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# Report for Development of the ESCO Market in the EU Enlargement and Neighbouring Countries

*Review of Albania, Bosnia and  
Herzegovina, Kosovo, Moldova,  
Montenegro, Serbia, the former  
Yugoslav Republic of Macedonia,  
Turkey, Ukraine, Belarus and Russia*

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## **Abstract**

The present study aims at giving an overview of the status of the ESCO market in the EU Enlargement and Neighbouring Countries, contextualising the legal frameworks and identifying the barriers that slow down the development of the energy service companies.

An in-depth analysis of ESCOs status is provided for the following countries: Albania, Bosnia and Herzegovina, Kosovo, Moldova, Montenegro, Serbia, the former Yugoslav Republic of Macedonia, Turkey, Ukraine, Belarus and Russia.

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## **Executive summary**

During the 2013-2015 period, the ESCO markets of the EU Enlargement and Neighbouring Countries (namely Serbia, Montenegro, Bosnia and Herzegovina, Albania, Kosovo, the former Yugoslav Republic of Macedonia, Moldova, Belarus, Ukraine, Turkey and Russia) remained almost unchanged compared to the 2010-2013 period.

In general the ESCO market for these countries is at a preliminary stage. In some countries (such as the former Yugoslav Republic of Macedonia) the energy services market is not yet developed and there are very few projects implemented with ESCO financing to date. The development of the ESCO market is hindered mainly by legal and financial issues, which are differentiated country by country.

The present study aims at giving an overview of the status of the ESCO market in the EU Enlargement and Neighbouring Countries, contextualising the legal frameworks and identifying the barriers that slow down the development of the energy service companies. A set of suggestions and recommendations is then provided to enhance the market for energy services in the Western Balkan Countries, Moldova, Ukraine, Russia, Belarus, and Turkey.

Furthermore, an insight is carried out sector by sector, focusing on residential, industrial and public buildings.

After this overview, which gives a clear picture of the general situation of the ESCO market in the region, an in-depth analysis of ESCOs status is provided for each of the eleven countries under analysis in chapters 9 to 19.

# **1 Introduction**

During the 2013-2015 period, the ESCO markets of the EU Enlargement and Neighbouring Countries (namely Serbia, Montenegro, Bosnia and Herzegovina, Albania, Kosovo, the former Yugoslav Republic of Macedonia, Moldova, Belarus, Ukraine, Turkey and Russia) remained almost unchanged compared to the 2010-2013 period.

In general the ESCO market for these countries is at a preliminary stage. In some countries (such as the former Yugoslav Republic of Macedonia) the energy services market is not yet developed and there are very few projects implemented with ESCO financing to date. The development of the ESCO market is hindered mainly by legal and financial issues, which are differentiated country by country.

The present study aims at giving an overview of the status of the ESCO market in the EU Enlargement and Neighbouring Countries, contextualising the legal frameworks and identifying the barriers that slow down the development of the energy service companies. A set of suggestions and recommendations is then provided to enhance the market for energy services in the Western Balkan Countries, Moldova, Ukraine, Russia, Belarus, and Turkey.

Furthermore, an insight is carried out sector by sector, focusing on residential, industrial and public buildings.

After this overview, which gives a clear picture of the general situation of the ESCO market in the region, an in-depth analysis of ESCOs status is provided for each of the eleven countries under analysis in chapters 9 to 19.

## 2 Status of the national ESCO markets

During the 2013-2015 period, the ESCO markets of the Western Balkan Countries (Serbia, Montenegro, Bosnia and Herzegovina, Albania, Kosovo and the former Yugoslav Republic of Macedonia) remained almost unchanged compared to the 2010-2013 period. This chapter gives an overview of the current status of the ESCO market in these countries.

