The facilitation approach and the best practice implementation cases in Europe

Seminar on “Facilitation Approach for ESCO Projects”

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BEA – Facts and Figures

Established
- in 1992 as Public–Private Partnership

Shareholders
- Federal State of Berlin
- Vattenfall Europe
- GASAG
- KfW Banking Group

Capital Stock
- 2.5 m €

Annual Turnover
- 12.9 m €
- 905 k € company earnings (EBIT)

Know-how
- 52 members of staff

Services
- Contracting
- Consulting
- International Know-How Transfer

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Objectives of the presentation

- Conceive Energy Performance Contracting (EPC) as a process that should be facilitated for the customer / decision maker
- Introduce the concept of EPC project facilitation
- Describe the functions and tasks of facilitators
- Give best practice examples of successful facilitation programs in other nations
- Discuss the implications and perspectives of the facilitator approach in Thailand
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Agenda

1. Energy Performance Contracting process
2. EPC project facilitation
3. Functions and tasks of facilitators
4. Best practice examples
EPC is a market based delivery mechanism for EE projects and requires service providers to not only design and install energy saving solutions, but to guarantee annual cost savings.

- EPC uses defined and accepted worldwide industry standards for delivering EE upgrades through a low risk and accountable method.
- EPC leverages specialist skills from ESCO companies.
- EPC enables the project cost to be financed with annual cost savings used to repay the loan over the live of the investment.
- EPC process minimises risk of project underperformance and enables customers to service any associated financing obligations.
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Energy Performance Contracting: energy costs and contracting fee

- Guaranteed energy cost savings as a result of EPC (30%)
- Energy costs prior to EPC (reference year)
- Energy costs during EPC (converted to energy prices in reference year)
- Contracting rate to ESCO
- Immediate energy cost reduction for customer
  - Profit margin
  - Investment payback

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Energy Performance Contracting: energy costs and contracting fee

Cost in EUR/year

Energy cost before implementation of measures
ESCO fee
Total cost without EPC implementation
Energy cost after implementation of measures
Total cost after EPC implementation

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Key issues and success factors for the EPC process

- Guaranteed savings (performance based remuneration of the ESCO – choice and application of suitable contract model)
- Competitive auditing process (one-step vs. two-step process)
- Selection of suitable project portfolios (opportunity/risk assessment)
- Choice, design and fair implementation of energy performance contracts and guarantee clauses (risk allocation between contractual parties)
- Intermittent need and cost for independent advice on the client/investor side based on experience from implemented projects
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Reasons for the need of the facilitator approach

- Despite a large number of successful EPC projects has proven the efficiency of the model, the demand for energy services in Europe remained regularly below expectations.

- Using a facilitator approach the following barriers for the uptake of successful EPC/ESCO programs have been systematically addressed:
  - Low awareness of and lack of information about the concept
  - Real and perceived high business and technical risks
  - High level of mistrust in the EPC/ESCO model both from customers and from financing institutions in some countries
  - Ambiguities in the legislative framework, including the public procurement rules
  - Lack of experience to develop adequate tender documents and specifications
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EPC process (not) using facilitation services

ESCO Concept Presentation → (Pre)Feasibility Study → EPC + Project Concept Approved

Facilitator

- Project Development
- Procurement
- Proposal Preparation
- Competitive Auditing

ESCOs

Investment Grade Audit (IGA)
- Project Details
- Expected & guaranteed savings
- Financing details
- Implementation plan
- M&V

Go/No-go

Investment Decision → Project Implementation

M&V → Savings

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Facilitator is a link between EE Suppliers and (potential) clients

EE Suppliers
- ESCos
- Finance, subsidy programmes
- Engineers, consultants, architects
- Manufacturers
- Technology suppliers

'Facilitator' as Intermediary
- Project goals, feasibility, 'make or buy?'
- Project structuring + business model
- Financial structuring, subsidies
- Legal structuring, ESCo contract
- Tender documents + procurement
- Proposal evaluation, contract award
- Controlling, M & V, mediation

Client

(Pot.) Client
Facilitator is crucial for market start up

- Facilitators support the client, enabling project development
- Facilitators foster competition among ESCOs
- Facilitators create a fair and level playing field for competition
- ESCOs benefit from increased market potential with active Facilitators
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Key success factors of the facilitator approach

- Catalyzer for decisions (mutual understanding and trust among all involved parties)
- Independence
- Long-time tracking of projects (project experience)
- Centrally provided know-how
- Cooperation with fund managers
Facilitation cost impact depends on project size, complexity of technology systems, data availability and scope of facilitation services (percentage value decreases with project size).

Typical Facilitator costs amount to approx. 3% of EE investment with a surveyed range of (1 – 14%) in developed facilitation markets (M&V assistance not included).

