How are EU ESCOs behaving and how to create a real ESCO market?

Paolo Bertoldi and Vincent Berrutto
European Commission – DG Joint Research Centre, Institute for Environment and Sustainability, T.P. 450, I-21020 Ispra (VA)
paolo.bertoldi@cec.eu.int

Mario de Renzio
Federazione Italiana per l'uso Razionale dell'Energia, Via Pompeo Neri 3, I- 20146 Milano, Italy
derenzio.firemi@iol.it

Jerome Adnot
Ecole des Mines, 60 Bd St Michel, Paris, France
adnot@cenerg.ensmp.fr

Edward Vine
Lawrence Berkeley National Laboratory, , Berkeley, California, USA
elvine@lbl.gov

Keywords

energy service companies, ESCOs, performance contracting, third party financing, DSM, Energy Service Directive, European Commission

Abstract

The European Energy Service Companies' (ESCOs) market has been estimated to be 150 million Euro per annum in 2000, while the market potential has been estimated to be 5 to 10 billion Euro per annum. This indicates that there is a great potential to increase the ESCOs' activities in the European Union (EU). Moreover there is a big difference in ESCOs' activities among EU Member States.

The Commission has promoted a number of policy initiatives to foster the development of the ESCO industry, including a specific article in the SAVE Directive (1993/76) and a model contract for Third Party Financing (TPF). Recently through the GreenLight Programme, the Commission has established the first European list of ESCOs. From the listed ESCOs it emerges that the definitions, roles and activities of "ESCOs" vary a lot, and only a limited number of ESCOs have the capability and willingness to finance the energy efficiency projects and receive payments exclusively from the resulting cost savings.

To establish a "real" ESCO market, the European Commission is planning to take a number of actions, including the following:

- introduce a clear and unique definition of ESCO at the EU level;
- establish a EU Code of Conduct for ESCOs in order to develop an EU wide accreditation of ESCOs;
- establish a EU list of accredited ESCOs;
- establish the European Energy Service Company Association (EAESCO); and
- propose a Directive on Energy Services.

This paper describes the present ESCO market and recent developments in the EU, analyses the key barriers to ESCO activities, and describes how the above mentioned action plan will help to develop an ESCO market in the EU.

Introduction

The two main drivers of the EU energy policies are climate change (under the sustainability heading) and market liberalisation (under the competitiveness heading). Under the Kyoto protocol, the EU has agreed to reduce greenhouse gas (GHG) emissions by 8 percent between 2008 and 2012 relative to 1990 levels. As a result of the Kyoto agreement, GHG issues are playing a central role in EU energy and environmental policies.

The other main EU energy policy driver is the restructuring of the electricity and gas markets. Historically, energy entities have either been: State-owned (e.g., France, Italy, and Portugal); owned by a mix of private and public/municipal companies (e.g., Germany and Sweden); or municipal-only companies (e.g., Denmark and the Netherlands). These diverse business structures have been difficult to integrate into an internal EU energy market, and the adoption of a common EU energy-efficiency policy has, understandably, been challenging in this context. A European Directive (96/92/EC) adopted in 1996 established rules for an Internal Electricity Market: EU member States were required to in-

troduce wholesale and minimal retail competition (for customers who consume more than 40 GWh/year) by 1999 (or 2000 for Belgium and Greece). However, the Directive, the product of a long process of negotiation, gave a great deal of freedom to member States in reconfiguring their markets to be competitive, and the market restructuring implemented so far by member States is at least as varied as were the various countries' energy industries before restructuring. Devising an energy-efficiency policy against this backdrop will require the identification of common interests without overlooking individual countries' needs.

To accelerate electricity market restructuring, the European Commission proposed a new directive in 2001 (COM(2001)125 final), which calls for member States to give all non-domestic (i.e., industrial and commercial) electricity customers freedom to choose their electricity suppliers by January 1, 2003, and extending this freedom to all customers (i.e. 100% market opening) by January 1, 2005. In November 2002, a political agreement was reached in Council, where the following timetable for market opening was agreed: the electricity and gas markets will be fully liberalised by July 2004 for non-household customers, while all customers (including households) will be able to choose their supplier by July 1, 2007 at the latest. This process will take account of a report assessing the impact of liberalisation to be prepared by the Commission in 2006.