In Serbia and Bosnia and Herzegovina, the ESCO markets are still in a preliminary phase. In particular, in the Serbian market several ESCO companies are active as of 2015. These are private companies founded by domestic capital or subsidiaries of regional and international ESCO companies in order to be active in the residential and industrial sector. The residential projects are realized on the basis of energy supply contracting (ESC). The legal conditions for the introduction of the EPC model in the public sector were created in 2015 in Serbia, as a part of the implementation of the Regional Energy Efficiency Program for the Western Balkans (REEP) founded by the European Bank for Reconstruction and Development (EBRD). Furthermore, tenders for street lighting projects based on EPC were published in several Serbian municipalities within the framework of REEP. However, the process for tendering of energy services in Serbian municipalities is still very slow.

In Bosnia and Herzegovina, there are several companies, which provide energy services based on ESC, although these are not officially registered as ESCOs. Projects target the improvement of heating systems in the public sector (health and educational institutions). In most of the projects, energy services providers carried out replacement of oil heated boilers with biomass boilers (fuel switch).

In Albania, Kosovo, Montenegro and Macedonia, the market for energy services is still non-existent. Lack of secondary legislation for ESCOs, complicated procurement rules and unfavourable legislation for EE investment in municipalities, combined with the absence of state incentives for EE hamper the development of the ESCO market in these countries.

In Moldova, the ESCO market is still in a very preliminary phase. The main reasons include the high cost of capital, low prices for energy and the lack of incentives for developing the ESCO market. The United Nations Development Programme (UNDP) project "ESCO Moldova – Transforming the market for Urban Energy Efficiency by introducing Energy Service Companies" ("ESCO Moldova project") supports Moldovan government in the development of ESCO legislation and the creation of market condition for the introduction of EPC.

The ESCO market in Ukraine has changed from a phase of stagnation during the 2013-2014 period, into a phase of minor growth as of 2015. This change in the market is associated with the adoption of the new ESCO legal framework, which was adopted by the Parliament of Ukraine and which established the energy service market in the public sector in 2015. As of 2015 between 20 and 30 energy service companies (ESCO) were active on the Ukrainian market.

Despite the economic downturn in Russia, the energy services market has grown slowly during the 2013-2015 period. Few positive changes related to an enhanced promotion of energy services and ESCOs can be pointed out to have changed since 2013: (EC, 2016)

- The Russian Association of Energy service companies (RAESCO) was established in 2014.
- The standard titled "Measurement and verification of energy efficiency" were analysed and adopted by the Members of the RAESCO Council. This standard is the first standard of the Russian Federation in this area and it will prescribe the use of the indicators of energy efficiency and energy savings volumes during the implementation of specific projects and energy saving measures.

- The state regulation (29 orders) on energy services were developed and adopted. Some laws were also changed and factoring was developed.

Although the Russian market for EE and energy services has a huge potential, the ESCO market is still moderate. There were up to 100 companies operating as energy service providers in 2015. However, it is difficult to determine the exact number of ESCOs, since many of the companies calling themselves ESCOs did not actually offer guarantees, or link their remuneration to the results of the project. Only few of these companies (about 10) offer turn-key EPC to their clients that include a technical audit, the development and implementation of the required measures, finance and a performance guarantee. Most of the projects in the industrial sector have been carried out though EPC by a few ESCOs subsidiaries of utility companies including international companies. Other types of energy service providers are small companies which originally were involved in energy auditing or turn-key engineering services and are now exploring the ESCO business or Producers of metering equipment and automatic control systems and IT integrators who are starting to work on projects based on the EPC principle.

The ESCO market in Turkey is still considered as moderate, despite the high potential. As of January 2016 36 ESCOs (EDV) were authorized by the General Directorate for Renewable Energy (DGER) to operate in the Turkish market. Turkish ESCOs focus on industrial projects using state incentives for the implementation of EE projects. The residential sector, although has very high potential for EE and energy services, is still not targeted by Turkish ESCOs. This is due to the high transaction costs and complications in setting up and implementing projects, making these non-economic in the absence of state incentives. The following table provides an overview of the above.

