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Banks are not well-informed about the ESCO concept and have no relevant products (Zgraggen 2013). The problem with TPF is that an ESCO project is treated as a normal loan and the future cash flow is not considered as a collateral (Zgraggen 2013). Nevertheless, there are sporadic examples of TPF from bank loans for the shared savings models of EPCs (Marino et al. 2010; EC JRC 2012). On the other hand, two private funds (SUSI and UBS) have been set up to provide incentives for ESCO investments.

Normally, though, ESCs are financed either by the client or the ESCO, whereas the contractors (ESCOs) provide the investment funds for shared savings EPC models. This may imply a leverage need after a few long-term projects, which can put a hold on the current growth due to lack of credible and bankable projects.

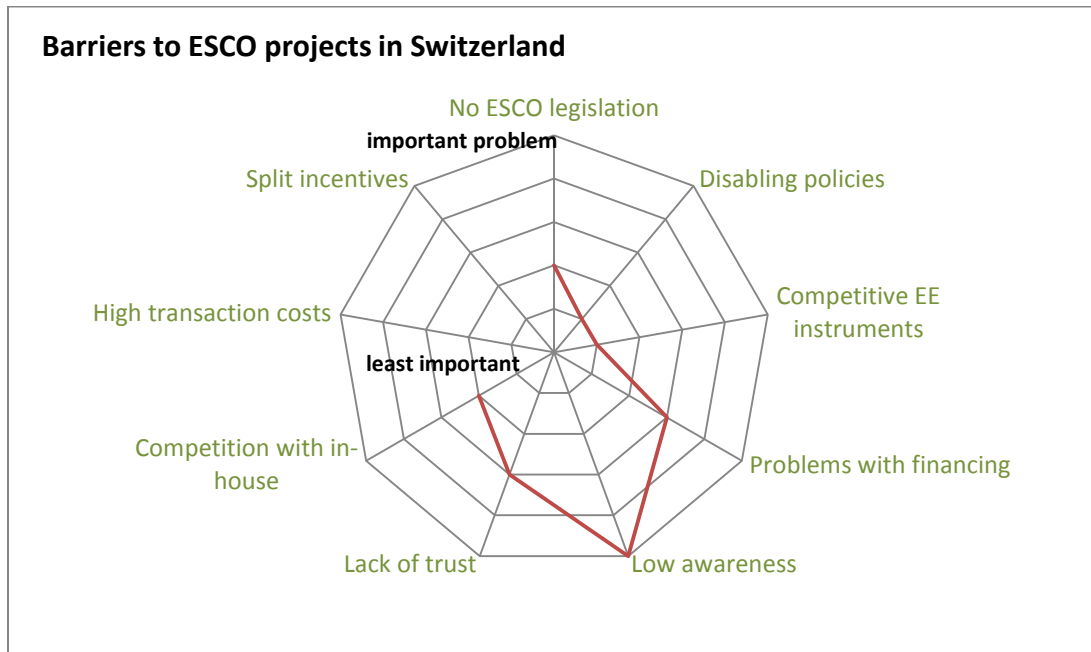
### *Barriers*

The Swiss ESCO market is still very small, and the market has not been prepared yet for the ESCO solutions. It is believed that until now, only a few companies were interested in offering ESCO services and there was no demand because of lack of awareness about this solution. Indeed, it is expected that both the demand and the supply sides are growing now, and this will be matched with a significant growth of the ESCO market (Marino et al. 2010; EC JRC 2012).

Nevertheless there are a few barriers which should be and are addressed. The lack of appropriate financing solutions is one of the key problems. ESCOs are able to finance a few projects at the moment, but as soon as there would be a growing number of projects, the amount of loans could create a lock on further bank loans. Energy services are not directly promoted by policies yet, and according to experts this may not be a problem in itself, as long as legislative hurdles are removed. IPMVP is widely known and used, but other standard documents are not available. However, stakeholders do not see this as a problem.

Finally, the lack of information has been one of the key obstacles so far, on part of all stakeholders, and especially in case of potential clients and banks.

In summary, the following graph illustrates the relative importance of barriers in Switzerland:



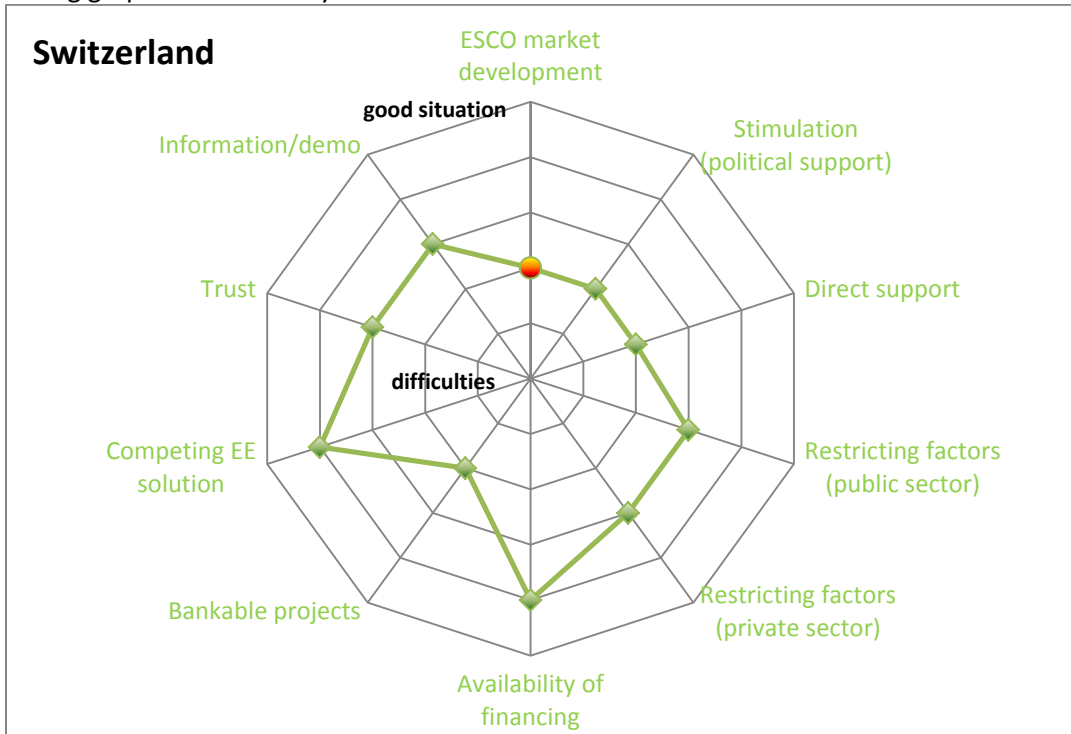
### *Conclusions and future expectations*

ESCO experts are optimistic about the ESCO market in Switzerland. Truly, the activity related to ESCO/EPC markets is rather limited and started to be seen only recently; nevertheless it is believed that a boom can be expected in the near future. It was 4 years ago when the first EPC project was launched. It was preceded by other types of ESCO projects (BOOT, Chauffage) mainly in the industrial sector, as well as other value added services. Demand is developing now as a result of the promotion by ESCO companies. It is expected that more and more tenders will be announced. In parallel, there is an energy efficiency obligation scheme that drives demand further. An energy policy that will – among others – promote ESCOs, information and awareness raising activities are also on the rise. It is to be seen whether these activities will provide an appropriate set of incentives and regulations to move the ESCO market ahead.

#### **Key drivers**

- Energy policy 2050 (under discussion), which will incorporate incentives to promote the ESCO market;
- National ESCO association “SwissESCO” and private facilitators;
- Two private funds, SUSI and UBS that are suitable for supporting ESCO projects;
- Scientific interest in adapting the ESCO models to the local context (MSc and PhD theses);
- Popularity of the IPMVP procedure;
- Dedicated discussions and actions from October 2013.

The following graph shows the key features of the Swiss market:



**Switzerland in a snap-shot:**

<b>Number of ESCOs</b>	6
<b>ESCO market size and potential</b>	market size: unknown
<b>ESCO market trend</b>	slow growth
<b>ESCO association</b>	"SwissESCO"
<b>Typical ESCO projects</b>	industry, social housing, private tertiary (hotels) and residential
<b>Main type of contract</b>	Chauffage, BOOT EPC (shared savings)

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## *South-east European countries*

### **Albanian ESCO Market 2013**

The ESCO market in Albania does not yet exist and there are no ESCO companies in the country. The importance of energy services and ESCOs are recognized by the Government and by the responsible institution for implementation of energy efficiency policies, i.e. Albanian National Agency for Mineral Resources (AKBN) and Albania –EU Energy Efficiency Centre (EEC) (EC JRC 2012).

#### *Current ESCO market*

In Albania there is not any registered ESCO or similar public or private company, that provide energy services on basis on ESCO contract. They are few companies or organization (e.g. Energy Efficiency Centre) that have implemented energy efficiency project financed by the Albanian government or by international organisation and they can provide some energy services as energy audits. These organisations could provide energy services on ESCO basis in the future (UN Economic Commission for Europe 2013).

One of the most important issues for the future development of Albania and its energy sector are the increase of energy consumption per capita and at the same time, maintaining the low level of energy intensity which would create a competitive economy in an open international market. According the one average scenario the expected growth rate of the Albanian GDP for the period 2009 -2018 is 4,5%. The forecast for final energy consumption for period 2009 – 2018 based on the Albanian National Energy Strategy (from 2009) shows that final energy consumption will increase in all sectors (26% in residential, 246% in service, 265% in industry and 241% in agriculture) except in transport sector (Albanian Government 2011).

The first National Energy Efficiency Action Plan for Albania for the period 2010 -2018 was adopted in October 2011. In 2008, the residential sector in Albania consumed more than 23% of the total final energy consumption. Electricity with 49% has the largest share on total consumption among the energy sources and then is biomass with 41% and oil products with 10%. (Albanian Government 2011)

The energy efficiency measures in residential sector should contribute to reduction of the use of electricity for space heating and hot water preparation through the introduction of central and district heating systems (these are not yet constructed in cities) as well as through use of renewable energy (e.g. solar heat systems). The energy consumption in the residential sector will be reduced through the implementation of energy efficiency buildings codes (e.g. mandatory use of thermal insulation in new buildings). Therefore it is necessary that the new Law on Energy efficiency (still in a draft version) is adopted and implemented. This draft law contains certain improvements with respect to the existing Law on Energy Efficiency (Law No.9379/2005) adopted in April 2005, but not implemented at all since the secondary legislation has never been prepared. The new Law has been prepared according the EU regulation for Energy Efficiency and it includes provisions for energy audits and energy certification of buildings, which is not mandatory at the moment in Albania. However trainings for energy auditors have been already organized by international organization. The aim is to have certified energy auditors, who will be able to carry out audits, and also to train other professionals to become auditors later when the regulation for audit will be adopted.

ESCOs are mentioned in NEEAP as one of the target groups for two measures related to development of regulation for minimum requirements on thermal quality of new and existing buildings and financial support for energy efficiency in the residential sector. ESCOs should be included in realization of energy efficiency projects, but first the regulation and financial mechanisms have to be created. (Albanian Government 2011)

The service/tertiary sector includes the commercial sector (which includes also SMEs) and public sector. This sector consumes 6% of the total energy consumption. The measures from the NEEAP are related to implementation of building codes in commercial and public buildings, improvement of heating systems for public buildings through introducing of small scale CHPs and solar systems for hot water preparation and implementation of energy audits and energy certification of buildings. The introduction of energy performance contracting is mentioned as a measure which shall be used to ensure the quality of the refurbishment of buildings and co-financing of energy savings measures. Implementation of a system for energy certification and energy audit in the service sector should result in establishing the building baseline energy consumption, the calculation of energy savings and the preparation of list with priority energy efficiency measures for commercial and public buildings, but also will enable distinguishing the energy consumption between both sectors, which is a current problem (Albanian Government 2011)

The Albanian industry sector accounts for approximately 13% of the total final energy consumption. The largest consumer of energy is the food and beverage sector with around 19,9 % and then is the building materials sector with 18,6%. The industry sector is still in a very poor condition in terms of energy intensity. The electricity contributes with 22,2 % to the energy consumption by energy sources. The energy demands of Albanian industry shall increase since it is expected the growth of the industrial production in the next period of 7-8 years. According to the first Albanian NEEAP, energy efficiency measures will be focused on the implementation of energy management systems, the introducing of modern less energy demanding technologies and the replacement of electrical motors, air compressors, and ventilation systems. The energy audit systems shall be introduced also for the industry. (Albanian Government 2011)

Because of the lack of relevant energy consumption data it is very difficult to estimate the potential for ESCOs in Albania (EC JRC 2012)

### *Types of projects*

The potential for implementation of projects through the ESCO model in Albania lies in public sector, industry and residential sector, since all of them are in very bad conditions in terms of energy efficiency. The building codes have not been applied neither for new nor for existing buildings even after 2002 when the Law on Heat Conservation of Buildings (Law No.8937) was adopted, because the secondary legislation has not been prepared. The poor energy infrastructure and not developed district heating systems in larger Albanian cities can attract foreign investments in energy sector. ESCO projects can be implemented by foreign ESCOs which have experience in the implementation of projects on basis of BOOT contracting. The EPC contracting it is not possible due to lack of suitable regulation for public procurement and low awareness in the industry enterprises and public authorities for energy services based on energy savings.

Until now no projects have been implemented using the ESCO model or similar basis.

### *Regulatory factors*

Albania as a member country of the Energy Community Treaty is obliged to transpose all EU legislation for energy efficiency including the EPBD and ESD. Therefore, in 2009 on basis of EU legislation the new Law on Energy Efficiency was prepared. The draft law set objectives and principles of national energy efficiency policy and introduce requirements for energy performances of the buildings, energy certification, energy audits of buildings and industry and labelling of household appliances. The Energy Efficiency Fund should be established according the draft law for financing of energy efficiency projects. Energy services should be a part of the Law on Energy Efficiency. However, although the draft was prepared in 2011 has been not adopted yet.

### *Market factors*

The lack of district heating and central heating systems, lack of implementation of building codes and very high dependence on the heating with electricity result in very poor leaving conditions in Albanian residential and public sectors. The prices of electricity are still below average EU28, but are higher than in some EU member states (e.g. Bulgaria, Estonia and Romania) (Eurostat 2013). The electricity tariffs have been increased in the last several years. Albanian electricity production depend on production of hydro power plants and if their production decrease due to dry years Albania have to import electricity at market prices from neighbouring countries. In the last 10 years only in 2011 Albania exported electricity to the neighbouring countries. Demand for electricity will growth in next 7-8 years and it can cause problems with electricity supply to households. Therefore the government have to invest in new production capacities or to implement energy saving projects. ESCOs can be used as mechanisms for implementation of EE projects. (AKBN 2011)

### *Awareness and trust*

The information campaigns for promotion of energy efficiency and renewable energy sources have been organized in framework of projects realised by international donor or financial institutions as: KfW, World Bank, EBRD or GIZ. Promotion campaigns for ESCO have not yet been organized (EC JRC 2012)

### *Financing ESCO projects*

The Energy Efficiency Fund should be established pursuant to the draft of the Law on Energy Efficiency, which has not yet been adopted. However, this is not enough, since the secondary legislation including: methodology for energy performance of buildings, energy certification and energy audit in order to enable preparation of suitable project proposals and monitoring of archived savings has also to be prepared. (Energy Charter Secretariat 2013a)

The financing of energy efficiency projects in Albania has been mainly provided through international financial institution as: EBRD , IFI, KfW or WB as well as through international funds.

EBRD established in 2012 the Regional Energy Efficiency Programme for the Western Balkan (REEPWB) which aim is to support energy efficiency for public and private sectors –and to encourage the public sector to take a leadership role as stipulated in the NEEAPs. Albania is one of the partner countries on the projects.

The EBRD also provides a credit line facility window (WeBSEEFF II) which consists of 75 million EUR. The credit lines will be extended to local financial institutions for on-lending to smaller scale energy efficiency and renewable projects. This finance is available for public and private sector.

A total of 50 million EUR has been allocated by the EBRD for the direct investment facility (WebSEDF). This facility intends to provide financing to ESCO projects for energy efficiency improvement in industrial enterprises.

### *Barriers*

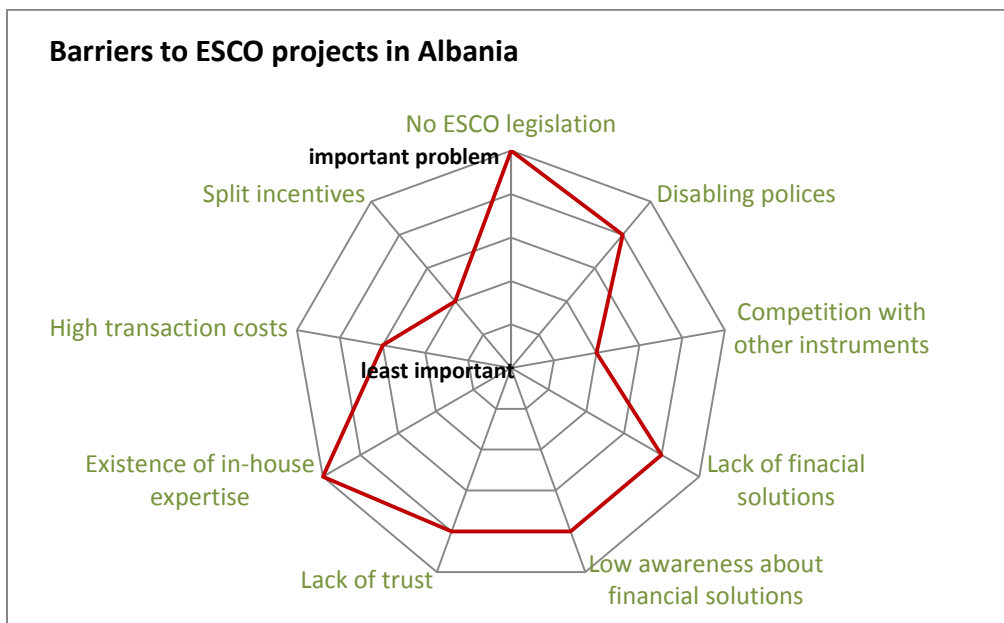
The lack of legislation is main barrier for development of ESCO market in Albania. The new Energy Efficiency Law has not yet been adopted, although the draft was prepared in 2012. Energy services and ESCO should be defined by this law. However, the secondary legislation related to this law has to be prepared and implemented after adoption of the law. The experience from the previous energy efficiency Law shows that regulation is more declarative than operational. The public procurement regulation also has to be changed in order to regulate process for tendering of energy services. The procedure for public procurement should be less complex, more flexible and more transparent.

There is a lack of proper financing mechanisms for energy efficiency projects in general. The commercial banks do not have flexible mechanisms as well as technical expertise to support and/or to promote financial schemes, although loans for energy efficiency and renewable energy are available on the market. The interest rate for loans from commercial banks is high (13%-17%) which makes the investments in energy efficiency projects not attractive. Even in the banks that offer EE loans the procedure are very complicated and requirements toward clients are higher than for the normal loans, while the interest rates are only 1% lower that for the other loans (EC JRC 2012). There is lack of financial incentives provided by government. The government could introduce tax rebates for companies that will implement ESCO projects as well as for products and equipment related to energy efficiency and energy supply.

There is a lack of promotion activities for energy services and projects on ESCO basis in the country. The government and state authorities should play a very important role in the promotion of ESCO and energy services through organising information and awareness rising campaigns for public and private sector. There is lack of good demonstration energy efficiency or renewable projects realised though ESCOs (EC JRC 2012).

The other barrier is lack of in depth knowledge on ESCOs by the experts in the energy efficiency field (EC JRC 2012).

In summary, the following graph illustrates the relative importance of barriers in Albania:



### Conclusions and future expectations

The key success factor for development of an ESCO market in Albania should be the new Law on Energy Efficiency as well as preparation and implementation of related secondary legislation. Implementation of the NEEAP also should be a driving force for the ESCO industry, since energy services and ESCO are mentioned as one among priorities. Establishment of an Energy Efficiency fund issuing guarantees for loans should improve the financing of energy efficiency measures and can attract domestic and foreign investors. Government and public authorities on national and local level should contribute to increase of awareness for ESCOs through involvement in preparation and realisation of campaigns. International organisation shall be involved in organising training and realisation of demonstration pilot project through technical expertise and know how.

#### Possible break-through points

- New Law on Energy Efficiency;
- Development of secondary legislation;
- Energy Efficiency Fund;
- Organizing of training for EE experts;
- Increased awareness raising activity.

#### Albania in a snap-shot:

<b>Number of ESCOs</b>	No ESCO
<b>ESCO market size and potential</b>	Not available
<b>ESCO market trend</b>	On ground
<b>ESCO association</b>	none
<b>Typical ESCO projects</b>	No ESCO project
<b>Main type of contract</b>	Not available

## Bosnia and Herzegovina ESCO market 2013

The market for ESCO services in Bosnia and Herzegovina is still at a very preliminary development stage. There are few domestic and foreign companies that started to provide some energy services for some municipalities (mainly as heat suppliers). These companies try to increase the interest of the public and of the private sector in energy efficiency projects. However, the lack of a regulatory framework is still the main barrier to the development of an ESCO market in Bosnia and Herzegovina (BiH).

### *Current ESCO market*

Although there are officially no ESCOs operating in Bosnia and Herzegovina, several companies provide energy services and try to reproduce the ESCO concept (mainly as heat energy suppliers) (UN Economic Commission for Europe 2013). They have concluded contracts with municipalities on the basis of a PPP (Public Private Partnership). Actually, they invest in new boilers for district heating systems and then they sell heating energy to municipalities as well as to households. They mostly use biomass as energy source for boilers, given the large biomass stocks available in BiH.

The first National Energy Efficiency Action Plan (NEEAP) of BiH for the period 2012 -2018 was prepared with the support of USAID and GIZ during 2012 (Petrovic 2012). An overall indicative energy efficiency target of 12.47 PJ of final energy to be saved by 2018 is established in this plan. This amount of energy corresponds to 9% of the average annual total final energy consumption registered in the period 2006-2010. According to the NEEAP, the biggest part of the target (5.25 PJ) will be achieved by energy efficiency improvement actions implemented in the residential sector, whereas the tertiary sector, industry and the transport sector will respectively contribute to target achievement with 1.62 PJ, 4.82 PJ and 0.87 PJ. It has been estimated that energy savings to be generated in the residential and tertiary sectors will correspond to €95 million/year saved in the period 2012-2018 and will require €730 million of total investments (€216 million in the residential and €143 million in the tertiary sector). Total investments required to achieve the energy savings targeted in the industrial sector will instead amount to about €440 million (Trivanovic 2013).

Around 20 cities in BiH have district heating systems operated by municipalities' enterprises, and all of them operate with big energy and financial losses. Those district heating systems have a potential for the implementation of EE projects based on the ESCO concept. There are also opportunities for installations of CHP plants based on the ESCO concept (biomass fired boilers) (Petrovic 2012).

### *Types of ESCO projects*

The types of ESCO projects so far implemented range from the installation of mini-heating systems, to the installation of energy efficient boilers and three-generation. Typical projects have involved guarantees on energy savings by a private company acting as an ESCO and their simple pay back time has been less than 5 years (UN Economic Commission for Europe 2013).

A good example for an ESCO project is given by the project for the district heating system of Livno, realized by the Municipality and a private company of this city. The company carried out all project phases including planning, design, building construction and supply of equipment for the new biomass boiler plant in Livno. A biomass CHP plant (1,4 MWeI and 8MWth) and a solar park with power capacity of 5MW will be also installed during a subsequent project phase. Besides heat supply, the company is going to offer energy efficiency measures in municipality buildings including the introduction of energy management for public buildings (Petrovic 2012).

This company has planned to implement a similar project in two other towns of the country (Petrovic 2012).

There are also foreign companies that have subsidiaries in BiH which provide energy services. For example, Econ Krobath GmbH from Austria realized several energy service contracts for public buildings (mostly hospitals) and residential buildings through its subsidiary company in Banja Luka. The company has taken over operation, reconstruction and maintenance of central heat plants in buildings. Overall, these company types realized 6 projects with a total power capacity of 3.464 kW over a total floor area of 40.595m<sup>2</sup> (ECON 2013).

### *Regulatory factors*

The regulatory framework for energy efficiency in BiH is established at the level of the Federation of BiH and the Republika Srpska. ESCOs and energy services are defined by the Laws on Energy Efficiency (Trivanovic 2013).

The Law on Energy Efficiency by the Federation of BiH is still in its draft version. It has been accepted in the Parliament as a proposal and now it is under the procedure of public discussion and amendmens.

Pursuant to art.40 of this draft version, the operators of distribution systems and energy suppliers are obliged to offer and to promote energy services. The offer for energy services has to include measures for the improvement of energy efficiency, prices and financial mechanisms proposed, type of contract to be stipulated and indicators to monitor and verify energy efficiency improvements. In addition, the art 41 establishes that financing for energy services will be provided by involved energy suppliers, operators of distribution system or facilities' owners, completely or through third part financing (Government of Federation of Bosnia and Herzegovina 2012).

The Law on Energy Efficiency (No.01/1518/13) was instead adopted by the National Assembly of the Republic of Srpska in June 2013. This Law includes a definition of energy services and ESCOs and establishes that energy services can be provided by ESCOs or other legal entities. The financing of energy services can be provided by ESCOs or facilities' owners, completely or through third part financing. The repayment of investments will have to be provided by achieved energy savings (The National Assembly of the Republic of Srpska 2013).

Competitive and functional tendering are admitted by the Public Procurement Law of both government entities and can include selection criteria based on achieved energy performances and NPV of investments. Tenders can be won by a single company or a consortium and subcontractors can be used by tender winners (Barnett 2013).

### *Market factors*

Increased electricity and heating energy tariffs for households and industry can lead to a growth of the market for energy services in BiH. At the moment the applied prices for electricity are among the lowest in Europe, since BiH is a country in West Balkan, which is a net exporter of electricity.

The ESCO concept can provide a solution for the financing of energy efficiency projects in the public sector (both on the national and the local/canton level) since this sector is facing a shortage of financial resources. The benefit for the public sector would be a general improvement of comfort conditions in public buildings (hospitals, schools, public administrations, etc.). ESCO services can create new activities and job opportunities also in the private sector (Petrovic 2012).

The municipalities of BiH are very interested in the implementation of energy efficiency projects, given the associated energy savings and lower energy costs for heating. Projects which include the reconstruction of networks for heat supply can in particular improve the quality of heating services. Most of the main municipalities in BiH have already signed the Covenant of Mayors initiative and have already submitted their SEAPs, this indicating that they can start with the implementation of EE measures on their territory (Petrovic 2012).

### *Information, awareness and demonstration*

Public campaigns for the promotion of energy efficiency in the public sector and households have been realized in frame work of projects implemented by international organizations as USAID, GIZ and UNDP.

### *Financing ESCO projects*

A Fund for Environmental Protection was established by the Law on Environmental Protection (No.01-337/03) in the Federation of BiH in July 2013. It is a revenue fund financed by fees collected from environment polluters and from other sources as loans, grants from donors, budget of the Federation of BiH. This fund will be available to be used for financing projects based on the ESCO principle (Environmental Fund of the Federation of BiH 2013).

A revolving fund for environmental protection and energy efficiency operates also in the Republika Srpska. This fund co-finances projects for the improvement of energy efficiency and renewable energy sources in the public sector. Campaigns for the raising of public awareness on energy efficiency and environment can be also financed through this fund. Initiatives financed can include projects implemented by the ESCO model (Fund for Environmental Protection and Energy Efficiency 2013).

The European Bank for Reconstruction and Development (EBRD) is considering a framework financing operation of €75 million to support selected private and municipal sub-borrowers undertaking investments in energy efficiency and renewable energy in the Western Balkans region, including Albania, Bosnia & Herzegovina, Croatia, FYR Macedonia, Montenegro and Serbia. This financing facility will be supported by a grant from the European Union through the Western Balkans Investment Framework ("WBIF"). The EU grant will be used to fund technical assistance and incentives to end-borrowers. The envisaged structure of the proposed investment framework builds on the first successful model of the Western Balkans Sustainable Financing Facility (WeBSEFF) launched in 2009. The new framework also aims at opening up the market to municipal energy efficiency projects and stepping up the policy dialogue to set up the necessary regulatory framework and support system for the emergence of the ESCO market (EBRD 2012).

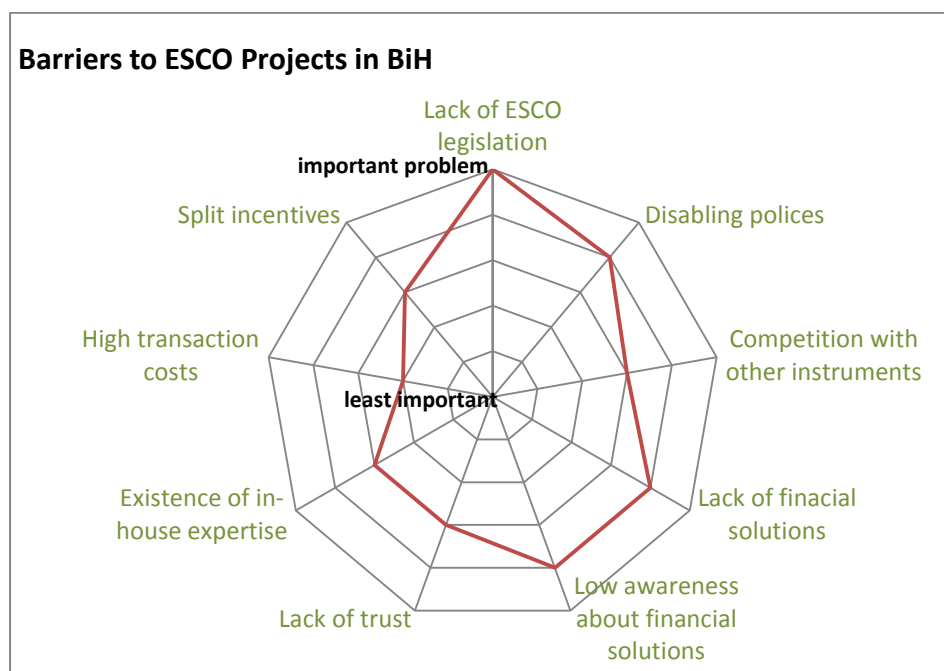
### *Barriers*

The following barriers constrain the development of the ESCO market in Bosnia and Herzegovina:

- A regulatory framework for energy efficiency is not yet adopted and therefore a proper ESCO business cannot be established.
- Public procurement procedures are in place, but are not enough clear.
- There is a lack of financing products provided by commercial banks. Moreover, loans from banks are with high interest rate. Overall, banks are not interested in EE projects, since they have not expertise to evaluate the projects.

- There is a lack of expertise in the preparation of energy efficiency projects based on the ESCO concept.
- There is a lack of reliable energy consumption data which are crucial for the identification of the baseline consumption.
- Electricity tariffs are among the lowest in Europe.
- The very complex administrative structure (both at the national and the local level) constrains a faster approval of EE projects in the public sector. Moreover, the ownership of as well as responsibilities over public buildings (in particular health and education buildings) is not enough clear.
- There is a lack of awareness on the application of the ESCO concept for EE project implementation.