In recent years, there has been increased interest in the provision of energy services, manly driven by electricity and gas liberalisation. Energy utilities initially offered lower gas and electricity prices to eligible customers. However, this process could not be sustained in the longer term as prices reached very low levels. The most innovative utilities understood that to retain customers, as well as to gain new ones, they had to offer services in addition to the supply of electricity and gas. These services include advice, energy audits, maintenance and operation, property management, and equipment supply. In addition, some other market actors, such as equipment and system suppliers, and installation and engineering companies, decided to enter the same market. Companies providing energy services to final energy users, including the supply and installations of energy-efficient equipment, and/or the building refurbishment, maintenance and operation, facility management, and the supply of energy (including heat), are known as Energy Service Provider Companies (ESPCs). Energy Service Companies (ESCOs) also offered these same services; however, ESCOs differ from ESPCs in the following ways: (1) they can finance, or arrange financing for, the operation of an energy system, (2) they guarantee the energy savings (as reflected in the contract), and (3) their remuneration is directly tied to the energy savings achieved.

ESCOs

An ESCO is a company that fulfils all the following requirements: it provides integrated energy services to their customers (mainly large energy users, but also utilities), which may include implementing energy-efficiency projects (and also renewable energy projects), frequently on a turn-key basis.

An ESCO provides performance and savings guarantees, and its remuneration is directly tied to the energy savings achieved. Therefore, an ESCO risks its payments on the performance of equipment and services implemented. Some ESCOs finance projects, recovering their investment cost from the resulting savings.

The typical ESCO project includes the following elements:

- Investment grade energy audit;
- Identification of possible energy saving and efficiency improving actions;
- Comprehensive engineering and project design and specifications;
- Guarantee of the results by proper contract clauses;
- Code compliance verification and guarantee;
- Procurement and installation of equipment;
- Project management and commissioning;
- Facility and equipment operation & maintenance for the contract period;
- Purchase of fuel & electricity (to provide heat, comfort, light, etc.);
- Monitoring and verifications of the savings results; and
- Project financing.

While the ESCO shall ensure all the above actions, the ESCO is not necessarily responsible for all of them. Some actions can be subcontracted; however, the ESCO has to ensure the results and project implementation. Some experts have compared the role of the ESCO to the architect in new property development: the architect has to define the project, select the engineering firm, supervise the building construction, obtain the permits, etc.

The financing of the project is ensured through two main types of contracts: Guaranteed Savings and Shared Savings. In the shared saving contract, the ESCO assumes the performance and credit risk; in the guaranteed savings contract, the client assumes the credit risk, while the ESCO assumes the risk for the savings.

Typical projects that have been implemented by ESCOs in Europe include the following:

- operation of building heating;
- installation and operation of combined heat and power plants;
- industrial facility refurbishment and operation;
- building facility management; and
- public lighting refurbishment and operation.

More recently, some ESCOs have installed the following technologies: lighting, heating, ventilation, and air-conditioning, energy management systems, and variable speed drives for motors.

Many ESCO projects in Europe have been undertaken, especially in the public sector: for example, in public buildings, hospitals, and lighting. The recent market liberalisation has also stimulated several projects in combined heat

and power for large commercial centres and industrial facilities. The liberalisation process has triggered many public lighting projects, where municipalities offered for tender the lighting operation, including the supply of electricity. The European Commission DG JRC has conducted a survey of ESCOs in the EU, resulting in the creation of the first EU database of ESCOs. And a recent survey of international ESCO activity shows that for a sample of EU countries, the development of the ESCO industry is still in its infancy (Table 1).

In Europe, several barriers prevent the full development of the ESCO industry. Recently, the IEA DSM Implementing Agreement Task X identified some of the major barriers: lack of information and understanding of the opportunities that energy efficiency offer; lack of culture for project financing; public procurement rules that prevent the use of ESCOs; "low" price of electricity; safety and reliability concerns that hinder the introduction of new technologies; burdensome administrative procedures that allow only very large projects to be carried out; and limited understanding of energy-efficiency and performance contracting by financial institutions. These barriers are consistent with the types of barriers identified for a sample of EU countries in a more recent survey (Table 2).