Table 1. Developmental level of the ESCO markets as of 2015 and the change in level of development between 2013 and 2015

Country	Status of the ESCO market	Development between 2013 and 2015	Number of ESCOs as of 2015
Albania	Not existent	unchanged	0
Belarus	Preliminary/Moderate	unchanged	n/a
Bosnia and Herzegovina	Preliminary phase	unchanged	4-5 <sup>1</sup>
Kosovo	Not existent	unchanged	0
Moldova	Not Existent/preliminary	unchanged	0
Montenegro	Not existent	unchanged	0
Serbia	Preliminary	slow growth	5-6 <sup>2</sup>
Russia	Preliminary/Moderate	slow growth	Up to 100 <sup>3</sup>
The former Yugoslav Republic of Macedonia	Not existent	unchanged	0
Turkey	Moderate	slow growth	36 (EDV companies with authorization)
Ukraine	Moderate	Slow growth in 2015	20-30 <sup>4</sup>

<sup>1</sup> They are not registered officially in Bosnia and Herzegovina

<sup>2</sup> According the interviewed experts for the currently reported research

<sup>3</sup> According the interviewed experts for the currently reported research

<sup>4</sup> According the interviewed experts for the currently reported research

## **2.1 Legal framework for ESCO**

As Contracting Parties of the Energy Community Treaty, Albania, Bosnia and Herzegovina, Kosovo, Montenegro, Moldova, Serbia, the former Yugoslav Republic of Macedonia and Ukraine are obliged to transpose the third energy package and adopt the EU acquis on energy efficiency and renewable energy. It includes the transposition of the Energy Service Directive (ESD, 2006/32/EC) and starting from October 2017, also the Energy Efficiency Directive (EED, 2012/27/EU) with some adaptations. Both directives include provisions for the promotion of energy services in the EU Member States. Therefore, the Contracting Parties have to ensure the transposition of Article 6 of the ESD and - as of October 2017 - the transposition of Article 18 of the EED. Also, the Contracting Parties countries shall prepare National Energy Efficiency Action Plans (NEEAPs), which have to be submitted to the Energy Community Secretariat. For the period 2010 – 2018, each contracting party shall submit NEEAPs prepared according to ESD on a two years basis. The NEEAPs are very important policy documents for the development of policies in order to – inter alia - promote energy services and ESCOs at the national level.

Regarding the transposition of the relevant EU legislation for EE (including Energy Service Directive -ESD, Energy Performance of Buildings Directive – EPBD and Directive for labelling of energy related products) all countries have made progress in the 2014-2015 period. However, in Ukraine, Albania, Bosnia and Herzegovina and Kosovo the adaptation of related laws and by-laws is pending.

In Serbia, and Montenegro, as well as in Macedonia, the definitions of the energy services and energy services companies (ESCOs), Energy Performance Contracting (EPC) are incorporated in the Laws on Energy Efficiency (or Law on efficient/rational use of energy) or in the Laws on Energy respectively.

## **2.2 SERBIA**

For the first time, the Law on Efficient Use of Energy (OG 23/2013) in Serbia, gives an explicit definition for energy services company ("ESCO") and sets out the rules for energy performance contracting (EPC) generally in line with the Directive definitions, aiming at providing the overall legal framework for energy efficiency arrangements. The Rulebook Determining Model Contract for Energy Services for Implementation of Energy Efficiency Improvement Measures for Public Sector Users was adopted on the 8th of May 2015 as the secondary legislation under the Law on Efficient Use of Energy promoting investments in energy efficiency. This secondary legislation consists of ESCO contract templates for energy efficiency, ESCO investments in public buildings, and in public street lighting. This secondary legislation ("ESCO By-Law") includes two energy services contract models, one for public buildings and another one for public lighting, and generally allows for public private partnerships to be established between the relevant public partner (e.g. a municipality, a public company, a State) and the relevant private partner (i.e. ESCO company) on a long-term basis wherein the installation and management of the energy efficiency measures by a private partner are to be financed from the savings achieved, thereby not involving public debt. Serbia adopted the Second NEEAP in October 2013. Promotion of ESCO services was mentioned as one of the four horizontal measures showing the recognition energy services and ESCOs as one important instrument for implementation and financing of EE measures, especially in the public sector (municipalities).

