

How to kick start a market for EPC

Lessons learned from a mix of measures in Sweden

Anna Forsberg
Swedish Energy Agency
Sweden
anna.forsberg@energimyndigheten.se

Carlos Lopes
Same affiliation
carlos.lopes@energimyndigheten.se

Egil Öfverholm
Same affiliation
egil.ofverholm@energimyndigheten.se

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Abstract

In less than five years Energy Performance Contracting has conquered at least 5 % (<4 million m² of ~80 million m²) of the public building stock in Sweden and the number of contracts is rapidly increasing. The paper analyses the strategy that has led to this dynamic development.

Attempts to create a market for energy services have been made in Sweden in the 1980's and in the early 1990's. In both cases the expectations were not met. In the third – and current – phase, the market has expanded considerably and is now the fourth biggest in the EU. This development is due to the adoption of a portfolio of flexible measures. These include: a “Forum for Energy Services” with stakeholders, market research studies, information and training activities using a network of multipliers based on regional energy agencies and on public building owners associations, implementation of pilot projects, EU-IEE and IEA projects and studies, subsidies for energy efficiency investments in public buildings, and evaluation studies.

The interaction between these measures - from identification of market needs to actual contracts and follow-up - is examined based on the results from evaluation studies. Factors of success are identified that allow the replication in other markets, for example where there is a high energy efficiency potential and limited access to public funding.

The purpose of this paper is to highlight the importance of having two key factors that have enabled the growth of a sustainable market for EPC as practised during the latest years in Sweden. These factors are (1) a set of activities that cover many

aspects from literature studies to pilot projects and their dissemination and (2) a strong coordination between the various activities.

Introduction

Energy Performance Contracting is a mechanism in which an ESCO (Energy Services Company) provides the supply, installation and sometimes the management of energy efficient technologies as a complete package to the end user to achieve energy savings. The resulting energy savings are used to pay for the investment. The main element of this type of contracts is the energy performance guarantee provided by the ESCO, which helps to convince the third-party who finances the project and secure the projected benefits for the client (usually the end-user).

In order to further optimise energy performance, a profit sharing mechanism can be established, where profits from increased energy savings are typically shared between the end-user and the ESCO. With this mechanism, both parties have an incentive to maximise the savings (ecccc, 2006).

Third-party financing (TPF) can according to Bertoldi et al (2005) either be arranged through the ESCO or by the client/end-user. If the ESCO provides the financial solution, it gets paid by the savings during the duration of the contract. Although this kind of TPF arrangement is very common in other markets, e.g. in Germany, it is often not the case in Sweden as the main problem is not a problem of liquidity. The main barrier is rather the perceived risk, which makes the performance guarantee the most important component of the contract as it makes it easier for the property owner to get access to funding directly through a bank.

Performance guarantee is the most vital part of an energy performance contract as it gives the building owner reassurance of that the project will deliver an increase in energy efficiency or else the building owner will receive his or her money back from the contractor. Furthermore, the performance guarantee helps the building owner to have access to funding at a lower interest rate, as he/she can prove that the investment has a lower risk than without the guarantee. This has been the situation in Sweden, namely in the large project of Regionfastigheter in Scania which covers an area of 420 000 m².

DEVELOPMENT OF EPC – THIRD TIME GOES

The first wave of EPC was introduced in Sweden in the early 1980's. The contracts were rather unsophisticated and developed from entrepreneur type contracts common at the time. Many of them were not even taking into account normalised degree years. The energy performance contractors were often manufacturers of HVAC equipment and HVAC entrepreneurs. Typical projects were boiler replacements in industry. In the commercial sector, contracts could often be rigid when it came to controlling occupant behaviour, stipulating no window openings for example. This type of contract got the nickname "freezing in the dark". The follow up systems were time consuming and labour intensive. Many contracts were made up in monetary terms rather than in saved energy resulting in dissatisfaction when expectations in cost reductions could not be met. The drop in oil prices in the mid eighties therefore caused problems for the energy services industry and thereafter only a few projects were carried out, mostly in industry and locally.