There are several positive opportunities for the ESCO business. Many of these opportunities are a response to the most common barriers to energy-efficiency projects to the end-users, such as lack of access to financing, lack of the necessary technical and financial expertise, limited time in organisation for considering energy efficiency, and competing responsibilities (maintenance, production, equipment purchasing, etc.).

The Current ESCO Market

At the European level, the European Commission has been promoting the ESCO industry and Third Party Financing (TPF) for a number of years. The first initiative was in 1988 when the European Commission adopted a Recommendation to Member States to promote ESCOs and the use of TPF, defining it and describing how they operate. In 1992, the European Council and Parliament adopted a Directive (93/76/EC, Article 4), where Member States where invited to design and implement programmes to use TPF in the public sector. Under the THERMIE and SAVE programmes, several studies and pilot projects were implemented to promote ESCO and TPF activities. In 1993, a standard ESCO-type contract was published for 12 EU countries members. In 2002, the European GreenLight programme identified ESCOs operating in the lighting field, and created a preliminary list of ESCOs (see www.eu-greenlight.org). The following sections describe in more detail recent ESCO development activities in selected countries.

ITALY

The first ESCOs started to operate in Italy in the early 80's by providing "heat service", where contracts to supply the fuel and to operate/upgrade the boilers were implemented. Some TPF was conducted especially in the service sector. During this period, several combined heat and power (CHP) plants were installed in hospitals. In 1984, the association of the heat supply companies (ASSOCALOR) was established. In the middle of the 90's, ASSOCALOR changed its name to AGESI (an energy service industry association) in response to a new legislative framework that required public authorities to consider energy-savings options when looking at energy supply options. Recently, an innovative policy mix was introduced in Italy. The Italian scheme combines command-and-control measures (energy-savings targets for electricity distributors), market instruments (tradable energy-efficiency certificates issued both to distributors and energy service companies), and tariff mechanisms (cost-recovery mechanisms through electricity rates) (Malaman 2002). The Italian scheme began in January 2002, and the first check on compliance with the obligations will be carried in mid-2004. ESCO projects, are eligible for the Italian certificates, and it is expected that several electricity distributors will purchase certificates from ESCOs, increasing the financial attractiveness of ESCO projects.

FRANCE

French energy policy is based on a strong tradition of public service, a notion that used to integrate the principle of *spécialité*. This last principle has had a direct impact for a long time on the organisation of energy service supply in France. Now there is a new definition of "public services". As soon as competition is introduced for a class of eligible customers, the principle of "*spécialité*" is no longer applied in that energy services can be sold together with energy.

The terminology "Energy Service" appeared relatively recently in France, as a generic name to designate a rather broad scope of activities in the energy sector. But, before this name was used, various services in the energy field had been already proposed for a long time by many companies, all more or less based on the concept of "Energy Performance Contract".

Six mechanisms of development are combined in the French history of energy services:

- Creation of a public utility, beginning with water then later district heating networks;

Table 1. ESCO Activities in Selected EU Countries Source: Vine (2003).

EU Country	Date of First ESCO	Number of ESCOs	Total Value of ESCO Projects in 2001 [USD ($)]
Austria	1995	25	7 million $
Belgium	1990	4	Don't know
Germany	1990-95	500-1 000	7 million $
Sweden	1978	6-12	30 million $
United Kingdom	1980	20	Don't know

Table 2. Most Important Barriers in Selected EU Countries Source: Vine (2003) (2003).

EU Country	Barrier #1	Barrier #2	Barrier #3	Barrier #4	Barrier #5
Austria	Administrative	Preparation costs for managing energy performance contracting	Lack of qualified consultants	Customers are not familiar with energy performance contracting	
Belgium	Legislative (lack of public procurement rules)	Inertia	Volume/scale of energy-efficiency projects	Low energy prices	
Germany	Short paybacks required	High transaction (information) costs	Budgeting principles in the municipal sector	Companies are reluctant to use ESCOs when core production process is affected	
Sweden	Lack of information, knowledge and understanding of energy performance contracting	Lack of trust in ESCO solutions/bad will from earlier ESCO failures	Public procurement rules	Lack of accepted contract conditions	Time consuming process to agree on contract
United Kingdom	Lack of commitment to energy policy at broad level	Low energy prices	Short-term view of investment	Fewer energy managers - emphasis on purchasing rather than demand-side measures	

- Operation contracts for the public and semi-public buildings (e.g. public purchase rules);
- Operation contracts for private buildings;
- Contracts for profit sharing (TPF: first French ESCOs);
- Wider automatisation and new control systems for buildings, offices and industry;
- Outsourcing with two components: 1) maintenance for multi-services); and 2) and lump price purchase of various services.

