European Energy Efficiency Policy and the ESCO market: the Case of Sweden

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Presentation at the Asia ESCO Conference
14 January 2010, in New Delhi

Content

- **EU energy efficiency policy**
  - Energy end-use efficiency and energy services directive (ESD)

- **Recent findings about the Swedish ESCO market**
  - Key market drivers
  - ESCO business characteristics and market opportunity
  - Insights on market development
  - Ongoing challenges

- **Two projects funded by Intelligent Energy Europe (IEE)**
  - EMEEES, evaluation of energy efficiency improvement measures
  - Change Best, development of the energy efficiency service market

- **Final remarks**

Directive 2006/32/EC on energy end-use efficiency and energy services (ESD)

- Indicative target of 9% final energy savings by 2016 (compared to baseline period of 5 years). The target shall be reached by way of energy services and other energy efficiency improvement (EEI) measures.
- Energy savings shall be measured and verified (or estimated) through a combination of top-down and bottom-up calculation methods.
- Public sector shall fulfill an exemplary role in the context of ESD.
- Energy companies and/or ESCOs shall offer energy services, energy audits, funds and funding mechanism, voluntary agreements and/or market oriented schemes.
- Member States shall develop National Energy Efficiency Action Plans (NEEAPs) to demonstrate compliance with ESD.

Research Approach

*Only **15%** of profitable energy efficiency improvement measures within the building sector is carried out.* (Report CEC 2005:1; SOU 2008:110)

Question:

What are the managerial and other challenges for ESCOs in creating a viable business around energy efficiency?

Informants:

49 individuals representing 20 companies as well as policymakers, agencies, authorities, and customers.

Survey Design

3-part interview questions:

Part I: Current Market Data.

Part II: Services Offered and Business Characteristics of ESCOs.

Part III: Industry Development Discussion Questions.

Source: Lindgren, 2009

Swedish ESCO market experienced a series of false starts amid broader energy history

1970s - Oil crisis spurred interest in energy conservation

1980s - HVAC equipment and HVAC entrepreneurs developed first EPC

- EPC earned “freezing in the dark” rep; created legacy of customer distrust
- Falling oil prices in the mid-1980s stymied further EPC development

1990s - Governmental decision to start phasing out nuclear reactors by 1995

- 1991 carbon tax introduced
- 1996 market deregulation
- Excess hydropower led to decreasing electricity prices

2000s - Renaissance of interest in ESCOs

Source: Forsberg, 2007

Three key market drivers

1. Rising energy prices

e.g. the electricity price for the average Swedish household increased by 70 percent between 2000 and 2007

2. Climate change and other environmental concerns

"I thank Al Gore every day for our business."

Comment made by an ESCO (cited in Lindgren, 2009)

3. Favorable policy environment

Dissemination and capacity building:

To facilitate the ESCO market, public spending of 1.4 million EURO were used between 2001 and 2006

Investment subsidies:

About 200 million EURO between 2005 and 2008

Sources: Forsberg, 2007; Lindgren, 2009

Research conducted Oct. 2008 - May 2009 found a strong & vibrant ESCO market developing

