



# **Energy Service Companies (ESCOs) in Europe**

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# Main Energy Priorities 2005

1. Increasing energy efficiency
2. Achieving a **properly functioning internal market** for gas and electricity
3. Promoting **renewable energy**
4. Strengthening **nuclear safety and security**
5. Security of Europe's energy supplies and further developing **external energy policy relations**
6. Improving the **links between energy policies and environmental and research policies**



Mr. Andris Piebalgs  
Energy Commissioner



# The Green Paper

- If the current trend continues, gross energy demand could increase by **10% by 2020**. Growth in electricity demand could also reach **1.5%** per year. Today's consumption in the EU could reach **1900 Mtoe** within 15 years (2020), compared with **1725 Mtoe in 2005**.
- Estimates indicate that we could reduce consumption by **20% by 2020** that is a saving of 60 billion euros a year.
- By saving 20% of energy consumption by 2020, it would be possible to secure 50% of the necessary reductions of CO<sub>2</sub> emissions.
- Saving 20% of energy consumption would also strengthen the competitiveness of our economy and facilitate the creation of one million jobs in Europe.



# The draft Energy Service Directive

## Background:

- Cutting greenhouse gas emissions to 8% below 1990 levels by 2008-2012 (ECCP 2000)
- A large energy savings potential remains in all end-use sectors (around 20%)
- Demand-side efficiency promotion and harmonisation are not fully addressed in Internal Market Directives.
- Action needed to curb escalating oil demand within the EU
- The need for an umbrella for existing and proposed energy efficiency Directives (e.g. EPBD, Eco-design, CHP).



# Objectives of the EE&ES Directive

- To promote cost-effective energy efficiency with targets, mechanisms, incentives, institutional, financial & legal frameworks;
- To develop a commercially viable market for energy efficiency and energy services (market transformation)



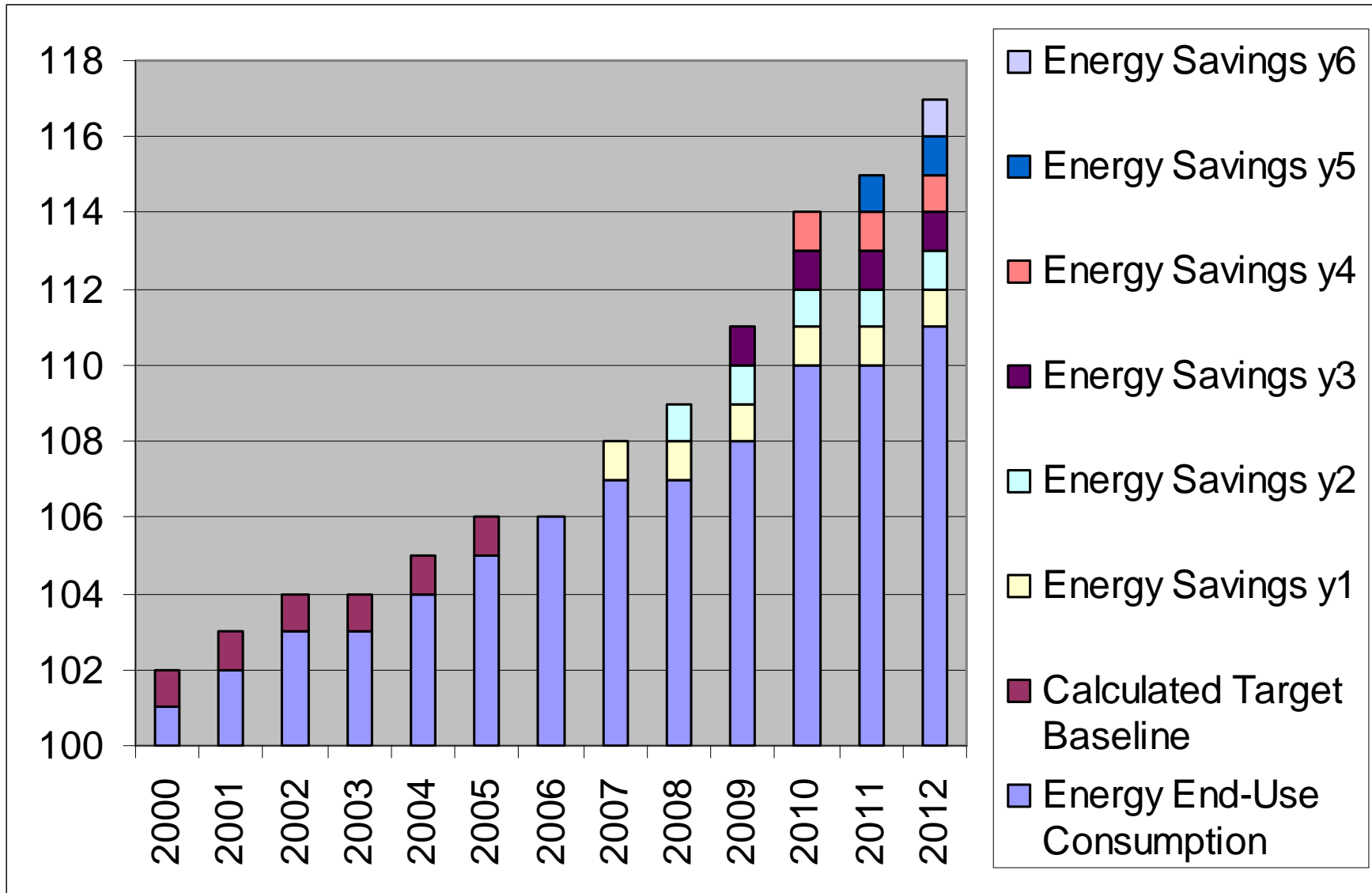
# The draft Energy Service Directive – Content 1/4: the Target