Delegated management of public services partly explains the French model of the ESCO industry. It introduced very early the logic of unbundling between the quality level of the public service and the means to provide it. The concept led to the creation of companies able to bear a financial risk of operations, a useful factor for the ESCO industry development.

Operational contracts for the public and semi-public buildings within public purchase rules led to a coding in items (P1/P2/P3/P4) divided for various reasons: to ensure the indexing of the prices, to apply the VAT to different rates, to distribute the elements of the invoice in accordance with the law, between owner and tenants or occupants, to enter them in the public accounts. This coding and the demand of public accounting for fixed results for a fixed price largely determined the features of energy performance contracting (EPC) in France. For all the P1 contracts presented, a clause of profit sharing can be integrated. This one envisages the sharing of energy saving carried out, or the excesses of consumption, compared to a previously defined basic consumption during one given whole year of heating. The advantage of these concepts of profit sharing is that the occupants and the contracting parties have an interest in implementing out energy-saving projects because they share the benefit. It should be noted that the market central commission in the register of the general technical specifications (Collection Marchés Publics n°2008) defines the formulas of profit sharing. Profit sharing involves all actors but, as opposed to a fixed price operation, increases the pay back time for the operator and may prevent investment.

The first real attempt to formalise energy performance contracts happened in 1983 when, for the first time in Europe, a company (still existing and active nowadays) was set up, only for TPF.

The essential clause allowing TPF in the public Markets is the clause of "Control of energy savings with guarantee of result" (GR-ME) : if the operator proposes actions reducing energy use, it can finance them on the future benefits. That ensures the best possible decision and the best possible realisation.

The current contracts of facility management are concentrated primarily in the tertiary sector. However the deregulation of the electricity market has created a new market of the offer of service in France while making it possible for new actors to offer a service of advice focused on the energy provisioning at the upstream of the meter.

Foreign ESCOs tend more and more to consider that their role is not to finance the energy-efficiency investments of their customers. Therefore, they prefer a scheme where the customers are financed directly by banks or by a financing

agency and where the ESCO plays simply a role of technical engineering and guaranteeing results. This was important for small ESCOs, which are often under-capitalised and which generally don't have the means of borrowing significant amounts of money from the financial markets.

In addition this scheme is likely to function well in those countries owning an established banking structure and having the sufficient technical expertise to include and understand energy efficiency projects. Thus the most original part of the French model consists in the coincidence between the financing and the guarantee, or even between the operator, the guarantee and the financier. The ESCO ensures the financing of the operation, and refunding is carried out only through energy savings, to which the financier can contribute.

The following example of CHP sold as a performance contract in France, provides a good illustration of the French practice. For a long time, while the market of CHP has increased very quickly in Europe, electricity production and administrative authorisations in France have slowed down the development of co-generation by independent producers and by Electricité de France. CHP units were authorised in only a very few cases. In 1994, only 570 CHP units (3 000 MW) were operated, mainly in industries, while the CHP potential was estimated between 5 000 and 10 000 MW by officials, and over 15 000 MW by equipment suppliers. Once the barriers were taken away, the growth became exponential in France. The main line of expansion is outsourced co-generation where HVAC operators provide full service and guarantees to the host company at reduced price for heat.

The case of co-generation is now exemplary of EPC in France : 1) co-generation is becoming the dominant 'Trojan horse' used by new independent producers for obtaining some market shares in France; 2) its development has led to the development of a series of new services for sizing, financing, building and operating CHP units.

The contracts with obligation of results strongly engage the responsibility for the company, which must fulfil successfully the mission, which is defined by the contract.

Thus, the company gives its estimate on operational budgets, its guarantee on the quality of air conditioning and well-being in the buildings, on the availability of steam or compressed air in the industry, on the maintenance of the materials, which are entrusted, to them and the compliance with the code of practice. It implements the means that it judges necessary, as it is needed, until obtaining the contracted result.