The following graph illustrates the relative importance of barriers to the ESCO market in Bosnia and Herzegovina:



### *Conclusions and future expectations*

The crucial factor for development of the ESCO market will be the implementation of energy efficiency laws in both government entities in BiH. At the same time, an improvement of the public procurement procedures for energy services and the development of standard contract templates for EPC can have a positive impact on the development of this market. A market driving force can be represented also by the sustainable energy action plans (SEAPs) that have been signed by 14 municipalities including most of the biggest cities in BiH. In this context, the ESCO concept can be considered in particular as one of the models for the implementation of EE measures in public buildings (Petrovic 2012).

#### Possible break-through points:

- Energy efficiency Law in both entities
- Procurement procedure and standard contract for energy services
- Financing facilities for the building sector and industry
- Introduction of higher tariffs for electricity
- Implementation of NEEAPs and sustainable energy action plans (SEAP)
- Intensification of awareness raising activities for the promotion of the ESCO concept

#### Bosnia and Hercegovina in a snap-shot:

Number of ESCOs	0
ESCO market size and potential	N/A
ESCO market trend	At a very preliminary development stage
ESCO association	None
Typical ESCO projects	Energy efficiency improvement of district heating in municipalities and central space heating in residential buildings
Main type of contract	"chauffage"

### Kosovo\* ESCO market 2013

\* This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

The ESCO market in Kosovo\* is still practically not existent. Although Kosovo\* adopted the Law on Energy Efficiency and set a secondary legislation, the lack of regulation related to ESCOs is still the main problem for the development of this market.

#### *Current ESCO market*

As a signatory party of the Energy Community Treaty (ECT), Kosovo\* is member of the Task Force on Energy Efficiency (TF EE). Under the guidance of TF EE, the Ministry of Economic Development (MED) developed the First National Energy Efficiency Action Plan (NEEAP). The objective of Kosovo\* is to achieve a 9% energy saving target (compared to a baseline consumption) by end of 2018 (MED 2011).

Kosovo National Energy Efficiency Action Plan (NEEAP) sets long term energy efficiency targets for the period 2010-2018 and intermediate targets for 2010-2012. In determining the medium term targets, the NEEAP considered a situation of (MED 2011):

- Lack of a functional Energy Efficiency Agency and non-existence of Regional Energy Offices;
- Lack of a fund for energy efficiency;
- Lack of a labeling system for the energy performances of buildings;
- Lack of a legal procedure mandating procurement of EE equipment for public entities;
- Lack of energy service companies;
- Lack of complete data from accurate surveys regarding EE in the public sector;
- Lack of mandate to public sector entities to undertake EE measures;

A large energy-saving potential exists in the public sector. Many administration, health and educational buildings are under state control and could be used to showcase EE improvements and provide the basis for a local ESCO industry that performs energy audits and implements projects, perhaps supported by grants and IFI loans (Task Force on European Integration 2012).

The highest potential for EE improvement is in heating and electricity generation, where the current energy efficiency level is considerably under that determined by EU relevant directives and current technological standards (in particular concerning furnaces and small heating equipment). For home appliances there is a possibility to increase the EE average by up to 100%, whereas the current thermal energy generation can be improved by up to 40% with new lignite combustion technologies. Further improvements can then be achieved by introducing cogeneration of electricity and heating. (Task Force on European Integration 2012)

### *Types of ESCO projects*

There have not been energy efficiency projects implemented by ESCOs in Kosovo\* (EC JRC 2012).

A number of energy efficiency measures in the public sector (e.g. in schools, hospitals and government buildings) have been implemented with the support of the donor community, including the EC, GIZ, etc.. Efficient lighting in buildings and streets and thermal insulation of buildings are among the key interventions.

### *Regulatory factors*

Kosovo has made substantial progress in developing a legislation and regulations in the energy sector to bring it in line with the EU *acquis*, as required under the Energy Community Treaty. However, it needs to continue completing the legal and regulatory framework in the area of energy efficiency as required under this Treaty. The major legislation and regulation relevant for energy efficiency and potentially affecting the ESCO business are:

- Law on Energy, No. 03/L-184, 15.11.2010
- Law on Energy Efficiency, (No. 04/L-016, 22.07.2011)
- Law on Public-Private Partnerships, (No. 04/L-045, 21.10.2011)

These Laws, however, do not include provisions for energy services and ESCOs.

Kosovo needs a full operational EE Agency as established in the Law on Energy Efficiency, No. 04/L-016, 22.07.2011. The role and responsibilities of this agency are described also in the MED Regulation No.08/2011 “On Internal Organization of the Kosovo Agency for Energy Efficiency”.

The Law on Energy envisages the possibility of establishing of energy offices at the communal level. The MED regulation is supposed to provide training and other institutional support so that these offices can be created and be running within a reasonable period of time. Several donors, such as the European Commission Liaison Office (ECLO) and GIZ in Germany, have funded energy training activities to communal officials in the past (Task Force on European Integration 2012).

Further support for a comprehensive development of the energy auditing institutions and infrastructure as well as for the establishment of the ESCO businesses should be part of policies developed in the area of energy efficiency in Kosovo. Moreover, actions anticipated in the NEEAP need to be undertaken in order to allow the take-off of ESCO activities (Task Force on European Integration 2012).

Finally, the Kosovo Government, possibly with donors' assistance, should consider modifying its national public procurement policy to enable energy services contracting (Task Force on European Integration 2012).

### *Market factors*

Kosovo's electricity tariffs are among the lowest in the region. Despite the low prices, the main issue in the sector is non-payment of energy bills. Similar to many other countries, district heating billing is based on the surface area of consumer dwellings, not on metered consumption. In Prishtina, district heating serves about 20% of the population. Pursue of price liberalization is the sine qua non for successful capital investments, particularly private ones. The Energy Community Regional Energy Strategy states that the existing price levels (not fully cost reflective) in the Contracting Parties (including Kosovo) cannot support new generation investments, neither by attracting private investors nor by providing domestic utilities with the means to invest on their own. When price levels are below the cost of new investments, it will not be possible to attract new commercially driven investments and this situation may even worsen the supply-demand balance. If the investment in the long-term remains inadequate, there is a serious risk for the security of supply. (Task Force on European Integration 2012).

### *Awareness and trust*

Information campaigns promoting energy efficiency have been so far realized only in the framework of some projects implemented by international organizations and financial institutions.

### *Financing ESCO projects*

The majority of funds currently available target the private sector, households and SMEs in particular. This implies that funds and financing mechanisms must be increasingly directed to municipalities and public buildings in general. The borrowing capacity of the public sector at the local and the national level is currently very limited and hence efforts will be required to find alternative models that allow funding to be made available to this sector.

Substantial funding is generally required to implement EE measures and meet NEEAP targets and funds available at regional level may play a key role in this respect.

The Kosovo Sustainable Energy Projects (KOSEP) framework was established by the European Bank for Reconstruction and Development (EBRD) in May 2013. The Bank provided a € 12 million credit line for Kosovo's financial institutions to be used to provide individuals and Small and Medium Sized Companies with credit for investments in energy efficiency and renewables (KOSEP 2013).

KOSEP facilitates incentive grants up to 20% of investments for Kosovars who invest in energy efficiency projects in the residential and business sectors. The incentives are given to eligible applicants who implement their projects with the support of one of the participating financial institutions (KOSEP 2013).

The EBRD has secured the backing of the European Union, who will further provide incentives up to 20% of the value of the loan to all participating sub-borrowers, both individuals and businesses.

Eligible actors for residential loans are: corporate entities, including housing management companies, ESCOs, suppliers and installers or any other service companies providing maintenance, operation, construction and refurbishment services upon contractual agreements signed with building owners/occupants. (KOSEP 2013)

For business credit lines the sub-borrowers must be private enterprises, firms, businesses, sole proprietors or other private legal entities formed under the laws operating in Kosovo (KOSEP 2013).

They must not be majority-owned or controlled by the state or by any other political, governmental or administrative body, agency or sub-division thereof. ESCOs are also eligible sub-borrowers if the energy end-user satisfies the SME definition (KOSEP 2013).

Finally, it is worth mentioning that credit lines for a total of €35 million are made available by the German KfW through two local commercial banks, to support households and small business energy efficiency measures. The interest rates on loans for EE measures are however generally very high in Kosovo; they range from 11% to 13% (Task Force on European Integration 2012).

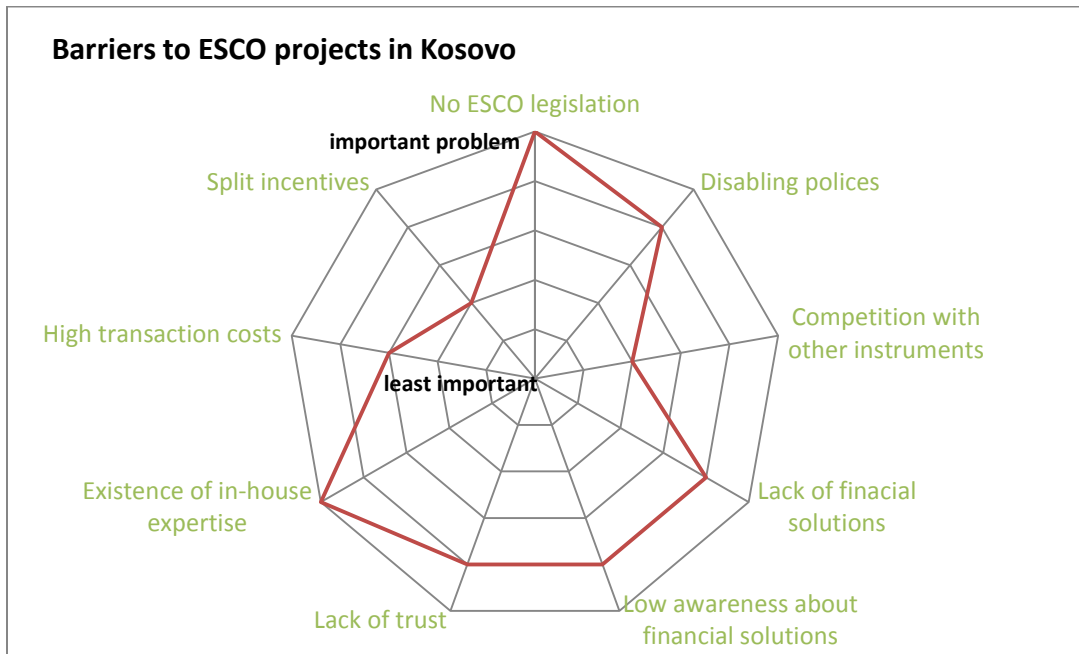
### *Barriers*

The major barriers to the development of the ESCO market in Kosovo are (EC JRC 2012):

- Lack of legal and regulatory frameworks;
- Lack of incentives of any kind;
- Lack of know-how and expertise for the development and implementation of ESCO projects;
- High investment costs for energy efficiency technology;
- Lack of energy efficiency funds;
- Lack of demonstration projects and information campaigns;
- Energy prices are low and cross-subsidized, while non-payment of energy bills is a significant issue;
- Lack of energy data gathering and monitoring systems.

Incentives can help to overcome barriers to entering the market, for example, through special programs offering financial or technical support, or even temporary exemptions from standard administrative procedures. Incentives should be both of the demand-pull as well as the supply-push variety. Examples of important demand-pull incentives are codes and standards creating end-user awareness and making concessionary financing available. Supply side measures involve actions such as providing tax incentives and financing for enterprises, easing import restrictions and duties on importing energy efficient equipment, training of auditors, architects and contractors, etc. (Task Force on European Integration 2012).

The following graph illustrates the relative importance of these barriers in Kosovo:



### *Conclusions and future expectations*

The development and the implementation of a legislation and regulations related to ESCOs can enable the introduction of energy services in the public and private sectors. The implementation of pilot programs based on the ESCO model in public buildings is expected to serve as a positive example for other sectors, such as the industry and the commercial sector. These programs could be coupled very well with more developed public procurement policies that facilitate energy services. Permitting all-in-one bids for equipment, services and energy savings performance guarantees can enable contracting for EE building upgrades and ESCO contracting can allow achieving this objective. Moreover, the bundling of many building upgrades into one procurement package could lead to significant economies of scale and cause a stronger interest by potential bidders. This type of initiative could also stimulate demand for energy services and attract local and international equipment suppliers, vendors and contractors into the EE market (Task Force on European Integration 2012).

On the other hand, campaigns to raise awareness about energy services and ESCOs are another important potential driver of the ESCO business in Kosovo.

#### **Possible break-through points**

- Law on Energy Efficiency;
- Development of secondary legislation;
- Energy Efficiency Fund;
- Implementation of pilot projects in the public sector;
- Intensification of awareness raising activities.

### Kosovo in a snap-shot:

<b>Number of ESCOs</b>	No ESCO
<b>ESCO market size and potential</b>	<i>Not available</i>
<b>ESCO market trend</b>	An ESCO market is basically not existent in Kosovo.
<b>ESCO association</b>	none
<b>Typical ESCO projects</b>	No ESCO project
<b>Main type of contract</b>	Not available

## FYROM ESCO market 2013

The ESCO market in the former Yugoslav Republic of Macedonia is still undeveloped, since the market conditions are not ripe enough for ESCO businesses to grow, due primarily to the lack of legislation. MT-ESCO, the first ESCo company established in the country, never functioned properly and was later closed down.

### *Current ESCO market*

Within the framework of the “Sustainable Energy Project”, financed by GEF and implemented by the World Bank (WB), MT-ESCO, the first ESCO company in the country, was created in 2006. It was established as a joint venture between Toplifikacija AD, Skopje (district heating provider) and MEPSO (transmission system operator) (Stefanovski 2013)

Currently there are no public or private owned ESCO companies in the former Yugoslav Republic of Macedonia (EC JRC 2012).

There are several companies in FYROM that can provide energy services, such as energy audits, EE project design and development as well as installation of energy efficient equipment and maintenance of energy equipment. However, these companies do not use ESCO contracts for their services.

The renovation of public buildings is one of the measures described in the first NEEAP, and one of the priorities set by the government. The Ministry of Economy supported by the World Bank and international and local experts, prepared a draft version of the National Programme for Energy Efficiency in Public Buildings (NPEEPB) for the period 2012-2018. One of the objectives of this programme is to encourage the development of the market for energy efficiency services and products in the country (Kirov 2012).

The programme targets energy efficiency renovations of all public buildings owned by the government, ministries and all 84 municipalities, plus the City of Skopje. In total, 2,441 public buildings were analysed under this programme with total annual energy costs of €42 million (Kirov 2012).

According to the draft of the NPEEPB, the moderate investment scenario can create energy savings of €13.9 million per year with a total investment of €92 million if implemented in all targeted public buildings. The high investment scenario can create energy savings of €18.5 million per year with a total investment of €167.5 million. The average simple payback period is 9 years in the high investment scenario and 6 years in the moderate investment scenario (Energy Saving International, Timel, and E3 International 2011).

It is very difficult to estimate the potential of the ESCO market in the residential sector, since there is no suitable energy consumption data. The energy certification of buildings has not started yet, so there is no baseline energy consumption and savings calculation method.

### *Types of ESCO projects*

In FYROM, there has been no energy efficiency projects implemented based on the ESCO concept yet.

Energy efficiency projects have been implemented on the basis of contracts established by consultancy services for energy efficiency issues and energy audits, including the installation, inspection and maintenance of equipment.

There are several municipalities in the former Yugoslav Republic of Macedonia that have started to develop and implement energy efficiency projects in their buildings (e.g. schools, kindergartens and administrative buildings) as well as for street lighting. They have signed contracts for energy audits and preparation of projects.

### *Regulatory factors*

The Energy Law (No. 07-610/01), adopted in February 2011, provides the basis for the development of an ESCO market in the former Yugoslav Republic of Macedonia. Although the Energy Law refers to the ESCO concept and regulates some elements of the ESCO service agreements related to public entities, it does not regulate any other aspects of ESCO services. Article 139 states that public entities can establish contracts for ESCO services. This article stipulates that the investment related to ESCO projects will be financed through the reduction of energy costs resulting from energy efficiency upgrades (Ministry of Economy 2011).

In addition, the Energy Law states that the public sector entities have to apply energy efficiency criteria in the public procurement tenders for goods and services. In general, the Macedonian legislation does not prohibit the introduction of ESCO businesses. According to the Energy Law, the government should establish an Energy Efficiency Fund to finance energy efficiency projects. At the moment, the government is holding negotiations between the relevant ministries on the structure of the Energy Efficiency Fund (EC JRC 2012).

Secondary legislation related to energy audits and energy certifications of buildings was adopted in June 2013. Since the Ordinance for Energy Auditing (No.12-3644/7) was only adopted recently, it will take some time for the development and the establishment of a system for energy audits and certifications of buildings. Energy audits are only mandatory for public buildings (Ministry of Economy 2011).

Energy audits and energy management systems are not mandatory for the industry, so it is difficult to set baseline consumption levels and estimate energy savings. The Energy Law does not require mandatory energy audits for the industry (Ministry of Economy 2011).

### *Market factors*

The rising prices of electricity and heating for households and industry can drive the growth of the market for energy services. Since both households and industry are faced with shortage of financial means, the ESCO concept can provide solutions for financing energy efficiency projects, but only if the environment for the ESCO market is improved.

Municipalities are also very interested in the implementation of energy efficiency projects that result in energy savings and lower energy costs. Most of them have already prepared local energy efficiency action plans and have started seeking technical expertise and financial support for their implementation.

### *Awareness and trust*

The public campaigns for promoting energy efficiency in households have been conducted within the framework of projects implemented by international organizations, such as USAID, GIZ and UNDP.

In the last couple of years, the Ministry of Economy together with the Austrian distributor for electricity EVN have carried out campaigns for energy efficiency in households.

### *Financing ESCO projects*

Commercial banks are aware of the ESCO concept and have shown interest in being involved in the development of ESCO projects, but with existing financial products and conditions. They do not have dedicated credit lines for financing ESCO projects. The offered credit lines for financing energy efficiency and renewable projects in households and SMEs are associated with high interest rates, and are not favourable towards the development of ESCO projects. The banks are also conservative and inflexible regarding the collateral of their financial products, and they require, as security, a mortgage on real estate or a pledge on equipment.

Although the Energy Law enables the creation of an Energy Efficiency Fund, the Fund has not been established yet. The Fund can be one of the possible financial models for ESCOs, if such a financial model for the NEEP program is chosen by the Government.

Only few municipalities are creditworthy in FYROM (most of them are in Skopje region) and can apply for loans (the requirements for applying for loans are described in the Law for Financing of Local Self-government Units). The other municipalities are not credit worthy to undertake projects using the ESCO model (Gecevski 2013).

### *Barriers*

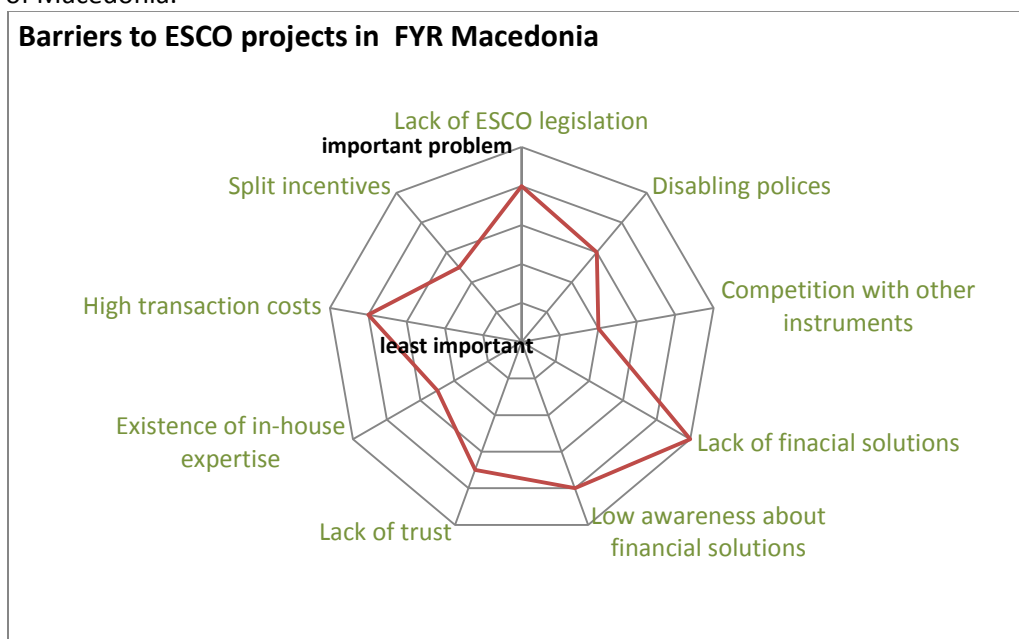
There are lot of barriers for the development of the ESCO market in the former Yugoslav Republic of Macedonia (EC JRC 2012):

- The regulatory framework still needs improvement. Although it exists, there are still some gaps related to the requirements necessary for the creation of an ESCO market;
- Lack of awareness for the ESCO concept among all relevant actors: public entities, financial institutions, private companies, professional associations, etc;
- Lack of recognition of savings generated by energy efficiency projects;
- Lack of standardized energy performance contracts. The Energy Agency can be involved in the preparation of a draft version of the contracts;
- Commercial banks are not ready to finance ESCO projects with favourable interest rates, and they still require very demanding collateral terms for their financial products;
- Lack of expertise for preparation of ESCO projects;
- Lack of reliable energy consumption data which is crucial for the establishment of baseline consumption;
- Low electricity prices (one of the lowest in Europe) and not liberated energy market
- Additional barriers for the development of ESCO companies are as follows (Lazar Gecevski.2013):

- Public institutions still receive recourses for covering their operating costs, including energy bills from the central budget. If energy costs were reduced due to the implementation of energy efficiency measures, the budget would be automatically reduced by the total amount of savings in the following year.
- The accounting system for budget users does not permit the separation of energy savings from other expenditure items. Under the current system, the municipalities may only borrow in general obligations, to be repaid from the general municipal revenues.
- The provisions in the Law on Public Procurement made it impractical for the ESCO model to operate. The Law on Concessions and Public-Private Partnership-2012 should apply to contracts between public sector entities and ESCOs, but its novel tendering and contracting provisions and approval mechanisms are still untested.

Furthermore, the legal framework allows for multi-annual budgeting, however this process is made extremely difficult by the Ministry of Finance, thereby discouraging the municipalities to seek multi-annual budget lines.

In summary, the following graph illustrates the relative importance of barriers in the former Yugoslav Republic of Macedonia:



### *Conclusions and future expectations*

The government has started a process to improve the legal framework and encourage faster implementation of energy efficiency projects. At the same time, it is currently working on the development of financial instruments for EE projects. One of the possible financial instruments is a fully operational Energy Efficiency Fund, which will function as a revolving fund. Another very important issue is the development of a system for energy certification and energy auditing of buildings, and the creation of a database for energy consumption of buildings.

#### Possible break-through points:

- Improvement of legislation for public procurement;
- Implementation of NEEPB;
- Fund for Energy Efficiency;
- Development of financial facilities for ESCO;
- Implementation of NEEAPs and local EE action plans;
- Increased awareness raising activity for promoting of ESCO concept.

Increasing electricity prices and the market liberalization will raise the interest in energy services in both sectors: industry and building sector. It can open the market for ESCO services, since neither the public sector, nor the industry has its own financial and technical capacity to develop and implement projects.

#### FYROM in a snap-shot:

Number of ESCOs	0
ESCO market size and potential	No data
ESCO market trend	On ground level
ESCO association	None
Typical ESCO projects	No ESCO projects
Main type of contract	No contract for ESCO

## Montenegrin ESCO market 2013

ESCO market in Montenegro is still not developed. The national authorities of Montenegro recognised the importance of ESCOs as a concept for the implementation and financing of energy efficiency projects. The Government has established the development of ESCO market as one of the priority for improvement of energy efficiency in the country.

### *Current ESCO market*

In the country there is not any registered company, which provide energy services based on ESCO concept. Some private companies are interested in the development of projects based on the ESCO concept (Nenezic 2012).

The ESCO report prepared by EBRD for Montenegro described some positive aspects for development of ESCO market in Montenegro (Nenezic. 2012):

- High potential for energy savings;
- Supportive primary and secondary legislation;
- Energy audits and energy management system are mandatory and in place for the public sector;
- Possibility for using savings for the operation and maintenance expenditures of public buildings;

The Project “Promotion and Implementation of Energy Audits in Public Buildings”, with financial and expert support from GTZ and the Government of Norway started an auditing campaign in public buildings in early 2009. Up to date about 40 audits have been completed under the training and WB projects. Audits ordered by public institutions, local authorities etc. are expected after adoption of the regulations i.e. in 2012 and onwards. Auditing activity will continue in next period financed by the state and donors (Ministry of Economy of Montenegro 2010).

There is no a precise figure for the size of the ESCO Market in Montenegro, but since Montenegro is a small country (with only 600,000 inhabitants) the overall potential for the ESCO business is very limited (EC JRC 2012).

### *Types of ESCO projects*

In Montenegro there are not energy efficiency projects implemented using the ESCO concept. Several companies provide only energy audits or different type of services as installation of equipment or maintenance of equipment, but not full scope of an ESCO service.

The government has implemented several energy efficiency projects in public buildings based on loans or grants received from international donor organizations.

One of them is the Montenegrin Energy Efficiency Project (MEEP). The Montenegrin government received a loan of €6.5 million from International Bank for Development and Reconstruction (IBRD) in order to finance the MEEP, which objective is the improvement of energy efficiency in educational and healthcare facilities, including public awareness for energy efficiency. The implementation of the project started in February 2008 and will be finished in March 2014. The measures had been implemented in 13 selected public facilities (8 schools and 6 hospitals). (Sekulic 2013)

Three types of energy efficiency measures had been realized:

- Improvement of building envelopes (insolation, changing of windows and doors, etc)
- Improvement of systems for heating and cooling of the buildings and
- Improvement of the lighting system in the buildings

The energy auditing has been performed as well as pre investment monitoring was carried out in most of the buildings before the implementation of the measures. The results after implementation were evaluated and they showed significant energy savings achieved in selected public buildings (Sekulic 2013).

### *Regulatory factors*

The legal basis for implementation of energy services in Montenegro is the Law on Energy Efficiency adopted in April 2010. The Law gives definition of energy services and energy performance contracting. It has also provisions for Public Procurement of Goods and Services, which should take in account energy efficiency by procurement of services and goods.

According to the Law on Energy Efficiency (Art 22) energy audits in buildings with useful floor area of more than 1000 m<sup>2</sup> used by public sector organisations are mandatory. The Ministry of Economy keeps records of these buildings in a special database (Ministry of Economy of Montenegro 2010).

The Law on Energy Efficiency provides the majority of requirements and obligations for the public sector, which are directly considered as measures to improve energy efficiency in the public sector (Ministry of Economy of Montenegro 2010).

Despite the fact that Montenegro had adopted the current EE Law only three years ago, the Government proceeded with the preparation of a new “Law on Efficient Use of Energy” in order to respond to a fast changing EU – legal framework and transposition of (Directive 2010/31/EU and 2012/27/EU). The Law on Efficient Use of Energy will regulate relations in the field of efficient use of

energy in end-use sectors and will initiate the development of by-laws, particularly those governing the field of energy efficiency of buildings.

The draft Law establishes a complex system of energy efficiency measures comprising among others:

- establishment and implementation of energy efficiency criteria with respect to purchases of goods and services;
- energy management;
- establishment of energy efficiency information systems and delivery of data;
- measuring of energy consumption;
- energy audits of buildings and their heating and air-conditioning systems.

The draft Law introduces the obligation to have energy performance of buildings certified, and displaying the certificates.

Energy efficiency measures may be implemented also by the provision of energy services provided by ESCOs. The draft Law defines the obligations of all participants in the process of providing energy services, as well as elements of energy efficiency contract. Mutual rights and obligations of ESCO and energy services user are determined in an energy performance contract under which the implementation of energy efficiency measures shall be paid by the agreed level of energy savings.

Pursuant to the draft Law financial means for the provision of energy services shall be provided by the energy service provider, in full or in part, from its own resources or by a third party. The amount of costs of the energy services provider, i.e., the value of investments for implemented measures to improve energy efficiency are determined and paid to the provider according to the level of energy efficiency/savings as set forth in the contract. The cost of the energy service providers and the value of investments in the implementation of energy efficiency measures is paid or returned to the provider from the savings in energy costs achieved during the reference period. The provider of energy services or a third party assumes, in whole or in part, financial, technical and commercial risk for the implementation of the energy service.

Law on Public Procurement adopted in July 2011 stipulates in article 95 that energy efficiency has to be taken in consideration as one of the economic criteria by evaluation of offers for most suitable offer.

The first National Energy Efficiency Plan for the period 2010 -2012 adopted in 2010, includes two measures related to energy services and ESCOs (Ministry of Economy of Montenegro 2010):

- Removal of barriers for alternative energy efficiency financing mechanisms in the public sector;
- Investments in utilities of municipality and public companies (demand side).

Both of these measures have been implemented only partially (Ministry of Economy of Montenegro 2012).

The Second National Energy Efficiency Action Plan (2013 – 2015) (draft version), defines three main groups of measures for public buildings (Sekulic 2013):

- refurbishment of public buildings through soft loans from international financing institutions;
- improvement of energy management in public buildings;
- establishment of alternative financing mechanisms (ESCO, EnPC) for implementation of EE measures in public buildings;

## *Market factors*

All relevant studies and energy audits that have been carried out, showed that there is a considerable energy efficiency potential in many areas including heating and cooling of buildings. The most important consumers in the public sector services (excluding transport) are the water supply companies, the public lighting, the Ministry of education (schools, high schools, universities, dormitories, office buildings etc.) and the Ministry of health (hospitals, health centres, office buildings). Electricity is extensively used in services sector buildings. Besides the normal electricity uses, such as lighting and cooling, electricity is also used to cover space heating, hot water production and other thermal needs. There are many buildings, where electricity is the only source of energy. Petroleum products are used mainly for space heating and hot water production. Hotels and commercial buildings are the main consumers of the private sector services. Energy consumption in the public sector practically is not monitored and controlled (Ministry of Economy of Montenegro 2012).

The Government set as a priority reduction of energy consumption in the public buildings through implementation of energy efficiency measures, which includes: renovation of public buildings (schools, high schools, hospitals and administrative buildings) as well as improvement of the heating systems. The ESCO concept has been taken in consideration, because of the lack of financial resources by public sector (Ministry of Economy of Montenegro 2010).

A number of municipalities and state agencies seem to be eager to improve the energy efficiency of their facilities and are looking forward to Energy Performance Contracting as a promising new management and financing tool. Municipalities, namely the Capital City Podgorica, Bar and Tivat expressed their hope that the ESCO model will also be implemented for reducing energy costs in street lighting and in drinking water provision. The on-going EBRD ESCO-Legal Framework project aims at providing a model contract and accompanying templates in order to facilitate this process.