The second phase began in the late 1980's. It involved energy companies normally selling electricity and or district heating. They introduced energy services for their customers. Most of these discontinued their energy service early 1990 awaiting the electricity market deregulation (Bergmash and Strid, 2004).

The third phase started in the late nineties. Measurement and verification systems using the latest communication technology and internet became instant and geographically insensitive and were available at a lower cost. This development made it easier to follow up the savings. New types of contracts appeared based on a confirmation of partnership including consideration to weather, activity, operating hours and indoor climate. Also, a set of initiatives was launched by the Swedish Energy Agency (STEM), which is described below.

Some of the local actors like ABB and SKANSKA expanded their Energy Performance Contracting activities and were followed by regulation and control equipment companies like Siemens, Johnson Control, Honeywell and TAC. The service offered was gradually expanded from controls to Building Management Systems. Now the major building service companies like YIT, Bravida and Dalkia joined in and likewise expanded their services to building modernisation. Some of these companies formed special branches for EPC. Some engineering consultancy companies like ÅF also started EPC activities. Another important role is played by companies providing consultancy services to clients engaging in EPC. The most important in Sweden has been the the Energy Agency Southeast Sweden (acting both as consultancy company and also as an initiator of own activities) and WSP Environmental.

Concerning the demand-side, most contracts are with the public sector. The reason for this is probably a longer time own-

ership and also government incentives for this type of buildings available since 2000. After 2000 the market expanded rapidly and does now have a turnover of 50-60 MEURO/year. (Svensson, 2006)

DRIVERS

Both the energy performance in buildings directive and the energy services directive have been important even though they have not yet been fully implemented. ESCOs have for example in advance promised building owners that they will provide the energy certification of the buildings once the legislation and guidelines are in place.

Building owners have over time slimmed their organisation, which means that there are fewer and fewer caretakers with enough energy knowledge. EPC companies can contribute with their own personnel but they can also provide training for existing Operation & Maintenance (O&M) personnel. As a result of neglecting O&M personnel for buildings there is an urgent need for investments for which there is no funding available.

Another driver is the need for building refurbishing and modernisation. It has been increasingly popular to include building refurbishing and modernisation in conjunction with EPC.

External factors have also contributed to the development of EPC. Energy efficiency has become in the later years a priority in society, not least for local politicians. And last but not least energy prices have been rising.

Strategy to develop Energy Performance Contracting in Sweden

BUILDING A STRATEGY

The third attempt to develop EPC in Sweden was public funded and started within the framework of the International Energy Agency's Implementing Agreement on Demand-Side Management. Nine countries, including USA and Japan, decided to create a task on Energy Performance Contracting. To start with an international cooperation has proven to be particularly effective. In this case it made it possible to share the efforts to perform a literature study, to compile experiences from other countries, and to build a network of experts. This work started in 2000 and ended in 2003.

This study provided a better understanding of the conditions required for structuring the work at National level. It helped namely to formulate a set of definitions, to identify the barriers, and to outline a first approach to possible solutions for the implementation of EPC in Sweden. However, it became increasingly clear that studies, international comparisons and trials for "copy and paste" policies and models would not make the market for EPC to kick-start in Sweden. The specific barriers needed to be addressed locally and the results showed to potential clients and suppliers of EPC.

The major obstacles hindering a faster and more comprehensive development of the Swedish EPC market was the limited know-how and experience within both the public and the private real estate sector. As a result, ESCOs experimented relevant difficulties explaining the contractual benefits of EPC and convincing the customers to engage in such contracts. In contrast to the common perception, these difficulties are only

partially linked to legal issues such as public procurement and accounting rules. The most important barrier in Sweden appears to be the lack of confidence, mainly due to the lack of credible and visible reference cases with a clear client focus. The lack of credibility is particularly important as it is the result of the first “EPC-similar” projects carried out in the early 1980s. These projects encountered several problems and did not deliver the anticipated value for the customers. This created an image of low credibility for this type of contract that was still remaining until the beginning of 2000’s

To move the process forward the Forum for Energy Services was created. Within this initiative the real estate companies were asked to point out the main areas where they would need further assistance in order to increase actual implementation of EPC projects (See figure 1). These are:

- Client oriented information, by providing building owners with evidence from information material, case studies descriptions and guidelines focusing on the process;
- Support to potential clients for internal capacity building, through direct advice, access to documentation, and training and information activities;
- Quality labelling for the contracts by structuring the EPC process, clarifying roles and responsibilities and formulating guidelines for the savings guarantees;
- Incentives and synergies. These include how to integrate energy investments in non-energy related projects like building refurbishment, how to make use of the subsidies and tax incentives in EPC projects, and how to make EPC compatible to regulations and legislation like the EU-directives on energy performance in buildings and on end-use efficiency and energy services.