Whereas a contract of means can be of low duration, the contract of results can be only a contract of long duration. Indeed the guarantee of the results implies a perfect knowledge of the installations but also, very often, significant investments in time for the knowledge, commissioning and adjustment of the installations.

The contract of results is for the French the form, which it is advisable to give to a technical management contract when there are, by nature, expensive and complex heating air conditioning, industrial heat or cogeneration installations. Such contracts are defined by Acronyms in France, and called P1, P2, P3.

In the case of a third-party financing company, it provides the financing and carries out investments aiming at cutting running costs. It is reimbursed through the savings obtained from one year to the next.

TPF therefore offers a threefold service:

- The financing,
- The technical realisation,
- A guarantee of results.

SPAIN

In Spain, several private ESCOs have been operating for a number of years. Moreover there are also some regional energy agencies and IDEA, the national energy agency, that act as ESCOs. (Blanco)

The private ESCOs are specially active in the funding of wind farms, while public ESCOs, in particular IDAE, are trying to open new markets like co-generation with biomass, biomass technologies with different uses and solar thermal and solar photovoltaic applications.

Third Party Financing (TPF) is a popular mechanism, with some variations: e.g. joint ventures are used for large-scale projects, while more traditional schemes are applied for smaller investments.

In some cases, ESCOs event compete with "expert" companies in the field, like IDAE. The number of banks and other financial institutions that carry out energy projects by means of the TPF mechanism keeps on growing. In sum ESCOs in Spain are well established and are growing, especially due to the support of the regional and national energy agencies.

GERMANY

In Germany by the end of 2000 more than 70 000 contracts on energy services were concluded with the following results (Geissler):

- more than 50 000 generation units,
- total investment: more than 5 billion Euro,
- total installed thermal capacity: 46 GW,
- total installed electric capacity: 8 GW.

Presently about 480 energy service companies are active on the German market and accumulate a total annual turn-over of about 3 billion Euro. Energy services are implemented at 120 000 sites, e.g. existing potential is used at a degree of less than 9%. As far as the financial support programs available in Germany, these can be split among non-government (e.g. credit programs by eco-banks, efficiency checks by energy agencies, and boiler replacement by utilities); and the government (e.g. loan /funding schemes of KfW/DtA, R & D programs, and incentive programs renewable energies.

FINLAND

In Finland there are 3 ESCOs with ongoing projects and all are really active. By the end of 2003 3 new ESCOs are expected to be active on the market (Väisänen). The size of the Finnish market is estimated to be in the range of 350 to 400 million Euro. While the turnover in 2002 was estimated to be between 4 and 5 million Euro, and clearly increasing in

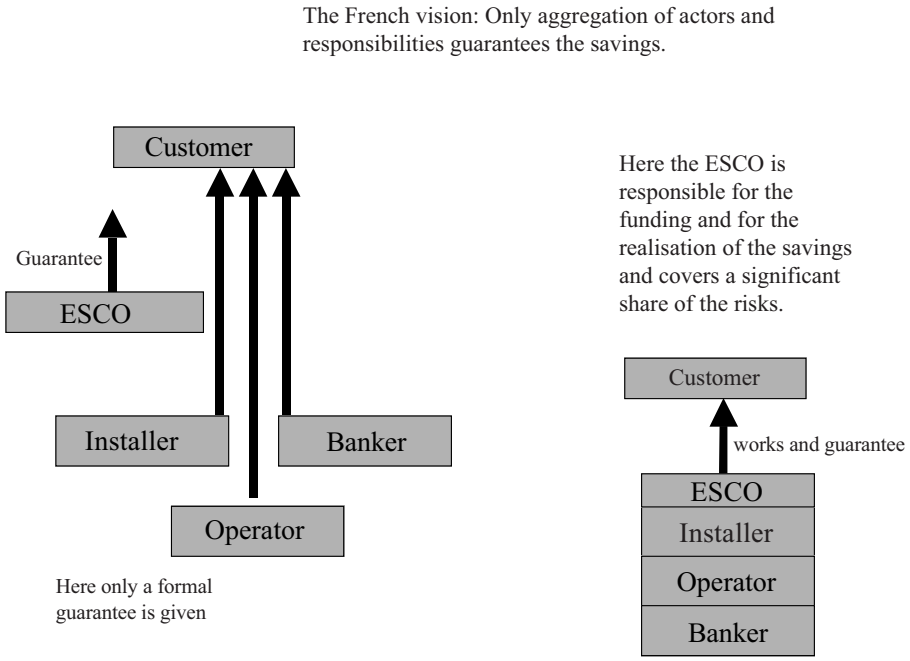

Figure 1.

the Autumn. In the Finnish market the interest among the clients is good and getting better , and the general knowledge on the ESCO concept is good. Therefore there is no need to significantly strengthen awareness.