- 1 % annual overall target
- indicative 9 % over Business As Usual in nine years (2008-2017);
- Governments to prepare energy efficiency action plans by 2007, 2011, 2014, the EC will assess each action plans;
- the first of these plans will have to include a national indicative energy savings target for 2011;
- public authorities to play an "exemplary role".
- harmonised energy efficiency indicators and benchmarks

(Agreement announced on 7 Dec. 2005, final text not yet released, needs to be formally ratified by the Parliament and Council before it can enter into force)



# The draft Energy Service Directive - Content 2/4





# The draft Energy Service Directive - Content 3/4

- ESCO defined generally with financial risk-taking and shared savings criteria
- ESCO set forth as one of major providers of energy services and energy efficiency improvement measures
- Member States to ensure competence & reliability of ESCOs with qualification, accreditation and/or certification schemes.
- Third-party financing and energy performance contracting (by i.a. ESCOs) defined and promoted
- Energy audits (by i.a. ESCOs) defined, quality-ensured and promoted



# The draft Energy Service Directive - Content 4/4

- The transport sector will be included;
- The MS will be able to choose which kind of obligations to put on energy utilities;
- Informative energy bills and improved metering to be implemented in MS;
- A Committee will be established to work out the measurement methodology details (Annexes);

# The GreenLight Programme

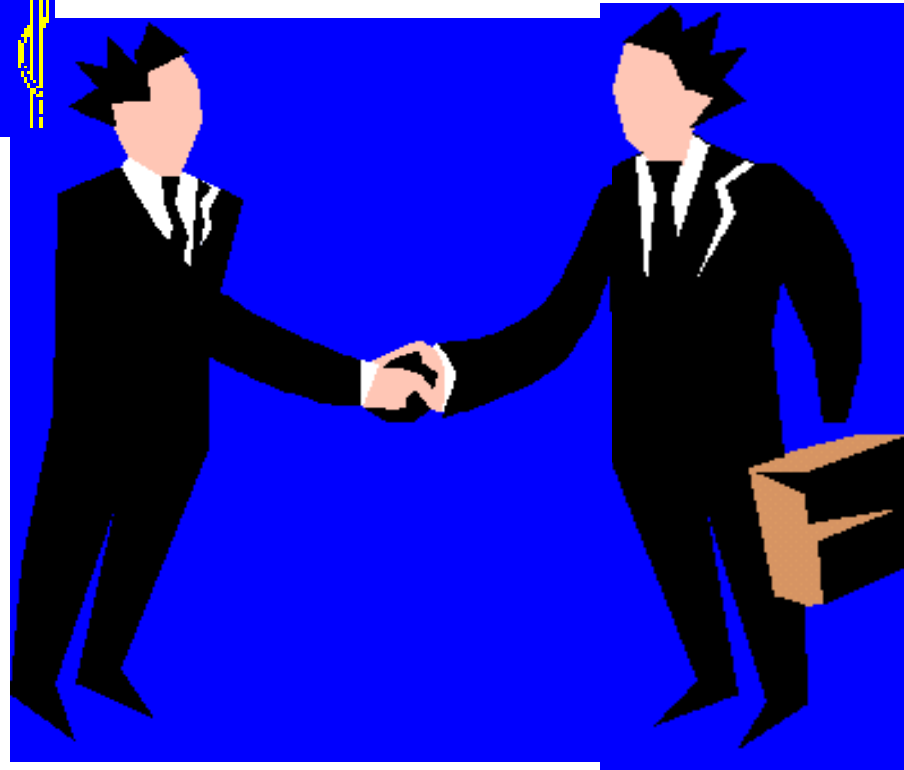
[www.eu-greenlight.org](http://www.eu-greenlight.org)