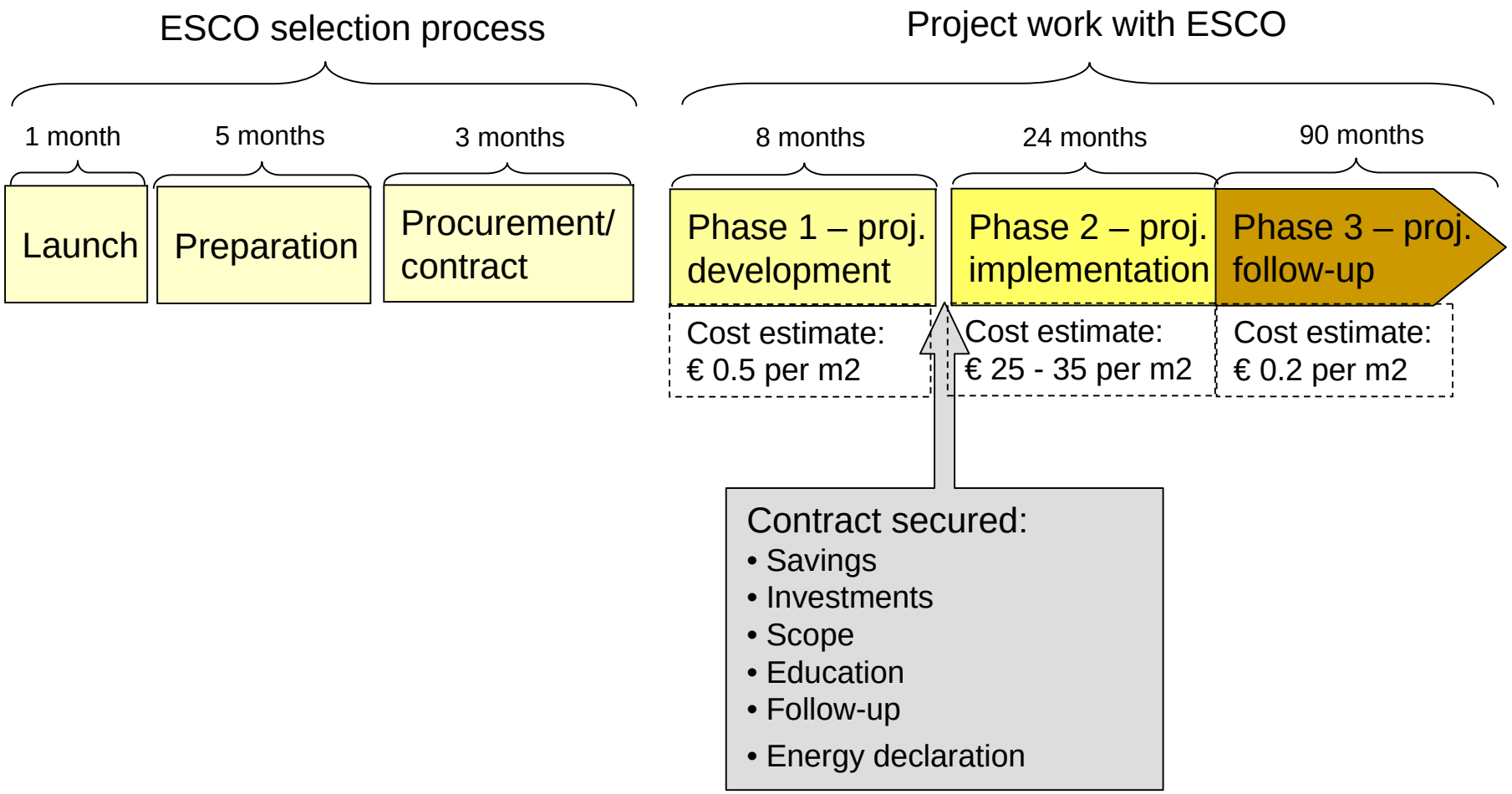
Number of ESCOs	27
Types of ESCOs	9 local/national, 18 multinational
ESCO association	No
Annual Revenue (2008) for ESCO projects	*85 million EURO *Only 8 companies reported data
Range of deal size	10,000 to 900,000 square meters

Source: Lindgren, 2009.

- ESCOs built upon customer base and expertise from 4 main areas:
  - Building and controls manufacturers
  - Facility management companies
  - Consulting firms
  - Energy supply companies

- Public sector has led the way with ESCO projects:
  - Ongoing EPC projects covers about 10 million m^2 (mainly public sector)
  - Total building stock of 630 million m^2 of which public sector buildings covers 90 million m^2

A typical Swedish EPC process



Market development insights (1)

- **Building controls & automation manufacturers as well as facility management companies have dominated market,** contrary to earlier expectations for energy companies**.**
- **Speculation around Sweden's ESD implementation sparked discussion (and some action)** among energy supply companies to develop energy services.
- **Mutual trust between companies and customers has grown**, helping to overcome legacy of distrust for EPC.
- **Third party financing has played surprisingly unimportant role** in ESCO business.