AUSTRIA

The status of ESCO and EPC in Austria has been surveyed recently. About 500 to 600 buildings are already optimised by EPC, compared to almost zero in 1998; these buildings represent roughly 4-6% of all service sector buildings. The main customers and driving forces are: the federal building administration; a few larger cities (Graz, Salzburg); and the small and medium-sized municipalities. The Austrian Energy agency (EVA) claims that "Austria is – together with Germany – *the* EPC pioneer in Europe".

In Austria, as in Germany and Spain, the regional and the national energy agencies played a crucial role in the development of ESCOs.

A Possible EU Strategy to Foster the Development of the ESCO Industry in the EU

Several types of strategic actions are needed for fostering the development of the ESCO industry in the EU. The first action is to increase information about energy-efficiency projects, financing opportunities, and services offered by ESCOs. As already indicated, there is a lack of information by the end-user on ways to improve energy efficiency in situations where there are limited financial or technical capabilities (e.g., in public buildings). Creating an awareness that ESCOs can help final users in implementing energy-efficiency projects is an important step. The same lack of awareness and interest is also present in financial institutions, especially in countries where there has not been a culture for third-party project financing. To move in this direction, the Commission's Joint Research Centre (JRC) plans to create a comprehensive list of ESCOs in the EU, including a description of their projects, capabilities, and illustrative case studies. A wealth of information is also available at national and local energy agencies. A similar activity at the local level is being conducted by the Graz Energy Agency under a SAVE project.

Energy managers of companies are important stakeholders for the promotion of ESCOs. These professional and qualified individuals should be familiar with the service and capabilities offered by ESCOs and should be able to rely on them for implementing projects in their companies. Thus, an important measure would be the organisation of training courses for energy managers, making them aware of ESCO activities, ESCO-type projects, and measurement and verification methods and protocols for measuring energy savings.

A second important action is to ensure that ESCOs provide a qualified and reliable service. In the United States, an ESCO accreditation system has been implemented by the national association of energy service companies (NAESCO). In Europe, an effort is underway to define the minimum set of qualifications for ESCOs, together with a system to assure the quality of service. The Commission JRC could offer a temporary voluntary solution, while a long-term solution could be found in a Directive or in a CEN standard. Once the certification process has been completed, an European Energy Service Company Association (EAESCO) could be created.

A third action is to create more information for financial institutions, and provide incentives to the "first movers" in this sector. For example, the EU could develop and publicise a website dedicated to those financial institutions that

support ESCO-type projects and that offer financial assistance.

A fourth action is to develop funding sources. EU ESCOs will need working capital for marketing and project preparation and development. Funding feasibility studies, energy audits and the preparation of financing applications would increase their ability to secure additional information and decrease the amount of equity capital required. In addition, sources of debt and equity financing need to be located. Several possible funding sources should be investigated: private banks and lending institutions; US financial institutions that are already familiar with energy performance contracting; venture capital firms; equity funds; strategic partners (e.g., utilities and engineering firms); leasing companies; and equipment manufacturers. A revolving fund to finance energy efficiency measures could also be set up. Dedicated debt organisations offering 80-100% financing for projects could be established and could use the above sources. Under this option, a master loan agreement would be standardised and executed between an ESCO and the debt facility which would commit the lender to provide financing according to defined terms and conditions. Funds would be drawn down on a project-by-project basis. The balance of financing would come from the ESCO, the customer or another equity investor. Alternatively, the debt facility could provide 100% of project costs, but returns to the debt facility would be higher to reflect the higher risk.