After these “structuring” studies, i.e. the IEA-study and the first phase of the Forum for Energy Services, the Swedish Energy Agency had found the justification and acquired the knowledge to launch new initiatives of different kinds forming what one can call a “strategy”, even if the term “strategy” is used here in a loose sense. In fact, the set of initiatives launched has evolved progressively in order to address identified needs but also to

take profit of opportunities like the possibility of participating in EU funded projects. The term strategy is used in the sense that a continuous effort has been made to link all the initiatives and looking continuously for synergies between them.

DESCRIPTION OF THE STRATEGY

The main aspects to be addressed by the strategy for developing EPC are listed below and the way the different initiatives address these aspects is illustrated in table 1.

- **Ground study.** This includes definitions, literature review, legal framework, identification and analysis of (perceived) barriers and the possible solutions to overcome them. This kind of studies requires the involvement of all stakeholders from the demand-side, mainly building owners and the supply-side, i.e. potential ESCOs, as well as other market actors and authorities. This was the first phase of the Forum for Energy Services;
- **Market studies.** These imply to identify the potential contribution of EPC to realise the energy efficiency potential. The involvement of stakeholders is also here required;
- **Guidelines for procurement and model contracts.** This includes developing standard model contracts, or, as it became evident from the market studies, structuring the process and developing guidelines for EPC projects instead of strict standards;
- **Pilot projects,** with the aim of testing the guidelines and in this way providing evidence of the feasibility of EPC contracts. This initiative became the EPEC and started in 2004;
- **Direct client oriented information,** which includes personalised information to potential EPC buyers with the preoccupation of providing competition neutral advice;
- **Information and capacity building.** This includes workshops, direct training activities, indirect training activities for multipliers such as regional energy agencies.

Forum for energy services (FES). The objective is to accelerate the penetration of energy services in Sweden through an active

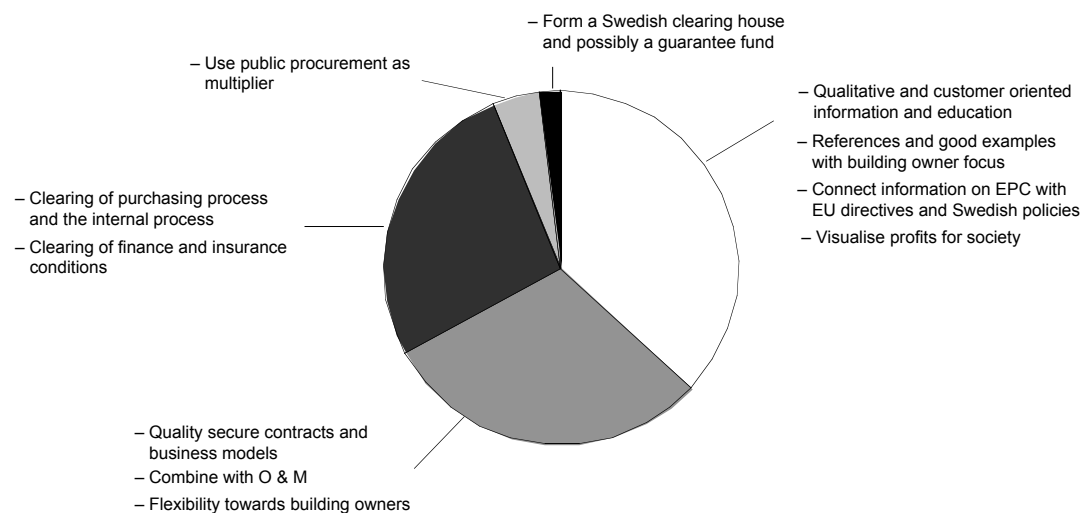


Figure 1: Activities identified as most important to increase energy efficiency and the use of energy services in Sweden. Adopted from (Svärd and Forsberg, 2004).