- Lighting accounts for a large share of electricity consumption:
- Tertiary and industry lighting consumption ca. 150 TWh
- Large cost-effective saving potential of about 30%



An initiative of the  
EUROPEAN  
COMMISSION

GreenLight is a voluntary programme, which has fostered the ESCOs development in the EU



Top-manager

- OK to install energy-efficient lighting where:
- 1) it is **PROFITABLE** and
  - 2) lighting quality is maintained or improved



## SUCCESSFUL EXAMPLES OF EFFICIENT LIGHTING



**Few copies  
available here.**

**Can be mailed to you  
Or  
Can be downloaded  
From the web**

## FIVE YEAR REPORT OF THE EUROPEAN GREENLIGHT PROGRAMME

**PAOLO BERTOLDI AND CALIN NICOLAE CIUGUDEANU**

European Commission, DG JRC,  
Institute for Environment and Sustainability, Renewable Energies Unit



# **The European Motor Challenge Programme**

**Motor driven systems account for 69% of European industrial electricity consumption and offer high savings potential at low cost up to 30% or over 100 TWh/yr**

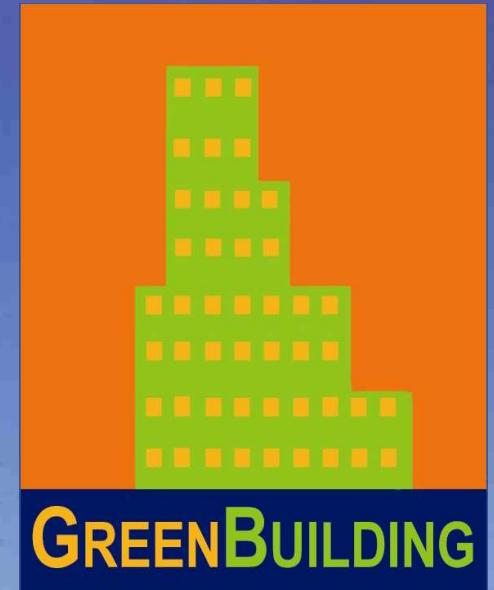
**<http://energyefficiency.jrc.cec.eu.int/motorchallenge/index.htm>**



**An initiative by the  
European Commission**

# The European GreenBuilding Programme

- GBP contributes to the EU objective to reduce energy demand in buildings.
- GBP stimulates “additional” cost-effective energy efficiency projects in non-residential buildings.
- GBP helps and facilitates the implementation of the new Directive on Energy Performance of Buildings (EPB Directive).
- GBP helps overcome most of the barriers to energy efficiency – in particular the lack of interest and information, technical capabilities and access to finance.



<http://energyefficiency.jrc.cec.eu.int/greenbuilding/index.htm>



# Introduction to ESCOs

- In the last decade Europe has seen an increased interest in the provision of energy services driven by electricity and gas market restructuring and the push for sustainability;
- There is a very different level of development of the ESCO industry (in terms of e.g. types of services, size and turnover of ESCOs, number of ESCOs) in the various European countries. The differences in level of development is due, among other, to the pro-active national and local promotion programmes as well as the introduction of project financing;
- There is a still significant variance in the ESCO-related definitions and concepts;



# Energy Service Provider Companies

- ESPCs provide energy services to final energy users (audits, project design and implementation, operation and maintenance, facility management, etc.).
- ESPCs are consulting engineers specialised in efficiency improvements and providing a service for a fixed fee for their advice (and not being paid based on the results of their recommendations).
- Because often the full cost of energy services is recovered in the fee, the ESPC does not assume any risk in case of underperformance.