Following options are common practice:

- Payment by customer (similar to engineering fees) or customer association (joint service)
- Payment by investing entity (possibly performance based or relative to an investment portfolio)
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Facilitation cost will not increase but lower total (average) project cost

- More project opportunities
- More implemented projects
- Less general costs for each project
- More energy saving measures at lower prices (competition between ESCOs)
- Better risk allocation
- Lower transaction cost for both the client and supplier side
- More confidence in project success and lower financing cost
- Total EE project cost will decrease with time and number of projects!
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General functions of facilitators

- Risk assessment
  - Identify promising areas for energetic rehabilitation
- Confidence-building
  - Increase confidence in the projects’ validity both from the client and supplier side acting as an independent engineer/expert
- Risk allocation by contractual provisions
  - Choice, design and fair implementation of energy performance guarantee provisions
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Tasks of facilitators in the energy contracting workflow

1. Project development, ‘make or buy’ ... (pre-procurement)
   2a. Tender announcement + ESCo qualification
   2b. Tender documents
   2c. ESCo offer
   2d. Award negotiations, tender evaluation
   2e. Detailed analyses by best bidder (optional)
   2f. Awarding of contract

3. Detailed planning, construction, commissioning

4a. Service delivery

4b. Controlling, M&V + quality assurance, reporting, invoicing

Source: after [IEA DSM Task-XVI 2010]

Blue = Client (+ Facilitator) Red = ESCo

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The role of the facilitator in the project development phase

- **Goal:** Determining project scope and promising project pipelines/portfolios

- **Key issues:**
  - Which sites or buildings should be included?
  - What technologies should be included?
  - What investment criteria should be applied (evaluation principles and criteria)?
  - Which funding mechanism is available or should be made available?
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Typical facilitation activities in the project development phase

- (Preliminary) Identification of saving potentials
- Tracking and benchmarking of energy consumption
- Feasibility reports regarding energy savings or distributed generation technology and system solutions
- Life cycle cost analyses and other economic and financial assessments
- Workshops with clients and their stakeholders
- Selection and adaption of ESCO business/contract model
- Project due diligence reports
- Identification and structuring of project funding
Goal: Using a uniform energy performance contracting process

Key issues:
- Project planning (tender management)
- Pre-qualification for bidders
- Request for proposal (standard RFP documents)
- Selection of best bidder (proposal evaluation and negotiation)
- Investment Grade Audit (one-step vs. two-step procedure)
- EPC contract draft and negotiation
Typical facilitation activities in the procurement phase

- Selection of a procurement procedure
- Definition of the ESCO company qualification and selection criteria
- Drafting of the tender documents (terms of reference)
- Choice and design of suitable ESCO contract
- Reply to requests of clarification by bidders
- Technical and economical evaluation of proposals
- Support/Organization of negotiations with preferred bidders (in the case of a negotiated or competitive dialogue procedure, usually two to three rounds of negotiations)
- Selection of the best bidder
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The role of the facilitator in the construction phase

- Goal: Quality assurance during installation and commissioning
- Possible activities on behalf of the customer or funder:
  - Representation and project management tasks during the implementation, supervision, and commissioning of energy saving measures
  - Technical Due Diligence reporting
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The role of the facilitator in the savings phase

- Goal: Assistance for measurement and verification of ESMs
- Possible activities on behalf of the customer or funder:
  - Technical and organizational support for measurement and verification
  - Invoice verification
  - Mediation between client and ESCO
Create a demand pull for EE projects by a facilitation program

Distribution of tasks / responsibilities
- Disclosure of aggregated energy consumption data (benchmarking data)
- Disclosure of time series of utility and analytical energy data for targeted facilities
- Identification of promising EE project opportunities
- Preliminary Technical and Economic Assessment
- Tender Documentation and Management
- Evaluation and negotiation of ESCO proposals
- Assistance in M&V
- Investment grade audit (IGA)
- Installation of ESMs
- Service delivery and Operation of equipment
- Performance guarantee

Goals of facilitation programs
- Monitoring & Targeting of energy consuming infrastructure and buildings (benchmark facility performance)
- Project delivery mechanism (standardized process to create EE project deal flow)
- Streamlined procurement and funding pathway (low transaction costs)

Facilitator

Customer / Decision maker
(Facility owner and funding/investing entity)
Industries & Buildings (government and private)

ESCO (preferred bidder)
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4. Best practice examples: Berlin Energy Partnership
Energy Saving Partnership (ESP) = Energy Performance Contracting (EPC)
for public buildings in Berlin

1995 initiated to reach ambitious climate protection targets

Coordination by Senate Department for Urban Development and the Environment; strong political back-up e.g. by parliamentary groups