## **2.3 MONTENEGRO**

In Montenegro, the new Law on Efficient Use of Energy was adopted in 2014. This Law defines energy services and ESCOs and sets the basis for the preparation of Energy Performance Contracts. The adoption of the Law on Efficient Use of Energy has also enabled a more efficient implementation and further development of by-laws in the field

of energy efficiency. The ESCO legislation is under preparation through the support provided by the Regional Energy Efficiency Program (REEP) financed by EBRD.

## **2.4 FORMER YUGOSLAV REPUBLIC OF MACEDONIA**

In Macedonia, energy services and ESCOs are defined by the Law on Energy adopted in 2011 and later amended in 2013. This Law gives also legal basis for the establishment of an Energy Efficiency Fund, which shall be crucial for supporting further development of the ESCO market particularly in the public sector. Although the second NEEAP was prepared in 2013, it has not been adopted yet. This document is very important for the promotion of energy services and ESCOs, since few EE measures in the public buildings sector are referring to energy services and ESCOS.

## **2.5 ALBANIA**

Albania adopted the new Law on Energy Efficiency in December 2015. This Law includes the necessary provisions for the establishment of the ESCO market in Albania, as well as securing the financing through the Energy Efficiency Fund. The Law prescribes also requirements for the public sector to purchase energy efficient equipment and appliances. The 2nd NEEAP of Albania envisages further implementation of the Energy Efficiency Law and focuses on the development of the ESCO market as prerequisite for the implementation of measures in buildings, water-supply systems, public lighting and industry' sector. In the 2nd NEEAP the financing mechanisms proposed, include strengthening the role of the EE Fund, public budget, loans, subsidies, International Financial Institutions (IFIs), ESCO financing etc. However, sources of financing were not clearly identified and presented. Although the first draft of the 2nd NEEAP was prepared in November 2013, this strategic paper for further implementation of EE policies, has not yet been adopted.

## **2.6 KOSOVO**

With the adoption of the Law on Energy Efficiency in 2011, Kosovo made a significant progress towards the creation of an appropriate legislative and institutional framework for energy efficiency. The Law on Energy Efficiency transposes the key requirements of the Directive 2006/32/EC and sets the legislative and institutional framework for the implementation of the energy efficiency policy in Kosovo. It sets the legal basis for future development/amendment of a secondary legislation.

As of 2015, financing of energy efficiency projects is hampered due to the lack of an appropriate framework for innovative financial mechanisms, including the belated setting up of the Energy Efficiency Fund stipulated in the Law.

The amendments to the Law on Public Procurement of 2011 introduced energy efficiency criteria in the procurement of energy efficient equipment and vehicles, in line with Annex VI of Directive 2006/32/EC. However, there is no secondary legislation in place. Secondary legislation on financing instruments, metering and informative billing, ESCO etc. still needs to be adopted for full compliance.

The Kosovo National Energy Efficiency Action Plan (NEEAP) is a basic document for the implementation of Kosovo's policies on energy efficiency. Kosovo's first NEEAP (2010 – 2018) was approved by the Ministry of Economic Development in September 2011. Kosovo's second National Energy Efficiency Action Plan was prepared on the basis of Article 10 of the Law on Energy Efficiency, and it was adopted in December 2013.

## **2.7 MOLDOVA**

In Moldova, the main provisions of the Directive 2006/32/EC (ESD) are transposed by the Energy Efficiency Law and by laws for EE. However, the ESD Directive has not been fully transposed. In order to fulfil this obligation, Moldova still needs to adopt a set of secondary legislations on energy end-use efficiency in the public sector, ESCO

mechanism, etc. The standard set of documents for energy service procurement in the public sector was developed in 2015 in the framework of the “ESCO Moldova project” implemented by UNDP. In addition, to facilitate the implementation of energy services, a general EPC model contract (with shared and guaranteed savings) as well as an EPC model for street lighting were prepared but still needs to be disseminated to be picked up by the market. The First NEEAP for 2013 - 2015 was adopted in 2013 setting up an energy savings target of 9% by 2016. The second EEAP of Moldova is under preparation.