# Energy Service Companies

An ESCO also offers the same services; however, an ESCO differs from an ESPC in the following ways:

- ESCOs **guarantee the energy savings** (a performance guarantee can revolve around the actual flow of energy savings from a project, or can stipulate that the energy savings will be sufficient to repay monthly debt service costs).
- The **remuneration** of ESCOs is **directly tied to the energy savings achieved**;
- ESCOs can **finance**, or **assist in arranging financing** for the operation of an energy system by providing a savings guarantee.
- Retains an on-going **operational role in M&V** over the financing term



# Typical ESCO Services

- Energy audits, feasibility studies
- Engineering design
- Equipment procurement
- Subcontractor management
- Construction
- Measurement and verification
- Operate and maintain
- Project financing



# Typical ESCO Process

- Site survey and preliminary evaluation
- Investment grade audit
- Financial presentation and client decision
- Project financing
- Final design
- Construction
- Commissioning and acceptance
- Measurement and verification
- Operate and maintain



# Sample Technologies

- Boilers
- Chillers
- Lighting
- Air handling
- Pumps
- Energy management systems
- Cogeneration
- Water conservation
- Compressed air
- Refrigeration systems
- Variable speed drives
- Thermal storage
- Renewables
- Motors
- Electrical upgrades



# Typical Contract Terms

- No results, no payment
- Recognizes ownership of risks
- Acknowledges responsibilities
- Establishes the baseline
- Documents equipment to be installed
- Usually long-term relationship
- Identifies M&V requirements



# Energy Performance Contracting

- Under an EPC arrangement an ESCO implements a project and uses the stream of income from the cost savings to repay the costs of the project, including the costs of the investment.
- The ESCO will not receive its payment unless the project delivers energy savings as expected.
- Different ways to structure a contract: shared and guaranteed savings, first-out. BOOT, chauffage and leasing also deserve attention.
- EPC is a mean to deliver infrastructure improvements to facilities that lack any of the following:
  - Energy engineering skills;
  - Manpower or management time;
  - Capital funding;
  - Understanding of risk;
  - Technology information;

