical and operational project risks, typically negotiated or competitive dialogue procurement procedures are applied. In terms of public procurement legislation, this is justified, because "a prior and overall pricing is not possible, due to the nature or because of the risks associated with the delivery of the services."2
   - Tendering is typically done using functional specifications which cover the entire project cycle (as opposed to detailed specifications for different trades and individual stages of the project cycle).

[1] This feasibility study does not need to be an (investment grade) audit, but should assess technical, economical, financial, legal and organizational project feasibility (an IGA should be done by the ESCos selected in our view).

[2] BVergG 2006 § 30 (2) Austrian public procurement law (translation by authors)

3. Construction: No particular tasks besides building owner representation and controlling
4. Service delivery and operation phase:
   - **Measurement** & **verification** and quality assurance skills are needed to assess the deliverables of performance based energy services, in particular for savings achieved in EPC contracts (c.f. [IPMVP 2012] or other approaches). And even with professional M&V approaches, inaccuracy and a degree of insecurity of the savings achieved may still remain as [Waltz 2002] points out.

Other obstacles may arise from the split incentives between owners and tenants in rented buildings. Or if there is a (possible) change of facility ownership or utilization before the end of the contract term. Also limited trust in a long-term partnership over an entire contract term, e.g. if the ESCo is small, are sometimes mentioned.

Last but not least, an ESCo project involves various competencies and responsibilities in a client's organization across different departments and even within technical divisions. These different entities may or may not necessarily share the same interests. For example in Germany for a building belonging to the central government, there are seven departments involved: two ministries, four subordinate administrations (with responsibilities for the building and the usage of the building) and a federal institute (the owner of the building). Another example from Belgium is the maintenance team of a technical department, which has a multi-year plan established, that interferes with the outsourcing activities foreseen. More generally, often the integrated planning approach challenges the independent and established business activities of individual technical disciplines and their individual representatives.

To summarize, some of the above task and challenges may constitute significant obstacles for a potential client to procure comprehensive energy service packages, because they require know-how and experience, which is not readily available to customers who are used to operate their facilities "in-house". Moreover, project implementation commonly necessitates organizational and personal changes from established routines, procedures and personal relationships, which is often an overlooked but persistent obstacle. The latter topic is addressed later in a separate section.

We conclude that many potential clients will need internal or external support to solve some or all of the above tasks and challenges. This thesis is also supported by the fact that the above requirements and more generally energy efficiency are typically not core business activities of a client's organization. Also life cycle cost minimization processes, regulations and tools are often not in place and existing procurement processes are designed to buy individual components, not integrated package solutions. Not least, the task of contracting with an ESCo arises only once per project cycle of typically five to fifteen years (or even up to 30 years for building envelope refurbishments). Furthermore this thesis is supported by ample empirical evidence: Many successful EPC projects - as listed by example in the introduc-

tion - were in fact developed with external support from so called Facilitators. (c.f. [Bleyl, Seefeldt 2012])

5 **Project** (and market) **Facilitators to enable clients**

In this section we summarize activities and services to support and enable clients to outsource concrete demand side energy projects. Secondly, we describe more general activities for ESCo market development, like awareness raising, information platforms or lobbying. As a first result we propose to differentiate between project specific facilitation and more general market facilitation activities, to be labelled as 'Project' and 'Market Facilitators'. In this paper we put an emphasis on project facilitation but give at least an overview of typical market facilitation activities and actors as well.

The focus of the research was mainly to identify concrete facilitation activities performed but we also looked at types of organizations and examples as well as sources of funding. Standard technical project engineering tasks (e.g. HVAC engineering) are not seen as project facilitation activities and accordingly are excluded here.

5.1 Project Facilitator Services

What kind of consultancy services are offered by Project Facilitators to support their clients to structure projects in order to contract comprehensive energy services packages to ESCos? Here we summarize the results of a market survey by providing an overview of project specific facilitation activities (without describing these in much detail here). The results are categorized into 1. Typical services performed, 2. Types of organizations and examples as well as 3. Sources of funding. As in the previous section, the presentation of the project facilitation activities is structured along with the project life cycle as displayed in Figure 1.

5.1.1 Typical project facilitation activities along an energy service project life cycle

1. During the project development phase, a variety of different consultancy services are offered:
   - Financial rough analyses of monetary saving potentials and net present value of future saving cash flows. Sometimes the analyses 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 the bases for a decision to investigate project feasibility in more detail.
   - Technical rough analyses: Appraisal of technical and economical performance indicators and benchmarking in order to achieve a first es-

timation of potentials. This approach is often used as a first step in communication with a clients technical managers.

- Technical-economical-ecological comparisons of different efficiency or supply measure options on the bases of a life cycle cost analyses, pay back 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 implementations;
- Workshops with client's and their stakeholders, where 1. Opportunities, risks and requirements of ESCo models are presented and 2. The project specific goals and framework conditions as well as the components of the energy service package are defined. Another aspect of these workshops often is to enhance communication between different stakeholder groups and individuals to resolve possible conflicts of interest.
- (Technical) project pre-structuring and business model: Definition of project goals and framework; selection of facilities, scope of service and interfaces and in succession selection and adaption of ESCo business model.
- Financial pre-structuring: Selection and adaption of financial model in consideration of equity, third party contributions and assessing of subsidy programs.
- Interdisciplinary feasibility studies to assess technical, economical, financial, organizational and legal feasibility of an envisioned project. These often serve as the bases for a 'go or no-go decision' for a detailed project preparation and call for proposals.

Across the different tasks, a Facilitator's job often is to facilitate communication between all stakeholders involved and to secure interdisciplinary project management up to continuous "hand holding" with a client. The project development phase ends with a basic decision to start the procurement process and with the allocation of resources or to end the project. Most of the above consultancy services are needed again in later phases of the project cycle, e.g. life cycle cost assessment for tender evaluation, technical and financial project structuring and fine-tuning of the contract model to the final project design and best bidder. And last but not least of course communication and project management.

2. Procurement phase. Basically Facilitators offer to manage the entire procurement process on behalf of a client. This typically encompasses activities such as:
   - Selection of a procurement procedure based on an estimation of the project value, an analyses 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.

- As derived from the project goals, the ESCo company qualification and selection criteria as well as the award criteria for the evaluation of the ESCo offers are defined.
- Drafting of the tender documents (ToR, specifications): For complex energy service projects, mostly functional specifications for the technical, economical, organizational, financial and legal requirements and framework conditions of the service package are used (this also includes baselines for EPC business models). Furthermore, the tender documents typically consist of a model contract, general comments on the award procedure and a proposal template.
- ESCo contract design: Legal advice; selection of model contracts; adaption to project and business model, incorporation of project specific contents and negotiation results after the best bidder selection. The final product is a contract ready to be signed by client and ESCo.
- In the case of a Negotiated or Competitive Dialogue Procedure, two to three rounds of negotiations are organized and conducted with the biddings ESCos. During this phase technical and financial project refining is achieved. After every round of negotiation, the proposals are evaluated to finally arrive at the best bidder.

Another service for ESCos and their clients is an independent ESCo offer appraisal. This service includes recommendation to financial institutions (FI) and a guarantee to clients to continue project operation in the case of an ESCo failure. It is offered by ESCo associations in Germany and Switzerland.

3. During the construction phase, Facilitators sometimes resume building owner representation and project management tasks for implementation supervision and commissioning. These services are often agreed in separate contracts.
4. During the service delivery phase, often (independent) **measurement and verification** by a third party are provided. This may include drafting of M&V plans and controlling; quality assurance. Also invoice verification and mediation between client and ESCo may be on the agenda. These tasks run continuously over the project term and are often agreed in separate contracts.

Figure 2 pictures the key tasks and relationship of Facilitators as intermediaries between clients and EE suppliers.

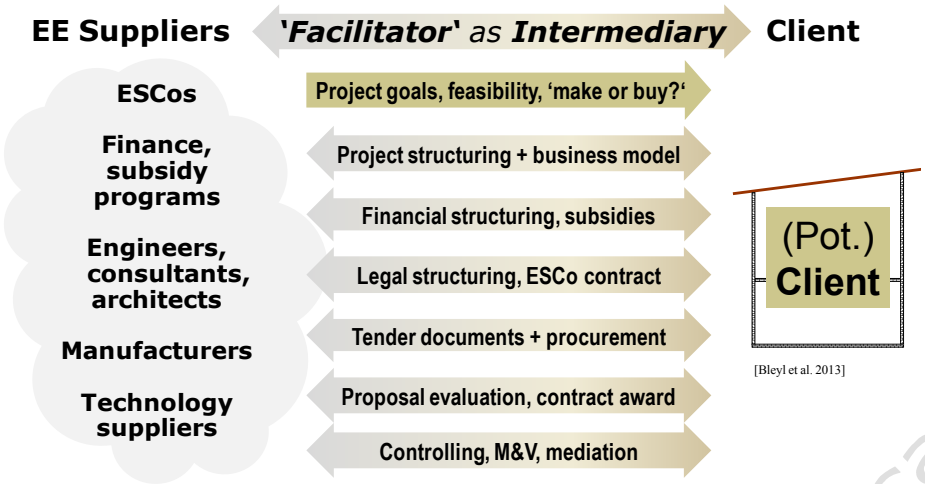

Figure 2 The Project 'Facilitator' enables and links client and suppliers as intermediary

Another important Facilitator role is to serve as an intermediary between clients and ESCos "cultures", interests and expectations in different phases of the project cycle. This mediation may encompass guidance to ESCos on energy related client needs and requirements either for specific projects or in general, information and exchange about innovative energy services models or cooperation opportunities. Sometimes also client's expectations towards ESCos and energy service models need a 'reality check' in order not to overburden the model. Or mediation may be needed to find consensus how to adapt energy cost baselines to changes in utilization of a building or plant utilization. Facilitators can also help to solve billing or M&V issues.