Project management by Berliner Energieagentur
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Energy Saving Partnership Berlin

- Total number of Building Pools: 26
  since 1996
  more than 1,400 buildings
- Guaranteed savings in total: approx. 11.9 million €/a
- CO₂ reduction (1996-2012): approx. 600,000 t (in total)
- Total Investment: 53 million €

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EPC in Germany – Main Clients

- Public authorities 75%
- Hospitals 20%
- Trade and commerce, housing associations 5%

Cultural centres

Administrative buildings

Schools, Universities

Sports facilities

Prisons

Hospitals
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Energy Saving Partnership Berlin – Experiences and Results

✓ guaranteed energy savings achieved in most contracts, high savings up to 35% feasible

✓ 26 contracts operated by 15 different ESCOs, around 100 subcontractors (regional SMEs) involved in implementation and maintenance

✓ good quality of saving measures because of expertise of ESCOs, rising experience and improvement of cost-effectiveness

✓ additional improvement of maintenance situation by central coordination through ESCO

✓ no legal proceedings or need to use bank guarantees so far

→ Success thanks to **reliable legal framework, standardized procedures and contracts together with professional process management**
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Project example – Wenckebach Hospital Berlin

- **Building:** public-owned hospital with 438 beds
- **Baseline:** 808,359 €/a
- **Guaranteed savings:** 39.6 % = 320,000 €/a
- **Invest:** 2.44 m €
- **CO₂ reduction:** 1,789 t/a
- **Duration of contract:** 12 years (start in 2011)
- **Measures:** modernisation of heat distribution, cooling and ventilation system, installation of CHP unit, web-based energy management system, user trainings
- **Special feature:** insulation of top storey ceilings
Project example – Deutsche Oper Berlin (German Opera house)

- **Building:** building complex with playhouse, studios, administration etc. (approx. 60,000 sqm GFA)
- **Baseline 2005/06:** 651 K€/a
- **Guaranteed savings:** 35.8 % = 233,155 €/a
- **Invest (hardware):** 1.48 m €
- **CO₂ reduction:** 1,085 t/a
- **Contract duration:** 12 years
- **Obligatory measures:** refurbishment of VAC installations, optimization of cooling plant, hot water generation and CBCS
- **Special features:** contribution of 1 m € to construction costs by DOB, resulting in increase of budget relief from 14,992 €/a to 126,021 €/a
Project example – Berliner Bäder-Betriebe

- Pool: 11 buildings/swimming pools
- Baseline: 4.9 m €/a (incl. water costs)
- Guaranteed savings: 33.5 % = 1.6 Mio. €/a
- Invest: 7.9 m €
- CO₂ reduction: 4,938 t/a
- Duration of contract: 10 years (start in 2001)
- Measures: water saving technology, optimizing filter flushes, separating water circulations, modernisation of hot water generation, renovation of air conditioning and lighting
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Berlin Energy Partnership facilitation approach

- EPC (process) model
  - Shared savings model (Financing by the ESCO)
  - One-step or two-step process
- Scope of facilitation services
  - Selection of suitable building pools (Project development phase)
  - Drafting of the tender documents (terms of reference), proposal evaluation and contract negotiation (Procurement phase)
  - Implementation and commissioning support (Construction phase)
  - M&V assistance, meditation between ESCO and customer (Savings phase)
- Enabling tools
  - Standard EPC contracts
  - Standard tendering procedure
  - Standard proposal evaluation tool
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4. Best practice examples: London RE:FIT program
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RE:FIT – London’s building retrofit programme

### Summary

- Identify buildings to retrofit, set a target energy saving and payback period
- Run a mini competition to select an Energy Service Company (ESCo) to carry out the works and guarantee energy savings
- Payback of the investment is guaranteed with the delivery risk transferred to the ESCo

**RE:FIT** allows public bodies to make substantial cost savings, reduce energy bills and the carbon footprint of their buildings

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Source: Greater London Authority
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The RE:FIT framework

Jan 2010: OJEU compliant framework established

Benefits for public sector clients:

• Provides pre-negotiated, EU compliant contracts
• No royalty costs to access the framework
• No shared savings
• Opportunity to make substantial energy and carbon saving
• Savings are guaranteed
• Low payback periods
• Uses experience to develop best practice templates/standards

Source: Greater London Authority
RE:FIT achievements

69 London organisations are engaged with RE:FIT:

- 25 London Boroughs
- 19 NHS Organisations
- 25 others

Retrofitting completed/near completion on 136 buildings including:

- Universities
- Schools
- Civic centres
- Hospitals
- Fire stations
- Office buildings
- Cultural centres
- Police buildings
- Community buildings
- Colleges
- Leisure centres
- Libraries