## **2.8 UKRAINE**

Ukraine made some progress by adopting technical regulations and ESCO support laws. However, a significant number of important laws (including Energy Efficiency Law and the Law on Energy Performance of Buildings) and by-laws for EE were prepared, but they have not yet been adopted by the government. The Law No. 327-VIII “On the Implementation of New Investment Opportunities, Ensuring Rights and Legitimate Interests of Individual Entrepreneurs for the Performance of Large-Scale Energy Sector Modernization” (“ESCO Law”) was adopted by the Parliament on 9th of April 2015. The purpose of the “ESCO law” is to create a legal framework for the introduction of new investment opportunities (including ESCO) in the public sector, ensuring the rights and legal interests of business entities while conducting a large-scale energy efficiency projects through the mechanism of energy services. In November 2015, the Cabinet of Ministers adopted the National Energy Efficiency Action Plan until 2020, compliant with the requirements of the Directive 2006/32/EC. The key priorities for Ukraine remain the adoption of the Energy Efficiency Law and the Law on Energy Performance of Buildings. These two laws are determinant for scaling up the implementation of EE measures in the buildings sector.

## **2.9 TURKEY**

In Turkey, The Energy Efficiency Law (EEL, Number 5327) adopted in 2007 and revised in 2011 stipulates the definition of energy services and set the basic requirements for implementation of energy services in Turkey. This Law prescribes the training of energy managers and energy auditors as well as procedure for authorization of the EDV (ESCO) companies. As of 2015, Turkey is working on the preparation of the first NEEAP.

## **3 Barriers to the ESCO industry**

### **3.1 Legal barriers**

Although, as described in the previous chapter, all countries included in this report have already a legal framework in place for EE and/or ESCOs, there is still a lot to be done in terms of ensuring a supportive and not hampering the legal framework, in particular in the following areas:

- Public procurement of energy services;
- Investment in EE in municipalities;
- Energy efficiency in buildings(public, residential and commercial);
- Monitoring and measurement of energy consumption in public, commercial and residential buildings;
- Energy auditing and energy management in the service (public and commercial) and industrial sector;
- Creation of homeowner associations as legal entities in the residential sector;
- Maintenance of multi apartment buildings;

In Albania, the EE legislation needs to be completed with the Law on Energy Performance of Buildings and by-laws that will make the legislation applicable. In addition, the lack of clarity about the procurement procedure and due to the fact that the Law on Public Procurement does not directly recognize ESCO contracts, make implementation of ESCO model difficult in the public sector. It is expected that the Law on Public Private Partnership (PPP), which is under preparation, will provide guidance and the basis for procurement and contracting ESCO projects in the public sector.

In Bosnia and Herzegovina, the Law on Energy Efficiency and the Energy Efficiency Action Plan (EEAP) were adopted by Republika Srpska, but the Law on Energy Efficiency has still not been adopted by the Federation of Bosnia and Herzegovina (since September 2014). In the Federation of Bosnia and Herzegovina as well as in the Brcko District, the full package of primary and secondary legislation transposing ESD (Directive 2006/32/EC), as well as the adoption of a state-level EEAP (Energy Efficiency Action Plans) have been waiting for adoption. Amendments are needed on the state-level Law on Public Procurement to include energy efficiency criteria. Therefore, Bosnia and Herzegovina still fails to comply with ESD in terms of EE including energy services (Energy Community 2016).

Although, Macedonia has progressed in the implementation of the energy efficiency acquis, including the update of primary and secondary legislation, there is further need for the preparation of secondary legislative for energy services and predefined EPC. The process of the adoption of the complete legislation for ESCOs has to be finished. Apart from that, some changes and additions are needed in existing legislation, especially regarding the public procurement (Energy Community 2016).