Other Facilitator tasks may be to serve as agents for change processes in client's organizations or to support individuals herewith (c.f. section "Psychological and Organizational Change Processes ...") and a transfer of ownership of the project to the client.

5.1.2 Types of organizations and examples

We have identified different types of energy agencies (EA) on regional (e.g. [BEA 2012], [GEA 2013], [KEA 2012], [energiekonsens 2012]...) and local levels (e.g. Heidelberg) which currently act as Facilitators. However only a small percentage of the 422 European EAs registered with ManagEnergy [ManagEnergy 2011] have active experience in ESCo project facilitation. National type EAs tend not to be involved in project specific facilitation activities, exceptions being for example the Fedesco knowledgecenter or the German Energy Agency dena. Also (mostly smaller) consultants such as energy efficiency advisories or energy audit companies as well as some legal advisors (e.g. Ernst&Young, Deloitte ...) offer at least the legal aspects of the facilitation process and work in cooperation with experienced energy service consultants.

5.1.3 Funding for project facilitation

Funding for project facilitation activities is mostly provided by the consulted clients, exceptionally also by ESCos. A number of countries and regions have subsidy programmes to support facilitation activities (e.g. in Korea for SMEs of up to EUR 10,000. The German 'Bundesstelle für Energieeffizienz' (BfEE) is currently considering to set up a Facilitation subsidy program). Subsidies for project facilitation were frequently quoted as a good means to overcome project development obstacles.

5.2 Market Facilitator Activities

In this paper we put a focus on project specific facilitation activities in order to enable concrete ESCo projects. However in order to distinguish from more general ESCo market development agendas, an overview of typical ESCo market facilitation activities is provided here. The results of the market survey is summarised and categorized into 1. Market facilitation activities, 2. Types of organizations and examples as well as 3. Sources of funding observed. On a time axis these activities are mostly in the forefront of concrete projects in order raise awareness and to provide information to potential market stakeholders but some more project specific activities like management of subsidies are located during project implementation phase.

1. Market facilitation - sample activities

- Documentation of good practice examples in different end-use sectors either on a searchable data bank or leaflets, e.g. [DECA 2013] [dena 2013], [EA.NRW 2012], [energiekonsens 2012], [KEA 2012],
- Operation of a 'Contracting hotline', which offers information for facility owners, e.g. [dena 2013]
- Information and promotion campaigns; organizing of seminars, workshops or conferences
- Drafting of Energy-Contracting guidebooks, which are addressed to public administrations and other stakeholders to enable project development and implementation. Guidebooks typically contain a description of the different stages of the project life cycle, in particular advice on procurement issues, tender evaluation and sometimes also model contracts (e.g. [dena 2013], [EA.NRW 2012], [energiekonsens 2012], [KEA 2012], [IEA DSM Task XVI 2012]).
- Provision of model contracts for different business models (cf. also guidebooks)
- Initiation of ESCo associations e.g. BELESCo in Belgium; ESCoNetwerk in the Netherlands, [DECA 2013].
- Operation of databanks of existing ESCos, e.g. [Contracting Portal 2013]
- Supporting measurement and verification of savings know-how: Introduction and translation of the IPMVP protocol to a national frame-

work and organizing of CMVP trainings (e.g. Austrian Energy Agency in 2012)

- Facilitation of financing and management of subsidy programs: Access to capital, e.g. through low interest financing programs or management of tax incentive programs on behalf of government entities (e.g. KEMCo).
- In some countries, so called 'Super ESCos', which are meant to serve as Facilitators and aggregators on the demand side of the market and to facilitate financing have been initiated, e.g. FEDESCo in Belgium or EESL in India [Limaye 2011]
- Last but not least market facilitation activities may also encompass advisory opinions and lobbying for better policy frameworks for the ESCo market.

2. Types of organizations

We found mainly energy agencies on the national and regional levels, which provide market facilitation activities. But also associations of ESCos and EE industry (e.g. BELESCo, [DECA 2013]), communal energy and climate advisors, in dependent consultants (in the framework of funded projects) and federal 'Super ESCos' (e.g. Fedesco in Belgium, EESL in India) provide market facilitation services.

3. **Funding sources** (in decreasing order of relevance)

Most market facilitation activities are funded from government money. Important contributions were also found from IEE funded projects. Membership fees of associations and seminar fees are further sources of funding. Generally we found budgets to be widely diverging and very much depending on the activities.

6 Project facilitation cost and funding

For the economic analyses we have compared empirical data on project Facilitator consultancy cost from some 32 "real world" different ESCo projects. These cost data were analyzed in relation to the investment cost and other relevant project indicators of the respective ESCo projects.

However costs of different projects may not be directly comparable, because they can be a function of project size, complexity of technology systems (e.g. heat only or electricity, water, steam …), data availability (who does ascertainment of basic energy data?) and on the scope of facilitation services performed (entire scope of services as described in the previous section or only parts of it?). Comparability between different countries may be limited by the fact, that the cost evaluations were made sparately by country, wherefore the methods applied can be somewhat distinct from one country to another.

Another problem was limitations in data availability in three countries: On grounds of data protection, no disaggregated data were available for Switzerland. There is an aggregated figure of some 2,300 companies, which have contracts with a Facilitator-like organization, that helps them reaching their CO_2-target agreement (through a reduction of CO_2-emissions and energy consumption) in order to get exempted from the CO_2-taxation on combustibles. The aggregated investments of the 2,300 companies are 125 Mio. CHF, whereof the Facilitator costs are around 6 percent. The facilitation cost in Sweden are estimations based on the available data. The costs are estimated by the Facilitators and they are not specific for a certain project. They probably vary from case to case. During the analyses it became clear, that in Korea ESCOs are acting as Facilitators for their own projects. Facilitation cost could not be declared separately from labour and other project related cost, so we have decided to exclude the Korean values from the cost analyses.

Nevertheless, the data in the figure below provide some first indications of project facilitation cost in relation to investment cost. Comparability is best given within countries.

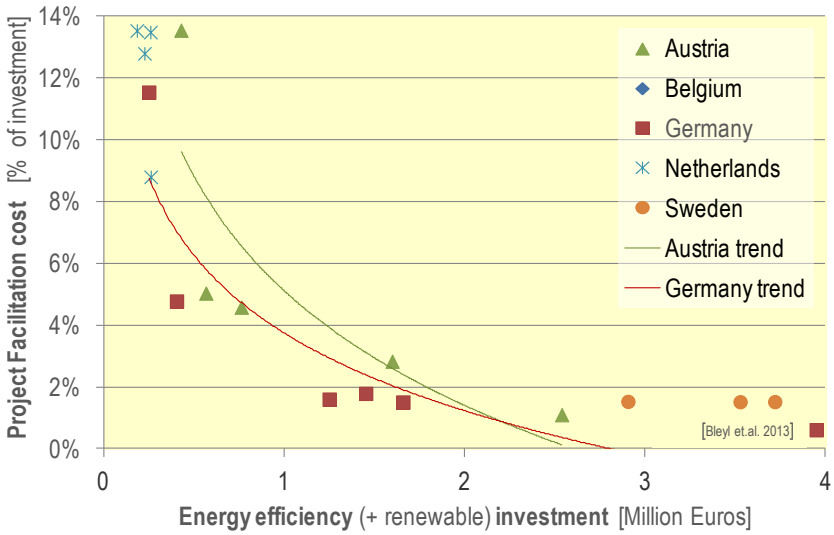

Figure 3 Project facilitation in relation to energy efficiency (and partly renewable) investment cost

In the more developed project facilitation markets in Austria, Germany and also parlty in Sweden, we found typical Facilitator cost to be on average at 3 % of EE investment (and in some projects renewable supply) cost, with a spread between 1 % and 14 %. In absolute numbers, average facilitation cost in Austria and Germany are comparable at 30 thousand Euros, ranging between 16 and 58 thousand Euros; whereas the average in Sweden is at about 60 thousand Euros. Facilitation costs also appear to have only little correlation with project sizes, which means the percentage value decreases for bigger projects. Cost for controlling of invoices, M&V or baseline adjustments during operation phase are typically not included, but are agreed on demand in separate contracts.