Table 1. Initiatives that compose the Swedish strategy for developing EPC and the aspects they address.

	IEA-DSM Task 10	FES	EPEC	Eurocontract	PU benefs	Interco PPP
Ground study, including definitions, literature review, analysis of legal framework, and identification of barriers;	XX	X	-	X	X	X
Market study in form of country picture	-	X	-	X		X
Development of guidelines and model contract	-	Partly	X	X		-
Pilot projects	-		XX	X	X	-
Direct client oriented information	-		XX	X		-
Information and capacity building.	-	X	X	X		X
Other	OECD countries	National	National	EU-perspective	EU, Interregional	EU, Interregional

“-“ : not addressed; “X“: partly addressed; “XX“: strong or main focus

dialogue with a large network of stakeholders. FES is a project funded by the Swedish Energy Agency and implemented in cooperation with the Energy Agency South East Sweden, and with the participation of networks of building owners, building companies, local and regional authorities, industry, ESCO: among others.

EPEC. The objective is to develop guidelines for processes, models and checklists for EPC, and test them in pilot projects. These guidelines are made available for direct use by stakeholders. EPEC is a project funded by the Swedish Energy Agency and implemented mainly by WSP-Environmental.

Eurocontract. The objective is to promote and further develop Energy Performance Contracting Schemes in Europe. Core elements are: to build up a platform that aggregates know-how and training tools, to develop innovative models and financing schemes for EPC, and to discuss securing quality criteria. National implementation serves as a reality check by testing implementation and giving feedback to the international activities. In Sweden, Eurocontract has allowed to valorise and complement the work already developed namely by updating country pictures, to refine existing model contracts with models developed in other EU countries and to implementing pilot projects. A strong focus is put on disseminating information and building capacity through a network of multipliers based in the Regional Energy Agencies. Eurocontract is implemented in Sweden by STEM in cooperation with the Energy Agency Southeast Sweden and is funded by the EU – Intelligent Energy-Europe Programme and STEM.

PU Benefs. The objective is to assist public bodies and especially local authorities to implement energy efficiency services. This is done by providing tools, specifications and guidelines for energy services contracts. Meetings with public bodies and dissemination activities are also included. PU Benefs is implemented in Sweden by the Energy Agency Southeast Sweden and funded by the EU – Intelligent Energy-Europe Programme and STEM.

Interco-PPP – Interregional co-operation for exchange of experiences and knowledge concerning Public – Private Partnerships. The overall objective (“) is to provide officials from local authorities with the capacity to assess, design and implement PPPs in their field of activity. This is achieved through analysis of reference case studies, exchange of experiences and information through inter-regional workshops and conferences. The activities in Sweden are coordinated by the Energy

Agency Southeast Sweden, and funded by the EU programme Interreg and STEM.

U.F.O.S., Network of public building owners and their work on energy efficiency is to 50% funded by the Swedish Association of Local Authorities and Regions (SALAR) and to 50% by the Swedish Energy Agency (STEM). U.F.O.S. have been publishing information on eight good examples of performed EPC projects around Sweden. During 2007 they will conduct a series of seminars in eight regional councils around Sweden.

DISSEMINATION AND CAPACITY BUILDING

Dissemination and capacity building have been two main ingredients of the Swedish strategy to establish a sustainable market for EPC. From the in-depth dialogue with the network of experts and various market actors conducted in 2004, it became obvious that lack of information and knowledge were two of the main obstacles.