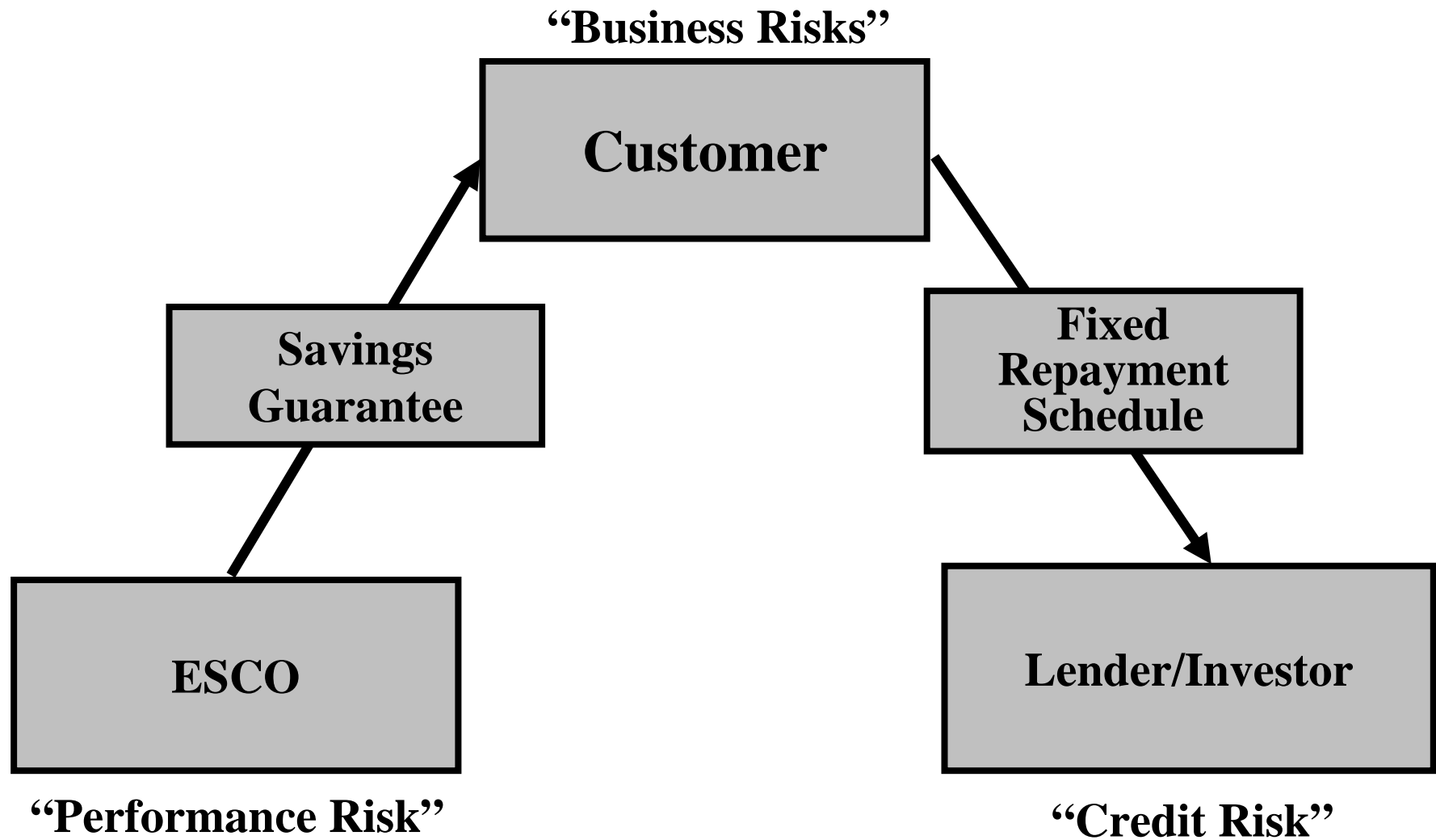


# Financing is Key Issue

- ESCO is a Service Company, not a Bank;
- Some ESCOs cannot invest their working capital to develop & implement Energy Efficiency Projects unless “reliable” and “commercially viable” long-term Project Financing is available.