Exceptionally high cost values (which are outside of the range of plotted values in the figure above in order to improve the resolution of the main data field) were found in emerging ESCo markets in Belgium and the Netherlands (e.g. in Rotterdam) 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.[3]

In terms of funding of facilitation cost, the following options could be observed: 1. Payments by client (similar to regular engineering or consultancy project fees); 2. Contract relationship with client but payment of facilitation cost by best bidder ESCo, which was announced already in the tender documentation. In some projects, a share of the remuneration was performance based, e.g. a percentage participation in the savings achieved.

With regard to subsidy schemes for facilitations cost, e.g. the German Federal Office for Energy Efficiency is currently discussing the following financ-

[3] The same was true e.g. in the early development phase of the Berlin "Energy Saving Partnership" EPC program in the mid 1990s

ing options for qualified Facilitators: 1. Subsidies for an initial consultancy to introduce EPC, 2. Subisidies for the implementation EPC projects and 3. Performance based incentive paynents to clients and ESCos for highly ambitious EPC projects [BfEE 2013, expert interviews, not published].

7 Organizational and psychological change management required

As presented in the 'clients perspective' section of this paper, new approaches, interdisciplinary cooperations and know-how in a variety of areas are likely to be needed in a clients organization in order to structure and procure comprehensive energy service projects. From an organizational and psychological perspective, solving these tasks may require a substantial amount of change in comparison to established routines and responsibilities with typically several different organizational units being affected. On an individual level, resistance may occur because of anticipated loss of power or status, possible extra work or fear of individual failure to cope with innovations may be encountered. Currently, project developers act according to their best personal knowledge and communication skills, but usually without a methodical background for change processes. As a consequence, project development often relies on highly motivated individuals and has not yet become a standard procedure in most (public) administrations.

First of all, we want to raise awareness for these seldomly mentioned and often underestimated barriers to outsourcing of energy efficiency projects. And secondly, we propose to take a look at change management theory and set out to sketch its application to change processes for potential public and private clients to enable them to outsource comprehensive energy projects. In the latter regard, we do not claim to have ready-to-apply solutions, so this attempt should be seen as a first approach towards the problems identified.

Kurt Lewin's model of change management, distinguishes three consecutive stages of a change process: 1. Un-freeze – 2. Change – 3. Re-freeze [Lewin 1963]. The theory focusses on individuals as the key to sucess. As mentioned beofore, change may threaten the balance of an organization and the psychological security of its members. To 'un-freeze', the key to kick start a change process is showing why the current way of doing things cannot continue. It is recommended to understand the beliefs, values, attitudes and behaviors that define the organization and its members – and be prepared to challenge them. The prospect of change may put people off balance and can evoke strong reactions. According to the model, this (controlled) crisis is necessary. Without it, there is a lack of the clear motivation and participation, which is deemed necessary to change. As a result of this process, readiness to 'un-freeze' has to emerge. The 'Move'-phase describes the change process itself and in the goal of the 'Re-freeze'-phase is to avoid relapse by creating a new balance and to anchor changes in the (corporate) culture [BdI 2009].

The following table summarizes the change process stages and its application to potential energy service clients.

Table 1 Change management: Three stages and their application to energy service clients

Change theory stages	**Application to energy service clients: => Proposal of process steps and guiding questions**
1. 'Un-freeze' in which readiness to change has to emerge and how to get into the 'Move' is defined	1. Explain and communicate, why change is needed? Driving forces may either be external (e.g. environmental policy goals or legislative mandates, new technologies, competition, market or societal change) or internal (mission statements, new management or employees, general re-structering, reduction of costs or creative individuals, who are convinced of certain ideas). 2. Appointment of a change agent (internal or external), who coaches the process on the customer side (c.f. description of task profile and skill set below).
2. 'Move' in which the change process itsself is implemented	1. Who are the crucial stakeholders to initiate and maintain a change-process (it may help to distinguish four groups: Managers, experts, multiplicators and networkers). => classification of stakeholders in terms of motivation and impact on the change process. Who might advocate, support or promote the project? Also decide whom not to engage. 2. Enhance communication between stakeholder groups and individuals to resolve conflicts 3. Detailed understanding of process steps for outsourcing (c.f. 'Procuring ES – a clients perspective' section). => Analyses of what ressources are missing? 4. Discussion of pros and cons of outsourcing versus in-house implementation for the organization 5. Analyses of opportunities and threats for the individuals through the outsourcing approach 6. Specification of new duties and responsibilities 7. An important step is an agreement on future ressources for the tasks and responsibilities As a result of stage 2, the organization and its members have been enabled to procure comprehensive energy service projects.
3. 'Re-freeze' Goal: creating a new balance to avoid relapse and to anchor changes in the (corporate) culture	1. Reflection of successes and failures => initatiate improvement processes 2. Documentation of new processes and routines => good practice, lessons learned 3. Exchange of experiences with colleagues and peers in other organizations

As a desired result of the change process, the clients organization is enabled to actively manage the requirements of comprehensive energy service projects. Its members have defined their new roles from managers of individual life cycle parts of a project to being client's representatives and supervisors in 'energy saving partnerships' and controllers of external energy service providers. Thus, they have become knowledgeable counterparts for ESCos. To sustain, the changes have become part of the corporate culture.

The tasks of a change agent may encompass: 1. Reflection of aspects conducive and detrimental to the implementation of change (What are the biggest risks for the process and how can they be met? What are the best methods to keep the process going? Who might be harmful for the project due to negative attitudes towards it (brakeman/opponents)?), 2. to offer support and orientation for initiator of change process and stakeholders, 3. Identification of stakeholders/ affected structures and processes, 4. Perception and observation of mood concerning change (motivation, resistance) and progress in the change process, 5. Creating acceptance by communicating a positive vision. To be successful, the change agent should have strong communication and active listening skills as well as social competences, a sensibility and understanding for different positions of target groups, be able to motivate, inspire and convince and be knowledgeable about the corporate culture and how to use it to implement change. [Re-Co 2013].

Tools for implementing changes are based on organization, information and communication. A successful change process usually requires a good mix of actions. The necessary depth of change is an outcome of the diagnosis. Possible actions are shown in the figure below.

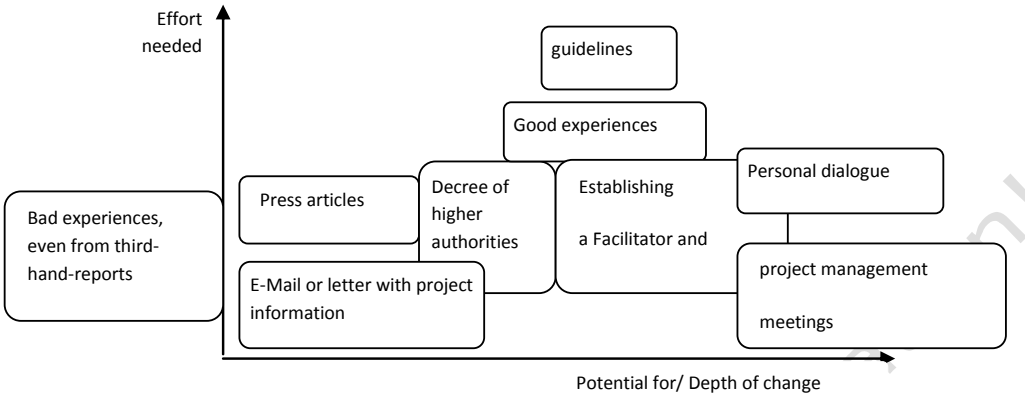

Figure 4 Actions for change in relation to effort and depth of change

To summarize, the change management model is an opportunity to better understand the structural challenges individuals and organizations face, when required to change established procedures. The change management model also offers a systematic and professional approach to overcome typical barriers and find new solutions. The chosen tools and actions should enable employees in (public) administration to choose EPC instead of the standard procurement processes. In doing so, communication and personal dialogue are the most important tools for change management. At the same time it should be mentioned, that further efforts and experiences to develop and apply this approach to EPC need to be made. Relevant research question are: What are the most promising tools to be used by Facilitators for accompanying the change-process and implementing energy services in the areas of organization, information and communication? What can be done to strengthen the driving forces and to „un-freeze" in clients organization? Who to partner with? And how can experiences collected be spread in order to make EPC-procurement become standard-procedures in public bodies? What is the role of networks and Facilitators in this process?

8 National Perspectives by Task 16 Experts

The national perspectives by the the Task 16 experts are structured as follows: 1. Current situation and known players, 2. Issues that are or should be solved through Facilitators, 3. Activities to stimulate Facilitators and 4. Facilitator stories. They are displayed by country in alphabetical order. The contact details of the experts can be found at the end of this publication.

