EPC Opens New Opportunities for Business and Climate

Presentation at the Public Workshop
"Energy Performance Contracting (EPC) – Procedures & Partnerships for Upgrading Building Environmental Quality in Cities”

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OVERVIEW OF THE DSM-IEA

IEA International Energy Agency (fd.1974)

- Is an autonomous body within the framework of OECD
- Carries out a comprehensive program of energy co-operation among its 23 member countries
- The European Commission also participates in the work
- The goals are international collaboration in the research, development and demonstration of new energy technologies
- The IEA’s R&D activities are headed by the CERT
- 4 Working Parties monitoring various agreements, new areas and advising the CERT on policy matters
Overview of the DSM-IEA

DSM: Demand-Side Management Programme

- DSM is one of the implementing agreements
- It is a collaboration with 17 IEA member countries and the EC
- It is working to clarify and promote opportunities for DSM
- 11 projects or “Tasks” have been undertaken since the start
- The overall program is monitored by an Executive Committee consisting of representatives from the member countries
- The leadership and managements of the Tasks are the responsibility of Operating Agents
- Task X: “Performance Contracting” with Dr. Hans Westling
**TASK OBJECTIVES**

- To facilitate the greater use of Performance Contracts and other Energy Service Company (ESCO) financial options and services in the participating countries.

- It is a business-to-business Task, limited to efforts involving the Performance Contracting agreements and other ESCO related financial options and services between client, businesses and all types of companies offering these services.

**In short “Payment in relation to performance”**
Cash Flow – EPC/ESPC Contract

ESPCs reallocate the federal customer’s payments for energy and energy-related operations & maintenance expenses (E+O&M)

Before ESPC Contract
- E+O&M

During ESPC Contract
- Savings
  - ESCO Services
  - Financing Debt Service
- E+O&M Cost Savings

After ESPC Contract
- Savings
- E+O&M

Source: FEMP, 2001
Needs

- Operation and maintenance of energy systems in aging building stocks cost more as the systems grow older and less efficient
- Increased environmental awareness
- Changes in legislation and rules concerning energy matters
- Ventilation and work environment issues
- Increased competition and cost-consciousness
- A joint multinational IEA Task contributes to an expanding international market for Performance Contracting
Motives

- For some property owners and users the main reason can be lack of investment money.
- For some it is simply a very economical business strategy. We only pay when we see value-added functions as reduced energy bills.
- For the ESCOs it is a good business argument and a way to connect with customers and start new business relations.
- For some companies and government organizations it can be a very efficient way to inspire innovations and to facilitate the introduction of more efficient solutions.
EPC - Fundamental elements

1. Energy Savings
2. Guaranteed Performance (Energy, Climate etc.)
3. Financing (supplied or arranged)
4. Security
EPC - Fundamental elements
& most frequent and additional services

1. Energy Savings
2. Guaranteed Performance (Energy, Climate etc.)
3. Financing (supplied or arranged)
4. Security
5. Technical areas
   - Heating
   - Ventilation
   - HVAC
   - Lighting etc
   - Monitoring
6. Other services
   - Training
   - Operation
   - Maintenance
7. Energy supply
   - Availability
   - Cost/price
8. Gen. refurbishment
9. Outsourcing
10. Renewables
Example – NAESCO model

Feasibility Study

Customer accepts proposed project

Investment grade audit and project proposal

Customer does not accept prop. project

Project design and construction

Customer pays ESCO for audit

Maintenance and monitoring
ESCO’s Service Flow

Introduction of Service Outline

Primary research
- Data research (duty of confidentiality): completion drawings; light, fuel and water expenses; daily reports; and logs of activities, etc.
- Walk-through research
- Hearing research
- Energy saving plans
- Study on economical efficiency

Primary proposal

Detailed research
- Measurements of energy consumed
- Study on how to improve
- Additional proposals
- Detailed plan for energy saving
- Detailed study on economical efficiency
- Planning of verification method

Secondary proposal

ESCO contract

Source: Japanese Country Report
ESCO BUSINESS

Guaranteed Savings

Supplementary savings

Historical costs  Contract  Actual
**PROCESS – EXAMPLE**

- Measures Implemented by the Client
  - Project cancelled
  - ESCO is paid off
  - The Client does not accept the tender

- Energy Audit
  - Finland’s energy audit programme

- Measures for ESCOs or agreed with the Auditor
  - Tender(s) for The Project Plan

- The Client accepts ESCOs tender for phases 2&3

- **1 PROJECT PLAN**

- **2 IMPLEMENTATION**

- **3 FOLLOW UP**
"You save, we take the risk"

Example from ABB
The offer consists of two parts:
- A maintenance contract in which the ESCO has the total responsibility for the operation, maintenance and functions of the installations for a fixed, annual fee.
- An incentive contract, where the ESCO invests in energy saving measures and is paid in proportion to how well it succeeds.