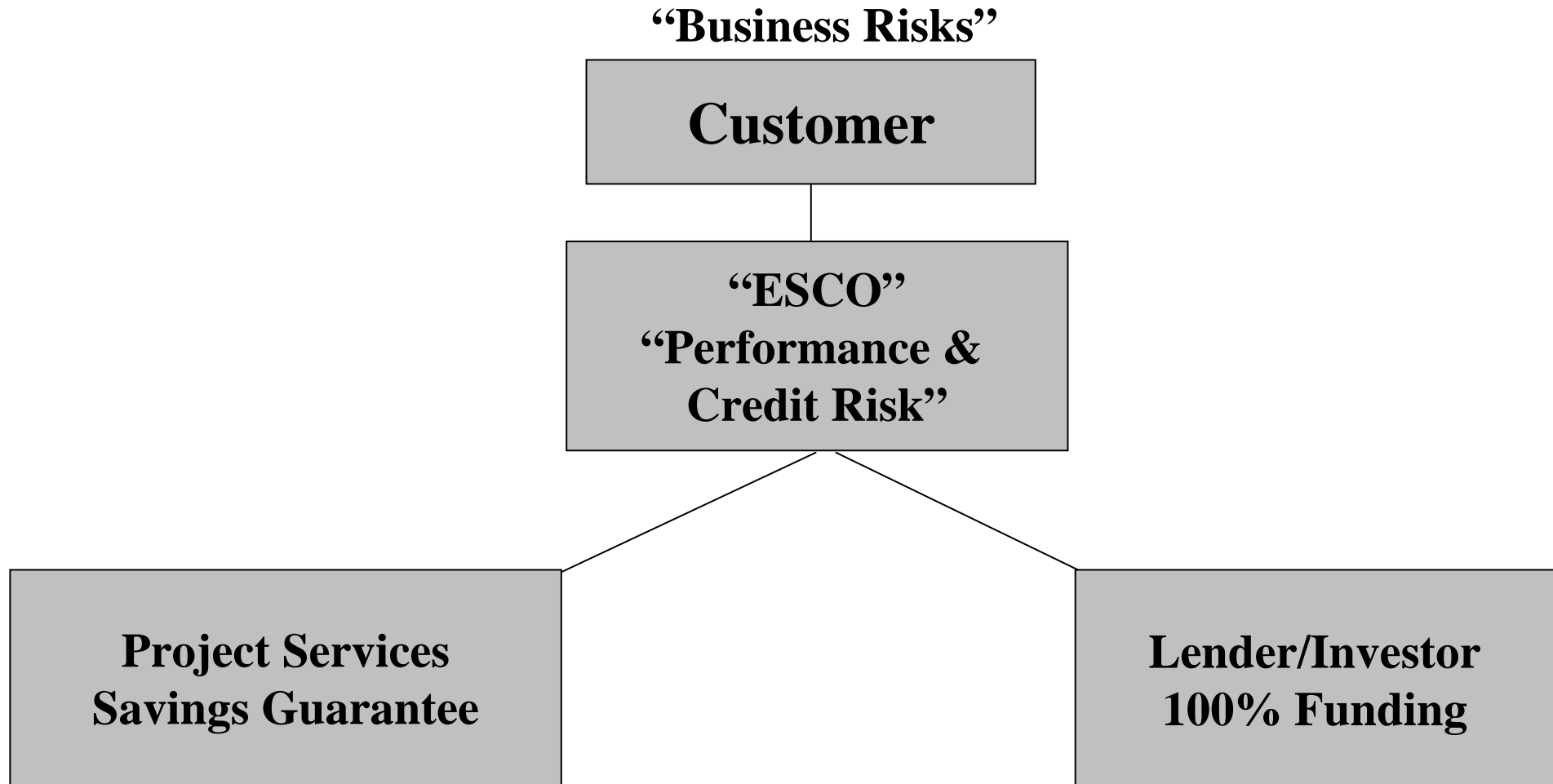
# Guaranteed Savings (user financing)





# Shared Savings

**(ESCO provides financing)**





# ESCOs in Europe: general characteristics

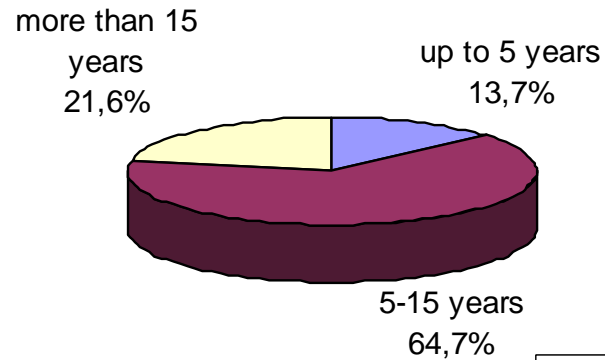
- Most ESCOs have been founded either by large companies or as subsidiaries of large companies (equipment manufacturers, facility management companies, operation, management and construction companies or energy utilities);
- Under EPC arrangements ESCOs have so far provided financing themselves (mainly in France, Italy and Germany).
- Only recently have more ESCOs started implementing EPC using TPF: no matter that almost all ESCO projects in Europe have been based on the shared savings concept. Chauffage contracts are also commonly used. The guaranteed savings concept has been used rarely;
- The market is segmented in 'functionally specialised' companies;