## *Awareness and trust*

Information campaigns or public awareness activities for promotion of energy services and ESCOs have not yet been carried out.

A capacity building plan was prepared for the period 2011-2012 and it includes actions for both the private and public sector. Most of the activities, such as thematic round tables, conferences and trainings were already implemented.

A number of other activities outlined in the public sector were somewhat related to the capacity building exercises (knowledge about implementation of secondary legislation, training on energy management and the like). Similar activities were envisaged for the commercial sector, with special focus on energy management and securing financing for the projects and specific investments

Several activities were conducted in Cooperation with Chamber of Commerce and Business Association and big companies (Ministry of Economy of Montenegro 2012).

## *Financing ESCO projects*

There is no state Fund for Energy efficiency in Montenegro, which could be used for financing of energy efficiency projects and ESCOs.

The international financial institution as: EBRD, World Bank, KfW, IFC provide loans through the commercial banks in Montenegro for implementation of energy efficiency projects. These loans could be used for financing of projects on ESCO concept.

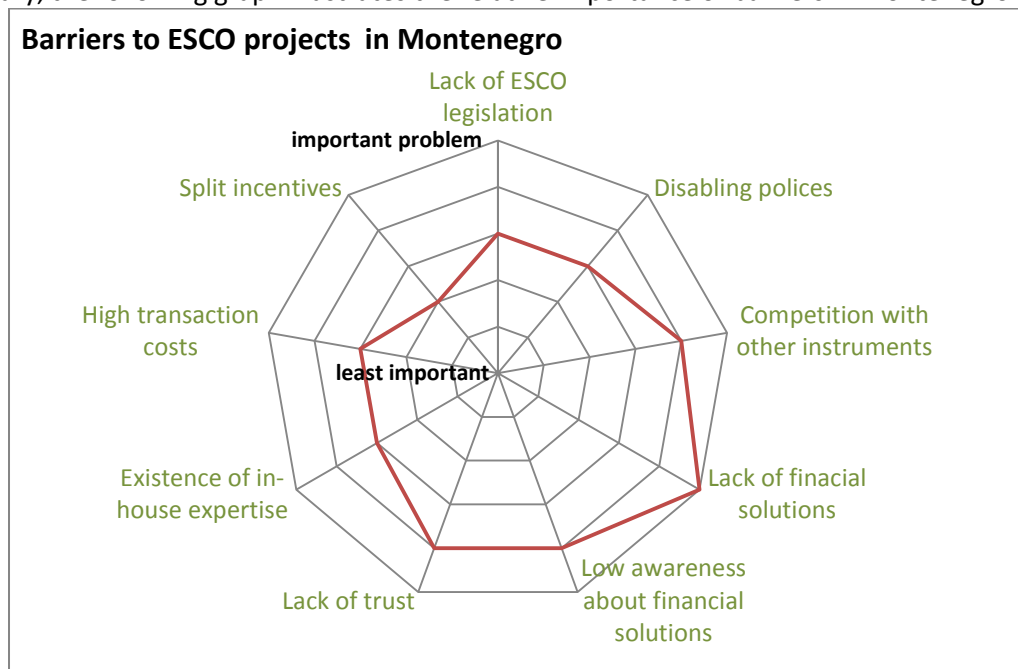
The Ministry of Economy in cooperation with the German KfW Bank launched the "Energy Efficiency Program in Public Buildings" (EPPB) with an amount of 13 million Euros. The agreement with KfW was signed in November 2011 and this program will last until June 2014. The Ministry of Economy is the responsible authority for implementation of the Program. The objective of the program is to improve energy efficiency and to increase comfort conditions in up to 30 buildings, which are under the Ministry of Education and Sports (elementary schools, high schools and special schools, kindergartens and dormitories) (Sekulic 2013).

### Barriers

The barriers for implementing the ESCO model in Montenegro are (Nenezic 2012):

- Low awareness for ESCO services and benefit of implementing ESCO model among public authorities (on national and local level) as well as in other sectors (industries, transport etc.);
- Lack of multi annual budgeting for municipalities;
- Lack of supporting financing mechanisms and guarantees;
- Insolvency of municipalities (low credibility);
- Very limited size of ESCO market;
- Risks perceived.

In summary, the following graph illustrates the relative importance of barriers in Montenegro.



### Conclusions and future expectations

In order to improve energy efficiency in public buildings and public services the Ministry of Economy is involved in the Regional Energy Efficiency Program for the Western Balkan (REEP), which is supported by European Bank for Reconstruction and Development. The aim of this program is to provide technical

assistance for improvement of legal framework and support of ESCO as instrument for implementation of energy efficiency policies. It will enhance the development of ESCO market in Montenegro.

The programme has already started (July 2013) and will last until 2014. The Ministry of Economy has established a “National Working Group” including other relevant state institutions and the municipal level in order to guide the Project and support the development of an ESCO-enabling legal framework and the formulation of technical guides and templates, which fully reflect the applicable law. Also the programme should develop a model contract for EnPC until April 2014 and should be identified pilot projects for implementing of EnPC model contract (GFA Consulting Group 2013).

#### Possible break-through points:

- The new Law on Efficient Use of Energy;
- EBRD Regional Energy Efficiency Program for the Western Balkan;
- Development of financial facilities for ESCO;
- Implementation of NEEAPs and local EE action plans;
- Increased awareness raising activity for promoting of ESCO concept.

In the coming period very important factors for development of the ESCO market will be the political will of the government to implement the new Legislation for EE as well as the national and local policies for energy efficiency as (NEEAPs and local action energy efficiency plans). This can initiate the creation and growth of the market for ESCOs.

#### Montenegro in a snap-shot:

Number of ESCOs	0
ESCO market size and potential	No data
ESCO market trend	0
ESCO association	None
Typical ESCO projects	No ESCO projects
Main type of contract	No contract for ESCO

## Serbian ESCO market 2013

The ESCO market in Serbia is still immature, at the same time there are signs of moderate development. While in 2007 ESCOs were not yet present in Serbia, by 2009 isolated actions had already taken place (Marino et al. 2010). Although Serbia does not have extensive experience with the ESCO model, several projects were realised during previous years (EC JRC 2012).

As of 2013, adequate legislation has still not been put forward. At the same time it is expected to be announced that the ESCO business model will be supported in the country. A new Law on Efficient Use of Energy was adopted in March 2013. This sets the legal basis for the introduction of the ESCO model as a solution for the development and implementation of energy efficiency.

### *Current ESCO market*

The potential size of the market for ESCOs in Serbia is still unknown, but it is estimated to be relatively large, both in terms of volume and value. It is connected to the large number of public buildings in

Serbia of various size and complexity. The average energy saving potential is in the range from 25% in public buildings up to 50% in public lighting (Matejic 2013).

Currently only a few (approximately 2-3) firms operate in Serbia that can provide ESCO services. These firms are focused on the industrial sector.(EC JRC 2012). They can provide energy services along the value chain, such as: design, engineering and consulting in project preparation, development and implementation of energy efficiency projects, installation and maintenance of energy efficiency equipment, financial services and project funding.

Some of the foreign companies that have international experience in ESCO services can be involved in the development and implementation of ESCO projects in Serbia, although their core business lies in other areas (e.g. provision of equipment) (Matejic 2013).

### *Types of ESCO projects*

Although the ESCO market in Serbia is not established yet, a few energy efficiency projects have been realised based on an ESCO model in the industrial sector. These are primarily related to the reconstruction of heat supply systems in production facilities, through the replacement of boilers and installation of CHP. These projects are typically concluded based on the BOOT model, and in a few cases based on the shared savings EPC model.

### *Regulatory factors*

The legal basis for the development of the ESCO market in Serbia is the above mentioned new Law on Efficient Use of Energy (Official Gazette 25/2013) adopted in March 2013. The basic principles of the Law on Efficient Use of Energy are (Solujic 2013):

- Energy security ( Implementation of EE measures in production, transmission, distribution and energy consumption)
- Competiveness of products and services
- Sustainable use of energy
- Energy management system
- Cost-effectiveness of energy efficiency measures
- Minimum energy efficiency requirements

In particular the following regulations were adopted in relation to Public sector and Local Government Units (Ministry of Energy, Development and Environmental Protection 2010):

- The Law establishes a system of mandatory energy management for municipalities with more than 20,000 inhabitants and for buildings/facilities in public ownership;
- It regulates the obligation of local government authorities to adopt a programme and plan for energy efficiency (including financial sources for realization of programme) and to regularly report to the Ministry of Energy, Development and Environmental Protection.
- It regulates a Budget Fund for the improvement of energy efficiency, which will co-finance activities defined by the Energy Sector Development Strategy for Republic of Serbia until 2015 (OG 35/05) and Strategy Implementation Program 2007-2012 (OG 17/07, OG 73/07 and OG 99/09) of the Republic of Serbia;
- Regulates the right of local government to establish an own budget fund for encouraging and co-financing of activities defined by its program and plan of energy efficiency;
- It encourages the creation of energy audit services to aim at identifying the best energy saving options in buildings, installations and services;

*The milk dairy IMLEK from Belgrade concluded with an ESCO from Belgrade an energy service contract. According the concluded contract, the ESCO purchased and installed the CHP in IMLEK and should operate with the CHP plant in the period of 12 years. The IMLEK shall buy on privilege price the total heat production from ESCO, The price of heat is 20% lower than the average costs for heat production in the boiling house operated by IMLEK before. The produced electricity, the ESCO can sell to the responsible entity in Serbia at defined feed in tariff. After 12 years of operation the ownership of the CHP will be transferred to IMLEK. The contract for services is based actually on BOOT model, with some elements for ESCO concept as in the case for delivering of heat to IMLEK*

*Source: (Economic Consulting Association with KPMG, EIHP, ESG 2012).*

*Energy service group Ltd. implemented the project in FAD a producer of automotive parts in Gornji Milanovac in 2004. This project was partially based on ESCO model. The financing of the project consisted of two parts: First part regarding the procurement of equipment, was realised in several instalments during implementation and the second part related to development of application software and SCADA system including installation, training and documentation, was paid through the energy savings during the two years of system operation. The Energy Service Group obtained 55% of electricity saving costs during for each month during the two years period. Although, the energy savings was not guaranteed with the contract, the ESCO group over took financial risk for project implementation*

*Source: (Economic Consulting Association with KPMG, EIHP, ESG 2012)*

The Law, furthermore, stipulates in its Art. 67 that “The Minister shall set the format and the structure of a Model Contract for individual types of energy services to be provided” (Ministry of Energy, Development and Environmental Protection 2013).

Pursuant to the Law (Art. 66) energy services shall be provided by legal entities on the basis of “energy service contracts”. Energy services can include: energy auditing, design, construction, reconstruction and retrofit in terms of energy savings, maintenance of buildings, as well as management and monitoring of energy consumption. Provider of energy services as well as the third party takeover completely or partially: commercial, financial and technical risk related to realization of energy services.

The Ministry will take activities for promoting of ESCOs services on the Serbian market (Ministry of Energy, Development and Environmental Protection 2013).

The Law also includes provisions to set up and apply energy efficiency criteria in tendering of goods and services (Solujic 2013).

In November 2011, Serbia adopted a new Law on Public Private Partnership (OG No.88/11) which creates a legal framework for the implementation of all types of Public Private Partnership projects. According to the law public entities may also implement ESCO based projects in several end-uses, such as public lighting, public buildings, and operation in local public utilities (for example district heating companies). (Economic Consulting Association.2012)

The Law on Public Debt does not recognize the subsequent payment obligation within the ESCO projects as a public debt/liability. Pursuant to this Law (Economic Consulting Association with KPMG, EIHP, ESG 2012):

- Public debt is LG's, or other legal entity's, debt for which a government guarantee was issued and activated
- Local government can borrow funds by signing a loan contract or by issuing of securities.

### *Market factors*

The commitment of the Serbian government to energy efficiency in public buildings has increased significantly in recent years, as shown by the supporting legal changes. It is a fact that energy performance status and the overall conditions of schools and hospitals in certain regions of the country need renovation. ESCOs as well as PPPs are considered as the concepts that can provide financial and technical solutions for the situation.

Serbia still enjoys lower tariffs for electricity for households than the EU28 countries. However, the government plans to introduce market priced energy<sup>137</sup> tariffs for households, industry and service sector as well as to liberalize the market, which will cause increased prices for electricity. The increased prices can be strong factor for the development of ESCOs even in the residential sector (Euractive 2013).

### *Awareness and trust*

The project “Development of performance contracting through pilot projects in the public sector in Serbia” was implemented by GIZ and Ministry of Mining and energy of Serbia in period 2009 -2011.

The Berlin Energy Agency GmbH was engaged as a consultant on the project. Objective of the projects was development of a contract model for EPC and procedures for public procurement of energy services. The proposed EPC was based on the model contract used in Hesse, Germany. The developed model contract was based on the level of energy savings. It is saving guarantee model contract and can be applied in public buildings and in street lighting. This model contract prescribes payment of fixed fee for guaranteed energy savings. In the frame of the project were prepared two pilot projects, but not implemented (Matejic 2013).

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<sup>137</sup> In august 2013 the price of electricity increased by 10.9 % for households and 11.3% for industry and service sector.

## *Financing ESCO projects*

A revolving Fund for Energy Efficiency is planned to be established pursuant to the Law on the Efficient Use of Energy, and promises to be a good source for supporting ESCO projects in the future. The Fund shall be managed by the Ministry in charge for Energy and shall be financed based on an annual programme adopted by the Government. Investment projects to be awarded through open public calls shall pass criteria including an energy audit or feasibility study for energy efficiency. Monitoring of the successful projects shall be based on energy audits performed 12 months after the implementation of the project. (Solujic 2013)

Commercial banks in Serbia are aware of the potential of the ESCO market in Serbia, but have not yet developed their specific products, because they do not have enough information about implementation, operation and funding of ESCO projects. Commercial banks ( e.g. Cacanska Bank) mediate credit lines from several International Financial Institutions (EBRD, World Bank, KfW, IFC) for energy efficiency projects in business and retail sector and these funds can be used for financing ESCO projects. Unfortunately commercial banks are not aware of the possibility to finance energy efficiency improvement in the public sector based on ESCO concept (Economic Consulting Association.2012)

The EBRD has developed the Western Balkans Sustainable Energy Financing (WeBSEFF), a €60 million credit line available through local banks in Serbia, BiH, FYROM and Montenegro to help SMEs invest in energy efficiency and renewable energy projects up to €2 million. Through the European Commission, the EBRD has also secured grant funding to provide Investment Incentives to help companies to apply for of this particular facility.

In addition, the EBRD also established a credit line facility window (WeBSEFF II) of €75 million. The credit lines will be extended to local financial institutions for on-lending to small scale energy efficiency and RE projects. This finance is available for the public and private sectors.

WeBSEFF provides financing of up to €2.5 million to municipalities, ESCOs, providers of municipal services and owners of public buildings looking to invest in:

- Modern technologies that cut energy consumption or CO2 emissions by at least 20%
- Retrofitting of buildings, provided the investment will make them at least 30% more energy efficient
- Stand-alone renewable energy projects

The purpose is to help them become them more energy efficient and save on the cost of:

- Providing municipal services, such as transport, utilities and waste management
- Heating and cooling public buildings

## *Barriers*

The major barriers for the development of projects based on the ESCO model are:

- Insufficient capacity of the public sector to identify and prepare ESCO project;
- Not clear ownership over the facilities and not clear defined user/users of the facilities owned by public sector;
- Lack of pilot projects carried out by ESCOs in the public sector;

- Lack of market based financial solutions (direct or through commercial banks). Commercial banks are aware of the ESCO concept, but they do not have specific financial products, probably due to the lack experience in assessing these risks;
- Price of electricity, gas and heat are lower than market prices, although they have been increased in the last two years. Full market liberalization for electricity prices is expected by 2015;
- General lack of trust and unduly resistance towards ESCOs and other PPP concepts because of fear of corruption;
- Lack of experienced ESCO companies and project developers;
- The energy efficiency is perceived as a technical issue only and its financial aspect is not ;
- Lack of reliable energy consumption data that could be used for the establishment of baseline consumption because of: Measurement for heat energy has been performed for several facilities together and not on regular basis in public buildings. The measurement devices are inaccurate and not calibrated. Simultaneous procurement of fuels for several facilities managed by a single public entity/owner (Matejic 2013). Individual metering is not in place in apartment blocks;
- Lack of system for monitoring and verification of energy savings;

In summary, the following graph illustrates the relative importance of barriers in Serbia:



The EBRD in cooperation with the Energy Community launched the project “Regional Energy Efficiency Programme for the Western Balkans” (REEP). EBRD programme consists of (Miller 2013):

- Institutional capacity building/regulatory support and new product development for public sector energy efficiency;
- Credit lines for financing of smaller scale sub projects in public and private sector (including ESCOs);
- Direct financing for medium-sized renewable energy and energy efficiency measures, including for ESCOs

Western Balkan Investment Framework (WBIF) approved grant of € 20 million for EBRD REEP (Miller 2013)

### Conclusions and future expectations

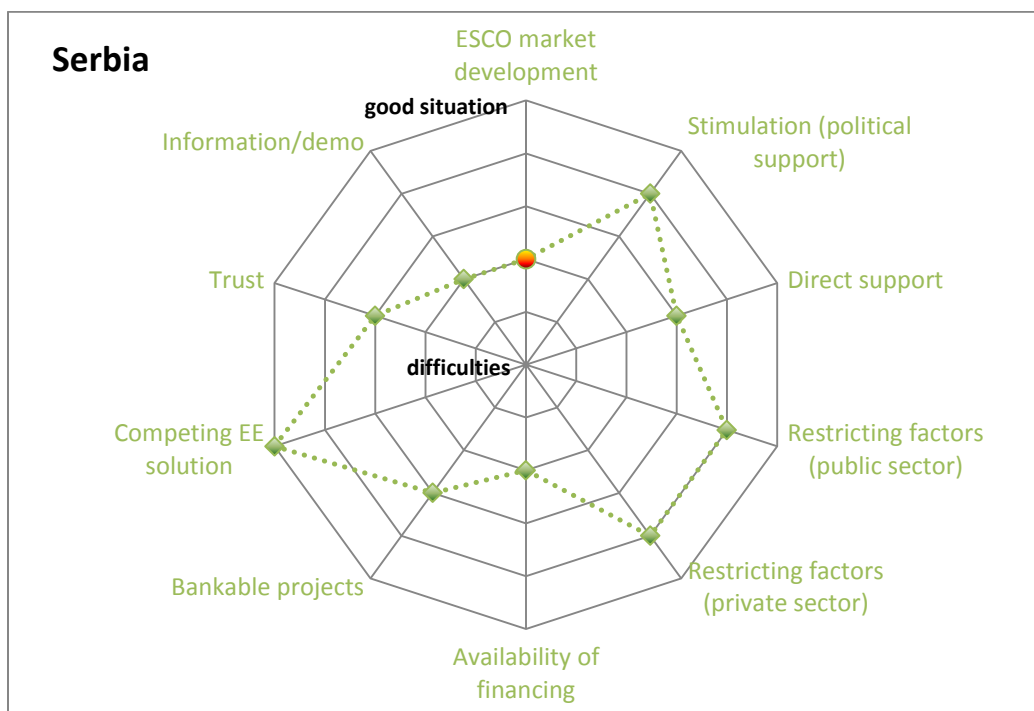
The Serbian public sector shows clear interest to apply the EPC concept in order to improve the energy efficiency performance of public buildings significantly. It is acknowledged that EPC can mobilize private investment in public infrastructure and services without engaging public funds and creating public debt. Implementation of the EPC concept can stimulate economic activities in sectors affected by economic crises (Matejic 2013).

**Possible break-through points**

- Implementation of the new Law on the Efficient Use of Energy;
- Establishment of a fully operational revolving Energy Efficiency Fund;
- Implementation of local energy efficiency action plans;
- Increased awareness raising activity to promote the ESCO concept;
- Deep involvement of IFIs and numerous ESCO promotion activities.

It is expected that the ESCO market is in front of a major leap in Serbia because of the increased political will of the government indicated also by the adoption of new energy efficiency legislation, and combined with national and local commitments and plans (such as the NEEAP and local action plans).

The following graph shows the key features of the Serbian market:



### Serbia in a snap-shot:

<b>Number of ESCOs</b>	2-3 companies that can provide energy services
<b>ESCO market size and potential</b>	no information
<b>ESCO market trend</b>	getting off the ground
<b>ESCO association</b>	none
<b>Typical ESCO projects</b>	rehabilitation of energy supply in industry, on-site power generation (co-generation, micro cogeneration); space heating, air conditioning, control and automation, indoor lighting; refurbishment of building envelope.
<b>Main type of contract</b>	very few EPC or BOOT contracts

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## Turkish ESCO market 2013

In 2007 the Turkish government adopted the new Energy Efficiency Law, which opens the window for the implementation of the ESCO concept. Since then ESCOs' activity in Turkey has restarted, but when referring to the size of the Turkish market, the ESCO market is not well developed.

### *Current ESCO market*

ESCOs in Turkey are operating under the name of EVD (EVD is a Turkish translation from English of "Energy Efficiency Consulting Company"). According to the Energy Efficiency Law (No. 5627) adopted on 18.04.2007, the companies that provide energy services have to be authorized by the state and must operate under state regulations. The first authorisations (licenses) for ESCOs were officially delivered in May 2011 (Akman, Okay, and Okay 2013).

According to December 2013 data, there are 30 ESCO (EVD) companies operating in Turkey, which are authorised to offer energy services for industry and/or commercial buildings and/or the residential sector. Five companies have authorizations for the industry, 17 for the building sector and 8 for both sectors (Acuner 2013).

The existing ESCOs are distributed in 9 cities only, and most of them are concentrated in Istanbul. Almost all of the prominent industrial centres have organized industrial zones, where most ESCOs are located (Akman, Okay, and Okay 2013).

There is no ESCO association in Turkey. On the state side the General Directorate of Renewable Energy (GDRE) and the Ministry for Energy and Natural Resources (NECC) act as the only facilitators (Akman, Okay, and Okay 2013).

Pursuant to the Energy Efficiency Strategic Paper 2012-2023 the number of ESCO companies for the industry shall be up to 50 until 2015. There is not provision for the number of ESCO companies in the residential sector (Acuner 2013).

The majority of the ESCO companies (75%) are small private enterprises with up to 50 employees. The medium sized enterprises with up to 250 employees are around 25 %. In Turkey there is are no public ESCO companies. Some of ESCOs are established by foreign vendors of energy equipment in Turkey.

These companies have already developed ESCO services in other countries and have experience in the implementation of energy efficiency projects (EC JRC 2012).

### *Types of ESCO projects*

Energy audits, energy certification of buildings as well as the development of energy efficiency projects is actually the core segment of energy services that are provided by ESCO companies (EC JRC 2012).

The majority of the ESCO projects are not based on a full investment grade energy audit. The projects related to the insulation of the building envelope, to indoor lighting, heat waste recovery, HVAC and replacement of electrical motors are frequently covered. The main client beside the industry is commercial sector buildings as: hotels, shopping malls, office buildings (Good, Güven, and Osman Memik 2008).

Hoteliers and international retailers are paying more attention to their energy costs since the hotels and other commercial buildings on the Turkish coast do not have access to natural gas pipelines and they have to pay higher energy prices. Also some headquarters of international companies impose carbon reduction targets, which have prompted Turkish branches to seek the help of ESCOs. The implementation of energy efficiency projects in buildings in the health sector (hospitals) is also reaching a satisfactory level. However schools and education buildings are still not covered by ESCO projects (Good, Güven, and Osman Memik 2008).

The ESCO projects are implemented on the basis of BOOT contracts or on the base of service agreements. EPC has been used only in few cases in pilot projects since they are not fully in line with the Turkish regulations.

### *Regulatory factors*

Turkey as an EU candidate country has overtaken the obligation to transpose and to implement the EU legislation related to Energy Efficiency and environmental protection.

The Energy Efficiency Law (EEL, number 5627) adopted on 18.04.2007 and revised in October 2011 transpose part of the Energy Service Directive (EN 2006/32). This Law is actually the basis for the

In 2012 the first real ESCO project was realized in Turkey with a loan from TURSEFF through the Energy Performance Contract concluded with Johnson Controls (which is an ESCO company) for the oldest shopping mall in Istanbul, Carousel, opened in 1995. The total area of the mall is 75.500 m<sup>2</sup>.

Johnson Controls was selected to design, install and implement the Performance Contracting model to renew the Carousel Shopping Mall's electromechanical systems.

Johnson controls started the project by providing training to the client in performance contracting. After signing a MOU with the client, the energy audit was carried out by a Turkish energy audit team in order to understand the current situation and to assess the gap vis a vis the customer requirements. This enabled a clear definition of solutions and the drafting of list of necessary measures. These were proposed to the customer as a complete and care free solution. Once the customer approved the proposed measures, Johnson Controls carried out the detailed energy audit of the mall. The detailed audit showed the expected result, i.e. that the total energy consumption of the mall could be reduced by 21% with the implementation of the proposed measures. The performance contract includes: cooling system optimization, replacement of heating and cooling pumps, replacement of air handling units and extraction fans, replacement of transformers, roof piping insulation and pump room piping insulation, control system installation. The total investment volume of the project is 3.250.000 USD, the simple payback period is 6,36 years and annual cost saving is 510.518 USD. Management of the "Carousel" mall started discussion about additional measure as lighting system upgrading, operational management of complete building, development of shops energy

definition of energy services and ESCOs. The EEL prescribes also the training of energy managers and energy auditors as well as a procedure for the authorisation of the EVD companies. There are also provisions for financing of energy services through state incentives (Celikoglu 2012).

In July 2012 the Communiqué on the Energy Efficiency Support (CELL) was issued (Serial Number: 2012/3). The CEEL covers the principles and procedures to be enforced on the universities, chambers of mechanical and electrical engineers, and ESCOs in order to ensure a proper execution of energy services in the industrial and in the building sectors. The CELL states that services that can be provided by ESCOs are energy management trainings, energy efficiency projects preparation and implementation, and consulting activities under service contracts concluded with industrial establishments, building owners or building managers (Akman, Okay, and Okay 2013).

Authorization certificates (authorizations) for EVDs are issued by the General Directorate of Renewable Energy. Some criteria for receiving an ESCO authorisation are: to fulfil minimum personal requirements, to hold a Quality management System according to TS EN ISO 9001 and to have facilities, devices and equipment authorised by the Turkish Accreditation Agency.

There are two types of certificates: A and B. The certificates are also separate for the industry and for the building sector. ESCOs applying for a certificate for the industry sector have to fulfil requirements that depend on that industry sector. There are 6 industry sub-sectors and the building sector is divided in two sub-sectors: residential and commercial sector (Acuner 2013).

Pursuant to the CEEL, universities and professionals chambers (mechanical and electrical engineers) can apply for an authorisation from the GDRE in order to carry out training, authorisation and laboratory support to ESCOs as well as for organising training and monitoring for the industry and the building sector. Until this year (2014), the Gazi University is the only institution that has been licenced among 104 universities and the Chambers of Mechanical and of Electrical Engineers (Akman, Okay, and Okay 2013).

Other important legislation concerning energy services and ESCOs include (Acuner 2013):

- Regulation on the Efficient Use of Energy Sources and Energy (En-Ver) adopted in 2008 and revised in 2013.
- Regulation on Building Energy Performance (BEP-TR) (Official Journal Number: 27075 adopted in 2008 and revised 2010).
- Notification on Energy Efficiency Incentives (2012)
- Notification on Authorization of Companies providing energy efficiency services (April 2012 and revised January 2013)

The Turkish government set with the "Energy Efficiency Strategy 2012 -2023" an overall goal of 20% reduction in primary energy intensity by 2023. Several measures are related to the industry sector including: energy audits for industry in order to identify measures for energy efficiency, mandatory energy audits for all enterprises with annual consumption over 5000 toe per year, obligatory establishment of an energy management system according to ISO 50001 for all enterprises with an energy consumption of over 1000 toe per year. It is foreseen that all the activities related to energy audits should be carried out by authorised ESCO companies in the next years (Government of Turkey n.d.).

## *Market factors*

The strategic objective of the Turkish government is to reduce the energy intensity of the country, since the energy intensity of the Turkish economy was 233, 11 kg of oil equivalent per 1000 EUR in 2010, much higher than the average energy intensity of EU27 countries (152,08 kg of oil equivalent per 1000 EUR in the same year). (EUROSTAT 2013)

The Turkish economy experienced a fast recovery after the global financing crisis in 2008. The GDP growth rate according to EUROSTAT was 8,5 % in 2011. It is expected that the primary energy demand will increase around 150% until 2020 as compared to 2013. In the same period the electricity demand will increase annually from 6,7% up to 7,5%. The required investment in the energy sector is estimated at 130 billion USD. Turkey is a country which has also a very high energy dependence of around 70% overall (and of 98% for natural gas ) (Celikoglu 2012).

The new Energy Efficiency strategy and the Law on Energy Efficiency create favourable preconditions for the development of an ESCO market. The Turkish government is very aware of the importance of the implementation of energy efficiency measures in the industry and in public buildings, since Turkey has a rapid economic growth (8-9%) and the energy facilities in the country can no longer meet the increase of energy demand. The country is very much depending on the import of oil and natural gas. The state is committed to reduce the energy consumption in order to compensate for the increasing energy consumption.

The driving force for the ESCO market can be the tariffs for natural gas and electricity, which have been increased since 2008. In the period 2012-2013 the prices for electricity increased by 17,7% and for the natural gas by 35,2% in the period 2011-2012 (source EUROSTAT).

## *Awareness and trust*

In February 2008 the Turkish government declared 2008 the "Energy efficiency year" and started the "National Energy Efficiency Movement", the national campaign which purpose is to raise public awareness for energy efficiency. Since 2008 the government has organized seminars, symposiums, conferences etc. In January 2013 in Istanbul the 4<sup>th</sup> National Energy Efficiency Forum and the Fair took place as part of the Energy Efficiency Week. In particular, this campaign focuses on provinces and municipalities in Turkey in order to initiate the preparation and the implementation of energy efficiency action plans at local level and to improve the cooperation between the public and the private sectors (Celikoglu 2012).

## *Financing ESCO projects*

Energy efficiency funds for the financing of energy efficiency projects do not exist in Turkey. However, the financing can be provided by state budget through incentives (only partially) or by IFIs through commercial banks.