Market development insights (2)

- **Local laws and norms matter.** Technical aspects of projects may not vary, but local differences – like well-established building contracts in Sweden - affect EPC projects.
- **Rivalry among existing firms is marked by competition and cooperation.** Companies may compete to win a project and then cooperate on buying parts from a “rival.”
- **Investment support programs, energy labeling programs, and information campaigns** by a variety of agencies and authorities helped build support for energy services.
- **Beyond providing a financial carrot, subsidy programs presented firm deadlines,** which fostered a sense of urgency for action.

Despite rapid growth, ongoing challenges remain…

- **Lack of knowledge remains a significant issue.** Developing savvy consumers of energy services required for market growth.
- **Investments needed to strengthen energy efficiency related curriculum** with universities, technical schools, and lower schools to build skilled workforce.
- **Timescale of projects and "trust" issues may present a barrier to entry** for ESCOs without an existing customer base or reputation.
- **Opportunity to connect existing programs** like, energy declarations, with specific energy saving actions and measurable results.
- **Expanding market beyond public sector may require additional incentives**. Other sectors, like residential market, are not a fit for ESCO model.
- **Energy-intensive industries** are favoring traditional methods for improving energy efficiency (i.e. through internal efforts or by using fee-for-service model) .

EMEEES (concluded in 2009)

www.evaluate-energy-savings.eu

Objective

- To support the implementation of the EU Directive on energy end-use efficiency and energy services, ESD (2006/32/EC).

Tasks

- Develop harmonized methods for evaluation of energy savings (20 bottom up and 15 top-down),
- Develop a template for national energy efficiency action plans,
- Provide practical advice and support for the European Commission,
- Provide a platform for information exchange.

ChangeBest (2009-2012)

www.changebest.eu

Objectives

- Assist energy companies and ESCOs in entering the B2B and B2C market for EES,
- Contribute to the development of the EES market as part of the implementation of the ESD,
- Demonstrate good practice in implementing the ESD.

Tasks

- Empirical analysis of the EES market and the respective economic and policy framework in the course of the implementation of the ESD,
- Exchange of experiences, national workshops and a European conference,
- A large bundle of promising EES business cases and strategies implemented in “field tests”,
- Communication and dissemination activities, and
- Induced further action and networking by energy (service) companies.

Final remarks

Greater details & data on ESCO projects are needed, and good practice for reporting data should be identified

- Despite emphasis on ESCO activities to contribute to energy saving targets (e.g. the ESD), there is limited data on actual energy savings delivered.
- Questions can be raised related to reporting: Who should report? To whom? What level of detail? Frequency?

EPC projects have been successfully implemented in public sector buildings

- Some market segments are ignored by ESCO. Herein lies business opportunities for other providers of energy efficiency services.
- Some applications are excluded by EPC projects. Herein lies opportunities for new (or modified) technology oriented energy efficiency services.

ESCOs, energy companies or other EES providers

- There are different actors and constellations that could provide services depending on context (incentives, legislation, actors etc). What examples are there?

Thanks for your attention!

For further information:

ChangeBest: www.changebest.eu

Available soon: National Reports on the Energy Efficiency Service Markets in 17 EU Member States.

EMEEES: www.evaluate-energy-savings.eu

Publications:

Lindgren K., and Nilsson L. J. (2009). *Building a business to close the efficiency gap: the Swedish ESCO Experience*". Article accepted for publication in *Energy Efficiency* journal.

Stenqvist C., and Nilsson L. J. (2009). *Process and impact evaluation of PFE – a Swedish tax rebate program for industrial energy efficiency.* Proceedings of the European Council for an Energy Efficient Economy 2009 Summer Study. Stockholm: European Council for an Energy-Efficient Economy.

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