8.1 Austria

8.1.1 Introduction to Austria and Germany

The Facilitator approach and implementation in Germany and Austria is very much reflected in this paper, since it draws to a large extent on experiences and empirical evidence from these two markets.

The number of active Project Facilitators is not statistically recorded but by long-term experience there are probably two hands full in Austria and a few dozens players in Germany. Most of them are either energy agencies or (management) consultants specializing in demand side energy efficiency and renewables. Interestingly there are a number of competent in-house Facilitators in public institutions on the national, regional and local level.

The number of Market Facilitators, which act mainly as pre-project information providers, is probably bigger and more widely spread. Subsidy programs directly geared towards ESCos (as in the case of South Korea) are not available in Germany or Austria, nor is there a statistically sound recording of ESCo or related projects.

8.1.2 Current situation (by Reinhard Ungerböck, GEA)

Evaluations of energy consulting initiatives[4] by the Institut für Industrielle Ökologie in St. Pölten (NÖ) in Austria show that the percentage of implemented measures for energy efficiency measures, which are proposed by energy consultants, is only about 23% (14% electicity measures, 30% fossile heat) although the medium payback of the proposed measures is 6,1 years. This shows significantly the gap between potential and realisation of measures.

As the Federal building stock is already treated in the "Federal Contracting Campaign[5]" a large share of the public buildings is effectively off the market.

[4] http://www.win.steiermark.at/cms/dokumente/11310569_55947421/3d6e5a85/WIN-Performance-Evaluierung_2010.pdf

[5] http://www.transparense.eu/download-library/epc-market

Also the residential sector remains a big issue as there are 3 separate sectors (from the juristic point of view) to consider[6] and in each of these sectors energy services proved to be difficult to implement (exceptions confirm the rule):

Rentals

The building owner is obliged by law (Mietrechtsgesetz) to make conservation and improvement measures. Energy services like EPC are legally possible, the main barrier is that energy savings must be relayed to the tenant and cannot be transferred directly to an ESCO. The solution to refinance the measures is to raise the rents (bilateral agreement with tenant) and to use laybacks (if available). Both solutions bear problems in their implementation because of the involvement of numerous parties.

Housing associations

For housing associations the same obligations (Wohnungsgemeinnützigkeitsgesetzes) count as for rental building owners (see above). The conservation fee can be raised up to 15 years for measures with lifetime more than 10 years.

In case of comprehensive refurbishment the saved costs for heating can be used for maximum 15 years for refinancing through an ESCO.

Owner community

The owner community is obliged (Wohnungseigentumsgesetz) to make conservation and improvement measures. The improvements have to be approved with 50% majority of the shares of the owners. If a contracting project is planned it is advised to inform the owner community at an early point for communicating the advantages of the business model.

Although the effective market for energy services is compressed within these limits, there is still a need for facilitators of energy services, especially in the areas of **regional public bodies, municipalities, communities, industry and medium-sized enterprises**.

On the other hand there are a large number of qualified energy-consultants, who produce the majority of energy audits, energy performance certificates and other consultations. These consultants come in touch with a high quantity of energyefficiency potentials without being capable to get them to realization. The reason: still in this group there is little detailed knowledge about energy services (exceptions: energy supply contracting), probably not even enough to create links to qualified project facilitators or to set the first steps towards the development of an energy service project.

8.1.3 Issues that are or should be solved through Facilitator

To close the gap in the respective target group between potential and realised measures energy consultants should be trained in basic skills of project development of energy services, so the first steps of a project can already

[6] EESI EPC national report of Austria: http://tinyurl.com/pnz926p

be performed. In this respect the following issues have to be addressed by the "facilitator light":

1) How to identify potential energy service opportunities
2) Basics of procurement and various business models of energy services
3) How to convincingly communicate project opportunities to customers
4) Which competences are necessary for a project development and where can they be acquired

8.1.4 Activities to stimulate

Within the framework of EESI2020[7] a facilitators tool kit, containing a facilitators guideline and a supporting marketing and communication package, is under development, which will be available most likely in spring 2014. On this basis trainings and information activities for energy consultants will be organized to qualify them as the desired "facilitator light" and to reach a higher market penetration.

8.2 Belgium

The demand to EPC-facilitators in Belgium is **positively** influenced by the increasing number of EPC-projects. The development of the Belgian EPC-market was initiated in 2009 by a handful of motivated experts of Factor4, EnergInvest and Fedesco in the frame of European projects (EESI, ChangeBest, etc.), individual initiatives of the mentioned companies and Fedesco. After many years of giving workshops, promotional campaigns, connecting with potential clients,… the Belgium EPC-market seems to expand. Fedesco published in December 2013 the call for candidature for the first EPC-project in the public sector, the two largest Belgian cities (Ghent and Antwerp) are expected to realize EPC-projects (in the frame of EESI 2020 and Transparense), several Belgian provinces en communities started EPC-initiatives, the Flemish Energy Company (Vlaams energiebedrijf) launched in January 2041 a call for candidature for EPC-projects in public buildings in the Flemish regions (schools, administrative buildings, hospitals, etc in total several thousands of buildings), etc.

A factor that **negatively** influences demand to EPC-facilitators are the severe cost savings implemented by virtually all Belgian local governments, as a consequence of the financial crisis and the obligation to reduce the their governmental debt. Due to the intensive EPC-promotion actions of the last few years, quite some decision makers understand that it is possible to save costs via EPC-projects and this insight increases the political support for EPC. Yet, they are not always aware of the necessity for engaging experienced EPC-experts and facilitators for actually realizing the net-cost saving. Factor4 estimates for instance the yearly net cost savings - thus energy

[7] http://eesi2020.eu/au/

cost saving minus cost of EPC-facilitator, investment, etc. of a typical EPC-project (1 mio. Euro baseline) - on 100 keuro each year. The cost of an experienced external EPC-facilitator has to be paid only once, is limited to some ten thousands and is actually required to realize the yearly net-cost saving. In spite of the high profitability of an investment in EPC-facilitation, the local governments hesitate, amongst other because:

- The implementation of an EPC-project will need the approval of the highest political decision makers at the local authorities. During this political decision process, the investment in the preparation of the EPC-project (e.g. investment in the EPC-facilitator cost) has to compete with other investment needs as the resting scarce investment resources. Only investments with crystal-clear and indisputable results, preferably on the short term, will survive this competition. EPC-facilitation has a competitive disadvantage as it quickly can be perceived as an consultancy service with vague and unclear advantages.
- Local authorities underestimate the specialized expertise needed to realize a successful EPC-project and think that their own staff can do the job
- Local governments have to save costs. As they cannot/don't want to fire people, they have to reduce external costs such as EPC-facilitation costs.
- External EPC-experts are weakly positioned for 'convincing' the authorities to engage EPC-facilitators as their arguments will quickly be perceived as a way to sell their own services.

8.3 Germany: KEA´s Approach to Project Facilitation

(Guest Authorship by Rüdiger Lohse, KEA)

KEA, which is the semi- statal climate protection and energy agency of Baden- Württemberg was founded 20 years ago. KEA considers energy services to hold one key function in the energy efficiency market, which, by combining efficiency and economic benefit for client and ESCO, may help to increase pace and number of energy retrofit projects not only in the public sector significantly. KEA has initiated the implementation of low- investment energy management services and, since 1998, develops contracting and especially EPC projects for the public building stock administration. After a first critical review of the current market situation from the perspective of a "facilitator", KEA explains one appropriate strategy to roll out EPC in large areas.

8.3.1 Current Situation

Although being one of the advanced European EPC markets, the EPC business model is far from being a widely approved and adopted tool on the German energy efficiency market. What is meant by "advanced EPC market" then? Doubtlessly, since 1996 German stakeholders have been successfully in preparing guidelines for the implementation of EPC projects in the public sector which could be used by facilitators to start up new pro-

jects. Also about 80- 100 good practice examples started in the last 10 years should exist and are waiting for evaluation and dissemination. However, this is just one important first step leaving many other untraced: hardly anybody from the stakeholders settled EPC to be not a sort of debt (if revenues and savings balanced) and then identified and rolled over all these numerous, partly discriminating impediments in the legal context of the target groups. Just to pick one of these stumbling blocks: the obligation for most of the German public bodies, prepared to decide on their ESCo´s best bid (including a guarantee on the energy savings) after several months of European procurement and decision making, to finally provide a 20-30 page report including a cost- benefit analysis for decision making. In this report, required by public supervisory entities (in most cases lacking any knowledge on EPC), it has to be verified that this specific EPC project will turn out better than a municipal "owner- directed" project with the same project scope. Beside, that all this is a useless piece of theory work comparing apples with oranges, no directive is given how to calculate and, at least, it leaves the final decision not at the municipality. All this unsettling practice will, of course, not happen if a public body will decide to conduct an "owner-directed" business model, where **nobody will take the responsibility to keep given promises on energy efficiency of the project**. Now, from the perspective of a public decision maker, a municipal (mostly good- willing) energy manager or an civil engineer chairing the municipal building services, which of the both paths seems to be the more feasible one under these circumstances? Surely it will be not EPC or other business models off the beaten track.