A fifth action is to standardise contracts and proposals and measurement and verification (M&V). The development of standard procedures for M&V of savings as well as for standard contract terms can help both end users and the financial community better understand performance contracting. The development of standard contracts has been an elusive task because various companies consider their contract approaches unique and proprietary. Rather than developing a single standard energy services agreement, NAESCO, for example, is now focusing on standard language for a set of key contract provisions, such as insurance, equipment ownership and purchase options, which will allow standard contract forms to be built up gradually. It would also be useful to have standard contract provisions that could be adapted for use in smaller size projects. EU ESCOs should fund only those performance-based projects that are subject to M&V protocols, and the International Performance Measurement and Verification Protocol (IPMVP) protocols would be a good first step. There is no reason for EU countries to repeat the US experience of vast expenditures for energy efficiency never subject to verification. The questionable results of unverified efficiency programs invariably place a cloud over the entire industry.

A sixth action is to conduct ESCO demonstration projects, perhaps as joint ventures. A critical factor in the future role and success of ESCOs in the EU will be the ability to demonstrate successful applications of the ESCO concept. The purpose of these demonstration projects would be to illustrate the applications of energy-efficient technologies, demonstrate the concept of energy performance contracting, and create areas of expertise in ESCO development. In order to attract potential customers, government agencies (or utilities) could identify and qualify customers with energy efficiency potential and, acting on behalf of a single customer or preferably a group of customers, undertake the procurement of turnkey energy efficiency equipment installation and services. The typical method is to develop and issue a request for proposals (RFP) to the energy efficiency industry. Before issuing the RFP, the procuring agency should secure the customer's commitment to the program, assist the customer in defining its decision making process and the acceptable range of financing and contracting terms, perform a preliminary analysis of the customer's creditworthiness, and assemble basic information on the energy cost, consumption and end use characteristics for the customer's facilities. The RFP should define the proposal format, its evaluation and selection process. This preliminary work delivers to the ESCO community a qualified and decision-ready customer. Experienced lenders can impart valuable information as well as demonstrate the importance of M&V to these projects' success. Early success of ESCO projects will be critical to the long-term growth and prosperity of the ESCO industry in the EU.

A seventh action is to promote energy performance contracting in government buildings. Government-owned property is a major energy user and can represent a significant proportion of the potential ESCO market. ESCOs can provide government organisations with valuable expertise and private sector investment capital. However, energy performance contracting is very often regarded as unconventional finance by government authorities. Rules and regulations may simply not allow energy performance contracting on government property. Therefore, an important first step is to review regulations and remove institutional impediments to provide a more hospitable environment for performance contracting. The EU should expedite the process as much as possible by providing subsidies to ESCOs and/or allowing 10-15% of government buildings be made available to performance contractors, raising the credibility of the ESCO business concept with major banks. The buildings could be made available to the top 3-4 qualifying ESCOs (the work should be divided up among the ESCOs). After this initial stage, all government buildings should be made available to energy performance contracting.

An eighth action is to develop a third-party financing network. A third-party financing network could be developed in the EU. The network would include ESCOs, national and regional energy efficiency agencies, associations of ESCOs, lighting and equipment manufacturers and suppliers, financial institutions, community agencies, utilities, and other suppliers of energy services that have an interest in accelerating investments in energy efficiency. All of these actors have a role to play in disseminating information on how third-party financing can be used to overcome impediments to energy efficiency and thereby accelerate energy-efficiency investments. The network would have as its aim the coordination of the efforts of the various and diverse actors to accomplish market penetration of energy-efficient technologies. They could co-ordinate activities, collaborate on information dissemination, and periodically exchange information about their experiences.

A ninth action is to establish an equipment-leasing organisation. Existing leasing companies might be persuaded to offer energy-efficient equipment. Depending on the availability of energy-saving measures, equipment leasing organi-

sations may need to be established to provide a supply of energy-efficient equipment for leasing.

In the long term, a combination of legislative measures, such as the proposed energy service Directive imposing a certain level of energy-efficiency projects to be delivered by utilities, as well as easing procedures for ESCO projects (e.g. procurement rules, etc.) could trigger a wide expansion of the ESCO business.