The government has developed two types of incentives schemes for the industry (Celikoglu 2012):

- Incentives for Energy efficiency projects and
- Voluntary agreements for the industry

Pursuant to the Regulation on the Efficient Use of Energy Sources and Energy (En-Ver) adopted in 2008 and revised in October 2011, industrial enterprises can apply for incentives from the state for financing

energy efficiency projects. The project shall have a maximum investment volume of around 378.000 EUR and a payback period of a maximum of 5 years. The state can subsidized up to 30% of the total investment or up to 113.000 EUR of an approved project. Other types of incentives from the state budget are voluntary agreements. Industrial enterprises, which want to apply for incentives from the state, have to sign an agreement with the General Directorate of Renewable Energy (GDRE), according to which they will be obliged to reduce their energy intensity by at least 10% within a period of three years. Twenty percent of the annual energy costs or a maximum of 75.000 EUR will be paid to the companies by the GDRE if they fulfil the voluntary agreement. The companies can finance the purchasing of equipment for co-generation, micro generation and renewable energy through the incentives they receive, but they can also finance services provided by EVD companies for the project's realization. (European Environmental Agency.2011)

In the year 2012 eleven EE projects were approved by the GDRE with a total volume of 600.000 EUR. In 2010 11 voluntary agreements were signed and their results were evaluated during the year 2013.(Acuner.2012)

SMEs can obtain incentives from the Directorate of Small and Medium Scale Industry Development and Support for: the Certification of energy managers (training fees up to 1.300 EUR per person), Energy audits (from 900 to 8.750EUR) as well as consultancy services for energy efficiency (up to 2.200EUR) (Celikoglu 2012).

TurSEEF is a credit line developed by EBRD for SME sized industrial companies and commercial enterprises that wish to invest in energy efficiency or renewable energy projects since the year of 2010. The loans are distributed through the commercial partner banks in Turkey as: AKBANK, Deniz Bank, Garanti, Vakif Bank and Turkey Bankasi. The total amount of the finance facility is 265 million USD. The TurSEEF benefits from USD 50 million in concessional and grant co-financing through the Clean Technology Fund (CTF), combined with about USD 7.5 million in technical cooperation (TC) funding from the EU in collaboration with the Turkish Treasury. The TC funds are used to support the participating banks in developing energy efficiency financing instruments, to help sub-borrowers design and implement such projects, as well as to increase the awareness about the benefits of sustainable energy investments. The maximum loan amount for energy efficiency and renewable energy projects in industry as well as for energy efficiency projects in commercial buildings is 5 million USD. The households also can apply for loans (up to 75.000 EUR) for energy efficiency projects (TURSEEF 2013).

As an example, one of the most important national banks in Turkey - „Seker Bank" develop its own special credit lines entitled „ECO credit" for supporting energy efficiency, waste management and renewable energy projects in small and medium enterprises (SME), individuals, industrial and agriculture enterprises. Until March 2012 almost 320 million TL have been provided for the financing of such projects.

### *Barriers*

Although the Turkish market for ESCO services has a huge potential and the saving potential is large in three sectors: industry, commercial and residential buildings, there are barriers which constrain the development of the market (EC JRC 2012):

- Lack of legislative support for the ESCO business. Procurement procedures are complex and inflexible and specific contractual arrangements for ESCO projects are incompatible with the

national legislation. The current Public Procurement Law prescribes lowest bid prices instead of a "best value" approach.

- The ESCO model is not recognized by the authorities as an individual business model providing services, but as a contract for providing goods. There is no clear definition of EPC contracts and no standard model for EPC contracts. The current ESCO contracts are not based on energy savings.
- Lack of appropriate forms of financing. The commercial banks do not have appropriate portfolios for the financing of projects on ESCO basis, especially in the building sector. They are mainly focused on the industry sector, which has higher priority in the energy efficiency strategy. Commercial banks consider energy efficiency projects for the residential sector as too small and with high risk. ESCO projects are not profitable without state grants. The majority of ESCO companies are small companies with very limited own financial recourse.
- Very limited pull-through projects implemented in SMEs. SMEs request from EVDs only energy audits, and not the implementation of projects based on the ESCO concept. There is tendency toward changing a manufacturing process rather than investing in energy efficiency.
- Lack of trust between clients and ESCO companies.
- Lack of reliable energy consumption data (especially for the building sector) for the set up of a baseline and hence for the provision of reliable data on energy savings.
- Lack of an integrated system for monitoring, evaluation and verification of energy savings.
- Lack of an appropriate promotion of EVDs by public authorities. Very limited number of demonstration projects base on EPC.
- Lack of information and low awareness of the ESCO model particularly among public authorities at local level. Municipalities are not aware about the benefits brought by the implementation of energy efficiency projects as well as about the possibility to use the ESCO model in public buildings (schools, administrative buildings, etc).
- Clients' aversion to sign long terms contracts, due to non predictability of: changing of credit interest rates, changing of inflation rate, fluctuation of Turkish currency and changing of energy tariffs.

In summary, the following graph illustrates the relative importance of barriers in Turkey:



## Conclusions and future expectations

The rapid economic growth and the increasing population in Turkey will lead to rising primary energy demand (up to 5% annually) and particularly to increasing electricity demand (from 6,7% up to 7,5% according to the high case scenario) until 2020. The Turkish government is very much aware that the existing energy capacity will not meet the energy demand of the country. Therefore it considers energy efficiency as a very important factor to reduce or to mitigate the growth of energy demand (Celikoglu 2012).

The state must attract more foreign investment projects in renewable energy. ESCOs can take part in the investments and risk. Without foreign capital, with merely the support of international financial institutions, the market will not be able to prosper because it is primarily a risk-based capital system that Turkey is trying to master (Akman, Okay, and Okay 2013).

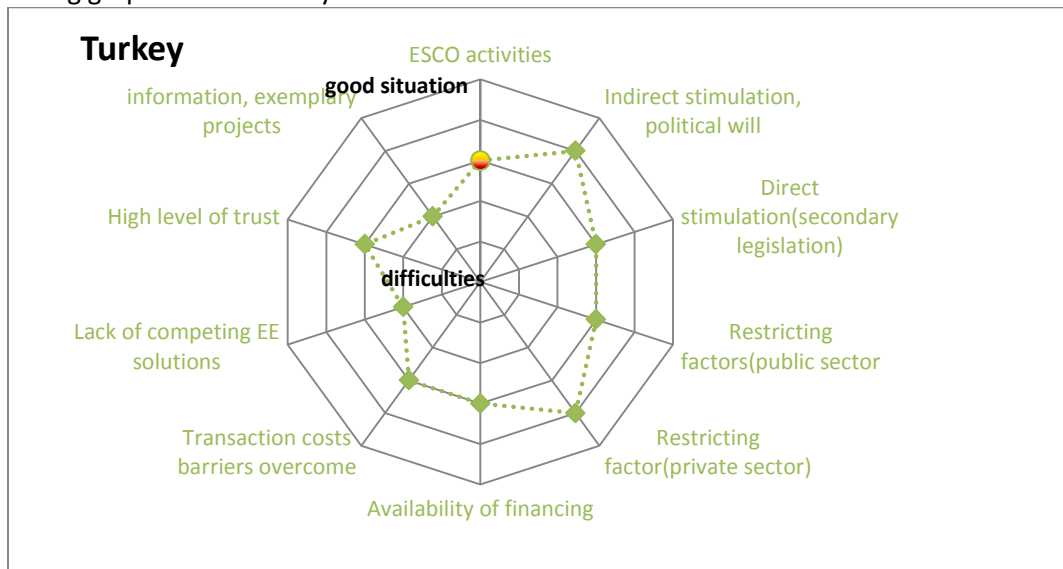
### Possible break-through points

- Implementation of energy efficiency programmes and plans
- Performing energy audits to get more reliable data
- Targeted state incentives (reduction of import duties, incentives for the building sector)
- Attracting more foreign investments
- Creation of an association of ESCOs
- Implementation of pilot projects in the public sector based on the ESCO concept
- Increased awareness raising activity

The preparation and implementation of local energy efficiency plans for the municipalities can also initiate the growth of the ESCO business, since there is a large potential for energy savings in public buildings. Information campaigns and the realization of demonstration pilot projects involving ESCOs should contribute to increase awareness.

The creation of an ESCOs association must be encouraged since it can help ease out some of the difficulties by providing unification, recognition, and public awareness (Akman, Okay, and Okay 2013).

The following graph shows the key features of the Turkish market:



### Turkey in a snap-shot:

<b>Number of ESCOs</b>	30 EVD companies with state authorization
<b>ESCO market size and potential</b>	no data
<b>ESCO market trend</b>	Getting off the ground
<b>ESCO association</b>	None
<b>Typical ESCO projects</b>	Rehabilitation of energy supply system in the industry, installation on site power generation ( co-generation, micro cogeneration); Space heating, air conditioning, control and automation, in door lighting for commercial buildings. Refurbishment of building envelope.
<b>Main type of contract</b>	BOOT, very few EPC contracts

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## *Eastern Europe and Transcaucasia*

### **Armenian ESCO market 2013**

The Association of Energy Service Companies of Armenia was established in May 2005 by a group of local ESCOs. The overall mission of the association is to promote the efficient use of energy and expanded use of renewable energy sources as a means of promoting both economic prosperity and environmental protection in Armenia. The association is designed for its members to discuss ideas, information and experience and to share the organizational structure through which ESCOs can raise funds for the implementation of joint projects (Scientific Research Institute of Energy 2007).

#### *Current ESCO market*

The “Armenia Building Energy Efficiency Market Assessment” report prepared in the framework of USAID programme “Municipal Network for Energy Efficiency” in 2007, listed 11 ESCO companies that operate on Armenian ESCO market. They are private companies that provide different types of services such as: installation of heating, electric supply systems, HVAC, system maintenance, management consulting, design and planning, energy audits. Some of these private companies supported by the USAID-funded Energy Efficiency Demand Side Management Programme established the Association of Armenian ESCOs (Scientific Research Institute of Energy 2007).

Through the analysis of the needs in promoting EE in Armenia on one hand and the committed assistance from other donors and the World Bank, it can be concluded that some major needs still need to be met, including (Social Impact and Management Systems International 2010):

- Stimulating supply side of local energy efficiency market: production and testing;
- Promotion of energy efficiency in the existing housing stock;
- Conducting innovative projects, which while risky for bank lending, would allow piloting and/or adapting new technologies in Armenia and testing new funding and implementation schemes;
- Continuing capacity building of ESCOs and ESCO association.

The Commercialization of Energy Efficiency Programme (CEEP), financed by USAID, supports the private sector energy service companies and the banking sector to increase the availability of bank financing for energy efficiency projects. However, challenges in developing ESCOs must be recognized and addressed. While it is widely understood that ESCOs need to be developed and supported on their path of becoming true ESCOs and operating with internationally recognized practices, the challenges of doing so should be explicitly recognized, analysed, and solutions sought to support the journey in a stepwise fashion. In particular, introduction of performance based contracting is needed, but this would have to be supported with a pilot, specifically designed schemes, etc. The capacities of ESCOs have significantly increased, most notably with regards to the application of new technologies but also regarding the basics concept of implementing EE projects. However, the program did not attempt to raise them to the next level on their path of becoming true ESCOs, and in particular, to a shift to performance based contracting (Social Impact and Management Systems International 2010).

Trainings, workshops and consultations were provided by the USAID CEEP project (2007 – 2010) to ESCOs on the following topics: proposal writing; project management and monitoring; energy audit techniques/equipment; site selection criteria and principles; principles of EE and CEM for ESCOs and site Energy Managers; practical course on weatherization; and energy economics. Also support was provided

to the ESCO Association (formed in 2005 with USAID support) in the preparation of the newsletters (Social Impact and Management Systems International 2010).

### *Types of ESCO projects*

The World Bank with a US\$1.82 million grant from the Global Environment Facility (GEF) Trust Fund started in March 2012 implementation of the Energy Efficiency Project for Armenia. The project will help to reduce the energy consumption of social and other public facilities. This project will support energy efficiency investments in schools, kindergartens, hospitals, administrative buildings, and street lighting and by reducing energy consumption and CO2 emissions of retrofitted public and social facilities (World Bank 2012).

To promote the development of the local ESCO industry and ensure sustainability of energy efficiency services within the country, the R2E2 (Renewable Resources and Energy Efficiency Fund) will enter into contracts with construction/ESCO firms. The contracts will include project design and supply, installation, commissioning and possibly maintenance of equipment. In addition, the contract will include provisions to allocate some project performance risks to the contractors based on the actual energy savings generated from the project. Before the start of the project for each type of public building a cost benefit analysis to assess economic and financial viability for energy efficiency investment was carried out. Also energy audits for public buildings were carried out. These analyses showed that energy efficiency investment can create energy saving of 49-52% (World Bank 2012).

### *Regulatory factors*

The Government has taken important steps to encourage realization of the energy efficiency potential. In December 2004, the National Parliament adopted the Law on Energy Savings and Renewable Energy (AL-122), creating a legal basis for energy efficiency in Armenia. This law prescribes energy audit and energy certification but does not include any provisions or definition of energy services and ESCOs (National Assembly of Republic of Armenia 2004).

The Government also adopted the National Program on Energy Savings and Renewable Energy, which identifies the sectors with the largest energy efficiency potential and provides an outline of technical measures/solutions to be taken to realize the identified technically viable potential. Additionally, under the Development Policy Loan (DPL) of the World Bank, the Government adopted a time bound Energy Efficiency Action Plan for 2010-2013 that prioritizes energy efficiency measures for various sectors.

### *Market factors*

The World Bank's Energy Efficiency Study for Armenia (2008) estimated that the public sector can save around 132 billion Armenian Drams (more than US\$360 million), 130 million kWh of energy equivalent annually, and 35% of estimated total energy consumption. The energy audits conducted for eight public facilities as well as energy efficiency investments in eleven schools under the World Bank supported Urban Heating Project, suggest that an average facility could save around 150,000 kWh of energy per year by investing an average of US\$70,000 with payback of three to eight years (World Bank 2012).

Public Buildings in Armenia has significant potential for improvement of energy efficiency and leaving condition. Some of the characteristics of the public buildings are (Babayan 2011):

- Public Agencies –financed from the state or community budgets (hospitals, schools, kindergartens, administrative buildings, street lighting, etc);

- Budget constraints coupled with rising energy costs -gas prices increased ~58% from 2008 to 2010; electricity also increased 20% (daytime), 33% (night-time);
- Buildings are under-occupied, financing is per person (student, patient, etc.);
- Survey results show average comfort levels in social buildings ~40%;
- Energy costs are generally second highest cost (5-20% of total costs) for public buildings;
- State of public buildings is poor and many need rehabilitation without prospects for cost recovery;

Government and Municipalities are aware of the situation and allocate funds from limited sources of the state and municipal budgets to fix situation. IFIs, donors, Diaspora, individuals support implementation of projects for improvement of the living condition and comfort. However, the financing of the energy efficiency measure cannot be provided since the granted funds are limited and loans are not provided for this type of organizations. Implementation of energy efficiency projects on ESCO concept shall be a solution (Babayan 2011).

### *Awareness and trust*

The concept of the “Outreach Plan” was developed in 2009 in framework of USAID CEEP. Main components of the plan were: production of Project Bulletins and success stories; production of ESCO Association Newsletter; program presentations and media events; and promoting general energy awareness. In practice: The website, brochures, project bulletins, success stories, ESCO Association newsletters were prepared as planned. They were disseminated during the program events, during the various business expos, and public events (Social Impact and Management Systems International 2010).

### *Financing ESCO projects*

Renewable Resources and Energy Efficiency Fund (R2E2) was established by the Government Decree No799N of 28 April 2005 following the Law on Energy Savings and Renewable Energies. Objective of the fund is to create financing mechanisms for energy efficiency and renewable energies. The fund is an independent legal entity acting under civil code (Babayan 2011).

The Fund shall implement the following activities (R2E2 2013):

- Training and capacity building for private entrepreneurs and auditors, energy service companies (ESCO), financial institutions (FI) and home owner associations (HOA) and capacity building related to renewable resources and energy efficiency sector investments;
- Awareness campaign on renewable resources and energy efficiency new technologies;
- Organization of credit and loan projects in renewable resources and energy efficiency sectors pursuant to respective international contracts and authorities given by the Government of the Armenia;
- Organization of financing in renewable resources and energy efficiency sectors;
- Financing of residential and industrial energy efficiency projects;
- Financing of renewable resources and energy efficiency projects through credits and grants;

The R2E2 Fund will be responsible for implementation of the financial management function of the World Bank Energy Efficiency project, including the flow of funds, planning and budgeting, accounting, financial reporting, internal controls and auditing.

In July 2007 EBRD started the Caucasus Energy Efficiency Programme, a dedicated credit line facility for EE and RE projects in Georgia, Armenia and Azerbaijan aimed at end-users in the industrial sector, RE

sources developers and end-users in the residential sector. Under this Programme, the EBRD launched the US\$35 million Georgia Energy Efficiency Programme at the end of 2007 and plans to launch a similar USD 20 million programme in Armenia: the Armenian Sustainable Energy Finance Facility (“ArmSEFF”) for industrial energy efficiency and renewable energy efficiency. An additional US\$5 million, in local currency may be extended for residential energy efficiency, subject to local currency funding availability.

### Barriers

Barriers for ESCO mechanism in Armenia (Babayan 2011):

- Low awareness on benefits
- Lack of capacity for assessment of the energy efficiency potential
- Lack of working capital in private construction companies
- Lack of long term loans within financial market
- Lack of mutual trust between contractor and client
- Risks related to the changes of behaviour after improvement
- Energy tariff non predictable, weather is changed from year to year
- The obligation in public organizations to go through a conventional tender process is a major barrier

Trainings, workshops and consultations to 6-8 banks in risk evaluation/ assessment of EE proposals/projects were conducted in framework of USAID Commercialization of Energy Efficiency Programme (CEEP). The training for bankers were shifted from a workshop mode to one-to-one training of bankers mid-project which resulted in training less number of people than planned (Social Impact and Management Systems International 2010).

In summary, the following graph illustrates the relative importance of barriers in Armenia:



### Conclusions and future expectations

The Armenian Market is much more developed for energy services compare to the markets of others South Eastern Countries. There are several ESCO companies that operate on the market, but they are still weak in terms of capacity and financial abilities.

#### Possible break-through points

- Implementation of World Bank “Energy Efficiency Project”;
- Development of legislation for ESCO and improvement of public procurement legislation;
- Implementation of pilot projects in Public sector on ESCO concept;
- Improvement of capacity of R2E2 Fund;
- Increased awareness raising activity to promote the ESCO concept.

Technical assistance is a component of the World Bank's “Energy Efficiency Project”. It will help to remove the existing barriers to realize the energy efficiency potential and to create an enabling environment for energy efficiency in the public sector. The key areas that this component will finance include: capacity building of the R2E2 Fund (Renewable Resources and Energy Efficiency Fund), including training and basic audit and monitoring equipment; pipeline development and capacity building for public agencies involved addressing knowledge gaps on energy efficiency, building the demand for program financing, and improving the prospects for the sustainability of energy savings generated under the project; policy development support, including efforts to support budgeting, procurement and financing of energy efficiency projects in the public sector as well as selecting policy measures and energy statistics; market development and capacity building of various market actors, including Energy Service Company (ESCOs), banks, construction firms; and project management, including monitoring, reporting and financial audits (World Bank 2012).

#### Armenia in a snap-shot:

<b>Number of ESCOs</b>	11
<b>ESCO market size and potential</b>	no information
<b>ESCO market trend</b>	slightly increase
<b>ESCO association</b>	1 (Association of Energy Service Companies of Armenia)
<b>Typical ESCO projects</b>	rehabilitation of heating supply system for public sector; indoor lighting; street lighting; refurbishment of building envelope;
<b>Main type of contract</b>	very few EPC or BOOT contracts

## Belarus ESCO market 2013

There is no specific legislation in place in Belarus, which regulates the energy services. However there are several companies which provide energy services on the basis of existing legislation. The ESCO activities will be regulated with the new Law on Electricity or with the new Law on Energy Savings that are under approval.

### *Current ESCO market*

The first ESCO in Belarus (BelinvestESCO) was established by Belinvestbank and the Department for Energy Efficiency of the State Committee for Standardization in 2005. Currently, several energy service companies are operating: BelinvestESCO, “Conecticum”, ENECA and Vneshenergiservice. These ESCOs provide energy services on contracts which are similar to the ESCO model. Most of the implemented projects involve improvements or reconstructions of heat energy supply systems and networks since the potential for energy savings in this sector are large due to the old equipment, the installation and the

huge energy losses. The energy supplier systems are mostly state owned (UN Economic Commission for Europe 2013).

Within the framework of UNDP/GEF Project: "Removing Barriers for Energy Efficiency Investment", in September 2010, the "International Energy Centre (IEC)" was established. The aim of IEC is to promote energy efficiency projects and financial schemes (including testing of new schemes e.g.: ESCO), to support energy efficiency investments project pipeline and to share know how and experience among all relevant stake holders. The IEC was integrated into the structure of BelinvestEnergoSberzheniy" and has been supervised by the Energy Efficiency Department of the State Committee for Standardisation, which is a responsible authority for implementation of energy efficiency programmes. Today IEC operates as engineering and consultancy of companies, experienced in development, investment, performing and monitoring of energy efficiency projects. IEC implemented projects on the basis of Simple Partnership Agreement (SPA), which are similar to the contracts for Energy services (UNDP 2011).

### *Types of ESCO projects*

The first ESCO projects in Belarus were established for energy supply and were implemented on turnkey basis using UK Energy Management contracts as a contract model. The ESCOs develop, install, maintain, and operate energy installation (boiler houses, CHPs etc). They owned the installation during the project (contract) time frame and sell the energy (heat or electricity) at lower prices compared to other suppliers. After the end of contracts the ownership of equipment is handed over to the client (state body). On the same model, energy efficiency projects realised by IEC, using SPA contract have been implemented. This type of contract is similar to the build –own-operate-transfer (BOOT) contract. The ESCOs uses mainly loans or long lease provided by foreign banks through the ESCOs, and guaranteed by local bank or EU stakeholders (UN Economic Commission for Europe 2013)

The ESCO's contract with its clients are different from the standard contracts where conventionally goods or services are provided by one party to the other in the form of a payment. Some of the specific differences are (Iqbal and Yozhikov 2006):

- An ESCO provides a basket of services to the customer, under a performance guarantee. Performance however, can be defined in a multitude of ways. The client may not actually pay for the services in the conventional manner.
- Instead, in some cases it is the ESCO who may actually make a net payment to its customer as a percentage of the savings it creates, whilst at the same time providing the customer its basket of services.
- ESCO services often include procurement/provision of funds, and provision of performance guarantees. In certain cases, an ESCO organises the finance from banks/financing institutions for its customer, whilst in other cases the ESCO itself operates as a financing institution.
- ESCO guarantees its clients (and the investors) that their investment will be fully paid back within the term of the contract.

In the framework of UNDP/GEF project "Removing barriers to energy efficiency improvement in the state sector in Belarus", several energy efficiency pilot projects in Belarus had been implemented. The realized projects included: construction of mini CHP, replacement of boilers and burners, replacement of heat pumps, installation of controlling and monitoring devices at boiler houses, installation of heat recuperation systems, construction of waste utilizers etc. In all instances energy audits and prepared pre-investment studies were carried out. The financing was ensured through own equity of clients (for

lower budget projects) or through commercial banks and state loans for the larger projects (Grebenkov and Molochka 2013).

Within the framework of this project, ten training for energy auditors (350-400 attendees) were carried out. Furthermore, bankable proposals and loan application for public entities were prepared, 27 investors for state owned entities were attracted and several pilot projects were realized. Also the ESCO was introduced as one of one of possible financial scheme for implementing energy efficiency projects.

### *Regulatory factors*

Although there are few energy service companies operating in Belarus, there is no specific legislation regulating energy services and ESCOs. The major legal acts that regulate the Energy savings and energy efficiency are: (ENECA.2013):

- Law on energy savings No.190-3 of 15 June 1998;
- Resolution of the Council of Ministers of the Republic of Belarus “On lax crediting of energy efficient and currency repaid project №720/14 of 31 May 2002”;
- Resolution of the Council of Ministers of the Republic of Belarus “On procedure of energy audits implementation” №964 of 29 July 2006;
- Resolution of the Council of Ministers of the Republic of Belarus №1882 of 24 December, 2010 “National Program on energy savings for the 2011-2015 period”.

The objective of this program is reducing in the energy intensity of national GDP (from the 2005 level) by 50% until 2015 and 60% by 2020. To increase up to 28%-30% the share of domestic energy resources in the boiler and furnace fuel mix in 2015 and up to 32-34% in 2020 (Energy Charter Secretariat 2013b).

The National Program includes a list of measures in all sectors: Industry, residential, commercial and public sectors. The measures to be implemented in the industry sector will be focused on upgrading or replacement of industrial process based on old inefficient energy technologies. In housing and public (municipality) sector should be undertaken projects related to reconstruction of heating production and distribution systems, installation of mini CHP plants on local fuels ( biomass in most of cases) improvement of outdoor and indoor lighting systems (street lighting). At the same time, energy efficiency of buildings should be increased and in 2015, the proportion of the energy efficiency homes shall reach 60% (Council of Ministers 2011).

The Civil Code suggests a variety of ways for starting and running a company. The following are a few of the legally approved organisational formats for commercial entities (Iqbal and Yozhikov 2006):

- Shareholding companies;
- Societies;
- Production co-operatives;
- One owner companies.

All these types of companies can be owned by the government or privately owned.

### *Market factors*

Through the implementation of the energy savings policies and strategies, the maximum use of local energy resources and the use of renewable energy, the government want to ensure energy security as well as decreasing energy dependency of the country. Almost 99% of the natural gas is imported and it represents 63% of primary energy consumption in the country (Energy Charter Secretariat 2013b).

From 2006–2011, the cost of natural gas imported to Belarus increased by more than a factor of five; this caused an increase in energy prices and tariffs for the consumers. In 2011, from January to September, on a year-to-year basis, prices for imported energy denominated in US Dollars increased by 17.4% on average, specifically by 36.5% for gas; by 10.2% for oil and by 9.3% for oil products (Energy Charter Secretariat 2013b).

The willingness of state to reduce energy dependence of Belarus for natural gas as well as the increasing prices of natural gas provided by Russia can be a driving force for the development of energy services in the country.

Once the ESCO concept is established and proven, the real impetus in the growth of the ESCO sector, will inevitably involve the participation of foreign investors, foreign ESCOs, and foreign technology. This however cannot happen unless the Ownership & Operational rights of foreigners and the repatriation of profits by foreign companies can be safeguarded. The Belarusian Government actively welcomes foreign investment and foreign technology and the issues of safeguards are well spelt out in Belarusian legislation. A large number of successful foreign investment projects are now in progress (Iqbal and Yozhikov 2006).

### *Awareness and trust*

Several pilot projects implemented with a technical support of international organization (UNDP) have shown the benefit of implementation of projects through ESCO model. They were implemented in more than 17 cities in Belarus and are used to promote energy services for public sector and industry based on ESCO or SPA model. As a result, their implementation had also contributed to increase the knowledge on energy savings, financing and development of energy efficiency projects of public institution and public entities (UNDP 2011).

### *Financing ESCO projects*

Sources for financing of energy efficiency projects in Belarus are: own funds of enterprises, National fund for Energy Efficiency (NEF), Ministry of Energy Innovation Fund, Belenergo Concern Innovation Fund of and other innovation funds and local budgets.

In general the innovation funds can utilize a mix of grants and concessional financing to improve energy efficiency. In the case of Belenergo Innovation Fund, the grants can be used for financing energy efficiency projects in state sector, while the concession financing can be allocated for public as well as for private sector. The loans are given for 3 to 5 years period but if the inflation rate stays on lower level for longer period, loans can be provided for a longer lending period. Business plans and implementation agreements are required by the banks, but no security or other documents are required. Since the Belenergo Concern is state owned company, the Investment Fund has been managed by the Committee on Energy Efficiency. The state stipulate each year the percentage of enterprise fund that should go to the Innovation fund (UNDP 2011).

The funds from the National Energy efficiency Fund (NEF) have been used for financing of innovative energy efficient measures in state enterprises and budgetary organization and may be taken in form of guarantees for loans from commercial banks offering concessional loans. The planned allocation are agreed with Ministry of Finance and approved by the head of NEF committee. The income of the NEF comes from fines and penalty of enterprises, local government which do not fulfil their obligation for energy savings agreed with the Committee on Energy Efficiency. The enterprises for financing of priority energy efficiency measures can use subsidized loans from commercial banks at half of the National Bank

discount rate. The guarantees for 50% of the loan are taken by the Government through the NEF. However, those funds are still underused by the enterprises (UNDP 2011).

In principle, banks are prepared to consider energy projects, because competition for good borrowers is increasing. However, at the moment provision of loans to companies is based on overall assessment of their assets. Banks know almost nothing about international project financing (Iqbal and Yozhikov 2006).

### Barriers

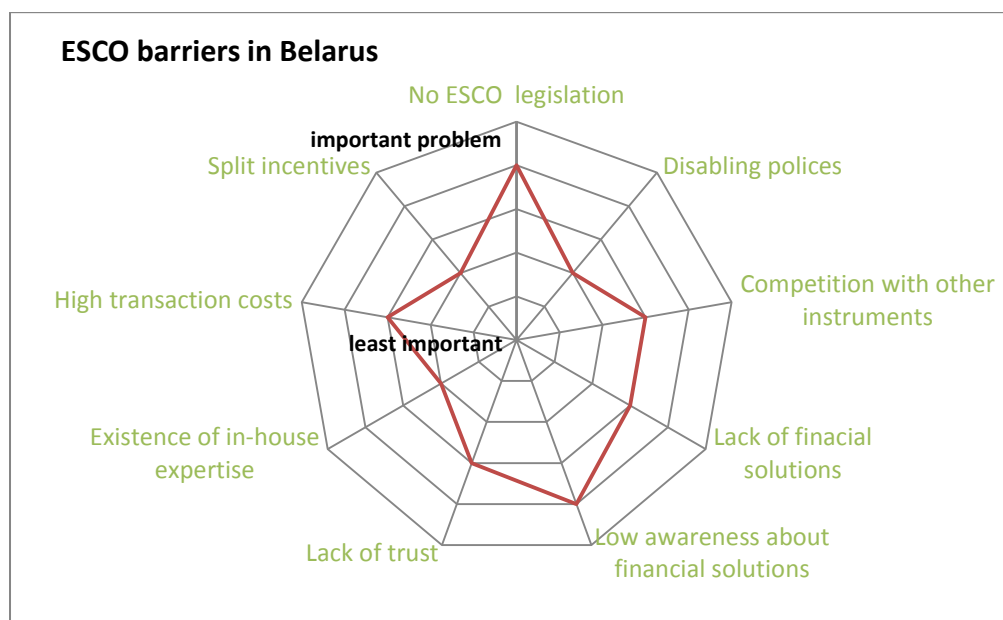
Lack of legislation on energy services (ESCOs), regulation for heat supply and CHP as well as the lacking of energy efficiency regulation (standards and norms), constrain the development of market for energy services in Belarus (UN Economic Commission for Europe 2013).

Lack of financing through commercial banks is another barrier towards the development of ESCO. The commercial banks are not interested for the development of financial products for energy efficiency, because of the lack of knowledge and experience in energy efficiency investment cycle. The enterprises have not sufficient capacity to develop feasibility studies and business plans for applying to bankable projects, even if they are guaranteed by states funds (Grebenkov and Molochka 2013).