In Montenegro, the Law on Public Procurement does not cover ESCO contracts, since this kind of relation and investments cannot be treated as public procurement. The solution is to put it through the Law on Public Private Partnership. The implementation of the system for certification of energy performance of buildings and inspection of heating and air conditioning systems should start without any further delay. Montenegro should improve statistical data collection and its system for the calculation of energy efficiency indicators and savings, as well as monitoring of EEAP implementation. The methodology and platform developed is a step forward. Nevertheless, Montenegro still needs to develop the system for implementation. Adequate resources, both human and financial, should be dedicated to improve the situation in this area.



The first priority for Moldova is the adoption of missing secondary legislation for implementation of the Law on Energy Efficiency and the Law on Energy Performance of Buildings as well as the introduction of energy efficiency requirements for procurements in the public sector.

Kosovo lacks secondary legislation related EE Law (based on Directive 2006/32/EC). Secondary legislation on financing instruments, metering, informative billing, ESCO's, etc. still needs to be adopted to fully comply with the ESD. (Energy Community 2016) Both types of the energy service contracts (EPC and ESC) are still not applicable in Kosovo. According to the current legal framework only the PPP or negotiated contracts can be applied.

In Turkey, the legislation related to local self-government (municipalities) is not in favour for development of ESCO services in municipalities. The procurement rules are very strict and complicated. The Public-private partnership rules are also very strict. Absence of appropriate legislation for the promotion of EE in multi apartment building (housing sector) is also one of the addressed issues.

In Ukraine, the ESCO law and the basic models of energy service agreements (actually EPC) have been adopted in 2015 but they are still not yet implemented. The implementation of the legislation has to be enforced by the authorities. In addition, the Energy Efficiency Law and the Law on Energy Performance of Buildings have to be adopted as soon as possible. The development and enforcement of the missing technical regulations for full transposition of the Energy Performance in Buildings Directive should follow.

In Russia, the regulatory framework for the public sector could benefit from further improvements such as the introduction of international monitoring and verification protocols, long-term budgeting for certain types of public organizations and the possibility to include other savings besides energy cost (such as maintenance cost optimization) in the contract.

### **3.2 Financial barriers**

In almost all countries included in this report, financial barriers are pointed out by the interviewed experts as one of the largest obstacles for the development of the market for energy services and ESCOs. In Serbia, Russia and Ukraine, ESCOs finance projects through their own equity and, in very few cases, through Third Party Financing (TPF). This type of financing is difficult on long term, especially for smaller ESCOs due to limited liquidity.

In Turkey there are some state incentives for industrial enterprises which can be used also for funding of ESCOs, but they are very limited and they can be only used for certain activities: for example for funding energy audits in industry.

With regard to funding of energy services and ESCOs several aspects can be stressed:

- Lack of energy efficiency funds for funding energy services and ESCOs;
- Lack of state incentives for EE and ESCO;
- Very high interest rate for EE loans provided by commercial banks;
- Lack of investment portfolio for EE including energy services by commercial banks;
- Lack of understanding for ESCO projects;
- Lack of know how in preparation and evaluation of EE projects implemented on basis of EPC;
- High inflation rate and exchange rate instability.

The lack of an Energy Efficiency Fund is pointed out in Montenegro, Albania, Kosovo, the former Yugoslav Republic of Macedonia, Bosnia and Herzegovina, Turkey as a key barrier. The creation of energy efficiency funds (EEF) is considered as an option for

scaling up energy efficiency investment in the public sector in the Western Balkan Countries. Under a typical EEF targeting the public sector, loans are provided to public entities to cover the initial investment costs of EE projects. These funds can also be used for funding projects implemented by ESCOs.