Finally, the introduction of the Kyoto Protocol and its flexible mechanisms (emissions trading, clean development mechanism, and joint implementation), and the related proposals for Directives for responding to these mechanisms will create a new opportunity for developing the ESCO industry. Energy-efficiency projects offer very cost-effective approach for reducing greenhouse gas emissions. Emerging carbon markets will create new opportunities for project financing and the further diffusion of monitoring and verification techniques used in energy performance contracting.

Conclusion

While the initial ESCO concept started in Europe more than 100 years ago and moved to North America, it is now showing some resurgence in the EU. Recent policy developments, such as the new Italian Decree on energy efficiency that allows ESCOs to carry out energy-efficiency projects and be eligible for the "white certificates", may result in a strong development of the ESCO industry. The announced European Directive on energy services will soon be presented (although the adoption and coming into force could take a long time). However, there is still a need to create a market-driven demand for energy services, through appropriate awareness raising campaigns and information dissemination.

To establish a "real" ESCO market, the European Commission is planning to take a number of actions, including the following:

- introduce a clear and unique definition of ESCO at EU level;
- establish a EU Code of Conduct for ESCO, in order to develop a EU-wide accreditation of ESCOs; a EU list of accredited ESCOs. and the establishment of the European Energy Service Company Association (EAESCO); and
- propose a Directive on Energy Services.

To keep the momentum going, the European Commission DG JRC is organising a major international conference in May 2003 on the status, prospects and challenges that the ESCO industry is facing today in Europe. The conference aims at gathering for the first time the numerous and different ESCOs operating in Europe and to discuss together with policy makers, experts, clients and members of the financial community the opportunities and strategy to promote the ESCO industry in Europe.

References

Adnot, J. 2002. *"Performance Contracting for accelerate energy efficiency"*. In Proceedings of the International Conference on Improving Electricity Efficiency in Commercial Buildings (Nice, France, May 2002), pp.261-270. Editor: ADEME.

Berrutto, V. and P. Bertoldi. 2002. *"Second-year assessment of the European GreenLight programme"*. In Proceedings of the International Conference on Improving Electricity Efficiency in Commercial Buildings (Nice, France, May 2002), pp.535-541. Editor: ADEME. More information about the GreenLight programme can be found on www.eu-greenlight.org

Bertoldi, P. 2001. *"A new Initiative to improve energy efficiency of motor systems: the Motor Systems Energy Efficiency Challenge Programme"*. Proceeding of the ACEEE 2001 Summer Study on Energy Efficiency in Industry. Washington, D.C.: American Council for an Energy-Efficient Economy. More information about the Motor Challenge programme can be found on http://energyefficiency.jrc.cec.eu.int

Blanco, I. 2003. Private communication.

Capozza, A. 2002. *"Market based policy approaches for end-use energy efficiency promotion"*. In Proceedings of the International Conference on Improving Electricity Efficiency in Commercial Buildings (Nice, France, May 2002), pp.229-233. Editor: ADEME.

European Commission (EC). 2000a. *Action Plan to Improve Energy Efficiency in the European Community. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions*. Ref. COM (2000) 247 final. Brussels, Belgium. 29 February 2000. Available also at: http://europa.eu.int/eur-lex/

European Commission (EC). 2000b. *Green Paper : Towards a European strategy for the security of energy supply. Communication from the Commission*. COM(2000) 769. Brussels, Belgium. 29 November 2000. Downloadable at: http://europa.eu.int/eur-lex/

European Commission (EC). 2001b. *The European Climate Change Programme. Final Report* (long version), 173 pages. Brussels, Belgium. Downloadable at http://europa.eu.int/comm/environment/climat/eccp.htm

Geissler, M. 2003 Private communication.

Joint Research Centre (JRC). 2002a. *The European GreenLight Programme – An initiative promoted by the European Commission. Presentation brochure*, 24 pages. JRC Publication Ref. S.P.I. 02.59. Downloadable at www.eu-greenlight.org

Leutgöb, K. 2003. Private communication.

Malaman, R. 2002. *"Market based policy approaches for end-use energy efficiency promotion"*. In Proceedings of the International Conference on Improving Electricity Efficiency in Commercial Buildings (Nice, France, May 2002), pp.229-233. Editor: ADEME.

Väisänen, H. 2003 Private communication.

Vine, E. 2003. *"International Survey of Energy Service Companies,"* unpub., Lawrence Berkeley National Laboratory, Berkeley, CA.