The Lack of motivation for implementing energy efficiency measures in supply side is due to the unclear transparency of financial flows, unfair energy tariffs for independent producers and high level of centralization. The demand side is also not motivated, due to the minor experience in energy management. As a result, a financial saving model generated by energy savings cannot be applied in budgetary organization and under cross-subsidizing system. Energy norms are established on a basis of the achieved level and grant funding does not provide motivation for other EE investments (Grebenkov and Molochka 2013).

The interest rate for loans provided by commercial banks are also very high (up to 35-36%) and for all legal entities interested in investment in energy efficiency measures can be offered finance at an interest rate not exceeding 50% of the National Bank Rate.

In summary, the following graph illustrates the relative importance of barriers in Belarus:



## Conclusions and future expectations

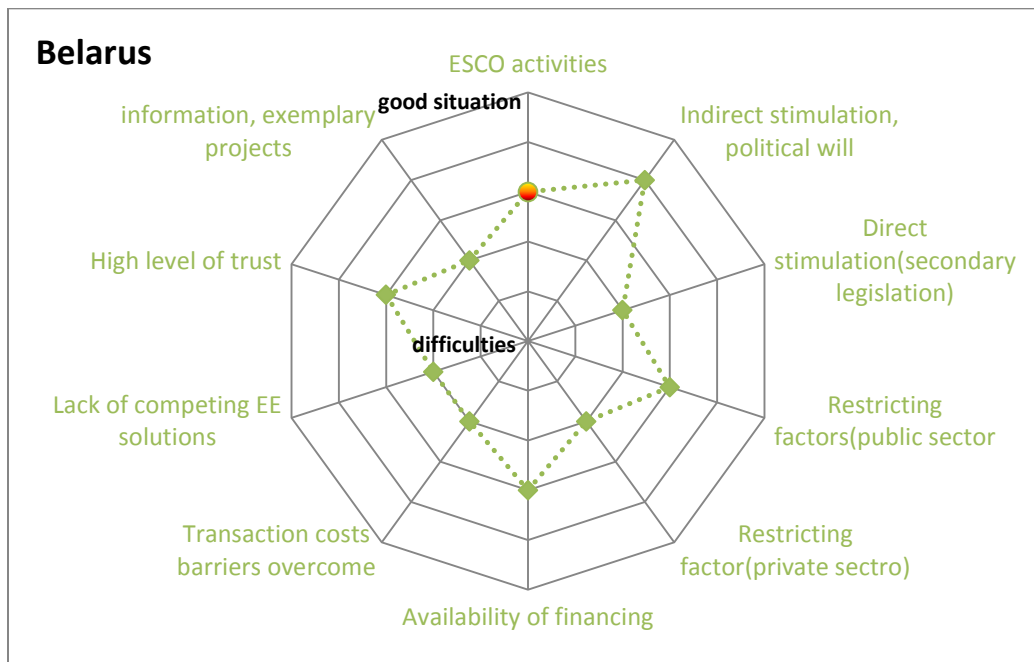
The preparation and adoption of energy efficiency legislation as well as the legislation which will regulate energy services together with the development of contracts for energy services should be the driving market factors for the ESCO market's development in Belarus. The International Energy Centre should be supporting the promotion of financing schemes for energy efficiency including the ESCO model. The IEC should also help in organizing training for energy auditors and in-house experts for the preparation of bankable projects for energy efficiency.

### Possible break-through points

- Political will to reduce energy dependence and energy intensity;
- The new Law on Electricity and new Law on Energy Savings;
- Review of state incentives (grants) for EE;
- Covenant of Mayors Initiative;
- Increased awareness raising activity.

There are 6 municipalities from Belarus that already signed the Covenant of Mayors initiative. The European programmes and organisations can support the preparation and development of their SEAPs. Within the framework of these activities, trainings for local experts on different topics, e.g.: energy audits, development of investment projects, energy management for public buildings and industry, can be organized.

The following graph shows the key features of the Belorussian market:



### Belarus in a snap-shot:

<b>Number of ESCOs</b>	3-4 companies
<b>ESCO market size and potential</b>	n/a
<b>ESCO market trend</b>	increasing since 2012
<b>ESCO association</b>	none
<b>Typical ESCO projects</b>	Heating supply systems reconstruction ; improvement of heating system in public buildings public lighting
<b>Main type of contract</b>	Simple Partnership Agreement (SPA) similar to BOOT contract

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## Georgian ESCO market 2013

The ESCO market in Georgia is not developed because of the lack of supporting legislation and interest for investment in energy efficiency project implemented on ESCO concept. However, the municipalities in Georgia became more and more interested in energy efficiency issues. Six municipalities including the capital city Tbilisi already signed the Covenant of Mayors Initiative and started with implementation of energy efficiency polices.

### *Current ESCO market*

They are no ESCO companies operating on the Georgian energy market. The lack of know – how for energy services and low knowledge for energy efficiency in general, are the factors which constrain development of ESCOs. In last few years with the support of foreign donor organizations projects have been implemented related to capacity buildings and training for local experts and local administration regarding energy efficiency issues.

In the frame work of the Georgian –Norwegian Capacity Building Programme on Energy Efficiency in 2003 was established the Energy Efficiency and Cleaner Production Centre, a non–governmental and non-profit organization, which mission have been to enhance activity of the engineering staff of Georgian enterprises in the direction of saving resources and as a result to reduce waste and decrease environmental pollution. The program included two sub-programs (Energy Efficiency and Cleaner Production Centre 2013):

- Energy Efficiency in Buildings (EAB);
- Municipal Energy Efficiency Planning (MEEP).

The overall aim of the sub-project: "Energy Efficiency in Buildings" is to contribute to increased energy efficiency in private and public buildings and facilities in Georgia.

The main activities were (Energy Efficiency and Cleaner Production Centre 2013):

- Updating/Development of manuals and tools. The latest version of Energy Savings International (ENSI) manuals, tools and software for energy auditing of buildings were updated and translated. Energy Auditing of Building Software (EAB) Textbook was updated, translated and published;
- Training. The local EAB Team (in total 10 persons) were trained on updated and new methods, tools and software for energy efficiency in buildings and energy auditing;

In 2007 the MEEP program prepared baseline evaluations for municipal energy consumption in buildings and drafted the first version of the Municipal Energy Efficiency Plan. In July 2008, the final draft of Municipal Energy Efficiency Plan for Tbilisi City was completed and presented to City Administration. The Municipal Energy Efficiency Plan is an important tool for municipal decision-makers, authorities and developers when planning for renovation and upgrading of municipal facilities by allowing them to target the most energy consuming objects and make action plans accordingly. (Energy Efficiency and Cleaner Production Centre 2013)

### *Types of ESCO projects*

They are no example of energy saving or energy efficiency projects implemented on the basis of ESCO concept in Georgia.

### *Regulatory factors*

Energy services and ESCOs are not regulated by the Georgian legislation. The legislation related to energy efficiency also has been not adopted.

Work on the drafting of an energy efficiency law was well-advanced before it was abandoned by the government in 2008. At the time of writing the Ministry of Energy has no formal sustainable energy or energy efficiency executive agency within its responsibility or budget provision for the implementation of sustainable energy programmes. Nor is there any provision for such in the “Priorities for Government 2009-2012”. (Energy Charter Secretariat 2012)

Winrock International – a USAID subcontractor – has worked with the government authorities since 2007 and a draft for an Energy Efficiency Law was developed with the cooperation of the Ministry of Energy and the NGO, “World Experience for Georgia” (WEG). The law was ready to go before the Parliament of Georgia in the autumn of 2008. (Energy Charter Secretariat 2012)

The Georgian Policy and Legal Advice Centre (GEPLAC), financed by the EU, has assisted the government on energy policy and legislation, most recently in the preparation of a law on energy efficiency. (Energy Charter Secretariat 2012)

### *Market factors*

Georgia imports 98% of its primary energy requirements of natural gas and oil products, which together meet about two thirds of the primary energy supply. Because of this and the relatively high energy intensity of its GDP, the competitiveness of Georgia’s economy is particularly affected at times of high energy prices. (Energy Charter Secretariat. 2012)

Reducing of the Energy dependence and energy intensity of the Country are strategic aims of the government. Energy efficiency can decrease the energy dependence and shall contribute to straightening of Georgian economy. Implementation of projects based on the ESCO concept can be a possible model for financing of EE.

### *Information, awareness and demonstration*

Local representative from the municipal sector, industry and decision-makers often lack of information on the practical options for energy efficiency that will influence their business in positive way. (Energy Efficiency and Cleaner Production Centre.2013)

In the framework of the Georgian –Norwegian Capacity Building Programme on Energy Efficiency materials (project brochures, guidelines, reports) of the implemented projects had been disseminated.

- A Demonstration project was implemented in the Khidistavi School (located near Gori). Installation of the heating system and PVC double glazed windows in the classrooms and Renewable Power Source (wind power generator 400 W and PV system 125 W) had been carried out.

- Dissemination/Experience sharing. A dissemination seminar was organized where project results were shared with local stakeholders, governmental representatives and international organizations.

### *Financing ESCO projects*

There are no special funds or financial products developed by local commercial bank for financing of ESCOs in Georgia.

The one example for financing of energy efficiency project has been the Revolving Fund (RF) established by Georgian–Norwegian Capacity Building Programme. This fund financed through small loans energy efficiency measures in private production companies (milk or bread factories). The maximum loan taken by companies was 7,000 USD.

### *Barriers*

The barriers for development of ESCO market in Georgia are:

- Lack of legislation for ESCO ;
- Lack of public procurement regulation for procurement of energy services;
- Lack of financial products provided by banks for energy efficiency projects and ESCOs;
- Lack of know-how and experience for energy services and ESCO among all relevant stake holders: National and local authorities, business sector, financial institutions and experts community;
- Lack of demonstration projects implemented on ESCO concept;

### *Conclusions and future expectations*

Development and implementation of energy efficiency legislation including the regulation for ESCO can create condition for implementation of projects based on ESCO concept. The government also shall introduce incentives in order to stimulate the local and foreign companies to invest in ESCO projects.

In the same time the international organization shall be involved in capacity building of local energy experts in public and business sector as well as in development of procedures and templates for EPC and public procurement for energy services. Capacity building for experts for preparation of financial products for EE can be also organized through international organization.

Promotion of energy services and ESCO especially on local level through campaigns supported by government can also raise the awareness of local authorities for energy services and ESCOs. In the last three years six Municipalities of Georgia (including the capitol city –Tbilisi) signed the Covenant of Mayors initiative, and submitted SEAPs.

## Moldovan ESCO market 2013

The Moldovan ESCO market is still on the ground because of the absence of legislation, which is necessary to accept a common definition and regulation of the energy services and ESCO market.

### *Current ESCO market*

There are few engineering companies in Moldova that can provide some kind of energy services : consulting, design and construction of ecological and energy efficient houses, design and installation of heating and ventilation systems, installation of heating /cooling systems with heat pumps, installation and maintenance of equipment etc. These companies are working on donor financed turnkey contracts. Few of them can also provide energy audit for buildings (UN Economic Commission for Europe 2013).

In the absence of own funds, the involvement of third parties in the implementation of energy efficiency measures and, consequently, development of energy services market, has become a primary task (Government of Moldova 2013).

The Moldovan Energy Efficiency Agency which was established in December 2010 has been responsible for implementation of national energy efficiency policies and was appointed as implementation body for the NEEAPS Measure "Promotion of Energy Services".

The Agency has started the process of drafting the normative framework with the first step – studying the energy services market and the barriers to be eliminated in order to develop it, having benefited from the SYNENERGY Programme (Government of Moldova 2013).

During the period 2013-2015, the development of energy services market would impose a series of actions detailed below (Government of Moldova 2013):

#### 1. Setting the legal and normative framework:

- developing and adopting the Regulation on energy services companies;
- amending the existing legal and normative framework to eliminate the administrative and financial barriers;

#### 2. The Agency will develop the following supporting tools for the potential energy service providers and recipients:

- a) Handbook comprising the main features of the Energy Performance Contract;
- b) Energy Performance Contract sample/template;
- c) Practical guidelines for implementing an energy management system.

#### 3. In order to stimulate the energy services market, the Agency will take the following measures:

- a) devising a study to identify the potential tax incentives and customs facilities, having conducted cost-benefit analysis;
- b) amending the relevant legal framework to introduce the tax incentives and customs facilities.

Pursuant to the first NEEAP, ESCO model for financing of EE can be applied also for renovation of public buildings and for improvement of street lighting in municipalities of Moldova. However, it is needed preparation and adoption of legislation related to energy performance of buildings, public procurement and public budget (Government of Moldova 2013).

### *Types of ESCO projects*

The Moldavian industrial sector has recorded substantial energy losses due to poor energy management, limited awareness and poor know-how about energy efficiency, inefficient exploitation, poor maintenance, inadequate procurement procedures, using old technologies etc. Therefore pursuant to the first NEEAP one of the measures which should be implemented is related to Development of energy service market for industrial sector. ESCOs should be in charge for implementation of Energy management systems in industry sector according the ISO EN 50001, energy audits and training of in house experts. Moldavian ESCOs have to be provided with training and expertise by international experts in order to be able to provide energy services to industry sector. (Government of Moldova 2013).

The optimising of heat production and distribution will be one of the priorities of the Moldavian Government for the next period of time (until 2020). The target is to reduce the heat losses up to 12% until 2020. This target should be achieved through making the heat production more efficient and through improvement of quality of the heat supply. The project will be related to upgrading and reconstruction of heat distribution networks, upgrading or reconstruction of pump stations, installation of monitoring and controlling devices, replace of thermal insulation of heat distribution systems.

### *Regulatory factors*

The National Development Strategy "Moldova -2020" was approved by the Law No.166 in July 2012. This strategy outlines the midterm and long-term indicative targets to reduce of the energy intensity of Moldavian industry of 10% by the year 2020. In the electricity sector (transmission and distribution) it is proposed to cut losses with 13% by 2015 and with 11% by 2020. The energy use within buildings is expected to be lowered with 10% by 2020 (Government of Moldova 2013).

Similar to the aforementioned Strategies, this Programme, approved by Government Decision No. 833 dated 10 November 2011, stipulates the reduction of greenhouse gas emissions with 25% in comparison with the level recorded in 1990. Also, the Programme lays down the national objective to make the overall use of primary energy more efficient by 20% by 2020. The Programme comprises measures to be taken in all national economy sectors, which, in fact, reflect the requirements set by the European Directives on energy efficiency and renewable energy sources, including creation of energy services market. (Government of Moldova 2013)

The first National Energy Efficiency Plan for 2013 – 2015 was adopted in February 2013. The overall national indicative target set by the Moldavian Government is a reduction of energy consumption by 9% until 2016. (Government of Moldova 2013)

There are several measurers in the first NEEAP regarding the promotion of energy services and development of ESCOs as follows (Government of Moldova 2013):

- Promotion of energy service companies (ESCs). The final goal is setting legislation and regulatory frame work to involve third party in the sector and set forth energy services. For the purpose of this measure the following actions will be taken:

1. Drafting the regulation on energy services companies would ensure the conditions for their operation on the market:

ESCOs would have the mission to guarantee financing, and to secure more advanced maintenance and operation level for energy systems;

In the private sector, these services would secure the quality of implemented projects, proper operation and maintenance of energy systems;

In the public sector, the ESCOs interventions would contribute to the reduction of energy losses in the lighting system, in the heating supply networks, within buildings, etc.

2. Drafting the package of documents necessary for the conclusion of energy performance contract (contract template; additional necessary acts).

3. Identifying and notifying the potential recipients of services about the stages and advantages of energy performance contracts.

4. Training and advising the potential energy services providers (building companies; design firms; entities dealing with manufacturing and installation of efficient technologies, etc.). This action will be focused on clarifying the energy performance contract procedures and contents, etc.

5. Suggesting amendments to the legal framework in place related to public procurement procedures and Local Public Authorities financing to overcome the barriers to ESCO market development. The purpose of this action is to allow financing the energy efficiency measures at the account of energy savings, and to pick up technologies and materials based on price-quality.

Development of energy services market for the industrial sector. Expanding and strengthening the quality of energy services rendered to the industrial sector and to other sectors on the Moldovan market. Supporting the development of the national services market and energy products for the industrial sector. The measure will envisage the following activities:

1. trainings for national experts, including on-the-job trainings with the involvement of international experts;

2. technical assistance provided to undertakings by national experts who successfully completed the training courses organized by UNIDO Programme.

The Implementation bodies for this measure are: Ministry of Environmental, UNIDO, national experts and energy service providers.

### *Market factors*

Besides the state's policies and willingness of the Government to support energy efficiency programmes, the very important market factors in Moldova should be increasing of prices of the electricity and natural gas as well as an introduction of heat energy consumption metering in residential sector, which has been foreseen with the Energy Efficiency Programme of the Government. The tariffs of electricity and natural gas are still under the EU average and they are subsidized by the state. However, in last few years they have been increased and it is expecting that will be much higher after liberalization of electricity market which is an obligation that Moldova has taken after entering in European Community Treaty. The tariffs are equal for industry and for residential sector, so both sectors will be motivated to undertake energy efficiency projects and to reduce energy costs.

## *Awareness and trust*

In order to guarantee a functional energy services market, the Agency will conduct awareness-raising and training actions intended for the market main actors. This measure implies professional education and training of energy service providers, consultants and recipients, as well as the implementation of the following activities (Government of Moldova 2013):

- a) setting help-desk services by the AEE, which will provide guidance and assistance, upon case, to the market actors in the process of preparing and devising the energy performance contracts;
- b) developing a Handbook for the public sector and organizing training sessions for Local Public Authorities;
- c) training the Energy Managers in charge with LEEPs (Local Energy Efficiency Plans) and LEEAPs development;
- d) raising awareness and training the private sector;
- e) providing training on tools relating to energy management systems and optimising the steam systems;
- f) drafting a Handbook regarding the energy performance contracts for Energy Auditors and Consultants;
- g) publishing the list of energy services providers on the AEE web page;
- h) disseminating the information on available financial mechanisms for energy services.

A pilot project on a basis of an energy performance contract, comprising the following actions:

- a) identifying pilot-projects, relying on the following sources: LEEPs, LEEAPs, sustainable development plans developed by the communities, which have adhered to the Covenant of Mayors, international projects, etc.;
- b) granting assistance for the development and compilation of the package of documents relating to the energy performance contract;
- c) granting assistance to prepare financing application/request if financing is covered from sources other than those belonging to energy services companies. Commercial banks and the existing funds (MoSEEF, MoREEF, EEF, etc.) may serve for financing of energy services.

## *Financing ESCO projects*

The Moldavian Energy Efficiency Fund should be an instrument for financing of energy efficiency project implemented by ESCOs. The fund was established with an aim to finance through grants and loans projects for energy efficiency and renewable energy.

The international financial institutions as EBRD, World Bank etc. have developed financial facilities in Moldova for support investments in energy efficiency projects in Moldova. The Moldovan Sustainable Energy Financing facility (MoSEFF) was launched by the EBRD in order to support energy efficiency investments in Moldovan enterprises. Under MoSEFF the EBRD made a total of 42 million of EUR available for on-lending through local partner banks. The loans are in range from €10,000 up to €2 million (MoSEEF 2013).

The EBRD provided a loan worth 2 million EUR to Moldova as a part of the programme called the Moldovan Energy Efficiency Residential Financing Facility (MoREEF). It provides 35 million of EUR to finance energy efficiency projects in individual households or to housing associations as well as to energy savings and energy service companies (MoSEEF 2013).

## Barriers

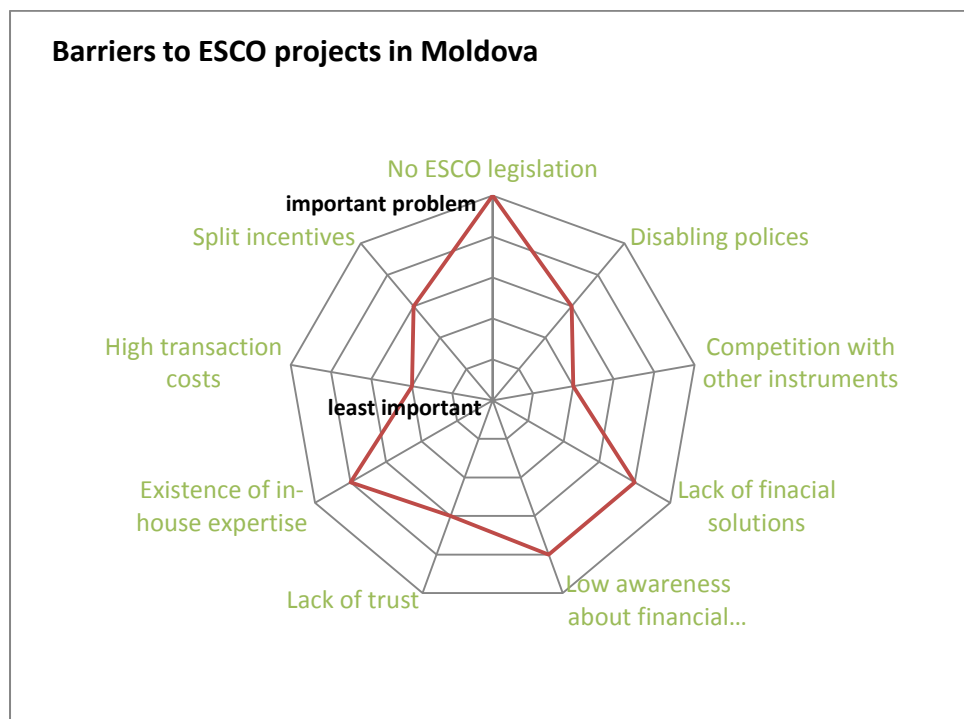
Lack of secondary legislation is one of the main barriers for development of ESCO model in Moldova. Full transposition of Energy Service Directive (now Energy Efficiency directive) should be priority in governmental policy. The Public Procurement Law shall be amended in order to enable public tendering of ESCO services. Therefore necessary is also amendment of Public Budget Law and adoption of new budget codes which will give precondition for ESCO investments in public buildings on national and municipality level (Government of Moldova 2013).

There is a risk of non-implementation of energy services during the first years, particularly, by the public sector, due to the reduction of budget allocations proportionally to the savings of means resulting from the project implementation. These provisions would deprive the Local Public Authorities from the financial savings, which could have served as coverage resources for the energy performance contract. In this context, the corresponding financial legislation might need amendments (Government of Moldova 2013).

The secondary legislation will enforce introduction for system for performance of energy audits and certification of buildings which are important for definition of base line consumption, calculation of savings and definitions of measures. The lack of energy data is also a barrier for ESCO model implementation.

Lack of expertise and a lack of in-house know how is one of the bigger barriers also for implementation of ESCO in Moldova. The public sector is not aware about energy efficiency and ESCO model.

In summary, the following graph illustrates the relative importance of barriers in Moldova:



## Conclusions and future expectations

The growth of Moldovan ESCO market can be expected in next period if the government undergone realization of the strategies and programmes for energy efficiency which were adopted last few years. Implementation of the first NEEAP should have significant impact on development of ESCO market, since it set of activities related to energy services and ESCOs. It is conectes also with preparation and implementation of secondary legislation which should include Energy Service Directive. Pursuant to the NEEAP, the Moldovan Energy Efficiency Agency should play very important role in promotion of Energy Services and ESCOs.

### Possible break-through points

- Implementation of the First NEEAP;
- Transposition of the Energy Service Directive in secondary legislation;
- Implementation of pilot projects in Public sector on ESCO concept;
- Increased awareness raising activity.

### Moldova in a snap-shot:

Number of ESCOs	none
ESCO market size and potential	no information
ESCO market trend	On the ground
ESCO association	none
Typical ESCO projects	No ESCO projects
Main type of contract	n/a

## Russian ESCO market 2013

The ESCO market in Russia is still in its early stage of development. The new energy efficiency legislation that has been implemented since 2009, has enabled rapid growth of ESCO market.

### Current ESCO market

The total number of ESCO companies that operating in Russia, is around 100 companies. They are distributed on the whole Russian territory. However, the most of them (around 50) are operating in Central Federal District (including Moscow). Most of them (50-75%) are small private companies with up to 50 employees, but there are also few public companies (Nadezhdin 2012).

ESCOs operating in Russia can be divided in the following types of companies (EC JRC 2012):

1. Small companies which originally were involved in energy auditing or turn-key engineering services and are now exploring the ESCO business.
2. Producers of metering equipment and automatic control systems and IT integrators who are starting to work on projects based on the EnPC principle.

3. ESCO-subsidiaries of utility companies which implement energy efficiency projects within their mother companies and have started implementing small pilot EnPC projects in the regions.

The “Federal Energy Service Company” – FESCO was established in July 2011 under supervision of the Ministry of Energy of Russian Federation (in accordance with Decree No.274). The main objectives of this public owned company are: creating condition for dynamic development of energy service market in Russia in accordance with best international practices, ensuring implementation of energy service contracts in public sector (on federal level) and defence industry and supporting the development of energy savings in Russian Federation through promoting of energy savings products. FESCO should provide technical expertise and monitoring of energy efficiency project implementation and unification and type design of engineering solutions (Garbuzova and Madlener 2012).

Although the FESCO was established in 2011 (by renaming the existing organization “Energocomplekt”) it has not implemented any project. It is still required to solve a number of organizational and financial issues for its effective functioning.

Prospective sources for financing of FESCO shall be: federal budget, private investors and others. In addition FESCO shall participate with at least 25% of share in Regional Service Companies (RESCO) that have been established as joint venture companies in Russian Federation with an aim to provide energy services on regional and municipalities level. FESKO can be one of the organizations who will be responsible for organization of finance for RESCO through interaction with commercial banks, private investors and other financial sources (Tulikov 2013).

At the present moment, at least 270 energy service contracts are signed (we consider the contracts with investment volume of more than 100 thousand rubles) totalling 3.9 billion rubles (86 million euros). In the budget sphere is made not less than 185 energy service contracts with investment volume of more than 100 thousand rubles total amount of 1.1 billion rubles (25 million euros), while in the private sector is made not less than 85 energy service contracts for the total amount not less than 2.8 billion rubles (62 million euros).

Russian public building sector, responsible for 9% of the total final energy consumption, has significant potential to save energy. Potential market for ESCO projects in public buildings and street lighting can be estimated in range from 140 - 590 million of EUR per year for the period 2012-2020 with required investment of 0,8-3,1 billion of EUR in 2020.

### *Types of ESCO projects*

The public sector has huge market potential in Russia since it is in very bad condition in terms of energy efficiency. Main characteristic of this sector are (Nadezhdin 2012):

- The energy consumption is constant and measurable.
- Standard technological solutions can be applied.
- Contracts can be signed on basis of public contract rules.

A large part of the energy service companies have experience of realization of energy service projects in the public sector. The share of projects in the public sector in relation to the total volume of the market from 2009 to 2013 amounted to almost 70 percent, while the share of attracted funds for these projects is only 28 percent. It is obvious that this area is perceived by investors as a pilot site, where it is used for small investment volume for the first few projects for the elaboration of relevant skills. Exceptions are

projects in the field of street lighting, which provided a sufficiently competitive market, remain the most attractive for investors, regardless of the scope of implementation (public or private).

Not less than 406,7 million rubles (9 million euros) is currently the volume of the market in the public buildings: institutions of culture, health care, educational institutions, sports etc. (individual heating unit, heat controlling). The remaining projects are implemented in the public housing stock, street lighting, in the area of modernization of systems of the pumping equipment, variable frequency drives and the introduction of other technologies that have a high potential for energy saving and improving energy. At least 347.5 million rubles (7 million euros) is the volume of the projects for street lighting.

In the private sector customers in energy service contracts are industrial enterprises, power engineering, communal services, the organizations engaged in the management of apartment houses (on behalf of owners of apartment houses). Despite the lack of requirements to the energy service contracts in the private sector (such as those set for the public sector), a large potential for saving energy (industry - 64 million tons of equivalent fuel, energy - 127 million tons of coal equivalent), the interest of the owners of industrial enterprises in reducing costs - the development of energy services in these areas is not so strong. At present it is known about the energy projects in industry and energy, in various stages of study, with an investment volume of more than 100 million euros. One of the reasons is that the time for preparation of projects in industry and energy, the degree of their development, investment and expertise of specialists in the proof of the effect require significantly more than in the budget sphere. Projects of such level are able to realize a greater extent only large specialized organization.

ESCOs have also potential in the residential sector in Russia. The main clients for ESCO companies should be homeowners associations and local authorities for the building owned by them. In private buildings the problem is the development of EPC with homeowners associations and complexity of payment schemes. The implemented projects in residential buildings are connected with heating system modernization and temperature control (Nadezhdin 2012).

The term EPC is used for different types of contracts. Some of these contracts cannot be considered 'real' EPCs. For example, some contracts are simply subcontracting contract under which the company implementing the contract does not take on a performance obligation, nor provides the project financing.

### *Regulatory factors*

The Russian President as a part of the governmental initiatives adopted in June 2008 the Decree No. 889 "Concerning some measures for improving the energy and ecological efficiency of the Russian economy" in which set a target to reduce the energy intensity of the Russian economy by 40% by the year 2020 compared to 2007. Therefore the issue of energy efficiency has gained significant importance. The "Energy strategy of Russian Federation up to year 2030" approved and adopted on 13 November 2009, defines the energy efficiency as one of the top priority of the Russian energy policy (Garbuzova and Madlener 2012).

The basis for introducing of ESCO model in Russian Federation is the Federal Law No. 261-FZ "On Energy Savings and Energy Efficiency and on amendments to certain acts of the Russian Federation" adopted on 23 November 2009 (Tulikov 2013).

Pursuant to this law, all state and local authorities, organization with state or municipalities interest, organization with regulation functions, public utilities companies for water, energy and fuel, industrial

enterprises with annual energy costs exceed 10 million RUB (around 250.000 EUR) as well as organizations that implement energy savings and energy efficiency projects are obliged to undergo energy audits at least once in five years period of time, starting from 2012. The other organization can carry out energy audits on voluntary basis. The energy audits have to be provided by Energy Audit Company (EAC).

The amendments in the Federal Law are related to the Budget code of Russian Federation in order to allow public agencies to pay for long term EPCs from savings on their utilities bills (Evans et al. 2012).

The Federal Law of July 2005 No.94-FZ "About placing of orders for delivery of goods, performance of works, rendering services and municipalities needs" was also amended. This Law will be replaced on with the new Law "On the contract system in the sphere of procurement of goods, works, services and state and municipalities needs" adopted in April 2013 and enter into force from 1 January 2014 (Tulikov 2013).

Other regulations related to ESCOs are (Tulikov 2013):

- The Regulation of the Government of Russia Federation of August 2010 No.636 "On Requirements to the terms of the energy service contracts and peculiarities of determining the initial (maximum) contract price (tender price) on energy services" and
- Order of the Ministry of Regional Development of June 2012 No.252 "On approval of model terms of service agreement, directed on the preservation and (or) increase of efficiency of utility services with the use of the common property in an apartment house".