8.3.2 Dissemination Strategies for Public Buildings

What showed to be a success story in Berlin still fails to take place nationwide in the numerous Federal, Statal and municipal buildings, not even to talk about industry and commerce and the private dwelling sector. Without tangling too much in Germany´s three different segments of the public sector, Federal Government (BUND), Federal States (Bundesländer) and municipalities administer their buildings and require specific decision making processes. In Federal buildings, where the German energy agency DENA plays a pivotal role in the preparation of EPC projects and has launched a valuable EPC guideline, the number of started projects in the last five years has been moderate.

Berlin, as the German capital and comparatively small area Federal state had to go short ways in preparation and decision making. Berlin still is not yet seen what it could be for other Federal States in Germany: a good practice example how a Federal State could set up a plan to establish EPC as a preferred tool to improve energy efficiency in a Statal building management. Remarkable efforts, not yet comparable to Berlin´s comprehensive approach, have taken place in the last years in the minority of 5 Federal states buildings: Bavaria (Mittelfranken- Peter Kalmer), Bremen (BEKS, Helga Feidt), Hesse (Statal Building Management) Nordrhein- Westfahlen and Baden- Württemberg. The other 11 Federal states are still not using EPC at all!

However, the majority number of public buildings is spread over large areas and numerous public authorities like municipalities, counties and other public administrations. Here, concepts for EPC dissemination have to be designed under the premise of numerous, de-centralized decision making structures. Relevant attempts that have been run through the previous years are far from a success story: an exemplary evaluation in the public sector shows, that 20 municipalities in south-west Germany have spent in the last five years more than 200 Mio. € for energy efficiency and refurbishment in public buildings with < 5% of this amount being realized in EPC projects.

8.3.3 KEA´s Approach 1998- 2010- mind- mapping and reshaping of the business model:

KEA considers energy services to be one of the key factors for the implementation of ambitious energy efficiency and retrofit targets in the building stock. Energy services offer a combination of economic benefit and energy efficiency which a typical public administration is hardly able to bear in a competitive level: providing efficiency guarantees, integrating funding and specific technological expertise etc. To gain an own level of experience, in 1996 KEA has initiated the implementation of a low- investment energy management service for the public building stock administration, sparking 10-20% of energy savings and participating in the verificated energy saving. Here, KEA takes the role of a small EPC- ESCo, controlling and optimizing existing heating-, electricity and water facilities and actively monitoring the energy consumption of buildings in very short terms and over a contract period of at least 3 years. In the last years training- seminars for the technical staff and the buildings users to save energy has been in the focus.

Since 1996 more than 50 municipality- and county administrations commissioned KEA with the implementation of such energy management services in total of about 5.000 public buildings. As a side- effect, the annual energy report provides all necessary energy consumption-, cost- and emission data, the achieved savings and potentials for the implementation of high-efficient energy conservation measures (ECM). In the majority of cases, these ECM were carried out by the municipality in the traditional "owner-directed" business model, where architects and civil engineers do the planning and design, the construction company implements the ECM and the public building owner operates it.

In 1998 KEA started to look for more efficient business models to implement energy conservation measures and adopted the Berlin EPC business model to the specific requirements of public bodies, mostly municipalities. This means, until today, not only to prepare written information on websites, flyers, articles but to spend amounts of time to be on- site, presenting the EPC business model to numerous public administrations, which in these times were and until now are hardly prepared to leave their beaten tracks of the "owner- directed" business model. During the "mind-mapping- phase" KEA conducted more than 150 presentations for mayors, civil engineers, energy managers, facility managers, municipal councils and public bodies

associations and collected their thoughts and recommendations for what an EPC should go for:

- Strong emphasis on the measures: many public administrations are preparing or already have a climate action plan, an energy concept or some other advanced energy planning tools, settling the over- all targets for CO2- reduction, energy efficiency and the implementation of renewables. In these cases the EPC project is the implementing tool for these targets. The scope of energy supply and energy conservation measures will be assessed in a feasibility study and discussed intensely with the municipal administration and council. The results will be documented in a "list of measures" which will play a crucial role in the procurement process.
- Integration of renewables in EPC projects: many municipalities own forest, produce woodchips of waste wood but do not have the capacities to set up and operate a biomass plant on their own. Usually biomass plants are built in energy supply contracting projects. Since 2005 KEA advanced the regional EPC to a new biomass- EPC business model.
- Integration of non- energy benefits: the acceptance for EPC especially in the municipal segment will in most of the cases be better if the building administration sees a benefit beyond just an energy saving effect with a short payback period. In the last ten or more years, public administrations tended to neglect their obligations for retrofit and maintenance (r+m) of their building and installations stock and to divert thee r+m revenues unrecoverable in other sections of their accounting system. Often, the infrastructure of buildings has taken damage and lost part of their value over the years. Instead of picking the low-hanging fruits, administrations expect EPC to contribute to dissolve their re- investment and their r+m problems.

KEA took in this case an "advanced facilitator role". The resume of the discussions in the mind- mapping phase and own strategic assessment led to a regional EPC business model which was distinguished in some crucial points to the Berlin EPC business model. KEA conducted the mind- mapping phase, evaluated the results, derived new assets and value prepositions and advanced and reshaped the Berlin EPC business model in several points:

- The project structure had to put more emphasis on the preparation phase and here especially the feasibility study and the mutual work on the technical project scope.
- The decision making criteria of the EPC procurement process had so far been focused on the energy and cost savings. Now, the measures have been added to the decision making criteria. The criteria sets up incentives for an ESCO to consider the "list of measures" and non-energy benefit measures.

In the following years, KEA acted as a facilitator, supporting the public bodies in all stages of an EPC project starting with the feasibility study to the signing of the EPC contract. In the performance phase KEA provides support in the m+v for the public bodies. In the recent 12 years KEA has initiated

more than 30 energy supply contracting projects and 20 EPC projects. Meanwhile the average is the development of 2- 3 EPC- projects per year. More and more public bodies apply for KEA´s support. The

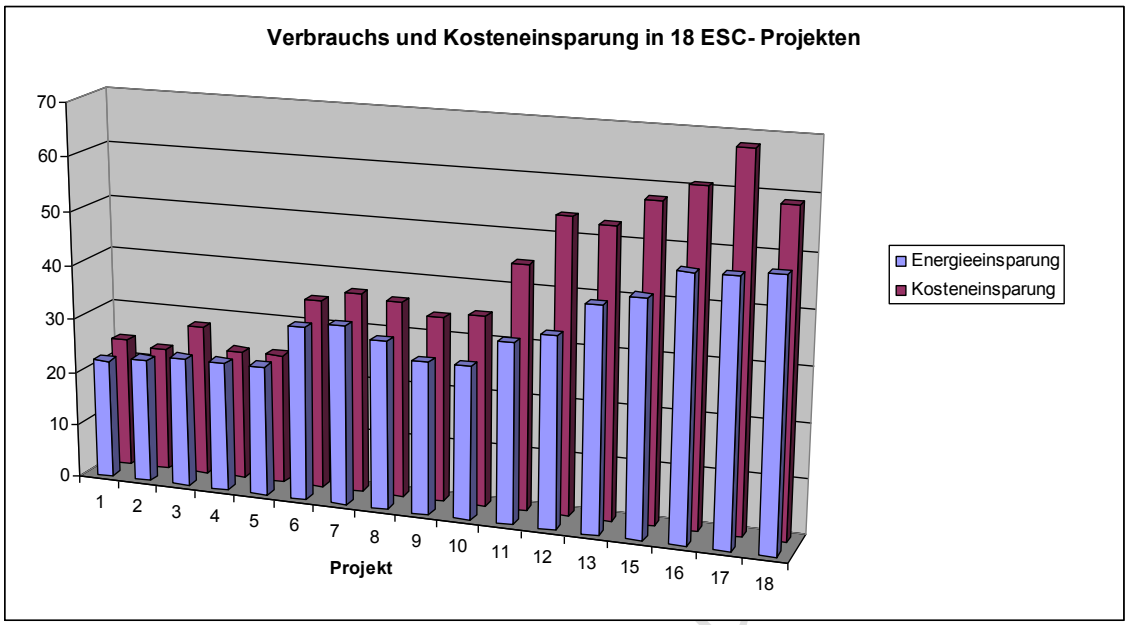

Figure 5 Energy- and Cost- Savings in 18 evaluated EPC projects in Baden- Württemberg facilitated by KEA

8.3.4 KEA´s next steps: Development of an EPC Roll- out strategy

With enough good- practice EPC projects initiated, KEA as a semi- statal energy agency has to reconsider which role it should play in the next years. Our opinion is that, if we continue to focus on the project facilitation, the EPC roll- out in a Federal state like Baden- Württemberg (1110 municipal administrations, 36.000 km²) will take place very slowly. The target of the roll- out strategy will be to increase the pace and number without losses in the quality of the projects. Discussion on the details of the strategy is still ongoing but a few first results can be outlined already.