To disseminate information and achieve a substantial capacity building, several means have been used such as:

- Making all information gathered available on the web in Swedish (www.energimyndigheten.se, www.energitjanster.se, www.epec.se)
- Generating nodes of knowledge in 7 of the regional energy offices in Sweden through an educative programme containing e.g. training sessions, themselves arranging seminars in their region, access to tutorial material, in-depth study material;
- Conducting regional seminars and utilise already built up networks with building owners through the regional energy agencies;
- Building strategic alliances between the Swedish Energy Agency (STEM) and other organisations e.g. the Swedish Association of Local Authorities and Regions (SALAR)
- STEM and personnel from regional energy offices have actively been participating in national conferences all over Sweden and in tutoring at universities and at private seminars.

Table 2. Amount of public funding used for implementing the Swedish strategy between the years 2001 until 2006.

Project	Period	STEM	EU- IEE	SALAR	Sum (kEURO)
Forum for Energy Services - FES	Phase 1 (2004)	50			50
	Phase 2 (2005-2007)	80	90		170
IEA DSM Task X	(2001-2004)	200			200
U.F.O.S. Public building owners network	Phase 1 (2004-2005)	100		100	200
	Phase 2 (2006-2007)	100		100	200
EPEC	(2003-2006)	270			270
Eurocontract	(2005-2008)	130	110		240
PU Benefits	(2005-2008)	50	50		50
Total summary (kEURO)					1380

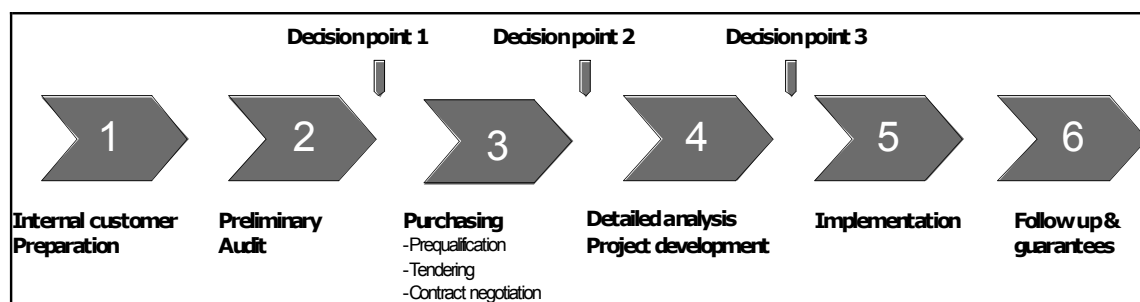


Figure 2. 6-step process and procurement guideline for EPC contracts. Based on [Swärd and Forsberg, 2005]

COSTS OF THE STRATEGY

The total amount of public funding used for implementing the Swedish strategy between the years 2001 until 2006 is shown in table 2. These figures do not include the funds provided by participating companies, which adds up to 1380 000 EURO.

An evaluation of the results of 11 of the about 50 ongoing EPC projects in Sweden is being performed (Gode et al., 2007). The energy savings amounted in these projects to about 60 GWh/year in 2002-2006 and the cost effectiveness is now being determined, as well as the contribution of the fact that the investments are made under a EPC contract. The evaluation will then focus on identifying the number of projects that have been triggered by STEMs strategy.

THE EPC PROCESS IN SWEDEN

Standardised model contracts were long considered to be a need for the development of EPC in Sweden. In Germany, the country where EPC is most used, standardised contracts are used and their existence is considered to be a condition for the development of the EPC market (Seefeld et al, 2003). The adaptation of model contracts was even one of the objectives of Eurocontract. However, the dialogue with stakeholders in Sweden made it clear that there was no real need nor interest for fully standardised RFQ's and contracts in Sweden, neither from the customers nor from the ESCO industry. Nevertheless, a need was recognised for structuring the EPC process, and for developing guidelines and testing them in projects.

The guidelines have thus been developed within FES, EPEC and Eurocontract, and tested in the pilot projects within the framework of EPEC and Eurocontract. The figure below illustrates the current process for EPC contracts in six steps and three decisions points.

Even though there isn't any demand for standardised contracts for EPC, there is definitely a need in so called quality securing instruments, and also for more process and procurement guidelines based on the public procurement act. The result has been a set of procurement and contracting structures that currently are being used in several public EPC projects. The guidelines are compiled in four documents and follow a structure based on a combination of "modified versions" of three well recognised standard contracts covering all phases of an EPC project.