The reimbursement is a percentage of the saving.
The rest goes to the customer.
Shared Savings

- **Customer**
- "ESCO" (Performance & Credit risk)
- Project services: Savings guarantee
- Lender/investor: 100% funding
Guaranteed Savings

CUSTOMER

Savings guarantee

ESCO

"Performance Risk"

Fixed repayment schedule

Lender/investor

"Credit Risk"
EPC/TPF procedure

Advantages for the ESCO:
- Profit
- Growth and diversification
- Synergy with other own activities
- Law incentives

Advantages for the end-user:
- More rapid implementation
- Transfer of management responsibility to the ESCO
- Better quality and reliability of the service received
- Savings
- Improvement of indoor conditions
- Outsourcing of non-core-business activities
- Updating of plants to standard
- Off-balance
BARRIERS

- Slow movement from buyers
- Lack of understanding of the opportunities
- Lack of information

- Time consuming work for
  - raising interest in general – formulation of contracts
  - measurement and verification – attitude and culture

- Lack of Public Recognition
- Procurement rules (Absence of bidding system)
- Lack of General Conditions

- Lack of Technical experts
- Lack of capital
- Different responsibility for investment and operation
- Low energy prices
# Market Segments - Perf. contracting

## Overview

<table>
<thead>
<tr>
<th>Promising market segm.</th>
<th>Finland</th>
<th>France</th>
<th>Italy</th>
<th>Japan</th>
<th>Netherlands</th>
<th>Norway</th>
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## EPC market potential per year

### Estimation

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<th>Tot. potential</th>
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<td>64–196 mill&lt;sup&gt;2)&lt;/sup&gt;</td>
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<td>Total 1–3</td>
<td>2.3 bill</td>
<td>144 bill</td>
<td>1.5%</td>
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### Sources:
1) Lambert, 1999
2) Country Report Japan
3) Country Report USA
4) Leutgöb et al, 2000

1 USD = 1.1 Euro
# National Government Programs & Policies

## Overview

<table>
<thead>
<tr>
<th>Procurement adapt</th>
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<th>France</th>
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## EPC - Introduction and Diffusion

### Problems
1. Credibility and Trust
   - Information
   - SAVE, Best Practice
   - Creation of networks
   - Demo projects
   - World EPC Conference
   - “Success stories”

2. Process & Procurement
   - Network of skills created
   - Energy Agency, FEMP
   - Clarification of rules
   - Guidelines
   - Alt. with energy audits and feasibility study
   - Prequalification & two-stage tender
   - Conditional Award of Contract

3. Contracts
   - Public Property Owners establish national standards as FEMP in USA
   - EC, WTO

### Short Term Actions
1. Information
   - SAVE, Best Practice
   - Creation of networks
   - Demo projects
   - World EPC Conference
   - “Success stories”

2. Network of skills created
   - Energy Agency, FEMP
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3. Public Property Owners establish national standards as FEMP in USA
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### Long Term Results
1. World EPC network established
   - “ISO 18000”
   - Energy management
   - Accreditation
   - Intern. ESCO Association

2. Different alternatives for initiation of EPC-projects accepted by all stakeholders
   - Both Owner, Energy Agency and EPC-initiated

3. “FIDIC” Energy perform, contract conditions finalised
   - Manuals (web & printed) for EPC-projects generally available
EPC - Introduction and diffusion

4. Financing
- Bank awareness
- Local government allowed to enter multi-year contracts
- EBRD & World Bank
- National economic incentives
- Government guarantees
- Warranty formulations
- Insurance arrangements
- White and Green Certificates: Trading an accepted mechanism for Climate Actions
- EPC Performance Bonds established

5. Measurement & Verification
- Analysis of existing protocols
- Pilot projects
- Simple benchmark-alternatives
- Yearly measuring
- Simplified benchmarking and repeated measuring routines established

6. Market
- Only limited in most countries but increased interest
- Start of breakthrough for EPC in many OECD-countries
- Public bodies launch EPC comp. – both large projects & parts of smaller
- EPC-solutions have penetrated OECD-countries and are increasing in transition & developing countries
EPC Process Detail

Prequalification
- Request for expression of interest with
  - announcement of project
  - description of existing conditions
  - energy savings target
  - qualification criteria
- Expression of interest with PQD
- Ranking of candidates
- 3–5 tenderers selected

Two-stage tendering
- Invitation to tender (with instructions, description of existing conditions, energy savings target, form of contract)
- First stage tenders (with system specification and preliminary energy savings guarantee (ESG))
- Technical consultations, refinement of instructions, targets etc.
- Second stage tenders (with updated system specification and ESG (subjected to financial grade audit))
- Evaluation
- If necessary, negotiations, BAFO
- Award of contract

Contract execution
- Financial grade audit
- Customer approve or opt out
- Project implementation and follow up.
EPC process

Preliminary study
- Subsidised
- Not subs.

Private
- Feasibility study

Public
- Prequalification
- Two-stage tender
  1. Technical proposals
  2. Final offer with conditional Energy Savings Guarantee

Contract (conditional)

Financial Grade Audit
- With Energy Savings Guarantee

Continue?
- No
- Yes
  - Opt out on agreed conditions

Project implementation
  Supply and Installation

Follow-up
  Operation, Maintenance, etc
EPC process

Preliminary study
- Subsidised
- Not subs.

Feasibility study
incl. complete offer, with ESG

Restricted tendering
complete offer, with ESG

Contract

Review and approval
of final project design

Project implementation

Follow-up
Limited range of services

This is basically a supply and installation contract, coupled with strong design warranty

Simple Project
Summary
EPC for climate & business

- Energy savings with 20-40% in many projects
- A market 10 times larger in some regions
- CO2 savings - cautious estimation around 100 Mt per year in 2015
- Cost savings and job opportunities to be further estimated