The Public procurement Law makes EPCs legal within the public procurement system and sets out the basic rules for such procurement. These include the fact that ESCOs must finance the EPCs and that the EPC tenders will take place in only one stage process (Evans et al. 2012).

Currently the Ministry of economic development of Russia jointly with the stakeholders and authorities develop a plan of measures on improvement of state regulation in the field of provision of energy services. It is expected that the plan will be approved in the end of spring 2014.

### *Market factors*

The ESCO market shall grow in the next five-six years rapidly since the Russian Government set it as one of the priority in his program for reducing the intensity of Russian economy by 40% until 2020. Creation of a super ESCO – FESCO and regional ESCOs – RESCOs as well as creation of a specific financial institution for financing of the ESCOs should create conditions for faster development of ESCO services. The government is aware of the barriers that exist and tries to overcome them through improvement of the legislation (e.g. Introducing of tax exemption, transfer of property, guarantee of return of investments in residential sector) and through establishment of financial institutions, which should develop financial products even with an interest rate compensated from the federal budget.

### *Information, awareness and demonstration*

In order to promote the ESCO model in all regions of the Russian Federation the Russian Energy Agency decided to implement the projects "Energy service in the budget sphere in the region of the Russian Federation". The project will be implemented in several steps starting with selection of pilot regions of Russian Federation (municipal entities) and identification of key bodies (on local level) responsible for project implementation. In the next phase, after preparation of feasibility studies, preliminary design, organizational schemes and pre-investment documents for energy service projects should be developed.

The next steps shall be: planning of the budget for energy service contracts and definition of main terms of energy service contracts, development of tender documentation, placing of order for energy services, implementation of energy measures and monitoring and verification of energy savings (Tulikov 2013).

In 2012, the Russian Energy Agency officially translated the International Performance Measurement and Verification Protocol (IPMVP), which is currently available on the website of the developer - EVO. In 2014 it is planned to develop national standards for measurement and verification in Russia.

### *Financing ESCO projects*

Pursuant to the Russian Public Procurement Law, ESCOs must include financing of projects as a part of the services under EPC. It means that ESCOs must take the financial risk for the project and carry out the financing. In the case of smaller ESCOs it has an impact on the working capital (Evans et al. 2012).

It was planned to create a special financial institution - the Energy Financial Agency (EFA). For these purposes were allocated 400 million rubles by the Russian Federal Energy Agency. The other partner was the Vnesheconombank.

The following model of the functioning of the EFA was expected: EFA should take a risk, and ESCOs should pay for the notes in instalments. ESCOs will sale the promissory note at a discount rate to commercial banks and they will receive the funds from bank necessary for purchasing of equipment and materials as well as for implementation of energy efficiency projects. The EFA will repay the promissory note to commercial bank (Tulikov 2013).

However, in 2013, the Russian Government had refused creation of this institution. It is currently assumed that instead of the EFA, should be established several regional financial institutions.

Financing remains a key problem for ESCOs in Russia. Russian banks are unfamiliar with the ESCO concept and thus reluctant to provide project finance to ESCOs while ESCOs have balance-sheet constraints to take on asset-backed loans. This acts as a barrier to further market growth.

Some state-owned banks have become active in the ESCO market by establishing ESCO subsidiaries. Gazprombank has set up its own captive ESCO called Gazprombank EnergoEffect. Gazprombank EnergoEffect currently has a small portfolio of projects in industry, street lighting and the utility sector. Sberbank has set up a subsidiary called Sberenergo Development which is looking into become active on the ESCO market.

Finally, the European Bank for Reconstruction and Development provided a seven-year EUR 20 million loan to Fenice RUS LLC in 2013.<sup>138</sup> The proceeds of the loan will be used by Fenice RUS to fund the investments it will have to make under EnPCs with Russian industrial clients.

### *Barriers*

Although some of the legal barriers for ESCO development have been overcome through the new adopted legislation, there still legal barriers that constrain the rapid growth of the Russian ESCO market, which has a significant potential. Further development of ESCOs legislation will be crucial for development of the ESCO market in Russian Federation.

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<sup>138</sup> <http://www.ebrd.com/pages/news/press/2013/130130c.shtml>

Some of the existing barriers are (EC JRC 2012):

- Lack of trust. Financial institution and public sector are not confidential in ESCO concept and in private ESCOs. Industrial client prefer to undertake the projects themselves instead of outsourcing these to ESCOs;
- High project development costs for especially for those projects that are tendered under public procurement law;
- Lack of technical expertise and lack of experience for implementation and preparation of projects based on ESCO concept and tender documentation for EPC;
- Rather long period of project implementation;
- High risk of EPC implementation in public sector;
- Lack of methodology for selection and evaluation of energy projects as well as for implementation of system for monitoring, evaluation and verification of energy savings;
- Access to finance: ESCOs are struggling to get access to finance for implementing their projects. Russian commercial and state banks are reluctant to provide project finance to ESCOs while the appetite for asset-backed loans is very low among ESCOs. The potential for expansion of ESCO services is severely constrained in the absence of project finance opportunities.

The necessary energy data for determination of basic consumption and energy savings will be provided after conduction of energy audits, which are now mandatory for public sector buildings and for public enterprises and installation of energy consumption meters. The regions and sub-regional entities have to prepare list of inventory for their facilities and energy certificates for their buildings (Evans et al. 2012).

In summary, the following graph illustrates the relative importance of barriers in Russia:



### *Conclusions and future expectations*

Implementation of the new Energy Efficiency Law and legislation related to Energy Services and Energy Contracts should have positive influence on development of the ESCO market in Russia. In the same time achievement of the indicative targets for reducing of energy intensity of Russian economy and

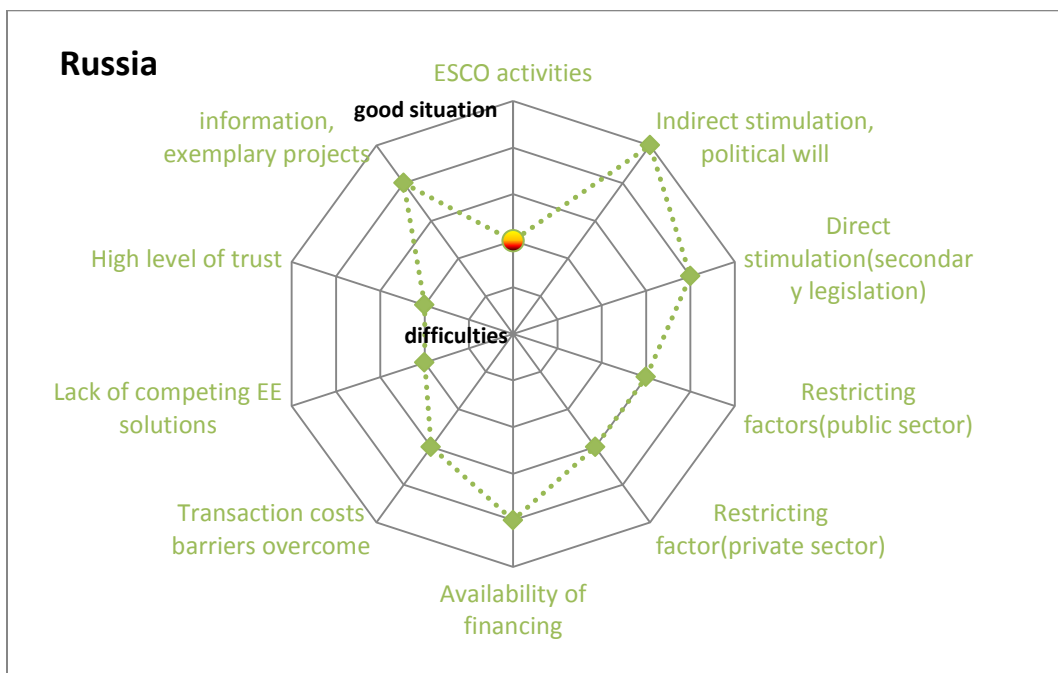
reducing the energy consumption in public buildings set in Energy strategies of the Russian Federation will put pressure on Russian public sector and industry to increase implementation of energy efficiency and energy saving projects.

**Possible break-through points**

- Implementation of the Energy Efficiency legislation for ESCOs;
- Improvement of Public procurement procedures;
- Creation of federal or regional EE funds;
- Increased awareness raising activity and realization of pilot projects;

The financing of ESCO projects (at least in public sector) will be ensured if the EFA will be developed as full operational Fund which is able to attract International Financing and Private investments for energy projects. In the same time the Ministry of Energy and Russian Energy Agency together with other federal bodies will work on promotion of ESCO as a model through implementation of pilot projects in all regions in Russia.

The following graph shows the key features of the Russian market:



**Russia in a snap-shot:**

<b>Number of ESCOs</b>	Up to 100
<b>ESCO market size and potential</b>	market size € 100 million/ year Market potential: € 2,8-7 billion
<b>ESCO market trend</b>	Growth since 2009
<b>ESCO association</b>	None
<b>Typical ESCO projects</b>	Refurbishment of building envelope. External lighting and street lighting Rehabilitation of district heating systems Replacement of pumps and installation od CHP
<b>Main type of contract</b>	Shared savings contracts

## Ukraine ESCO market 2013

The ESCO market in Ukraine is still not developed although the first 10 ESCO companies were established in Ukraine in period 1997-1998. The economic growth from 2011 resulted with larger demand for energy services in industry and energy sector in Ukraine.

### *Current ESCO market*

The number of ESCO companies increased and in 2012 in Ukraine were active around 30 ESCO companies. The most of the ESCO companies in Ukraine are small sized private owned companies. On the market are also operating several public ESCO companies, which are owned by local authorities or by public enterprises (EC JRC 2012).

The first public ESCO company, the “Ukraine Energy Service Company” (UkrESCO) was established as a Joint Stock Company in 1998 pursuant to the dedicated Loan Agreement between Ukraine and EBRD (Novoseltsev, Kovalko, and Evtukhova 2013).

As of 2012 the potential size of the ESCO market was estimated around €100 million in the building and in industry sector.

In 1999, five ESCO companies established the Association of Energy Service Companies of Ukraine. The main objective of this association was to encourage better cooperation among private ESCOs, public sector, financial institution and the business sector. After a successful start and few realized projects, the number of members increased to 37 companies. However after 5 years the Association ceased to exist (Stepanenko n.d.).

In 2013, the new Ukrainian ESCO association was established by 6 ESCO companies. The main objective of the association is to initiate municipal and regional projects based on ESCO model.

### *Types of ESCO projects*

The most frequently energy efficiency projects implemented by ESCO companies in industry are projects related to improvement and reconstruction of heat supply systems, reconstruction and modernization of compressed air production systems, modernization of pump stations, industrial process optimization and construction of cogeneration plants. Rarely covered are projects regarding improvement of installation for industrial cooling and waste heat recovery (Stepanenko n.d.).

Energy audits constitute the basic services provided by ESCO companies in Ukraine. There is large demand on audits in industry as well as in the building sector. The costs for this kind of services are low but they are very important for development an ESCO market. There about 30 companies able to carry out energy audits professionally (Stepanenko n.d.).

The history of ESCOs in buildings started in 2001. Since 2001 around 100 energy efficiency projects have been realized in residential and public buildings. The projects were implemented mainly with the help of grants provided by international financial institutions and with the technical assistance of donor organizations (such as UNDP, USAID, and the EU). The realized projects were successful (achieved up to 40% heat energy savings) and demonstrated the ESCO concept. The main problem for implementation of EE in multi apartment buildings is not established co-owners associations or condominiums. The ESCO companies do not like to conclude contracts for EE projects with large number of owners/clients (Novoseltsev, Kovalko, and Evtukhova 2013).

Majority of the EE projects have been related to improvement of heat supply systems for public and residential buildings, since the large number of the buildings in Ukraine are connected to the district heating systems, which are in very bad condition and need large reconstruction and modernizations. The heat supply sector is stuck in a cycle of financial and physical decay with acute and chronic consequences for service quality and reliability (Stepanenko n.d.).

Some of the public ESCOs were established in order to provide energy services for several municipalities and to serve as pilot regions for demonstration of ESCO projects in Ukraine.

The “ESCO Rivne” was established as a closed joint stock company in November 2003. The financing of the projects was ensured through the grant received from GEF in the amount of \$5.3 million. The pilot projects were implemented with a technical assistance of UNDP in the period 2003 - 2011. The role of ESCO Rivne in this period was to design, realise and finance all necessary and cost effective investments in the municipality's buildings and in the district heating facilities and network of Municipality of Rivne through energy performance contracting (EPC) or other applicable contracts. In addition in this period it was developed a template for an EPC. The ESCO Ravne should also have disseminated the achieved results to other municipalities in Ukraine through workshops and seminars. The programme has had large impact (environmental, social, technical and financial) to final beneficiaries. The new district heating system increased the living condition for around 300.000 inhabitants in Rivne as well as for around 1000 beds in two Municipality hospitals (O’Brian 2012).

### *Regulatory factors*

Ukraine – as a member of the ECT – is obliged to transpose and to adopt EU legislation in the field of energy savings, energy services and energy efficiency. Ukraine started this process several years ago, but it is still not completed.

The State Agency for Energy Efficiency and Energy Saving (with the support of World Bank at initial stage) developed a draft National Energy Efficiency Action Plan (NEEAP). The indicative target of this action plan is to ensure energy saving of 9% of the average final energy consumption until 2020. The first NEEAP for Ukraine is still not adopted.

The State Target Economic Program on Energy Efficiency 2010-2015 was adopted in March 2010 to implement the goals of the Energy Strategy, and supersedes the State Complex Program of Energy Saving, which come to an end in 2010. It has as a goal reducing the energy intensity of GDP by 20% compare to 2008, reducing dependence on imported energy sources (particularly natural gas, where substitution to the tune of 15 billion m<sup>3</sup> is the expectation) and increasing the use of renewable resources by a factor of five. Other expected outcomes from the programme are: reduction of 15%-20% of the level of greenhouse gas emissions and reduction of 50% of the heat losses from residential and public buildings.<sup>139</sup>

On 12 January 2012, the Draft of the Law “On energy efficiency in residential and public buildings” was passed to the Parliament Committee on Construction, Urban Development and Regional Policy by the Cabinet of Ministers of Ukraine. The draft Law was adopted by the Verkhovana Rada in May 2012, but its consideration has been postponed. This Law will provide minimal requirements and standards for EE

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<sup>139</sup> Source: [http://www.energyagency.at/fileadmin/dam/pdf/veranstaltungen/Vortrag\\_Kisimes-Ukraine.pdf](http://www.energyagency.at/fileadmin/dam/pdf/veranstaltungen/Vortrag_Kisimes-Ukraine.pdf)

in buildings and will envisage energy certification and energy auditing of buildings. Most of the requirements from EU EPBD directive should be transposed through this Law.

In 2013, Ukrainian parliament received two versions of the law on ESCOs. This law shall regulate ESCO activities in public and municipal sectors, particularly is related to renovation of public buildings (schools, hospitals, kindergartens etc.). This law should create a new market for energy services and ESCOs and will cover 38.000 public buildings in 26 regions of Ukraine (EC JRC 2012).

### *Market factors*

The energy dependence of Ukraine is very high since 70% of the consumed natural gas and almost a half of oil are imported from Russian Federation. It pose a considerable risk for energy security of the country (as was proven during the winters 2006-2007 and 2008-2009 when the interruption of Russian natural gas took place after disputes over the gas price) (Maissner, Naumenko, and Radeke 2012).

Industry, residential property, utilities and the power sector have the lowest energy ratings and therefore will have the largest potential for increased energy efficiency. These sectors possess outdated technologies along entire value chain. The energy intensity of Ukrainian economy is as much as four times higher than in EU 28 and is also much higher compare to other developed regions in Asia and CIS countries. This partly reflects interference in ownership and pricing in these industries which in turn reduce competitiveness. (Maissner, Naumenko, and Radeke 2012)

Therefore the demand for EE projects is much higher in industry and will remain as a major source for ESCO projects in Ukraine in next years.

The building sector in Ukraine holds also significant potential for improved energy efficiency and represents around 40% of the total final energy consumption. A significant part of residential and public buildings was built during the period of mass construction period 1960 – 1991 and only 7,4% of the building stock was constructed after 1991. Therefore most of the buildings need urgent renovation in terms of energy efficiency improvement (Stepanenko n.d.).

### *Awareness and trust*

Information campaigns for public awareness rising for Energy Efficiency have been realized in the framework of almost all projects implemented by IFIs (EBRD, WB ect.) or by other donor organization as: GIZ, USIAD, UNDP. e.g. the UNDP Rivne ESCO project had as a project component the organization of workshop and training events on ESCO and dissemination of results from implemented ESCO project to raise awareness among local authorities, public enterprises and households for ESCO.

In the framework of the USAID project "Municipal Heating Reform Project in Ukraine" implemented from 2009 to 2011 35 demonstration projects have been implemented in 11 cities of Ukraine. The findings of the demonstration projects are relevant also for the ESCO business since they were implemented in variety of types of buildings and in buildings with different ownership structure: public and private. In implementation of the projects were included also local ESCO companies, which provided energy audits or participate in preparation of Municipal energy plans (Hankinson et al. 2012).

In 2012 EBRD started the pilot project for development of an Energy Performance Contracting pilot project in public buildings (schools and kindergartens) in City of Dnepropetrovsk. The project will be implemented with the Municipal Energy Managing Enterprise. The Project will support the creation of public sector demand for ESCO energy efficiency projects (in particular EnPC), while supporting private

sector ESCOs with finance to supply this demand. The Company will competitively tender on behalf of the municipality the demand-side ESCO energy efficiency projects on the basis of EnPC. The Project will be a first step to demonstrate benefits of private ESCO services to the public sector with a view of a later national roll-out of EPC projects. Two tenders with an investment amount of roughly EUR 10 million in total are prepared and are supported with an EBRD loan and tendering is anticipated in early 2014. Further tenders are being prepared (EBRD 2013).

### *Financing ESCO projects*

Third part financing is still a new type of service in Ukraine, which is yet to be mastered by ESCO companies and financial institution. EPC is still not in place and most of the companies do not use such type of contracting.

The financing of EE projects in Ukraine mainly has been provided by loans received by IFIs such as EBRD, IFC, GEF, WB and distributed through commercial banks. No public energy efficiency revolving fund exists.

The Ukraine Energy Efficiency Programme (UKEEP) is a credit facility developed by EBRD realized through the Ukrainian Participating Banks (Ukreximbank and Megabank), which provide debt financing to private small and medium sized enterprises for industrial energy efficiency and renewable energy projects. Only private owned companies are eligible for UKEEP financing. UKEEP could provide up to 2,5-3 million USD in loan financing. The loans have competitive terms and conditions, but the precise levels depend on the borrower and the negotiations with Partner Bank. In the period 2007 – January 2013 75 projects were approved with a total amount of 112 million USD. Typical projects are: rehabilitation of boilers, replacement of old gas boilers with condensing boilers, switch from electrical heating to fuel based district heating, energy management system or building management systems, etc. (UKEEP 2013).

Lending for residential sector is also very limited in Ukraine, because of several barriers which limited the market for financing of EE measures in residential building sector such as: high interest rate and local reserve requirements from local banks for lending to home owner associations, limited number of local financial institutions, lower energy tariffs for residential sector and perceived lack of business potential in the residential sector in Ukraine as well as the local currency lending constrains for IFIs, limiting ability to lend in UAH.

The most of state or municipal owned enterprises as district heating systems operators are facing with insolvency and cannot conclude ESCO contracts.

### *Barriers*

The development and implementation of legislation is necessary to create economically sound conditions for attracting domestic and foreign investments in EE projects. Although the new Law on procurement is adopted in 2010, the public procurement rules and procedures are inflexible and complex and have to be improved. The ESCO model is not recognized by authorities as an individual business model providing Energy Efficiency services, but as a contract for delivery of goods or consulting services. (EC JRC 2012)

Contractual arrangement specific to ESCO project are not in line with national regulations. The standard EPC contract template shall be developed as well as public tendering procedures based on EPC shall be prepared (EC JRC 2012).

Municipal budgeting rules make difficult for municipalities to borrow funds for EE projects, because the governmental rules preclude the multi years budgeting for municipalities. The multiyear budgeting is required for municipalities to enter into long terms contracts with ESCOs.

Lack of financial products and lack of professional experience by commercial banks for financing of EE projects is also indicated as an important barrier. They perceive lack of business potential especially in residential sector. The Commercial banks offer the credits with high interest rates and high collaterals and therefore the potential clients from industry or residential sector are not interested in borrowing. The payback period is very high due to low energy tariffs for households.

There is lack of information and/or skills in industry sector to enact technical options to achieved energy efficiency. The negative externalities of global and local pollution are not reflecting in the costs of energy use. Lack of predictable and transparent energy polices, uncertainty about future development of prices for natural gas and electricity are barriers for industrial enterprises to enter into long term contracts with higher investments.

Lack of reliable energy consumption data in industry or in residential sector makes it difficult to establish baseline consumption as well as provide data on energy savings.

In summary, the following graph illustrates the relative importance of barriers in Ukraine:



### *Conclusions and future expectations*

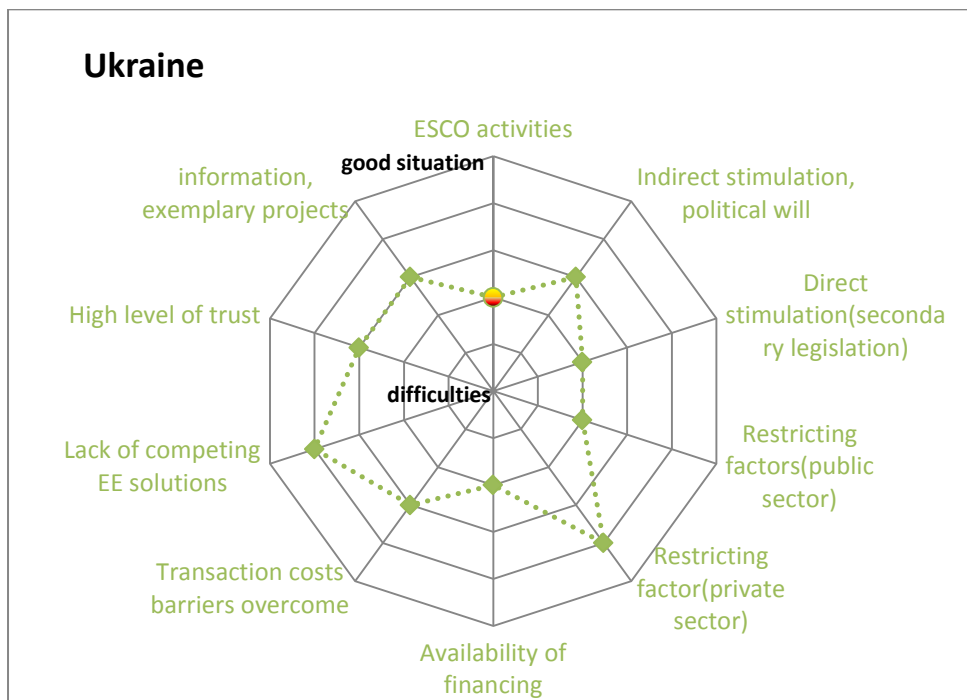
The crucial factor for much faster development of the Ukrainian ESCO market will be new legislation for EE and ESCOs, which will create the legal basis for implementation of EE projects on ESCO model. It is expected that the laws will be adopted by Ukrainian Parliament in 2014. Also implementation of EE polices shall lead to increase investments in energy efficiency projects.

**Possible break-through points:**

- New legislation for EE and ESCO;
- Improvement of public procurement rules;
- Establishing of public funds for Energy Efficiency;
- Increased awareness raising activity;
- implementation of local (SEAPs) and national EE plans (NEEAP);

Implementation of national and level EE plans and programmes (as NEEAP and SEAPs) should be contributed to faster development of the ESCO market in Ukraine. Currently 49 municipalities (including Kyiv and Lvov) signed the Covenant of Mayors initiative, and 16 of them already prepared and submitted the SEAPs. The ESCO model can be used for financing and implementing of energy efficiency projects, especially for renovation of heating supply systems and public buildings.

The following graph shows the key features of the Ukrainian market:



### Ukraine in a snap-shot:

<b>Number of ESCOs</b>	Around 30
<b>ESCO market size and potential</b>	€ 100 million / year
<b>ESCO market trend</b>	Increased since 2011
<b>ESCO association</b>	several
<b>Typical ESCO projects</b>	Rehabilitation of energy supply system in industry, installation of on-site power generation (co-generation, micro cogeneration); reconstruction of district heating systems and street lighting in cities. Space heating, air conditioning, control and automation, in door lighting in residential buildings. Refurbishment of building envelope.
<b>Main type of contract</b>	BOOT, very few EPC contracts

# Conclusions

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During the past ca. 3 years most of the European ESCO markets have grown and developed their complexity including a higher institutionalization. Thus the average European ESCO market has improved. Development is also observed in case of the non-EU countries covered in the report.

There are more ESCOs with more projects in 2013 than there were in 2010, and ESCOs have foraged in areas where they were rare before. Nevertheless, the markets are far from reaching their potential. There are only few mature markets, such as Germany, the Czech Republic, France, and Austria. Even these can expect to go through significant growth in the future. The ESCO survey carried out during 2012-2013 revealed that in spite of the financial crisis, the ESCO sector could kick-off in several typical non-ESCO countries, such as Denmark and Spain. Decrease or deterioration of the ESCO sector was rare during the observed period (only Hungary experienced a clear decline, while the change in Austria and Sweden are debated).

EPC and other alternative and locally tailored contracts have increased their popularity. The markets are driven as much by market forces (increasing energy prices, growing interest from potential clients, development of partnership between players on the demand and supply side, as well as between ESCOs and subcontractors), as by dedicated policy measures, regulations and financial solutions. Interestingly the list of drivers is similar in many countries, but the leveraging success factor (and leading barrier) is diverse.

Both the general energy efficiency market and the ESCO markets are expected to grow further in the future. There are several countries where experts foresee a near-future ESCO boom.

## Overall development of the ESCO markets during 2010-2013

The key conclusions of the previous ESCO status reports were that the ESCO markets of the European countries vary widely in terms of development and size, as well as in features and frameworks. While this statement is still accurate on the whole in 2013, the markets have more in common than before.

First of all, **almost all of the European markets have grown since 2010, and only few of them remained stable or declined**. The growth has unfolded in size, referring to a larger number of companies/projects, as well as in strength reflected in market volume, more developed market structure, availability of institutions, or wider market coverage. The growth has been largely fuelled by the growth of demand, i.e. an expansion of interest from the side of potential clients (e.g. the public sectors in the Czech Republic, Denmark, the UK), who look forward to alternative financial and managerial solutions of energy renovations. Nevertheless, there are countries where crucial regulatory drivers, information dissemination and financial solutions were introduced during the observed period (see section on drivers below). Interestingly, growth could be realised even in countries where the regulatory framework poses a problem for ESCOs (e.g. in Italy, Greece, the industrial sector of Slovakia, etc.).

Table 4, Table 5, and Table 6 show the sizes and relevant changes of every ESCO market in our study.

**Table 4. The development status of the ESCO markets in 2013, and the change between 2010 and 2013.**

	<b>development status*</b>	<b>change since 2010**</b>
<b>EU</b>		
Austria	good	stable (or slowly decreasing)
Belgium	moderate	slow growth
Bulgaria	preliminary	unchanged
Croatia	preliminary	slow growth
Cyprus	not existent	unchanged
Czech Republic	good	slow growth
Denmark	moderate	strong growth
Estonia	not existent	unchanged
Finland	moderate	unchanged
France	good	strong growth
Germany	good	slow growth
Greece	preliminary	slow growth
Hungary	preliminary	strong decrease
Ireland	preliminary	strong growth
Italy	moderate	slow growth
Latvia	preliminary	unchanged
Lithuania	preliminary	unchanged
Luxembourg	preliminary/not existent	unchanged
Malta	not existent	unchanged
The Netherlands	preliminary	slow growth (or slow decrease)
Poland	preliminary	slow growth
Portugal	preliminary	slow growth
Romania	preliminary	slow growth
Slovakia	preliminary	slow growth
Slovenia	preliminary	slow growth
Spain	preliminary	strong growth
Sweden	preliminary	slow growth (or slow decrease)
United Kingdom	good	balanced growth
<b>Other European countries</b>		
Norway	preliminary	slow growth (but volatile)
Switzerland	preliminary	slow growth
<b>Southeastern Europe</b>		
Albania	not existent	unchanged
BiH	preliminary	slow growth
FYR Macedonia	not existent	unchanged
Kosovo	not existent	unchanged
Montenegro	not existent	unchanged
Serbia	preliminary/not existent	stagnation (or slow growth)
Turkey	preliminary	slow growth
<b>Eastern Europe and Transcaucasia</b>		
Armenia	preliminary	slow growth
Belorussia	preliminary/moderate	n/a
Georgia	not existent	unchanged
Moldova	not existent	unchanged
Russia	preliminary/moderate	slow growth (or slow decrease)
Ukraine	preliminary/moderate	slow growth

\* The development status reported in this table represents a qualitative evaluation performed by national experts based on the number of active companies, the market volumes and potentials registered in the countries.

\*\* Based on the JRC survey 2012-2013. If answers from respondents varied largely, the alternative views are shown in brackets.

**Table 5. Number of companies and market volumes in the EU countries, Norway and Switzerland.\***

	number of ESCOs		market size		market potential
	in 2010	in 2013	in 2010	in 2013	estimated in 2012
<b>EU</b>					
Austria	over 50	over 50	n/a	€15-20 m	n/a
Belgium	10-15	10-15	n/a	€5 m	€500 million-several billion
Bulgaria	few	7-12	€6 million	€33 million (?)	€500-900 million
Croatia	2	10	€10 million	€100 million	n/a
Cyprus	0	0	n/a	0	n/a
Czech Republic	8-10	20	€2-4 million	€10-20 million	€100-500 million
Denmark	10	15-20	€8-25 Million	€140-150 million	€1 billion
Estonia	2	2 (3?)	n/a	n/a	€100 million (renovation of buildings)
Finland	8	5-8	€4 million	€10 million	€200 million
France	100	350	€4-5 billion	€75-100 m for EPC, €3.2 b/year for all	€250-500 m for EPC and €5 billion for all ESCO projects
Germany	250-500	500-550	€1,7-2,4 b/a	€3-4 billion, of which €150 million is EPC	€20-30 billion
Greece	2	5	n/a	0	€5 million
Hungary	30	10	n/a	n/a	n/a
Ireland	15	ca. 30	n/a	n/a	n/a
Italy	100-150	50-100	€275 M in 2008; €387 M in 2009	€500 million	€1-10 billion
Latvia	5	8	€1-1.5 million	€2-3 million /year by one of the 7 ESCOs	€100 million-€10 billion
Lithuania	6	3-5	n/a	n/a	n/a
Luxembourg	3-4	3-6	0	0	€5.1-6-2 million
Malta	0	0	0	n/a	n/a
Netherlands	50	50	n/a	n/a	€30 million/year
Poland	3 to 10	30-50	€5 - €10 million/year (current value)	EUR 10-25million (2011) (annual turnover)	€25-75 million annually (economic potential)
Portugal	10 to 12	100	€10-30 million	n/a	€100-200 million
Romania	14	15-20	ca. €50 million	n/a	n/a
Slovakia	5	6-8		n/a	n/a
Slovenia	2-3	5-6	n/a	€3million	€15 million
Spain	15	20-60	€100	€300-400 m/yr	€1.5-2-6 b
Sweden	8		€60-80 million	€60-80 million	€300 million/yr
United Kingdom	20	30-50	€400 million	n/a	n/a
<b>Other European countries</b>					
Norway	5	10	€25 million	n/a	n/a
Switzerland	76 (7-10?)	6	€170-350 m/year (uncertain)	uncertain estimates	

\* Note: please refer to the country texts for the content of these values. They are robust and rarely comparable because of the content – in case of the number of ESCOs differences are due to the definition of these companies in the given context, while in the case of the market sizes, sources include different parts of the value chain and/or calculate or estimate these in a variety of ways.