Training of Facilitators:

In the past, most of the engineering companies neglected an active role as project facilitator, for them it is still more attractive to conduct the planning in an "owner- directed" business model. The typical revenue of an engineering company in the energy and building sector is between 8-15%, those of the facilitator is typically <5% of the investment cost. From about 200 engineering companies working in that field less than 10 offer facilitator services. Other potential partners for an EPC- roll out are regional energy agencies and energy consultants (Energieberater). KEA intends to set up a training program for facilitators. The target is to provide in all 35 counties one expert able to support public bodies on a regional level.

Information campaign:

The information campaign will have to inherit the methodology of the EPC business model. This means, that the information on results of EPC and other business models will have to be evaluated and prepared according to the needs of the public administrations. Important is that the information from the project also comes back and initiates a discussion on further advancement of the business model. The experience made by public administrations in EPC projects has to be collected continuously and evaluated under the premise of further optimization of the EPC business model.

Development of specific business models:

One important approach is KEAs ambition to develop performance related business models for deep retrofit projects in a Federal r&d project and on the level of IEA- Annex 61.

Another approach focuses on specific solutions for the scores of small and medium sized buildings. In this segment mostly SME will play an important role. These companies, for example medium sized hand-craft companies do not have an access to EPC related business models, which, at least will help to increase the energy efficiency in breadth. A different approach is KEAs ambition to develop performance related business models for deep retrofit projects in a Federal

8.4 Korea

8.4.1 Current Situation ESCos in Korea

'ESCo Facilitators', who mostly consult on behalf of a client, is to serve as an intermediary between clients and ESCos. Typically 'Facilitators' were divided as 'Project Facilitators' enabling project development, another important advantage of this buyer-led approach and 'Market Facilitators' putting a focus on project specific facilitation activities in order to enable concrete ESCo projects.

Since introducing the first ESCO project in Korea in 1992, the government has been raising and providing the Energy Use Rationalization Fund to assist ESCO projects. During the early period from 1992 through 1996, the government provided loans between KRW 2 billion and 5 billion each year for energy-saving facilities in general. Beginning in 2007, the amount of loans provided yearly began to increase significantly as the government sought to promote ESCO projects more actively. Private sector capital was involved in 2011 in the form of the ESCO Fund, with the government protecting the special low interest rates even on the commercial ESCO loans provided by the private sector. New legislations have been passed since 1998 to provide tax benefits for energy users who have installed energy-saving facilities through ESCO projects.

The specific legal rationale for today's ESCO policy was found in the Energy Use Rationalization Act (EURA), more specifically in Article 25 (Supporting Energy Service Companies), in Article 2 (Cancelling the Registrations of Energy Service Companies), and in Article 27 (Limiting the Registration of En-

ergy Service Companies), as well as in Articles 27 and 30 of the Enforcement.

Decree for the EURA and in Article 24 of the Enforcement Rules for the same law. In order for any company to register itself as an ESCO, it must be kept certain values and sizes of assets, technical workforce, and equipment , required by the Enforcement Decree.

There were only four ESCOs registered in Korea in 1992, but now there are 227 ESCOs registered in this country (as of the end of 2012). Of these 227 companies, 39 companies were newly registered, when 46 companies were cancelled as the end of 2012.

An analysis of the trend in these companies' sales records over the last five years shows that, the greater the funding provided for them, the greater their sales became. In other words, the ESCO market in Korea appears to be largely shaped and led by the governmental policy subsidies.

When 'Project Facilitators' is defined as intermediary for selection procedure of the project value, drafting of the tender documents, ESCo contract design etc.. ESCos themselves in Korea are acting as 'Project Facilitators'.

Typically 'Market Facilitators' are defined as an intermediary for project specific facilitation activities in order to enable concrete ESCo projects. 'Market Facilitators' are doing documentation of good practice examples in different end-use sectors, operation of a 'contracting hotline'to facility owner, operation of a 'contracting hotline' etc..

KEMCO has been acted as 'Market Facilitators' since the Ministry of Knowledge Economy delegated the task of registering ESCOs to KEMCO as of July1997. Accordingly, KEMCO has been processing the applications for ESCO registrations since then. And KEMCO introduced a factoring system to help lighten the debt burden on ESCos, extended the scope of financial assistance for ESCO projects, decreased in the fixed interest rate for ESCO loans extended the policy subsidy encouraging ESCO projects etc..

8.4.2 Issues that are or should be solved through Facilitator

ESCos market size in Korea are estimated 330 million US $ based on 2012 but it has not been extended rapidly recently. New investment of ESCO has not been increased because of financing difficulty of low credibility small size ESCo companies and lack of new ESCO business items from conventional efficiency improvement business. And also ESCo market size has not been grown because Energy conservation was not priority than the utility capacity improvement and the productivity increase in term of industrial sector. Owner of house was lack of investment for energy saving because renter of house was charged on expense of building energy consumption in terms of residential sector. Most ESCo market depend on ESCo loan from government and more ESCo market by private fund need to be expanded.

8.4.3 Activity to stimulate

In order to expand ESCos market with new area, we need to increase the investment for IT based BEMS and FEMS etc.. Recently Korea has experienced electricity power shortage because on the problem of nuclear power plant. And we hope that ESS, EMS and DR could be treated with ESCos business to solve recent electric power shortage problem. In order to strength the competiveness of ESCos, the excellent ESCos should be supported more financially by evaluating the specialty, technology capability and so on. And number of projects by guaranteed saving contract should be expanded more than by shared saving contract and high credibility M&V method for performance evaluation is required to improve credibility of ESCo in Korea.

8.5 Netherlands

The interest in ESCo's in the Netherlands is still young. The last 2 years, there is a strong interest in ESCo's. The reason for this was the creation of an appealing ESCo project at 9 swimming pools in the city of Rotterdam in 2012 .

In addition, in 2012, the objective ESCoNetwerk as a Market Facilitator was grounded to overcome barriers and unfamiliarity . ESCoNetwerk is a sister network of PPS Network Netherlands , with 8,000 members and 40 participants , the largest independent Dutch organization in the field of public-private partnerships .

ESCoNetwerk has about 40 members with very diverse backgrounds, including lawyers, banks, accountants, government agencies, consultants, contractors, companies focused on large infrastructure projects and large international ESCo 's. Clearly herein is the heavy stamp of PPS Network .

The structure is little related to the ESCo. The sample projects are largely based on supply contracting and / or are realized abroad.

The role of the Project Facilitator is indistinguishable. Companies such as Deloitte and AT Osborne hereby have the best fit to the role of Project Facilitator. These companies focus mainly on public procurement .

ESCOPLAN acts as an independent Project Facilitator focused on comprehensive refurbishment and in another, strictly separate role as advisor to Manesco, a cooperative ESCo .

In the Netherlands there is strong need for more structure in the role of the Market Facilitator and more independent Project Facilitators.

8.6 South Africa (Guest Authorship Simon Zellner and Christian Borchard, GIZ International)

8.6.1 Background

The 'ESCo Facilitator' idea in South Africa came up as a result and as a recommendation of an international experts' mission in 2012. The experts identified good potential for the development of an energy service market in South Africa. However, out of some estimated 200-500 ESCos in the country, only 5-10 qualified as real ESCo according to international definition allocating the financial and technical risk with the ESCo. The large share of ESCos rather operated as energy auditors who developed in South Africa as a result of an IDM funding programs from the country's state-owned electricity provider ESKOM.

The interventions from these funding programs targeted mainly at the replacement of light bulbs with energy efficient lighting and served mainly to reduce South Africa's peak demand in the late afternoon. Products were often supplied by ESKOM and the risk was borne by the client, not the ESCo.

Due to South Africa's historically low energy prices in the past, energy efficiency was not high on the agenda for many years. Recent years have seen massive tariff increases of up to 30% annually and have strongly raised awareness on energy efficiency solutions. In addition, ESKOM's IDM program has been put on hold because of financial challenges due to delayed finalization of two large new coal power plants and due to restricted electricity price increases by the National Energy Regulator of South Africa, NERSA.

As a result of this situation, both large and medium-sized enterprises require energy efficiency solutions in the short run, in order to save money and to generate electricity independently and to avoid power failures and rolling blackouts as experienced at large scale in 2008. At the same time, South Africa's energy intensive industry still accounts for almost 50% of the country's energy consumption and face suppressed demand as a consequence of insufficient generation.