- Frame agreement;
- Detailed analysis agreement (step 4), for which the existing standard contract "ABK" (Common agreements for Consultancy services) for engineering and consultancy services is used;
- Building agreement or project implementation (step 5) for which the existing standard contract ABT (Common agreements for building and construction work) for construction is used;
- Project follow-up and guaranteed savings agreement (step 6), for which the standard contract ABFF (Common agreements for property operation), for Operation & Maintenance services, is used.

PERFORMANCE GUARANTEE – A WAY TO FIND FINANCING

Performance guarantee, as highlighted in the introduction, is an important part of an EPC project. Apart from the ESCO taking the risk for achieving real energy savings the guarantee also highlights the possibility of achieving energy savings without "Contractor linked financing". As an example Regionfastigheter

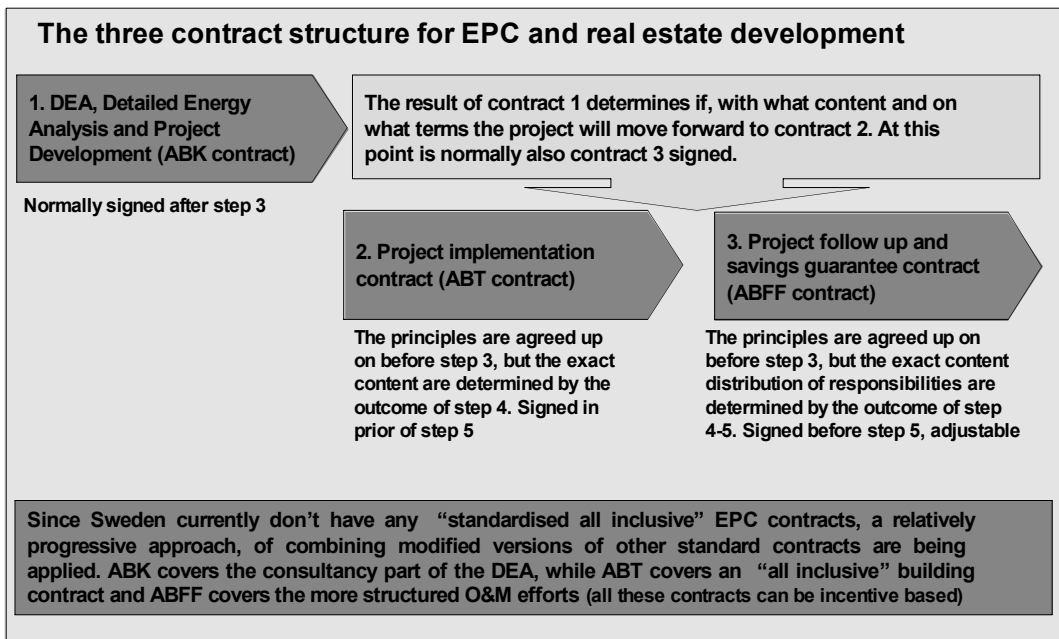


Figure 3. Structure for EPC contracts based on three existing standard contracts.

Skåne financed a 10 million EURO contract when backed by firm and solid savings guarantees from the EPC Contractor. This is true for many of the EPC projects performed in Sweden during the latest years and has its background in the building owner wanting to minimize the risks and the costs. By arranging the financing of the EPC project this way it also benefit the ESCO market to grow more rapidly due to reduced need for the ESCO to be as financially solid as to be able to arrange financing within their own organisation or through a third party. This does of course also decrease the financial risk of the deal.

Evaluation of the strategy

In order to find out whether there have been an added value from the conducted activities and if there is a need for further activities the FES project conducted an evaluation of the whole package of activities included in the Swedish strategy. The evaluation was conducted via a qualitative survey by sending out a questionnaire and through phone inquiries to 29 different companies and organisations corresponding to 34 especially selected people in the sense that they have been in contact with the FES activities. The results as presented bellow are based on the answers from 23 individuals within 20 companies and organisations.

Furthermore a quantitative evaluation of the effect, in terms of energy savings and decreased environmental impact, is also being performed. Preliminary results are presented below.