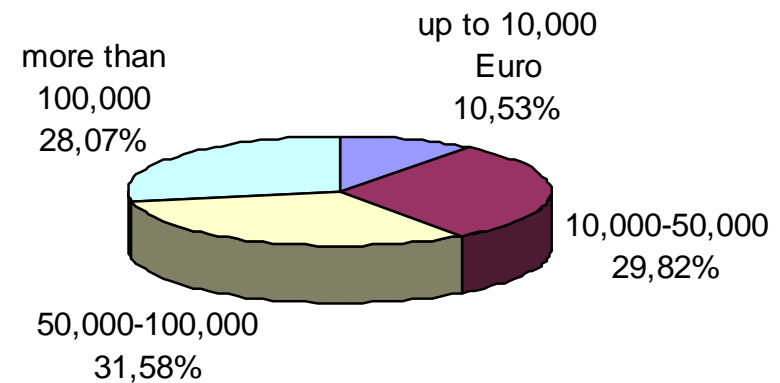
# Criteria for passing contracts\*

\* Based on 51 responses

## Maximum contract duration



## Minimum annual energy bill (in Euro)





# ESCO projects

- The majority of ESCOs' projects in EU MS have focused on co-generation; public lighting; HVAC and EMS.
- The majority of ESCO projects in Europe have been undertaken in the public sector.
- The recent energy industry restructuring has stimulated projects in CHP for large commercial centers, hospitals, and industrial facilities (BOOT contracts); it has also triggered public lighting projects, where municipalities tendered lighting operation, including the supply of electricity.
- In many cases ESCOs are more interested in the business of selling energy or equipment than in exploiting the financial opportunities of energy savings.



# Country Development

**Premier league:  
high**

**Germany, Austria**

**Hungary, France, the UK**

**Second league:  
medium**

**Spain, Sweden, Czech Republic**

**Italy**

**Third league: low**

**All other European countries**



# Country Survey: Germany

- **Germany**, together with **Austria**, is the most mature ESCO market in the EU;

There are around **480 ESCOs** with an overall annual turnover of about **3 billion Euro**. Energy services are being implemented at **120,000 sites in 2003**, estimated to be less than **9 %** of the existing market potential;

The sector attracting most attention is public buildings primarily due to the support of energy agencies and the restructuring of building administrations towards outsourcing of energy-related operational tasks;

The financial and technical support is shared between non-government programs (e.g. credit programs by eco-banks, efficiency checks by energy agencies, and boiler replacement by utilities), and government programs (e.g. loan /funding schemes, R&D programs, and incentive programs for renewable energy);



# Country Survey: Austria

- To date the energy efficiency of about **500 to 600 buildings** has been improved via EPC, as 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 large cities (Graz, Salzburg); and some small and medium-sized municipalities. Private commercial buildings are not typical EPC customers;
- There are about **35 ESCOs**;
- In Austria, as in Germany and Spain, the **regional and the national energy agencies** played a crucial role in the development of ESCOs.



# Country Survey: France

- Co-generation is a good example of EPC in France. The main line of expansion has been outsourced co-generation where HVAC operators provide full service and guarantees to the host company at reduced price for heat. Co-generation is the 'Trojan horse' used by new independent producers to obtain market share.
- The current contracts of facility management are concentrated primarily in the **tertiary sector**.
- France is a strong believer in the shared savings concept and chauffage contracts.
- The French market is rather well developed, although very 'special' and largely dominated by a few very large companies.



# Country Survey: Italy

- 20 years experience in energy service matters with the first ESPCs started in the early 80's by providing "heat service" to public buildings under contracts to supply the fuel and to operate/upgrade the boilers.
- The Italian market is still dominated by ESPCs. A few large multinational companies coming from the heat supply and the building control sectors dominate the Italian ESCO industry. A few new ESCOs are starting operation, mainly in street lighting. The Italian banks are still reluctant to provide financing for ESCO projects.
- The introduction of the White Certificates scheme should facilitate the development of the ESCO industry in Italy. Guidelines and model contracts for EPC and TPF have been published by some regions.



# Country Survey: Spain

- EPC is very common in relation to district heating. **Long-term BOOT and chauffage contracts** are common.
- TPF is a popular mechanism, with some variations e.g. joint ventures used for large-scale projects, while more traditional schemes are applied for smaller investments. The number of banks and other financial institutions that carry out energy projects by means of TPF is rapidly increasing.
- Direct project financing by regional and local energy efficiency agencies.
- The ESCO industry in Spain is well established and is growing, especially due to the support of the regional and national energy agencies.



# Country Survey: UK

- There are approximately **20 ESCOs** operating in the **UK**.
- Popular customers are located both in the private sector (commercial buildings, industry generally excluding process aspects) and in the public sector (large state owned hospitals, prisons and defence establishments, local authority housing).
- ESCOs with significant capital may use their own finance, but most major ESCOs use external TPF from banks.



## Energy efficiency frontrunners and ESCO laggards: the cases of DENMARK and the NETHERLANDS

Provisions for mandatory DSM together with numerous projects implemented by the national energy agency have left little space for commercial ESCOs.