In the light of ESCos, this created a unique opportunity for contracting models, such as energy performance and energy supply contracting. Supply contracting however, is limited to on-site generation as the country does not provide any feed-in tariffs. In addition, wheeling and licensing are not common.

8.6.2 ESCo/Cogen Facilitator

GIZ, The Deutsche Gesellschaft fuer internationale Zusammenarbeit who is implementing the South African-German Energy Program (SAGEN) on behalf of the Federal Ministry for Economic Cooperation and Development focuses under its energy efficiency component on the development of an energy service market and the demonstration of energy efficient technology.

As part of various experts mission, GIZ decided to set up an ESCo Facilitator at one of its cooperation partners, the South African Energy Development Institute (SANEDI). The role of the newly established Facilitator is to moderate and communicate between the ESCo and the client and to provide know how on energy related policies, financing opportunities as well as model tender and contract documents for energy performance contracting.

As South Africa's interest in cogeneration increased significantly, GIZ opted to combine both cogeneration and ESCo into an ESCo/Cogen Facilitator approach for SANEDI. Since the country does not have sufficient knowledge on these topics yet, support services from an international consortium of experts were tendered and assigned in order to assist SANEDI in taking over this task.

An important precondition to sustain the Facilitator in the future was the commitment from SANEDI's side to provide internal staff as a counterpart to the experts and to take over their role in the medium to long term.

The ESCo/Cogen Facilitator has started its work at SANEDI in October 2013 and has already organized a number of workshops, supported feasibility studies and assisted in the promotion of cogeneration for various associations, for example the energy intensive user group of South Africa (EIUG).

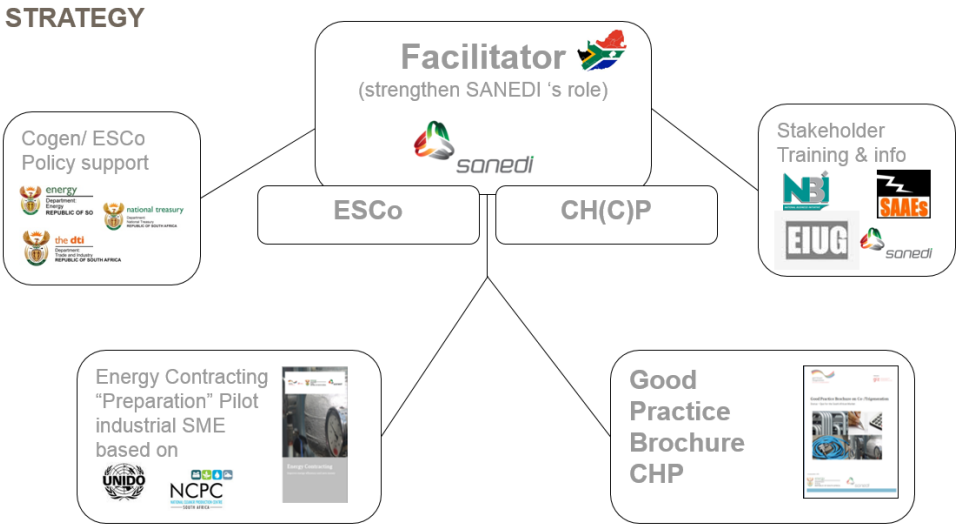

Figure 6 South Africa's ESCo/Cogen Facilitator Approach (Source: GIZ)

Business and technology training for ESCos will be provided through a number of workshops and the provision of good practice guides and model documents on SANEDI's website.

8.7 Sweden

8.7.1 Current situation and known players

The current status of the Swedish energy service market reflects a need of stimulation action and support. The overall increase in number of EPC projects is weak compared to the estimated potential in the market.

Historically, a positive market development can be identified; the number of EPC projects increased substantially under 2000-2008, until the market had a major decline in 2009-2010, but this market drop was temporary and the market recovered in 2011, although in a modest extent compared to earlier. According to the actors on the market, the development has not been positive in the last couple of years. Data from 2012-2013 can verify this information showing that the number of EPC projects has dropped more than half compared to 2011.

Today, only a handful of consultants are performing EPC project facilitation activities (around 2-3 players), of which none work full time with EPC project facilitation. Although there is quite a number of competent and experienced ESCOs active in the Swedish market, a conclusion could be that not enough projects are being initiated.

The scope of EPC investments varies roughly from 1,700-17,000 k€. The facilitator cost varies from 35-60 k€. Some facilitators argue that the cost could reach up to 175 k€. The wide range of cost estimates could be explained by what types of facilitator activities have been considered. Costs above 60 k€ are likely to be related to when a client outsources its' own work to a consultant.

Taking into account the preparation in an EPC project, the total project cycle is normally around 11-12 years. The energy cost savings are 20-25 %.

8.7.2 Issues that should and should not be solved by Facilitators

Today, the focus of project facilitation activities is mainly performed in the procurement phase of the energy service projects. In order to develop the Swedish energy service market, facilitation services have to be developed in the preparation phase. These services should focus on management support specifically to create decision support, including the pros and cons of establishing an energy service agreement, based on the individual conditions of the potential purchasing authority.

8.7.3 Activities to stimulate

The Swedish Energy Agency has issued a call for proposals in 2014 for project facilitation activities that are directly related to an investment in energy efficiency in buildings. The intention is not on generating more and deeper technical studies, but the aim is rather to create favourable conditions for property owners to realize concrete energy efficiency investments. The

studies shall recommend different alternatives of combining internal activities and different types of energy services to property owners.

Today, there are a considerable number of energy audits and studies on how energy and environmental impact can be reduced in both public and private properties. Despite being well-documented and proposing cost effective energy efficiency measures on technical/operational level in most cases, few lead to implementation of specific energy efficiency measures.

The Swedish Energy Agency expects this call for proposal to attract more players in the project facilitation market and consequently help property owners to initiate more energy efficiency measures through energy services.

The Swedish Energy Agency has also granted funding to 'Energieffektiviseringsföretagen' (EEF) to analyze the possibilities and create a plan to form an ESCO association. The ESCO association is due to represent the Swedish energy efficiency services industry and play an important role in the implementation of Energy Efficiency Directive.

8.8 Switzerland

There are several different policy measures aiming to reduce energy consumption and CO_2 emissions. These measures could act supportively to establish an Energy Performance Contracting (EPC) market in Switzerland as some of the measures can help partly financing projects. Despite of that the Swiss EPC market is still in its infancy, so far. Switzerland has several years of experiences in Energy Supply Contracting (ESC) but there are only a few companies with ESCO-Services, which offer EPC and only around a dozen EPC projects are running at the moment. Facilitator in the classical meaning of ESCO business are not known in the still underdeveloped EPC market, nonetheless there are some facilitator-like activities taking place.

In Switzerland enterprises can get exempted of the CO_2 levy on heating fuels by committing themselves to reduce their CO_2 emissions by a certain amount and reach a specific CO_2 emission target. Additional, in several Swiss cantons, enterprises with high energy consumption (>5 GWh heat consumption and/or >0.5 GWh electricity consumption) have to improve their energy economy. Enterprises of these two categories and enterprises which commit themselves voluntarily to reduce their CO_2 emissions and energy consumption can contract with the Energy Agency for Economy (EnAW, Energieagentur der Wirtschaft) to reach specific CO_2-emission targets. EnAW is a facilitator-like organization. If a company shows interest in a CO_2-emission target, EnAW conducts an energy check-up in the company, evaluates its saving potential, gives recommendations how to reach the saving potentials and establishes so called short and long lists with energy efficiency measures. The short list contains the cost-effective conservation measures and the long list the non-economical measures. Energy specialists of EnAW accompany the companies during the realization phase and monitor their savings.

In order to get an overview of the Swiss ESCO market the Swiss Federal Office of Energy (SFOE) and the Operating Agent of the IEA DSM Program Task 16 "Competitive Energy Services" organized the first Swiss ESCO workshop in October 2013. The workshop was meant to build up a network between the different actors in the Swiss ESCO business and to discuss the status quo with its pro's and con's and the future perspective.

It was an interesting and lively discussion and there was a consensus that one of the reasons why the EPC market is not further developed in Switzerland is the lack of knowledge how to handle the procurement process (public tender) of the public sector and the lack of Facilitators who could ease this work. Several EPC projects were conducted in the industry sector but the ESCO mostly struggled to acquire projects in the public sector despite the high energy saving potential in public buildings of the federal state, the cantons and municipalities. There are several conclusion taken out of the workshop: EPC projects have to get better known among potential clients in the private and the public sector. The responsible public authorities have to build up a minimum of knowhow and the ESCOs need to convince with their well developed EPC projects. Therefore a comprehensive guideline for an EPC procurement process should be developed and published. Further, the federal state could act as a role model and conduct a first pilot project. Because of the potential lack of knowledge of the public authorities of this kind and size of projects, professional facilitators play an important role and have to assist the projects very closely. The guideline, the pilot project and the professional consultancy of facilitators shall promote EPC projects and help to reduce potential skepticism.