Table 6. Market sizes from the point of number of companies and market volumes in non-EU European countries.\*

	number of ESCOs		market size		market potential
	in 2010	in 2013	in 2010	in 2013	estimated in 2012
<b>Southeastern Europe</b>					
Albania	0	0	n/a	n/a	n/a
BiH	n/a	5	n/a	n/a	n/a
FYR Macedonia	1	0	n/a	n/a	n/a
Kosovo	0	0	n/a	n/a	n/a
Montenegro	0	0	n/a	n/a	n/a
Serbia	10	3-5	n/a	n/a	n/a
Turkey		30**	n/a	n/a	n/a
<b>Eastern Europe and Transcaucasia</b>					
Armenia		11	n/a	n/a	n/a
Belorussia			n/a	n/a	n/a
Georgia	0	0	n/a	n/a	n/a
Moldova	0	0	n/a	n/a	n/a
Russia		up to 100	n/a	€ 100 million/ year	€ 2.8-7 billion
Ukraine		around 30	n/a	€ 100 million/ year	n/a

\*Note: please refer to the country texts for the content of these values. They are robust and rarely comparable because of the content – in case of the number of ESCOs differences are due to the definition of these companies in the given context, while in the case of the market sizes, sources include different parts of the value chain and/or calculate or estimate these in a variety of ways.

\*\* Indicates the number of EVD companies with state authorization (see country chapter on the definition of EVD).

The geographical distribution of ESCO companies and projects is uneven within countries. For example in Germany, the ESCO market is underdeveloped in the east, except for Berlin, while well-developed in the west. In Austria, a few regions and cities such as Styria, Salzburg, Tyrol and the city of Vienna, are leaders in using ESCO projects.

Many of the ESCO markets have not only grown in size, but have started to show a **structured**, more **mature** format. One or more of the following market qualities have been established during 2010-2013 in the process of maturation:

- the markets are becoming demand driven,
- policies acknowledge and support the ESCO solution,
- facilitators<sup>140</sup> exist and are effective;
- ESCO associations have been set up or are planned,
- model contracts, standards and/or intensive information dissemination are developed and carried out by third parties/market facilitators;
- participation of a wide array of companies, including consultants, small enterprises, large ESCOs, utilities, etc., indicating an open and competitive market.

The following table summarizes the existence of certain indicators of maturity, namely the market driver (demand, supply and/or facilitators), the existence of ESCO associations and the involvement of utilities and energy suppliers in the market (see Table 7).

<sup>140</sup> see more on facilitators under the relevant heading below

**Table 7. Institutionalization of ESCO markets in the EU Member States, Norway and Switzerland.**

	<b>driver*</b> (D-demand; S-supply; F-facilitators)	<b>association</b> (year of establishment if known)	<b>engagement of utility (supply, distribution, etc.) companies</b>
<b>EU</b>			
Austria	D	yes (2005)	yes, starting
Belgium	F (D)	yes, two	yes
Bulgaria	S	no	n/a
Croatia	S	no	n/a
Cyprus	F	no	no
Czech Republic	S & F	yes (2011)	yes, some
Denmark	D	no	yes
Estonia	none (S)	no	no
Finland	F (D)	no	no
France	F (D)	yes, several	yes
Germany	D & F	yes, several	yes and increasing
Greece	S	no	no
Hungary	S	no	yes
Ireland	F	no	yes
Italy	D	yes, several	yes
Latvia	S	no	starting now
Lithuania	S	no	no
Luxembourg	D	no	n/a
Malta	none	no	
Netherlands	S	yes	
Poland	S	no	yes
Portugal	D in industry, F in public	yes (2011)	starting now
Romania	F	yes (2013)	starting now
Slovakia	D	no (under discussion)	yes
Slovenia	S	no	starting now
Spain	S	yes, several	some
Sweden	D	yes (2006)	yes
United Kingdom	<b>D</b>	<b>yes</b>	<b>yes</b>
<b>Other European countries</b>			
Norway	<b>S</b>	<b>no</b>	<b>n/a</b>
Switzerland	S	yes	yes

\* The market players (such as energy service supply or demand sides or independent facilitators) that act as the main actors or drivers of the ESCO market growth/transformation are indicated in this column. They are mostly found to successfully perform promotion, information dissemination or other activities with a positive effect on the market. In some countries there may be different driver types (indicated in brackets in case their role is less relevant compared to other types). The key players may differ depending on the geographical region or the demand sector. Furthermore, the situation in a country can change drastically within months or years. The information reported in the table refers to the market situation as of the end of 2013 and should be referenced with caution for the reasons just mentioned.

### *Types of ESCO firms*

When markets have grown, the new entrants have been mainly either small engineering/construction firms (e.g. in France, Ireland, Slovenia, the UK) and/or utilities opening up their businesses towards energy services. These energy companies are rarely interested in earning an extra profit from their ESCO projects directly (although that can be the case), and they are either lead by regulations on energy

efficiency obligations<sup>141</sup> or DSM programmes (e.g. Denmark, Latvia, Slovenia), and/or they offer energy services to attract new customers and increase loyalty of current ones (e.g. in Latvia, Austria, Denmark, Portugal). In Germany energy supply has been moving towards decentralised energy supply, and local and regional energy companies appeared on the energy services market in order to fulfil increasing interest from customers (MPW Institute LLC 2013).

In the EU neighbouring countries, small local engineering companies and construction firms are the most common ESCOs. Furthermore, the involvement of agencies and special vehicle (SPV) companies supported by international donors is typical. These latter ones provide general support for the market (financing, training, lobbying, etc.), while also implement (pilot) projects. They can be considered the equivalents of public ESCOs in European Member States. For example the Ukrainian and Moldovan markets were set up through these dedicated “ESCO agencies”.

The number of public ESCOs has also increased in Europe. Public ESCOs participate for example in the markets of Switzerland and Croatia. In Russia, FESCO was established in July 2011 under the supervision of the Ministry of Energy. There are several public ESCOs in Ukraine, the first one, UkrESCO, was established already in 1998. The public ESCO model used by Fedesco, Infrac and Eandis in Belgium has been referred to as an “integrating” organisation<sup>142</sup>. They contract public entities (clients) directly, and then subcontract the tasks to smaller, private suppliers on a competitive basis. Hungary and France are in the process of introducing a public ESCO at the moment.

It is interesting that Energy Performance Contracting is provided by different size of companies depending on the country. The few international big giants dominate the EPC market in Germany, Portugal, Belgium and mostly in Denmark and Sweden. However small companies can offer EPC in France, as opposed to the chauffage contracts generally carried out by large firms.

ESCO projects may even be carried out by a community of residents and the local businesses. The Meadows Ozone Energy Services Limited (MOZES) replaces the traditional energy suppliers in the region of Nottingham. The MOZES ESCO is responsible for financing, installing, operating and maintaining PV systems that supply the residents – who own the company – with renewable electricity via energy supply contracts (Hannon, Foxon, and Gale 2013). Similar idea has been advocated in Denmark by some municipalities (Jensen, Nielsen, and Hansen 2013), and the city of Győr in Hungary plans to transform their ESCO project (Raab-SOL) into a community lead district renovation, where the ESCO would be a facilitator rather than the implementer (Grosser Lagos 2013).

### *Facilitators and associations*

The **role of facilitators has not been duly acknowledged** in the development of ESCO markets (Bleyl et al. 2013). In a well-developed ESCO market, the buyers look for solutions to implement energy saving measures and/or property renovations and improvements. In this process they should consider the ESCO contract as an alternative to for example own implementation, leasing, outsourcing, etc. However, ESCO solutions are complex and are difficult to evaluate and compare – especially with alternatives. In most countries potential clients are not even aware of the existence of ESCOs. Bleyl et al. (2013) collected a list of tasks that facilitators can and do perform. The list includes overall information, amplification of the use of the ESCO concept, helping interested customers of the public sector to

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<sup>141</sup> The role of EEOs in the launch of ESCO projects has been advocated by some, and negated by others. There is no straightforward link. See more under “Success factors” below.

<sup>142</sup> Singh et al. (2010) have applied the term “super ESCO”.

prepare a tender or other announcement, selecting the winner, concluding a contract, monitoring and verifying savings, etc. From the clients perspective all of these and other steps in procuring or contracting an ESCO is – to say the least – challenging. These tasks require specialized knowledge in technology, financing, management, even communication, which a facilitator can offer.

There are a number of organisations that act as facilitators in Europe, for example **national (or local) energy (efficiency) agencies** (e.g. Motiva in Finland, SEAL in Ireland, the Graz Energy Agency in Austria, the Berlin Energy Agency in Germany, the Cyprus Energy Agency in Cyprus, etc.), **(private) energy audit companies, some legal advisors and private facilitators** (e.g. the Swiss market is expected to be launched with their help), or the **EPC procurement advisors** in the Czech Republic.

In a few countries the **government** can take up this task, for example the Ministry for Energy and Natural Resources in Turkey. In the non-EU/EEA countries, **IFIs** can typically act as facilitators, e.g. the World Bank/GEF in Armenia, EBRD in the West Balkans. IFIs are also present in some EU countries, e.g. EBRD in Romania and Bulgaria. In these countries, **agencies are set up by the government or external donors** to stimulate the energy services markets, e.g. the Energy Efficiency and Cleaner Production Center in Georgia or the Moldovan Energy Efficiency Agency.

There are 11 Member States, Switzerland and Ukraine that are aided by one or more associations, about one quarter of which were established since 2010. Furthermore, in Slovakia, Slovenia, Sweden, the Netherlands, and Switzerland the establishment of further associations is being discussed currently. Besides, EFIEES, the European Federation of Intelligent Energy Efficiency Services, represents private ESCO companies that are able to provide an overall energy management service to end-users. There are several non-official organizations with similar functions, such as the ESCO Club in Poland, the Bulgarian WEC Committee, the ESCO network in Denmark, DEEM group in Hungary, the National ESCO Action Group in Ireland. Of the non-EU/EEA countries, Armenia has an ESCO association since 2006, Ukraine established an association in 1999, which stopped working after 5 years and was recreated in 2013, and there are plans in Turkey to establish one.

### *Contract types*

The most **commonly used contract type is still the chauffage contract**<sup>143</sup>, i.e. heat supply contract. There are **only a few countries, where EPC dominates**, e.g. in Austria or the Czech Republic. Even in Germany, where EPC enjoys significant popularity as a result of the Berlin Energy Agency projects (Energy Saving Partnership model), only 8-10% of the market is covered by EPC.

During the 2010-2013 period two trends were seen in the countries with a relatively developed ESCO market. On the one hand, clarity has increased in regards the meaning and clarity of existing contracts, either because of the creation or the dissemination of standardized contract models or guides or because of the introduction of definitions/standards (e.g. standardized contracts in the RE:FIT programme in the UK, the EPC standard in Norway, certification and standards in Austria, etc.). In other countries, more flexibility was allowed in the contracts or the contracting process than before (e.g. Denmark, UK), and so called “negotiated procedure” is followed (Belgium).

In parallel to strengthening existing contract types and awareness about them, new contract types emerged during the period under observation:

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<sup>143</sup> For definitions, please see the “Background” section.

- The traditional one-element contracts in France have been transforming to incorporate further elements, “small extras”, such as audits, financing, monitoring. As a result, contracts are better tailored for the needs of the client.
- **Integrated Energy Contracting (IEC)** is a newly applied model, whereby energy efficiency and energy supply measures are combined under an EPC project, with energy efficiency measures enjoying a priority. IEC contracts are simpler than normal EPC, and therefore less expensive. IEC has been developed for the German and Austrian markets, and is used in Greece and the Netherlands (Bleyl 2012; Wargert 2011; EC JRC 2012).
- **smartEPC** was developed in Belgium, to integrate energy, maintenance, comfort and building value performance contracting.
- **EPC+** is an ESCO contract model combined with state grants and forfeiting, in order to provide finance for large scale renovations of bloc-houses that are in particularly obsolete state (Government of Latvia 2011).
- “**Function agreements**” or “**comfort agreements**” are common in Sweden. These are “chauffage” contracts, based on the provision of an agreed level of comfort or function, and the payment for energy is substituted with the payment of the level of service.

### *Target sectors*

ESCO projects are mostly implemented in the public sector (buildings and street lighting) and in industry. The preference depends on the national circumstances, on the openness and willingness of the public administration, on legal barriers in the public sector, and on factors such as size of the sector, size of the individual installations, financial capacities, long-term thinking in industry.

It could be noted during that sectors that were absolutely not attractive for ESCOs before, such as residential buildings and infrastructure (transport), were touched upon during the period 2010-2013. The problems related to these sectors include that they are decentralised and the projects would be very small while experiencing higher transaction (information and face-to-face interaction) costs. Moreover, the lack of trust from the potential clients is higher than in other sectors, potential clients have low liquidity and aversion to involve bank loans, and the split incentive problem is evident in most countries due to a high rate of renting, etc.

In spite of these traditional barriers, there are trials to engage these tricky areas. There was an ESCO in the Netherlands that had projects in the **transport** sector; however detailed information is not available about the project(s) and the results achieved. Jensen, Nielsen, and Hansen (2013) show that in the so called “strategic ESCO approach”, municipal ESCO projects have the potential to be disseminated into **infrastructure** improvement. Water supply renovations have been carried out by ESCOs in Spain.

The **residential** sector, public and private, has been given an increasing interest in the form of pilots (e.g. the FRESH project<sup>144</sup> in Italy, France and the UK, and the ESPARR project in Norway), but also in the form of ESCO-initiatives (e.g. in Denmark, Hungary, Estonia, France, Poland, Latvia, the Netherlands, Sweden, the UK, Germany and Switzerland). The Bulgarian government also expects energy savings through ESCOs in the domestic sector according to their second NEEAP (Republic of Bulgaria 2011). These projects usually (but not always) combine some form of national or EU financial incentive with the ESCO

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<sup>144</sup> Financing energy Refurbishment for Social Housing (FRESH) is a European co-operation project that aims to pave the way and demonstrate to Social Housing Operators that Energy Performance Contract can be used for low energy refurbishment on a large scale. See more at <http://www.fresh-project.eu/project/>.

technical realisation; therefore, a pure market based solution is not always available. Nevertheless, the contracts are often guarantee based, i.e. the main role of the ESCO is to support the project with a guarantee.

### *Motivation of concluding ESCO projects*

The primary driver of an ESCO project is the economic gains from the investment. The client saves on energy costs, while the ESCO (and other contractors, financial players) raise profits. This approach has been leading promotion and information dissemination. While profits are key to most of the ESCO projects, there are cases when other motivations also exist or outforce pure economic benefits.

The focus of the ESCO contract has been shown to shift when it is concluded between a client and an energy service provider that is not for clear-cut profits. While we tend to consider ESCO projects as marketable on their own, it is increasingly common to engage in the field due to a mix of additional motivations:

- on the client side:
  - **improvement of image** (since energy efficiency and climate change have a positive connotation);
  - **general renovation**, which is then combined with the energy system revamping;
  - improvement of **comfort**.
- on the ESCO side (especially in case of energy producers, distributors, equipment installers, etc.)
  - Trigger **loyalty** of the customers and thus improving the position of core products;
  - **Attract more customers**;
  - Comply with **regulations**.

If these two motivations prevail, the ESCO-type investment can be cross-subsidised by the main product(s) of the contractor or from the client side (e.g. it can be added to the general renovation cost).

## **Success factors**

There are a number of important drivers behind the above described market growth and transformation. The most important success factors are listed and explained below. In the period under observation, 2010-2013, it could be concluded that a factor may be an important driver in the development of the ESCO market in one environment (e.g. the dedicated ESCO measures in Sweden (Forsberg, Lopes, and Öfverholm 2007)), but may lead to only little change in others (e.g. in Spain the dedicated ESCO legislation and public programmes have not achieved major results as had been expected, on the other hand promotion by the supply side has increased the ESCO market).

### *1. Legal and political drivers*

1.1. **Long-term, manifested and credible commitment** by the government and/or the public administration to sustainable energy, energy efficiency and/or directly to the ESCO concept is amongst the key factors that can kick-start a market. For example in Denmark, a strong energy efficiency regulatory framework has been linked with an announced commitment to the ESCO solution by local administrations. There is a large number of ESCO markets today that are backed with a politically united, strong pledge.

A vehicle of this message could be the **NEEAPs, the SEAPs, or other official energy plans, strategies** that do not depend on, for example, election cycles. Such a commitment ensures a safe business environment, and therefore longer-term thinking by both ESCOs and clients, and provides for lower transaction costs.

1.2. **Supportive policy framework** is inevitable for the establishment and development of the ESCO market. When comparing the national markets, a general corroborative energy efficiency or sustainable energy regulatory background helps more than specific ESCO rules. For example, in the Netherlands ESCOs are not mentioned in legislation, nevertheless the general framework ensures that the energy services market can operate with a growing success. In Romania, ESCO and EPC are defined in law, but secondary legislation is still missing. In Switzerland, stakeholders believe that the direct promotion of the market by policies is not necessary, because by removing general legal hurdles the market can be expected to increase.

On the other hand, there are markets where market players do expect dedicated support or legal definitions, and where the general energy efficiency support is/was not enough (e.g. Denmark, Norway, Latvia, Slovenia, etc.). Certification, transparency, information dissemination are amongst the functions stakeholders expect from dedicated legal acknowledgement or measures.

1.3. **Dedicated ESCO legislation and measures** have increased throughout Europe. While the ESCO Status Report 2010 (Marino et al. 2010) concluded that the number of policies and actions set up with the objective of directly supporting the ESCO market were limited, the opposite can be seen between 2010 and 2013. Around one third of the EU/EEA countries enjoy dedicated ESCO rules. These may be in the format of providing an official ESCO definition, an ESCO certification scheme, standards, or establishing financing support for ESCO projects, or encouraging (even mandating) ESCO contracting for public authorities. The level of success of these measures varies widely, though. Successful policy package was introduced in Greece (the 3855/2010 law describes the context and principles of an EPC, provides a model contract and prescribes the allocation of obligations and responsibilities between the ESCO and the client). In Italy the Legislative Decree 115/2008 is the most relevant legislation for ESCOs, and it defines an ESCO, the energy service and the energy service plus contracts. The Law on the Efficient Utilization of Energy in Final Consumption (adopted in 2008 and reviewed in 2012 OG 158/08 and OG 55/12 ) is the legal basis for energy services and ESCO operation in Croatia. On the other hand, Cyprus and Spain put forward a complex set of policy measures; nevertheless it has not been enough to spark the ESCO market. For example, Spain launched several large-scale ESCO programmes (the “Plan 2000 ESE” and the “330 ESE Plan”), incorporated the definition of ESCO, an endorsement system, and the standard energy services into Spanish law in 2010, but the official programmes were delayed and have had problems and caused frustration in the market. The experienced market growth in Spain remains hence below expectations.

1.4. **Complementing measures** can also contribute to the success of ESCO markets. These are laws and regulations that are introduced for another reason, but have a positive “side-effect” on energy services. The introduction of **Energy efficiency obligation schemes** (EEO) is mandatory in EU Member States via the Energy Efficiency Directive (see more in “Background” section). While, there is disagreement about the level of contribution of EEOs to the ESCO market, nevertheless energy services have increased in the countries where an EEO has been introduced or the introduction is under discussion, e.g. in Denmark, Germany, Poland, Latvia, the UK, etc. In Slovenia, experts foresee a positive impact, but the system has been introduced only recently.

In fact, the impact of EEOs depends very much on their design. If energy companies (obligated parties) carry out energy services themselves, the system can be even competitive to market-based ESCO services. However, the system design may include the possible involvement of third parties, which will often be ESCOs. The possibility of trading certificates issued under an energy efficiency obligation scheme is often seen as a driver, e.g. in Italy and Poland . Acquiring energy efficiency certificates through an ESCO implemented energy efficiency investment increases profits, thus increasing the demand for ESCO projects.

1.5. **Removal of regulatory barriers** was pursued in several ESCO markets. In Spain public procurement rules are adapted to long term (such as ESCO) contracts as a result of the modified procurement law (Law 30/2007, modified in Legislative Decree 3/2011). Contracting processes have been made more dynamic and Article 11 of the Law defines the Public Private Collaboration Contract (PPCC) to suit best municipal conditions for ESCO projects (Rivas Puente and Puente 2011). Energy-efficiency criteria were developed to be considered in the tendering process (Boonekamp and Vethman 2010). Similarly, the Swedish procurement act opens the way for EPC by accommodating it in public procurement practices.

The introduction of **varied criteria in public tenders** that involve requirements beyond up-front investment costs, such as the consideration of life cycle costs, energy efficiency, social benefits, etc. is registered done in many countries. These tender evaluations are particularly beneficial for ESCOs. For example in Croatia, the Ordinance for Contracting and Implementation of Energy Services in the Public Sector (OG 69/12) created the legal conditions for energy service contracting in the public sector. The Ordinance recognises energy savings as an income for the building owner. In Finland a number of energy efficiency related criteria were introduced in the tender evaluation. However, applicants complain that as a result, the criteria are now too complicated and it is difficult to comply with the requirements.

The EBRD has a programme in Bulgaria and Romania to explore information about awareness raising, access to information about EPC, investigation of the legislative background, in particular procurement regulations and practices, as well as the general enabling framework and secondary legislation.

1.6. **ESCO and ESCO service standards** are able to improve the quality of the markets, partially because of the clear requirements towards the suppliers and because the clients can select trustful contractors more easily. The European standard of energy services was introduced in 2010. There are a number of countries, which adopted their own official ESCO definition or a standard. For instance, in Germany, there are a number of relevant standards, such as DIN EN 15900: Guidelines of energy efficiency services (03/2009), ISO 50001: Energy management systems - Requirements with guidance for use (04/2012), VDMA 24198: Terms and services of Energy Performance Contracting (explaining the stages of project development and giving criteria for the assessment of EPC services), and DIN 8930-5: Definition of different types of contracting (11/2003). In Italy, the UNI CEI 11352 standard certifies an ESCO.

## *2. Procedural factors, tools*

2.1. **Tools, models and handbooks** have been prepared that can be used at various stages of the project implementation. The EU has financed several initiatives addressing problems, such as project preparation, decision support, monitoring and verification, and even tools for the financing institutions interested in ESCO projects. Furthermore, tools are put out by other countries as well as by businesses and facilitators around the world. Table 8 lists a few interesting examples.

Table 8. Examples of free tools that can be used in ESCO project preparation and in monitoring and verification of energy savings. The list is – by no means – exhaustive.

Project decision, preparation	Monitoring
Excel Calculation Tool for Assessing Customer's Profitability of Investment with ESCO Company – available at: <a href="http://www.biosolesco.org/financial_tool.html">http://www.biosolesco.org/financial_tool.html</a>	IPMVP by EVO – available at <a href="http://www.evo-world.org/index.php?lang=en">http://www.evo-world.org/index.php?lang=en</a>
“Is EPC right for you?” A test available in the Best Practice Guide – available at: <a href="http://www.eec.org.au/UserFiles/File/docs/BestPracticeguidetoEPC.pdf">http://www.eec.org.au/UserFiles/File/docs/BestPracticeguidetoEPC.pdf</a>	A Best Practice Guide to Measurement and Verification of Energy Savings – available at: <a href="http://www.aepca.asn.au/">http://www.aepca.asn.au/</a>
Energy Performance Contracts (EPC) Handbook by SEAI – available at: <a href="http://www.seai.ie/Your_Business/National_Energy_Services_Framework/EPC_Handbook/">http://www.seai.ie/Your_Business/National_Energy_Services_Framework/EPC_Handbook/</a>	Example of an M&V plan by the PERMANENT project – available at: <a href="http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&amp;prid=1888&amp;side=downloadablefiles">http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&amp;prid=1888&amp;side=downloadablefiles</a>
Step-by-step instructions for putting together an energy efficiency service – available at: <a href="http://www.changebest.eu/images/stories/deliverables/changebest_guide_ees_development.pdf">http://www.changebest.eu/images/stories/deliverables/changebest_guide_ees_development.pdf</a>	

2.2. **Standard documents** have been advocated by a number of countries, where these have been prepared and used with more or less success. In 2011, after a few unsuccessful ESCO procurement projects, an ESCO procurement guide for the public sector was developed in Finland in 2012 (Koski 2011). EU projects implemented in Spain, the UK, Ireland, Austria, etc. also put several model contracts on the table. The use of the model contracts is limited, but their success was particularly highlighted in France.

2.3. A notable development and important step towards a trustful ESCO-client partnership is when **flexibility** is ensured **in the content and the preparatory procedure** of a contract. This allows tailored services. In Denmark municipalities that consider entering an ESCO contract, often perceive risks as too high because many ESCO suppliers are unknown companies. This problem is overcome with a larger flexibility in the contracts, and municipalities may opt out at any time during the project timeline. In France the system of contracts, referred to as P1, P2, P3, P4 is also able to ensure a degree of tailoring. A similar system is used in Spain. In Lithuania and Poland the lack of flexibility in the contractual process was seen as a crucial barrier for ESCO projects.

2.4. Established **statistics system, data collection, the introduction of centralized data collection and management systems** have been found to decrease transaction costs, and therefore increase the accessible profits for ESCO projects. The Myenergy programme in Luxemburg is one key driver of the ESCO market. The building certificates introduced due to the transposition of the EPBD have been often referred to as core drivers, for example in Sweden, Portugal. In the Netherlands, Georgia, Armenia, and Albania<sup>145</sup>, the effects of building certificates are expected to be seen in the future. The certificates can be used as baseline information. In Turkey, ESCOs are the primary suppliers of energy certificates of buildings, through which they can acquire larger projects. In Italy the “Energy Service Plus contracts” include an additional commitment by the provider to reduce the consumption of primary energy for winter heating by at least 10% with respect to what is indicated in the building certificate.

<sup>145</sup> Building certificates have been introduced on a voluntary basis in this country

### 3. Financing

3.1. A number of **EU and national level grants, financial incentives, preferential loans** have been identified that were used during the period 2010-2013. In the Czech Republic ESCO projects have been regularly combined with operational programmes (CombinES project n.d.), which has proven effective and has increased the achievable savings from 20-30% to 40-50%. The EPC+ contracts combine the ESCO contract model with state grants and forfeiting, to finance large scale renovations of multiapartment buildings that are in particularly obsolete state (Government of Latvia 2011).

These national and local financial grants may be destructive to the ESCO markets, especially when they are non-refundable, because they compete with market based instruments, e.g. in Bulgaria, Hungary, etc.. On the other hand, credit lines from IFIs and national governments have been seen as a key success factor in kick-starting ESCO markets. Currently, they are very common in non-EU countries. Governments may want to differentiate between loans and grants available for clients and for ESCOs (in Germany and in Hungary), or may not specify who can apply for the support (in Latvia).

The “green fund” in the Netherlands is a preferential loan with 1% discount on the interest rate for ‘green’ investments available to be combined with an ESCO model (EC JRC 2012; De Boer et al. 2011). Usually, municipalities have access to preferential loans, and therefore ESCO projects are largely client financed in Croatia and Denmark (as opposed to Germany, where municipalities are not prioritized in this way).

3.2. **Third Party Financing** (TPF) has increased, but it is still on average used only in one out of 10 projects. Since preferential loans are not available in Germany, financing is provided by banks, which are particularly active in this country. The openness of the financial sector has increased in several countries, including the Czech Republic.

### 4. Information and awareness

The ESCO concept is increasingly recognised by authorities and considered as a valid alternative to own investment, leasing and other traditional practices by clients. The knowledge and understanding of the various ESCO models is also growing. As a result, in several countries, promotion efforts are not wasted on explaining the general benefits of the model, but rather new contract forms and flexible conditions can serve the needs of the individual clients better.

4.1. **Motivation** to refurbish sites, properties and buildings seems to increase. Energy efficiency investments are often driven by **regular refurbishment**. The experience of the municipalities that engage in an ESCO project in Denmark shows that the measures are done **quicker and at a cheaper price**. Some municipalities do not possess the appropriate capacities themselves.

Environmental and climate awareness has increased at all levels. This has motivated policies on the governmental levels, and participation in projects at the client sides. In Scandinavia, one of the main drivers of ESCO (and other energy efficiency) projects is public image and environmental concerns.

4.2. **Awareness raising** activities have boomed – all of the countries in the current report indicated running awareness raising and information dissemination activities between 2010 and 2013. This activity was multiplied with the implementation of the EU EPC campaign, which visited all EU countries. The campaign highlighted the possibility to combine various climate and energy goals, as well as to combine available tools such as the ESCO concept and the **SEAPs**. The **Covenant of Mayors** has served as a key

driver, and as one of the main success factors in the Netherlands, Denmark, Cyprus, Croatia, but also in non-EU countries, eg. in Belarus, Ukraine, BiH, and Georgia.

## 5. Structural and market related changes

5.1. **Energy price** is one of the main factors influencing the demand of energy efficiency investments and therefore ESCO services. The steady rise in energy prices and energy taxes has improved the payback time of energy efficiency investments and increased the importance of energy efficiency in cost competition. The rise in energy prices has also increased the interest in energy conservation for non energy intensive energy consumers. These can be combined with energy tax rebates (France and Italy) to further increase the profitability of ESCO projects.

These measures are being considered also in Moldova, Kosovo and Russia.

5.2. The collapse of the construction sector was among the most significant barriers in 2010. Reflecting this, the **recovery of the construction industry** is currently a major driver and can be expected to contribute to an increase of ESCO projects both through the demand and the supply sides. In the Czech Republic less profitable types of measures (e.g. insulation) could be combined with profitable ESCO measures based on the increase of the construction activities and to reach deeper renovations. In the Netherlands, general renovations are extended to energy efficient refurbishment, too.

In Denmark and Hungary, the decline of the construction sector has induced construction companies to search for new market niches, and thus enter the ESCO business.

5.2. The recent intensive proliferation of **ESCO associations** has meant a growing capacity to support the ESCO markets. In addition other types of **facilitators** also appeared and intensified their activities. As it can be seen in Table 7, about 40% of the EU ESCO markets enjoy the support of an association that is able to represent the companies. The establishment of ESCO associations has partly been supported by public authorities. The creation of ESCO association enables a market establishment with important activities, such as standardization and quality control efforts, dissemination of information and capacity building lobbying.