EVALUATION RESULTS FROM A QUALITATIVE SURVEY

The first results of the qualitative study indicate that there is a common view among the interviewees that there has been an increase in knowledge concerning EPC especially among public building owners. Further this knowledge increase is believed to depend to a large extent on the activities focusing on dissemination and capacity building rather than on the subsidy scheme introduced in 2005 for public building owners.

The actors who answered also revealed that they appreciated that the transmitter of information aiming at raising interest, creating confidence and stimulating action was coordinated by a public administration since it maintains independence.

The general knowledge about EPC and the attitude towards projects are experienced by the respondents as it has made great progress and been improved during the latest three years. The various activities introduced by STEM are believed to largely have contributed to this development. The knowledge raising information material, guidelines, templates etc are believed to have improved the transparency and credibility for performance based contracts. The public strategy has created credibility for the EPC business model. By connecting the operational energy efficiency measures with both public and internal strategic goals the importance of a strategic thinking when purchasing an EPC has been proven for the building owners. Further the subsidy scheme for public buildings concerning specific energy efficiency measures seem to have lead to that more measures have been conducted within each EPC project receiving public funding. This is in comparison to what would have been done otherwise. However, an interesting observation is that six municipalities have received some subsidy in connection with their EPC project say they would have carried out the EPC project anyway, sometime with a less ambitious investment plan.

Finally the actors answering to the inquiry (20 companies and organisations) all indicate that EPC has the potential of being a regular choice when performing energy efficiency projects among building owners in the future. This can be related to the increase in demands put on the building owners such as (Swärd, 2005):

- Increased profit and tougher limitations regarding investment budgets;
- Focus on core business, not on secondary services such as buildings;

- Increased demands from the government and society on e.g. less environmental impact, healthy indoor environment, energy certificates, etc;
- Increased demands from tenants on services, comfort and indoor environment.

The criticisms received through the survey say that more actors would like to become involved and that the FES (Forum for Energy Services) should work more actively to encourage that. They also ask for a more open dialogue. Some actors also ask for information more adapted to the various companies and organisations as well as more operational support in actually conducting purchases of EPC. An important request is related to monitoring and evaluation. Stakeholders want to have provisions for monitoring and evaluation of contracts in order to investigate their long term effects.

The survey gives that the 20 companies and organisations answering have been involved in about 60 projects in-between the years 2004 until 2006. In terms of number of contracts, on top of the four pilot projects (i.e. that have received support from Eurocontract and EPEC), at least six new EPC projects are being carried out amounting to around two million square meters and the amount of ongoing contracts including savings guarantees within the two largest ESCO's (TAC and Siemens) currently amount to around 20 contracts (oral communication Manuel Swärd and Daniel Svensson, 2007). If energy services are studied from a broader perspective thus including services as operation of maintenance and delivered indoor comfort the ongoing contracts amounts to over 100. There are good reasons to believe that this development is the result of the strategy for developing EPC that is being implemented. The qualitative survey carried out, although not yet complete; show that this success is due to the complementary utilisation of different activities that have formed a the strategy to develop EPC.

QUANTITATIVE EVALUATION OF ACHIEVED ENERGY EFFICIENCY BY EPC PROJECTS

The Swedish Parliament adopted fifteen national environmental quality objectives in April 1999, describing what quality and state the environment are in and whether the natural and cultural resources of Sweden are environmentally sustainable in the long term. EPC has the potential to address several of these environmental objectives including, inter alia; reduced climate impact, a good built environment and clean air. EPC can to a certain degree contribute towards the attainment of these objectives. STEM is currently conducting a study through IVL - Swedish Environmental Research Institute aiming at quantitatively answering the following questions:

- To what extent the performed EPC projects have contributed to efficient energy use in the Swedish building sector?
- What is the contribution of the EPC projects towards the achievement of the national environmental objectives?

The study comprises an in-depth revision of about 30 EPC projects conducted within the industry and in the public building sector (IVL, 2007, preliminary results).