- In the *Netherlands* some utilities offer energy management and energy service contracts; as of 2002, EPC was non-existent
- In *Denmark* provisions for mandatory DSM together with the activities of the national energy agency and the national energy saving trust in terms of project implementation have left little space for ESCOs.

*Energy efficiency can be done by means other than ESCO development!*



# The way forward (1)

- Increase information about energy-efficiency projects, financing opportunities, and services offered by ESCOs;
- Demonstrate successful applications of the ESCO concept, applications of energy-efficient technologies, and EPC, and creating areas of expertise in ESCO development;
- Use public procurement for turnkey energy efficiency equipment installation and services.



# The way forward (2)

- Launch an Accreditation System for ESCOs;
- Develop financing sources;
- Standardise contracts and M&V;
- Promote EPC in governmental buildings;
- Develop a European TPF network.



# Conclusions 1/2

- The provision of energy services is a **growing industry** that involves a diversity of enterprises and covers a variety of activities; the current status of the ESCO industry in different countries shows significant differences.
- Supply side at present is attracting the lion's share of ESCO's attention (**CHP the most common type of project**); at the demand side street lighting projects are common. **Projects in buildings still need policy support;**



## Conclusions 2/2

- Recent policy developments, such as schemes with tradable certificates for energy savings as introduced in some European countries, may result in a strong development of the ESCO industry. In the long term, a combination of legislative measures, such as the proposed “Energy Services” Directive, coupled with strategic actions to foster both the demand for and the supply of energy services could trigger a wide expansion of the ESCO business in all European countries
- Energy-efficiency projects offer a very cost-effective approach to reducing greenhouse gas emissions: will EU ETS through the Kyoto flexible mechanisms take them up?

## ENERGY SERVICE COMPANIES IN EUROPE



### STATUS REPORT 2005



**PAOLO BERTOLDI AND SILVIA REZESSY**

European Commission, DG JRC,  
Institute for Environment and Sustainability, Renewable Energy Unit

A few copies are available here.

The report can be mailed to you  
and is also available for  
downloaded  
from the web

## List of European Energy Service Companies

Last update 11 April 2005

[Austria](#) - [Belgium](#) - [Bulgaria](#) - [Croatia](#) - [Czech Republic](#) - [Denmark](#) - [Estonia](#) - [Finland](#) - [France](#) - [Germany](#) - [Greece](#) - [Hungary](#) - [Ireland](#) - [Italy](#) - [Luxembourg](#) - [Norway](#) - [Poland](#) - [Portugal](#) - [Romania](#) - [Slovakia](#) - [Spain](#) - [Sweden](#) - [Switzerland](#) - [The Netherlands](#) - [United Kingdom](#)

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**Database of ESCOs in Europe at:**  
<http://energyefficiency.jrc.cec.eu.int/esco.htm>



## ESCOs

In recent years there has been an increased interest in the provision of energy services to achieve energy and environmental goals. In particular some new companies providing energy services to final energy users, including the supply and installations of energy efficient equipment, and/or the building refurbishment, have started to operate on the European market.

What characterises these companies, defined as Energy Service Companies (ESCOs) from the traditional energy consultants or equipment suppliers is the fact that they can also finance or arrange financing for the operation and their remuneration is directly tied to the energy savings achieved. This page offer some information about ESCO operating in the European market and their projects.

The European Commission DG JRC is promoting the activities of ESCO as part of its promotion of the GreenLight and Motor Challenge programmes.

- [Energy services](#)
- [What is an ESCO?](#)
- [ESCO project elements](#)
- [Energy Performance Contracting and most common contractual structures](#)
- [Financing options](#)
- [Model Third Party Financing Contracts \(Model contract prepared by the UK ACE\)](#)
- [The European Database of ESCOs](#)
- [The European Database of ESCOs projects](#)
- [Energy Service Companies in Europe - Status Report 2005 \(download pdf 1,7 MB\)](#)
- [The Monitoring and Verification](#)
- [First European ESCO conference, Milan \(Italy\) 22-23 May 2003](#)
- [Further reading](#)

## Several Information about ESCOs

<http://energyefficiency.jrc.cec.eu.int/esco.htm>



# Thank you for your attention!

More information about the “**ESCOs in Europe 2005**” status report and the **European ESCO database** can be obtained from

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