5.3. In countries where projects and project development processes can be better tailored, and can be built up in a step-by-step basis, ESCOs have gained power. Progressive projects are common in France, i.e. a client starts with a smaller project, and when trust has established, the client purchases the next service level or involves further buildings in the project. One successful project stimulates the contract for another.

“Negotiated agreements” have been used in Belgium. After the tender is won by one company, projects are finalized through a “competitive dialogue”.

5.4. Parallel **development of information and communication technology** was a driver in the Swedish ESCO market. The boom of **smart technology**, used in the energy management of buildings is predicted to pull several ESCO markets along.

## Barriers

The list of barriers has not changed significantly since 2010 throughout Europe, and all of the countries carry on to struggle with certain limiting factors. On the other hand, the observed growth and development is the result of successfully eliminating or decreasing one or more major barriers. The most important and common barriers are discussed below.

## 1. Legal and political barriers

1.1. **Erratic and incalculable legislation** can block ESCO markets. In an economy where laws change rapidly, without (proper) public and expert consultations and not allowing enough time for the business sector to prepare, long-term contracts, such as ESCO contracts are not viable, because of the high risks associated. Such wacky legislation has hindered the markets of Hungary, Slovenia, Italy, and Spain.

If national financial grants are commonly used for energy efficiency renovations, however the announcement of the grants and the volume of their budget are rhapsodic, clients will put their bankable projects on hold to wait to see if at least parts of the investments could be covered from the appearing grants. This is the case in Hungary and Latvia, where the risky legal environment and the incalculable financial support have had a major role in the decline of the ESCO market.

1.2. The **lack of official and/or generally accepted ESCO definition and/or certification scheme and/or standards** hinders the ESCO market. While there is an EU-wide definition for ESCOs, in many countries, it is the company that decides whether to refer to itself as ESCO or not. This has caused significant confusion in the Netherlands, Croatia and other West Balkan countries. Often the notion of ESCO is popular, even if the company does not actually deal with energy services. On the other hand, in France, the number of ESCOs is underestimated because more general contracts often involve elements of ESCO services, even if the whole contract is not an ESCO contract.

In both cases, the clients are confused, and it is unclear for them what ESCOs really offer. This situation reduces trust in the ESCO solution, and customers will be mistrustful with approaching companies or even with facilitators.

1.3. There are a number of examples of **contradicting interpretation of legislation** regarding the ESCO businesses. For example in Sweden, there is no common agreement whether a municipality-owned energy company is allowed to offer energy services outside their municipality of origin or not. Today, practice varies, and therefore some municipalities allow their companies to operate throughout the territory of Sweden while others restrict their activities to one municipality (SEA 2012). Public institutions in the Czech Republic are often afraid of using EPC because of the unclear rules (e.g. about project registration, approval and accounting).

The lack of acceptance of the ESCO concept by the public financier is a crucial issue. In the Czech Republic, the so called “organisational units of the state” (OUS) are not able to apply EPC because they are legally bound not to receive or provide grants based on the Act no. 218/2000, Section 49. The Ministry of Finance, which administers these OUSs, even considered EPC as an act of “cheating”. The Heat Supply Act does not allow selling services, i.e. comfort as a commodity in Slovakia.

1.4. **Procurement** related barriers used to mean the central hurdles for ESCO projects. As of 2013, many of the national legislations have resolved the tendering and the public management of EPC projects. Nevertheless, problems do remain. There are still a lot of countries where the savings in energy costs cannot be transferred into another budget line, such as operation or human resources.

A common problem to several countries (e.g. Italy, Hungary, Sweden) is that the company that has carried out the feasibility study (baseline audit) cannot participate in the competition for the renovation project. This either impedes the contracting of one/several relevant companies, or the partners use “grey” solutions (e.g. the establishment of a new “vehicle” company only for the preparation phase) that may also be the ground for corruption practices. On the other hand, in Belgium a solution has been found through the use of negotiated agreements (see at the drivers section).

Procurement laws and practices are deemed as too complex in Cyprus, completely blocking the initiation of ESCO projects. But this problem is also evident in Croatia and Finland, even though procurement practices are also considered as drivers there.

## *2. Institutionalization and project tools*

2.1. The **lack of facilitators** is considered as a market gap, i.e. without facilitators some ESCO markets cannot be started. For example, in Cyprus and Malta, neither the supply, nor the demand side has been able to push the market through its tipping point.

2.2. The **lack of proper measurement and verification practices** is a problem. Without a credible method to prove energy savings, projects can be debated by the participants. This has led even to court cases (Latvia), or failed projects (Sweden). Measurement of projects where the public budget is also involved, because of a grant, is imperative. For example in the Czech Republic, the Kozloduy Fund does not use reliable measurement and verification system and therefore the appropriation of the financial grant can be debated. A similar situation has been registered in Hungary with the Panel Programmes and other building renovation programmes that required a certain level of energy performance improvement which was not checked or certified.

## *3. Financial barriers*

Finding financing and/or appropriate financing solutions remain a common barrier. Although TPF is used more often than before, according to EEVS (2013) only 1 out of 10 ESCO projects incorporates external financing. In the other cases, either the ESCO or the client will provide the budget for the project.

3.1. The most regularly referred problem relates to the **accounting of EPC projects as loans** by public authorities. This has two consequences.

On one hand, municipalities and other authorities are not allowed by their government to participate in ESCO projects, because these are considered to fall under the **EUROSTAT methodology ESA 95** (European System of Integrated Economic Accounts), and therefore are added to the value of the government debts, which are on the other hand limited by the EU legislation (Directive 2011/85/EU on requirements for budgetary frameworks of the Member States and related regulations). At the moment there is no satisfactory solution for this, although some countries (e.g. Denmark) do not consider municipal ESCO projects as loans. But most of the countries either clearly interpret the EUROSTAT methodology as a barrier to ESCO projects (e.g. Slovakia, Czech Republic, Poland), or do not clearly take a stand (Spain).

The other problem is that **liquidity** and **credibility** of the public administrations are limited, especially after the financial crisis. Therefore they are reluctant to take “loans”, and/or banks are reluctant to offer loans to them.

3.2. The classic problems with **banks** remain, i.e. **low awareness and motivation**. Nevertheless, there are a number of ESCO financial products, which are seriously underutilized. In Hungary, about 3-4 banks have ESCO-related products, which are not utilized because the application process has several requirements which are either not possible to comply with (deadlines, list of administrative documents, etc), or the costs and/or effort would be too high compared to the benefits of winning the loan.

3.3. There is a strong **aversion to loans** by potential ESCO clients, especially by the public administration, the private residential and the private tertiary sectors. During the financial crisis, accessing loans that were very hard to repay was so general that even entities that did not take part in this problem are

afraid to get engaged with loans. They fear that the financial crisis situation can repeat, and loan repayment seems to them too risky. At the same time, banks are also much more careful in selecting the safer partners, and from their point of view an ESCO project is irregular, and thus unsafe.

3.4. **High transaction costs** remain to block the start-up of ESCO markets. ESCOs still prefer large projects, that have a better cost/benefit ratio. At the same time, pooling (or bundling) has gained more and more popularity, and is done in Austria, Germany, Luxembourg, etc. In Denmark, an average of 60 buildings can be found in a pool.

On the other hand, smaller ESCOs struggle to find the way in-between. In Sweden, clients prefer tenders for projects with a value of less than €56 million, in order to avoid the complicated EU level procurement.

#### *4. Market and partnership problems*

4.1. There is still some **lack of trust by the clients** in the markets, although a lot has been done to overcome this barrier (see “drivers” above). Lack of trust usually originates from inhomogeneous ESCO offers in the market, lack of competition, lack of experience of clients, ESCOs and financial institutions, absence of credible and visible reference cases with a clear client focus, unclear definitions and failed contracts, unstandardized measurements and verifications.

Lack of trust is among the key barriers in the non-EU countries covered, and this problem is highly ephemerized in the West Balkans and post-soviet countries, because of fear for corruption.

4.2. **Lack of well-established partnerships** between ESCOs and sub-contractors was also identified, as well as mistrust from the side of contractors towards clients, due to an increased risk of unstable and insolvent customers. Furthermore, partnerships between the ESCOs and subcontractors were marred as a result of financial difficulties of the construction sector in general, whereas many previously reliable companies went bankrupt or had to change business.

4.3. **Failed projects** have been seen to affect the markets very deeply. Even one critical project may undermine the successes in a short time. For example, in Sweden the ESCO market has decreased radiacly in 2009 due to an EPC procurement in Stockholm, where disagreement between the parties could not be resolved. The effects of this dispute were negative on other companies, created mistrust in the EPC business model (Energimyndigheten 2011) and market recovery is slow since then. In Finland public procurement rules were not always followed properly, and the projects had to be stopped for investigation or be cancelled. In Latvia, a project was taken to court due to the disagreement about the results of the project. The same happened in Hungary and has contributed to a bad reputation for other companies that have to restart market information campaigns and building up trust.

### **Comparison of barriers**

Even markets with a successful ESCO market experience barriers. However these are more often related to the natural features of the markets, while legal obstacles are smaller, financing is usually solved and awareness is not a major problem (Figure 6).

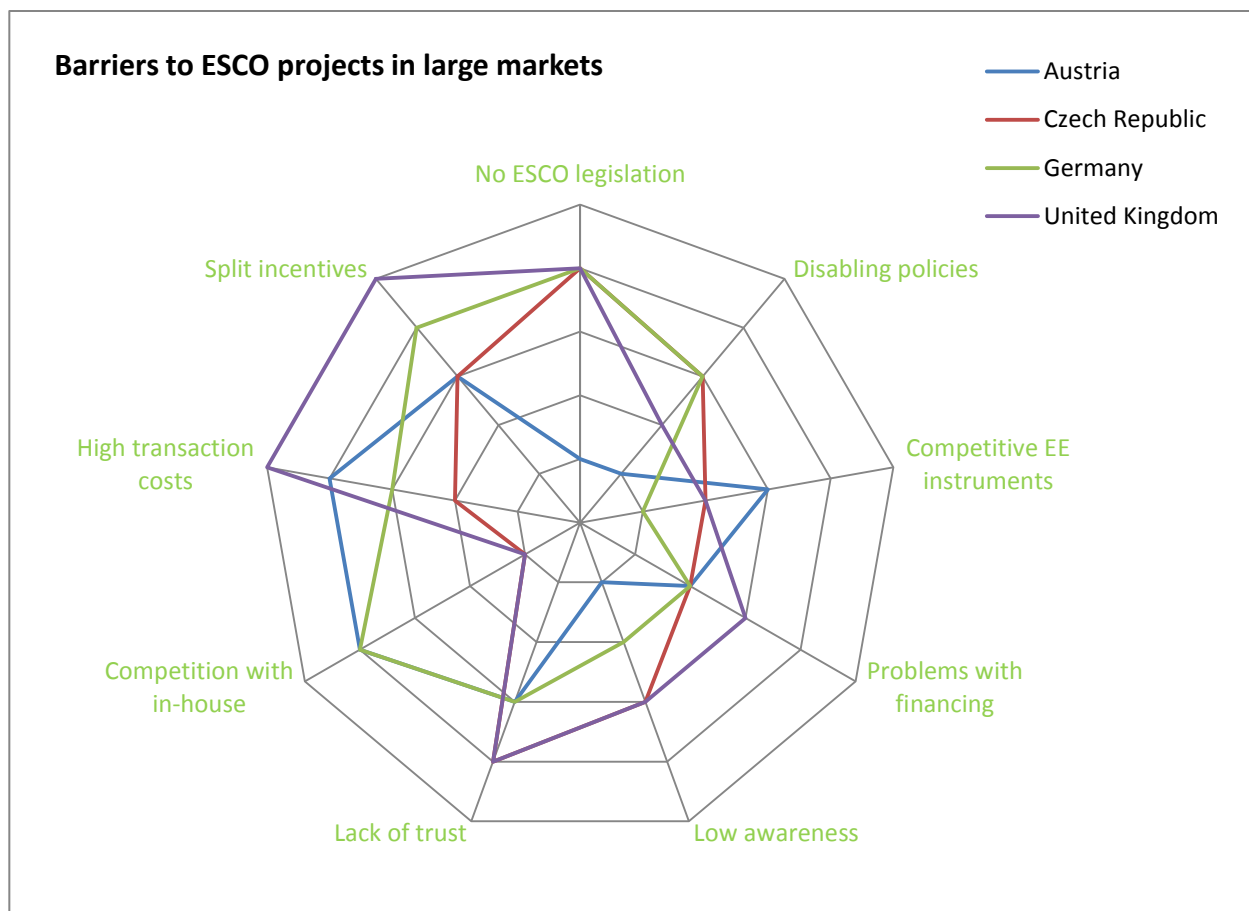


Figure 6. Comparison of barriers to ESCO projects in large markets.

On the other hand, the opposite can be observed in countries where the number of ESCO companies and the volume of projects are small or these have been decreasing lately. There is a lack of supportive legislative frameworks and/or there are disabling policies in these countries. In addition financing is a problem, sometimes in the form of high transaction costs. As a result, trust is low. Other tools for energy efficiency are either non-existent or compete with energy services (see Figure 7).

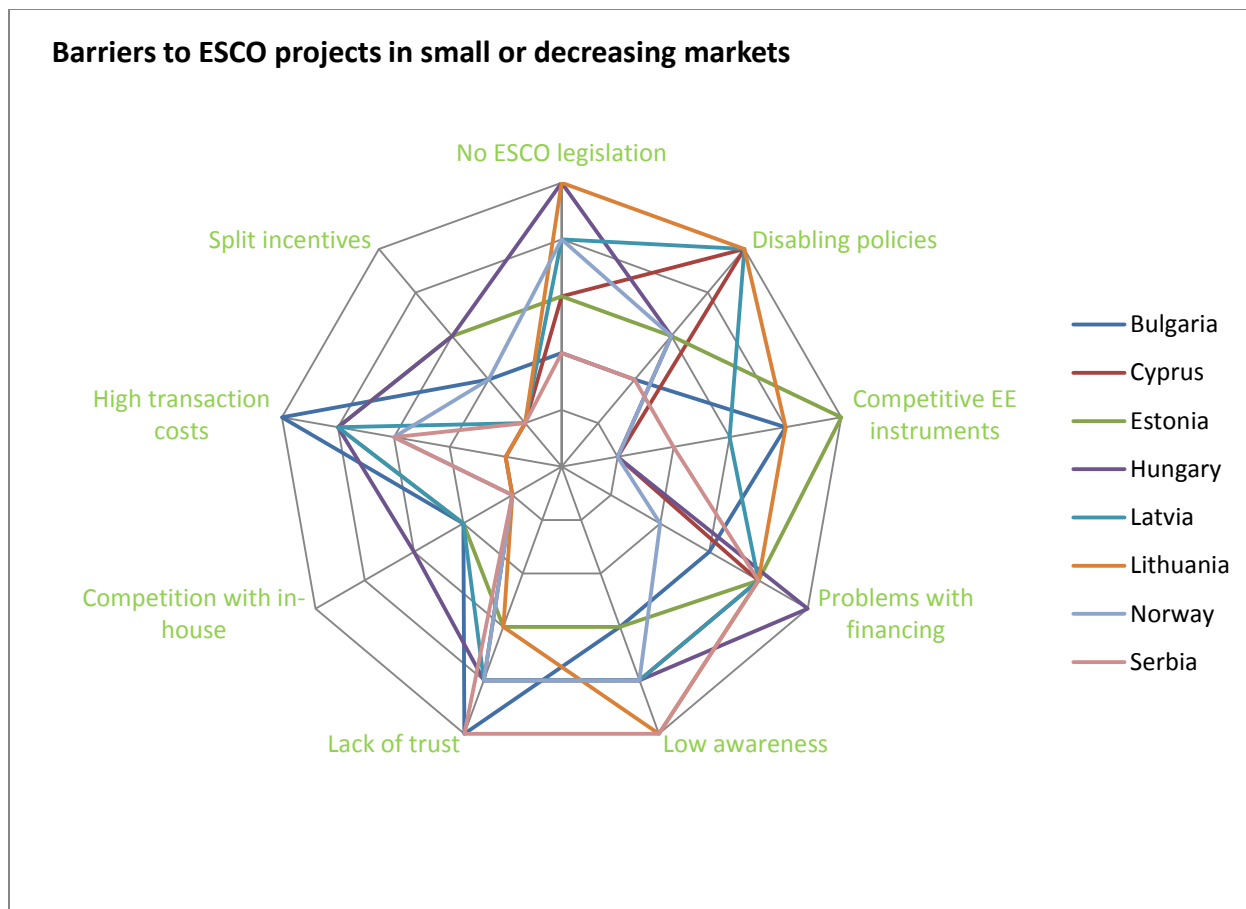


Figure 7. Comparison of barriers to ESCO projects in small or decreasing markets.

## Conditions for ESCO markets maturity

The European ESCO markets have been undoubtedly developing both in terms of volume and in complexity when compared to the findings of the 2010 or the previous ESCO status reports. Based on the analysis of the success factors of the markets across Europe, it is possible to collect a list of conditions and features that can possibly define a mature market. Such a list also indicates the likely directions of market transformation and the generally expected areas of improvement if a more functional ESCO sector is targeted.

Clearly, the list reported below should not be intended as an exhaustive list of necessary conditions for ESCO markets maturity. It is normal that a mature market can build up with only a combination of some of these features, or thanks to other specific context dependent conditions.

That being stated, the conditions for a mature ESCO market can generally be described as follows:

- the ESCO concept is **known and understood**. Clients will still need additional information about the specific offer and contract types offered by suppliers, but a decision between own investment, ESCO project, outsourcing, etc. is done internally. The additional information is available from consultants, independent facilitators or public agencies;

- the market is **demand driven**, meaning that (potential) ESCO clients actively search for suppliers, and define their needs and requirements for an energy services project or package, announcing them and waiting for alternative solutions, which can be compared to each other;
- there are **alternative contract forms**, several of them available in a standard format or supported by guidebooks that have been prepared by an independent organisation with the involvement of market stakeholders.
- there are **alternative financial solutions**, including client-financing and bank involvement.
- **transaction costs are low**, historical data on energy consumption are available;
- **monitoring and verification** of savings is carried out with a standard and transparent method;
- there are **facilitators**, who can help clients decide about the available offers, while supporting the supplier side by undertaking lobbying activities, general promotion, training, certification, etc.
- the energy and procurement general **policy framework does not hinder** ESCO projects and there is rarely a need for dedicated legislation for ESCOs. Nevertheless ESCO definitions, standards, and sometimes specific laws can be necessary. On the other hand the ESCO solution will be the route to a sustainable economy (energy consumption) and not the goal of a legislation;
- **grants or preferential loans** – if available – **do not favour, nor disqualify ESCOs**. They should be **gradual** and provide non-refundable subsidies only for measures that have a very long payback time (i.e. would not be financed by market players), but are socially beneficial, and that are combined with more attractive measures in order to achieve e.g. deep retrofit or complex project or favour special social groups, etc.

Finally, while governments and public administrations often aim at developing the ESCO industry, this should be done in order to achieve energy savings or sustainable energy use, not for the sake of the industry itself. Policies and measure should indeed be aimed at socially beneficial ESCO market impacts and/or at the deepening of these impacts. Otherwise, the risk is that they can obstacle or not allow to fully exploit the positive outcomes linked to the ESCO business.

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GTZ - Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (the precursor of GIZ until 2010)

HBOR - Croatian Bank for Reconstruction and Development

HEP - Hrvatska Elektroprivreda (the Croatian producer and distributor of energy)

HEP ESCO – the subsidiary ESCO of HEP

IBRD - International Bank for Development and Reconstruction

IDEA – Instituto para la Diversificación y Ahorro de la Energía, the National Energy Agency

IEC – Integrated Energy Contracting

IFC – International Finance Corporation

IPMVP - International Performance Measurement and Verification Protocol

JRC – Joint Research Center

KfW - KfW Bankengruppe

LED - light-emitting diode

MEEP - Montenegrin Energy Efficiency Project

NEEAP – National Energy Efficiency Action Plan

NEF - National fund for Energy Efficiency in Belarus

NREAP - National Renewable Energy Action Plan

m - million

PDA - Project Development Assistance

PPP – public-private-partnership

RE, RES – renewable energy (sources)

REEP - Regional Energy Efficiency Program for the Western Balkan

SEAI - Sustainable Energy Authority of Ireland

SEAP - Sustainable Energy Action Plan

SSE - Energy Services Enterprises, used in Italy

SME – small and medium sized enterprises

SPV – special vehicle company

TF EE - Task Force on Energy Efficiency

UNDP - United Nations Development Programme

VAT - value added tax

VEB - Vlaams Energiebedrijf, Flemish Energy Company

WB – World Bank

WBIF - Western Balkan Investment Framework

WeBSEFF – Western Balkans Sustainable Energy Financing

# Annex: ESCO survey 2012

The survey was available online at: <https://www.surveymonkey.com/s/JRC-European-ESCO-Survey>

## European ESCO Market Survey 2012

### *Introduction*

The European Commission, JRC regularly publishes the European ESCO Market Report (see <http://iet.jrc.ec.europa.eu/energyefficiency/esco>). In preparation of the European 2012 update, we are collecting information on the latest ESCO market developments in Europe.

To this end, I hope you are willing to share with us your knowledge of your national ESCO market and/or information about your ESCO business experiences and will reply the questions below. The information and data provided will be solely used for research purposes to prepare a public report. These public reports are targeted at policy makers and at European ESCO market players. Please, indicate any data or information you would like to be kept confidential in the comments.

Please feel free to forward the link of the questionnaire to other ESCOs/ESCO experts, for them to provide us with information in order to collect the widest range of information and opinion.

Thank you and best regards:

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Please note:

1. As the survey requires some time to fill out, please make sure that you dedicate enough time to complete it in one go (approx. 20 mins. - 40 mins.), or be sure that the time-out setting on your browser is disabled.
2. For any problem relating to the survey please write to: [jrc-escosurvey@ec.europa.eu](mailto:jrc-escosurvey@ec.europa.eu)
3. All questions with (\*) asterisk in front are mandatory.
4. The Survey is best viewed using MS Internet Explorer or Mozilla Firefox.
5. Once the survey is completed you will be redirected automatically to the start of the survey.

### *JRC PRIVACY STATEMENT*

1. Description.

The Joint Research Centre (JRC) is subscribing to the Survey Monkey website in order to collect data for the creation of the 'European Energy Service Companies (ESCOs) Report'. Your personal data will be collected and further processed for the purpose detailed hereafter under point 2.

This processing of personnel data has been notified at JRC corporate level and is under the responsibility of the

Head of Unit Internal and external communication at the JRC, acting as Controller. The specific ESCOs Report is under the supervision of the Head of Unit of Renewable Energies at the JRC.

The personal data are collected on a voluntary basis and according to conditions as provided by Survey Monkey (see the Survey Monkey Privacy policy and Terms of Service).

As this processing collects and further processes personal data, Regulation (EC) 45/2001, of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data, is applicable.

2. What personal information do we collect, what is the legal basis, for what purpose and through which technical means?

The main personal data of participants are the names and e-mail addresses of the people working in the energy service market.

The Legal Basis of processing are:

- In what concerns the legal basis of the processing, the data collected through a voluntary basis will solely be analyzed for the creation of the "Energy Service Companies Market in Europe Status Report 2012" that will be published by the European Commission only.

- Registration and participation of data subjects are provided on a purely voluntary basis.

The purpose of the processing of personal data for the ESCO Report is to investigate the ESCO market in the EU Member States and neighbouring countries. To this end, the authors sketch the current status of national markets and identify changes that have occurred during 2007-2010. In addition, the factors influencing the developments observed are investigated. Specific barriers are described and potential policy interventions to increase energy efficiency investments and to exploit energy saving potentials through ESCOs across Europe are discussed. The primary territorial scope of the report is the European Union (EU-27) and neighbouring countries. As technical means, the user data are collected through web forms and a backup of data is kept at JRC.

3. Who has access to your information and to whom is it disclosed?

The access to the site is only granted through user\_id / Password to a defined population of users. No personal data is transmitted to parties, which are outside the recipients and the legal framework mentioned.

4. How do we protect and safeguard your information?

The collected personal data is stored on the servers of Survey Monkey (see privacy policy on the Survey Monkey security).

5. How can you verify, modify or delete your information?

Users are able to request to update the information submitted or to cancel their submission or request to be excluded from the report by writing to [jrc-escosurvey@ec.europa.eu](mailto:jrc-escosurvey@ec.europa.eu)

6. How long do we keep your data?

The use of Survey Monkey is planned for the duration of the creation of the ESCO Report.

7. Contact Information

Should you have any queries concerning the processing of your personal data, please address them to the Controller or the Supervisor at [jrc-escosurvey@ec.europa.eu](mailto:jrc-escosurvey@ec.europa.eu)

On questions relating to the protection of personal data, you can contact:

- DG JRC Data Protection Co-ordinator: [jrc-data-protection-coordinator@ec.europa.eu](mailto:jrc-data-protection-coordinator@ec.europa.eu)

- Commission's Data Protection Officer: [data-protection-officer@ec.europa.eu](mailto:data-protection-officer@ec.europa.eu)

8. Recourse

In the event of a dispute, you can send a complaint to:

- European Data Protection Supervisor: [edps@edps.europa.eu](mailto:edps@edps.europa.eu)

## The survey

*Note: We understand an ESCO as a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria.*

1. Please provide the following personal data so that we can contact you for follow-up and in order to share the report with you when ready. You can indicate your privacy requirements below.

**Please provide the following personal data so that we can contact you for follow-up and in order to share the report with you when ready. You can indicate your privacy requirements below. \*Name & Surname:**

**\*Company:**

**Address 1:**

**Address 2:**

**\*City/Town:**

**State/Province:**

**ZIP/Postal Code:**

**\*Country:**

**\*Email Address:**

**\*Phone Number:**

2. Privacy options

Privacy options You do not agree that we list your name and affiliation in the acknowledgement section of the report (your e-mail will not be published).

You do not agree to be contacted for follow-up/clarifications in regards to your answers

\*3. What is your affiliation type? (Check all that apply)

What is your affiliation type? (Check all that apply) ESCO (a company whose core activity is providing ESCO services)

Other company, which offers ESCO solutions among others (eg. construction company, engineering enterprise, real estate company, architect, etc.)

Utility with ESCO offers

Utility without ESCO offers

Energy agency

Governmental organization

Intergovernmental organization

Financial institution

Equipment manufacturer

- Equipment installer
- Facility or property management company
- Consultant
- Academic/research
- Other (please specify)


Please provide information about the ESCO market of a certain country

\*4. Country of relevance: Please select the country in which your company/division is located:


5. How many ESCOs operate in the country of reference? Please give the latest information.

Note: We understand an ESCO as a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria.

How many ESCOs operate in the country of reference? Please give the latest information. Note: We understand an ESCO as a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria. I don't know

Insert total number (eg. 500)


6. Which year is this data from?

7. What is the source of the above information?

What is the source of the above information? A survey, research (please give reference to the source and if available send us the electronic copy by email to [paolo.bertoldi@ec.europa.eu](mailto:paolo.bertoldi@ec.europa.eu))

An estimate (please specify if your own, or a generally accepted number or other)

Other (please specify)


\*8. Has this number been changing significantly in the last 5-10 years? If so, how?

- Has this number been changing significantly in the last 5-10 years? If so, how? Yes, it has decreased
- Yes, it has increased

No, it remained stable

I don't know

8. a. Why did such a change/stagnation occur?

\*9. Are ESCOs in the country of reference predominantly:

Are ESCOs in the country of reference predominantly: Local/national companies?

Part/sister/daughter companies of large international corporations?

There are no ESCOs operating in the country of reference, and ESCO projects are carried out by foreign ESCOs?

There are only one to few pilot ESCO projects (please give information in further comments below).

There are no ESCO projects.

9. a. Further comments

10. Has the above been changing significantly in the last 5-10 years? If so, how?

Has the above been changing significantly in the last 5-10 years? If so, how? Yes

No No

10. a. Why did such a change/stagnation occur?

11. What types of ESCO companies are present in the country of reference?

What types of ESCO companies are present in the country of reference? Building and control manufacturers

Facility management and operation companies

Consulting/engineering firms,

Energy service & supply companies?

Energy agency

Equipment manufacturer or supplier

Equipment installer

Other (please specify)

12. Which of the listed ESCO types is predominantly represented in the country of reference?

Please rank the ESCO types in order of importance in the country. You can indicate non-existent types by selecting "N/A" in the right.

public ESCOs

private ESCOs

public-private joint ventures

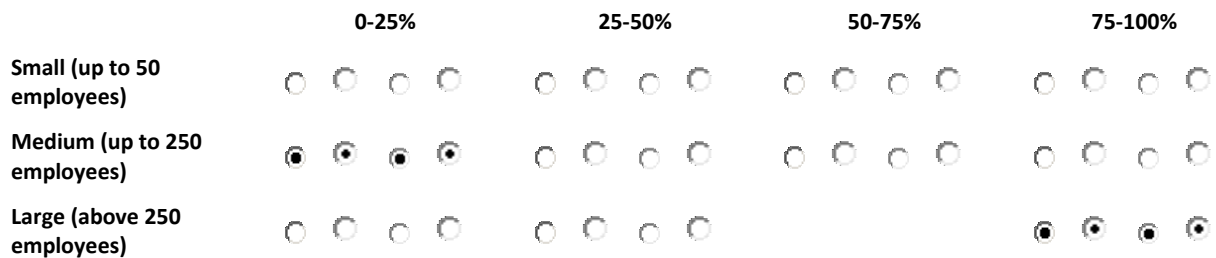
Other

\*13. Where do ESCOs predominantly position themselves in the energy efficiency service value chain?  
Multiple options are allowed.

- Awareness raising,
- Information and energy advice,
- Identification of measures,
- Technical planning,
- Financing and subsidies,
- Implementation (operation, supervision),
- Optimisation of technical operation,
- Saving measurement and verification
- Other (please specify)


14. How is the ESCO market divided amongst different actors according to their size? Please, indicate the approximate market shares per category and the approximate number.

Note: In case of large companies active in other sector than ESCO, the size should refer to the ESCO division.



\*15. Has this market share significantly changed lately? If so, how?

- Yes
- No   No

15.a. Why did such a change/stagnation occur?

16. Is the energy service provision of ESCOs in the country of reference predominantly:

- Is the energy service provision of ESCOs in the country of reference predominantly: Core business
- Or supplementary to other business activities (e.g. equipment manufacturing, energy supply, etc.)?

16. a. Comments

17. Has this changed lately? If so, how?

- Has this changed lately? If so, how? No
- Yes   Yes

17. a. Why did such a change/stagnation occur?

18. Which are the most common type of contracts used by ESCOs in the country of reference?

\*\*Note: Under an energy performance contracting (EPC) arrangement, the ESCO may use the stream of income from the cost















## JRC Mission

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners.

*Serving society*  
*Stimulating innovation*  
*Supporting legislation*

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