The preliminary results resulting from analysing 11 of the EPC projects conducted in the public sector are:

- Decreased energy demand of approximately 60 GWh/year;

- Approximate decreased demand in primary energy corresponds to 80 GWh/year using a primary energy factor of 2,5 for electricity.

As the study is under progress the contribution to the achievement of the environmental goals of the studied EPC projects can unfortunately not yet be described.

Discussion and conclusion

It is hard to identify evidence beyond all doubt for the claim that STEM's complementary strategy has kick-started the EPC market. However there are several strong indications that this has been the case;

- The market grew, from a very low level, with exceptional speed in the years following the introduction of STEM's initiative. There are approximately 20 pure EPC projects and 60 "hybrids" on the market in Sweden today. All of the 20 pure EPC projects evolved after the initiatives of STEM. There are very good reasons to state that the 20 pure contracts to a great extent are a result of STEM's strategy;
- A corresponding increase, at the time, in other countries can not be observed except for Austria where similar actions were introduced by regional and central government. (Bertoldi, 2005). This would suggest that if STEM had been passive, the market barriers - such as insufficient knowledge, insufficient trust in the business concept, lack of trained personnel - would have prevented the development of EPC;
- The qualitative evaluation survey conducted by questionnaire and phone interviews to representative actors indicates that the various activities performed are seen to have been of great importance in the development of the market for EPC. Since the beginning of the implementation of the Swedish strategy (IEA in 2000, FES in 2004, EPEC 2005, Eurocontract 2005, PuBenefs 2005), the market has developed considerably. Not only are the contracts and tenders increasing by number but the market has turned from being a marketplace ruled by the contractors, to have becoming a market where the buyers take initiative and set the requirements. This strategy has focused mainly on overcoming the most perceived barriers: the lack of knowledge and experience, and risk aversion;
- The preliminary results from the quantitative study conducted by IVL indicate that the STEM complementary strategy has been a cost efficient strategy.

FACTORS OF SUCCESS

The factors of success and the lessons learnt identified and that could be used in other situations for the design of a regional or national strategy are;

- A neutral actor like a government agency is preferred to take the lead and convince the actors that EPC is both advantageous and secure for all stakeholders involved;
- STEM's stakeholder oriented initiative allowed a close contact with the main actors thus receiving feedback on the

contribution of the strategy to trigger the development of EPC;

- The use of modern information technology, sensors and web communication has been the prerequisite for the new type of EPC contracts;
- The new type of flexible contract structure has reduced risks for all parties;
- A complementary strategy including several actions is necessary in order to meet the needs of all the various stakeholders involved.
- The possibility for the building owner, within the paragraphs of the contract, to keep the O&M personnel and even get them trained is advantageous, and avoids possible opposition from the local trade union. A case study from Nyköping illustrates the benefits of keeping the staff for O&M within the organisation and includes a tutorial programme within the EPC project. The staff became very positive to the EPC project, which has affected positively the performance outcome of the project. Other benefits are that the O&M personnel, thanks to the training received, gains a higher status within the organisation and so do the energy related issues. Thus instead of a full O&M outsource the contractor gives capacity building, training and follow-up while the practical O&M service is still provided by the client's personnel. This construction is also securing a stable achievement of energy savings even when the contract period has ended;
- EPC without "Contractor linked financing" has been successful in some cases, especially in the south of Sweden. An example is the regional property owner Regionfastigheter Skåne who financed 10 MEURO themselves, backed by the firm and solid savings guarantee from the EPC contractor;
- Good examples or demonstration projects of EPC seem to be of vital importance for building owners. It is easier to learn from chairing practical experiences.

FUTURE DEVELOPMENT

From the evaluation carried out and the experience gained by the team during the programme, some suggestions for further work have been developed.

- Continue with the Forum for Energy Services and expand the dialogue to actively involve more stakeholders;
- Start to work with capacity building towards the consultancy sector as well as the building owners to strengthen the buyer's capacity and the quality of the EPC agreement. This will lead to improved capacity in giving operational support when purchases of EPC shall be conducted;
- Work with information support directed to various branch organisations so that the information material is tailor made to their members;
- Introduce an objective monitoring and evaluation programme of EPC projects in order to investigate the long term effects of the contracts.

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