£2.16m energy bill savings per annum

£15.1m investment

Source: Greater London Authority
### RE:FIT Pipeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Buildings</th>
<th>Savings</th>
<th>Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>First building retrofitted</td>
<td>42 buildings</td>
<td>£1m energy bill savings per annum</td>
</tr>
<tr>
<td>2010</td>
<td>RE:FIT Pilot</td>
<td>136 buildings</td>
<td>£2.16m energy bill savings per annum</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>Pipeline of 370 buildings</td>
<td>Savings of over £4.9m p.a. in energy bills</td>
<td>£26m investment</td>
</tr>
<tr>
<td>2015</td>
<td>Target &gt; 600 buildings</td>
<td>Savings of up to £12m in energy bills per annum</td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>Target 40% of public sector buildings</td>
<td>Savings of up to £80m in energy bills</td>
<td></td>
</tr>
</tbody>
</table>

Source: Greater London Authority
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The RE:FIT process

The RE:FIT PDU supports users through the whole RE:FIT process:

- **Gain Management Buy-in**
  - Senior support required
  - MoU signed

- **Secure Funding & Resources**
  - Final buildings selection
  - Tendering approach chosen

- **Prepare Project Brief**
  - Internal resource selected
  - Funding approach chosen
  - Benchmarking

- **Mini Competition**
  - ESCo site visits
  - Bids submitted
  - Evaluation and preferred bidder selection

- **Investment Grade Proposal**
  - ECMs and savings detailed and guaranteed

- **Install Energy Conservation Measures**
  - Measurement & Verification
  - Guaranteed savings

- **Service Delivery/ Monitor Performance**
  - Installation and commissioning/handover

© Berliner Energieagentur GmbH  Source: Greater London Authority
London RE:FIT facilitation approach

Role of Programme Delivery Unit (facilitator):

• Manages the RE:FIT framework of suppliers
• Facilitates the uptake by London-based public sector organisations
• Supports clients through all programme stages
• Uses experience and lessons learnt to develop best practice templates and standards
• Provided at no cost to London’s public sector organisations

£2,671,000 funding, 90% from ELENA (European Local Energy Assistance Programme), 10% from the GLA
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State of Victoria Efficient Government Buildings Programme

- Developed and managed by the Department of Treasury and Finance (DTF)
- Contracts are awarded to the provider that identifies the greatest savings compliant with a 7 year payback period.
- At 30 June 2012, projects had been tendered at sites accounting for 20% of Government’s total energy use.
- Solutions commonly include lighting upgrades and controls, heating and cooling efficiency improvements, building automation, water conservation measures and on-site electricity generation e.g. co-generation and tri-generation.

Average savings (energy, greenhouse gas and water)  
Maximum savings  
Return on investment (IRR)  

over 37%  
60%  
at least 12%  

Source: Department of Treasury and Finance

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Key elements

- A set of guidelines outlining the process of Energy Performance Contracting and investment criteria for projects.
- A facilitation service provided by DTF to assist departments to deliver projects in a consistent and effective manner.
- A procurement pathway. DTF manages a panel of pre-qualified EPC service providers and has developed standard templates for planning, tendering and contracting projects.
DTF has established a panel of pre-qualified organisations to provide EPC services to departments and agencies when implementing EGB projects.

Members of the panel have demonstrated required competencies, and in most cases have previous experience in delivering EPC projects.

Use of the panel is recommended for Efficient Government Buildings (EGB) projects, it is not mandatory to do so.
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Projects under way

The Efficient Government Buildings program has facilitated 28 large-scale building upgrade projects, including:

- education facilities;
- hospitals;
- offices;
- courts;
- prisons;
- museums and arts facilities;
- parks and sporting facilities; and
- water infrastructure.
- upgrade of traffic lights around the State from incandescent to LED technology.

Source: Department of Treasury and Finance

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Projects implemented under the EGB program are allocated to a DTF facilitator who assists departments and agencies with advice and support regarding:

- Preparation of tender and contract documents;
- management of tender processes;
- determining appropriate funding requirements;
- implementation of projects;
- access to standard tender documentation and contracts;
- access to specialist technical and legal advice if required;
- access to specialist measurement and verification advice if required; and
- coordination of program results and case studies.

Source: Department of Treasury and Finance
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Existing guidance and tools for EPC facilitators in Europe

- Inventory of EPC essentials

- Toolbox of project EESI:
  http://www.european-energy-service-initiative.net/eu/toolbox.html

- In preparation by EESI 2020 www.eesi2020.eu
  - Facilitator Guideline (draft version existing)
  - Marketing materials (July 2014)
  - Facilitator Training Kit (July 2014)
Thank you for your attention!
For more information, please visit:

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