By keeping the Swiss ESCO network active, realizing the above mentioned measures and profiting from ESCO experiences of other countries, the Swiss ESCO Market has good chances to prosper. It will contribute to the aimed reduction of energy consumption and the achievement of the Swiss CO_2 emission targets.

9 Summary and conclusions

Market development in a (largely) non-regulated environment is ultimately determined by its (potential) client's decisions to buy or not to buy. Therefore this paper has taken a look at the ESCo market development, predominantly from a client's perspective, both public and private sector.

By their very nature, Energy-Contracting models constitute a significant degree of complexity: they offer solutions for an entire project or life cycle - from design, building, operation & maintenance, optimization, measurement and verification to disposal. And they integrate different technical trades as well as economical, financial, organizational and legal aspects of a project into one customized energy service package, respectively contract.

This integrated and multidimensional approach of performance based Energy-Contracting models opens up solutions for a number of obstacles in the way of energy efficiency projects, which are not achievable through standard planning instruments and procurement practices. Amongst others these opportunities encompass minimization of project cycle cost across the borders of capex and opex budgets, comprehensive planning and optimization across different technical disciplines and trades or performance and operation guarantees for an entire project cycle. In this regard energy services can be seen as a 'delivery mechanism' for energy efficiency and (renewable) supply projects (without discussing pros and cons of Energy-Contracting models or 'make or buy' decisions in this paper).

In return, this comprehensive approach has extensive implications and requirements for all parties involved but may particularly be a challenge for the client side. The need for change in comparison to established, standard procedures, which address only individual parts of the project life cycle, concerns a variety of areas along the project life cycle. Examples are developing and structuring of interdisciplinary projects across technical trades and departments, economic appraisal in terms of life cycle evaluations, multi-year financing arrangements across different capex and opex budgets, non-standard procurement procedures, contractual design of long-term energy service agreements or measurement and verification of the savings achieved.

Particularly from a clients perspective (but also for consultants and want-to-become ESCos as well as in the perception of energy policy makers), we found that these requirements often constitute substantial obstacles and challenges towards comprehensive energy service projects and thus Energy-Contracting market development. Solving most of the above issues requires special know-how and expertise, which is not often readily available in public institutions nor within most private sectors undertakings. We conclude that many clients will need support to enable them in solving the obstacles and challenges outlined above.

As a solution, we have found that Facilitators, who mostly act on behalf of a client, can play and important and enabling role and have successfully done

so in different European and other Energy-Contracting markets. The Facilitators role is to consult to the client (and sometimes also the ESCo) and to provide the specific know-how and experience needed in order to surmount the energy services specific requirements outlined above. Additional Facilitator activities may encompass feasibility studies, selection of the best suited energy service business model (e.g. ESC, EPC or IEC), structuring of financing from different internal and external sources or subsidies, preparing tender documents, evaluating ESCo proposal as well as quality assurance and M&V on behalf of the client.

Besides enabling project development, another important advantage of the buyer-led approach is to foster competition amongst the supply side for particular projects. Likewise important the Facilitator approach provides a fair and level playing field for this competition between ESCos, other EE suppliers but also financiers.

Another Facilitator role is to serve as an intermediary between clients and ESCos '(corporate) cultures', interests and expectations in different phases of the project cycle. This mediation may encompass guidance to ESCos on client needs and requirements either for specific projects or more generally, information and exchange about innovative energy services model developments or cooperation opportunities. Sometimes also client's expectations towards ESCos and energy service models need a 'reality check' in order not to overburden the model. Or mediation may be needed to find consensus on how to adapt energy cost baselines to changes in utilization of a building or plant utilization. Facilitators can also provide independent advice how to solve billing or M&V controversies.

But even the best Facilitator will not be successful, if a client's organization and individuals are not enabled to meet the requirements and to become supportive and knowledgeable counterparts for comprehensive Energy-Contracting projects. We want to acknowledge the fact and raise awareness among Facilitators and other stakeholders, that the identified needs for change require approaches beyond economic rationale based on a 'homo oeconomicus' concept or environmental awareness. Instead psychological and organizational change processes need to be put on the agenda, even though this may be new territory for most energy efficiency professionals. A key task is to enable the members of the client organization to define their new role as clients representatives and supervisors in 'energy saving partnerships'.

Facilitation costs are up-front investments for project development and creating a level playing field for competition. In principle they are comparable to other up-front planning costs like fees for architects, engineers or other consultants. Even though more cost data would be needed for an in depth analyses, we found typical facilitation cost in the more developed project facilitation markets in Austria, Germany and Sweden to be 3 % of EE investment cost on average with a range between 1 % and 14 %. When comparing this cost to typical planning fees for engineers of - in first approximation - between 10 and 15% of the investment cost, the facilitation cost figures are notably lower - on average by about one half order of magnitude.

It was also repeatedly mentioned by clients and Facilitators, that through an intensive (but fair) competition between suppliers, the advantages achieved with regard to prices and quality outweigh the initial facilitation cost by far.

However, at least initially, facilitation cost has to be borne by the clients. This up-front investment often constitutes an obstacle for market development and we would like to raise the attention of policy makers to this opportunity to support market development. Facilitation cost also appears to have only little correlation with project sizes, which means their percentage value decreases for bigger projects. On the other side of the coin, this means that facilitation cost for smaller investment projects can be prohibitively high. In this context, facilitation cost can also be viewed as transaction cost and thus can be used as an indication for minimum project sizes of Energy-Contracting projects (c.f. [Bleyl et al. 2009]).

These conclusions are supported by empirical evidence from a number of ESCo market examples in Europe. Here, Facilitators supported potential ESCo clients and thus have successfully contributed to ESCo market development by creating a demand pull through enabling energy service project development, which led to calls for proposals for ESCos to bid on.

10 Outlook

Furthermore the Facilitator approach requires more knowledgeable and professional players as also requested in article 18 of [2012/27/EU] and by some ESCo associations. Since the nature of Energy-Contracting is not only complex for clients but for Facilitators as well, project facilitation requires interdisciplinary training and experience in the various fields of EE and RE technologies, life cycle cost evaluation, procurement of comprehensive services, contract design and not the least communication skills to facilitate between the different parties involved. The curriculum should be application-oriented and can be deducted from the typical facilitation tasks to be accomplished. Ideally, Facilitators should have knowledge and understanding of both the demand and supply side of the market.

Clients will need to decide which parts of the facilitation know-how they want to build internally and for which topics they prefer to hire external consultants. This is again a 'make of buy' decision, which will depend on the time frame, the resources available and the foreseeable number of projects in a client's portfolio to be outsourced. Whether this training can be left to commercial seminar providers or would need another institutional set-up is open for discussion. Proof of training or a comparable certification of professional competence could be made mandatory if public subsidies are to be utilized.

In the context of change processes we would like to encourage more interdisciplinary cooperation and research between the traditionally technically or policy led energy efficiency community and behavioral economists and change management professionals, e.g. with IEA DSM 'Task XXIV: Closing the loop - behaviour change in DSM: From theory to practice'.

It would also be interesting for future work to compare the buyer-led, facilitation approach to the more ESCo-led project development practice, which appears to be prevailing in Anglo-Saxon countries and other developing markets around the world, which have received technical assistance from mostly US-led assistance programs.

However despite the opportunities the Facilitator approach can enable, we should not lose sight of the fact, that some obstacles to EE can only be solved through legislative or regulatory changes, namely budgetary household regulations and respective accounting rules (e.g. for 'ring-fencing of savings') to permit signing and administrative implementation of long-term ESCo contracts in national, provincial or municipal public households but also in many private undertakings. Another prominent example, where legislative intervention is needed are the split incentives between landlord and tenants in the residential and commercial building sector.

The above issues will need to be addressed and the Facilitator approach multiplied, if the market is to develop from individual projects, led by highly motivated individuals, to mass roll-outs for comprehensive building refur-

bishment portfolios in order to provide more significant contributions of EE and more specifically the energy services sectors to our energy policy goals.

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e7 www.e-sieben.at/ *(since 01/2014)*

Grazer Energieagentur www.grazer-ea.at

Belgium
Fedesco: www.fedesco.be

EnergInvest *(since 07/2010)*: www.energinvest.fr

Factor4 *(since 07/2010)*: www.factor4.be

Finland *(until 06/2009)*
Motiva Oy: www.motiva.fi

India *(until 06/2012)*
Bureau of Energy Efficiency: www.bee-india.nic.in

Japan *(until 06/2009)*
Japan Facility Solutions, Inc.: www.j-facility.com

Korea *(since 07/2012)*
Korea Energy Management Coorperation: www.kemco.or.kr

Netherlands
Essent Retail Services BV *(until 06/2012)*: www.essent.nl

ESCOPLAN *(since 07/2012)*: www.escoplan.nl

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