The establishment of an EEF generally requires the development of a legal framework comprising national legislation as well as supporting secondary legislation or regulations that will define the structure of the EEF. In some countries, as Albania and Kosovo creation of an EEF is stipulated in the Laws on Energy Efficiency or in Law on energy as in the case of the former Yugoslav Republic of Macedonia. However, because of the administrative and other barriers, the EEF are still missing. In the former Yugoslav Republic of Macedonia, establishment of an EEF has been postponed since the government cannot make decision about management structure of the fund.

In Serbia, the creation of an EEF was authorized by the EE Law adopted in 2013. The EEF was created as a line item in the state budget in 2014. It is managed by the Ministry of Energy and Mining and provides financing of EE projects in municipalities. Theoretically, ESCO projects can be funded from this basket, but this has not been realized in the praxis yet. The EEF is not created as a separate/independent institution with own management structure and as a revolving fund. In Montenegro and Bosnia and Herzegovina, funding of EE projects are provided by existing environmental funds in the form of grants and not as loans. (Limaye et al. 2014)

In Turkey, incentives have been provided by the government only for the industry sector; specifically, for the large industrial enterprises but they are not enough to scaling up energy services. Other specific incentives should be developed and applied to SMEs and especially to the building and commercial sector. Because, the incentives from the government has leverage effects, meaning that providing one unit could result in additional investment of 10 units as stated by the ESCOs.(EC, 2016)

Although the grants provided by the governments or International Financing Institutions for funding EE measures and/or ESCOs are necessary to start up EE investments, it is worth noting that often they can even spoil the market for energy services. In many countries, such as in Montenegro, Bosnia and Herzegovina and the former Yugoslav Republic of Macedonia and Ukraine, the public sector has received only grants for EE improvements in public buildings or public facilities over many years. Therefore, the public sector in these countries became reluctant to third party financing. In Ukraine, a few years ago one public ESCO established through grants provided by the Global Environmental Facility (GEF) in the framework of an UNDP project, refused to take loans from banks to finance EE projects after the end of the project. Therefore, grants and similar incentives have to be balanced. They can be used for funding of energy audits or up front studies to reduce the transaction cost, but not for funding of whole projects.

The commercial banks usually have limited understanding of the ESCO business model, which is a main financial barrier in all countries analysed in this report. Commercial banks have limited knowledge of the EPC contracts and the benefit from energy and financial savings resulted from them. In addition, the commercial banks have limited capacities to prepare and evaluate EE projects prepared on the ESCO model.

Commercial banks in Russia, Ukraine, and Belarus consider ESCO business as very risky and therefore provide loans with very high interest rates. In Ukraine the current financial stability, in which Ukrainian banks have to provide short-term loans at very high interest rates range from 20% to 25% and even 30% in some cases, therefore making even more difficult for ESCO to have access to finance (National Bank of Ukraine, 2015) In addition, in Ukraine the inflation rate and the currency risks are extremely high for the commercial bank which face an annual inflation rate of approx. 43 %. Energy tariffs are approved in a national currency and the exchange rate is difficult to forecast and manage (EC, 2016).

### **3.3 Other barriers for the development of the ESCO markets**

Additional barriers that hamper the development of the ESCO market in the Western Balkan Countries, Moldova, Turkey, Ukraine, Belarus and Russia, include:

- Complicated and very strict public procurement procedures,
- Lack of understanding of energy services and ESCOs,
- Lack of trust in outsourcing of EE services and lack of trust in ESCOs;
- Lack of interest in investment in EE;
- Lack of energy data or lack of reliable data for energy consumption;
- Lack of system for measurement and verification of energy savings;
- Lack of capacity for monitoring of implemented EE projects;
- Lack of umbrella organization (association) of ESCOs;
- Lack of standardized EPC or ESC model contract,
- Low energy prices.

## 4 Recommendation and success factors

### 4.1 Political commitment

A credible and long term commitment to energy sustainability and improved energy efficiency by the governments and local administrations can scale up the market for energy services in the Western Balkan Countries, Moldova, Ukraine, Russia, Belarus, and Turkey. These commitments shall be incorporated in the national EE policies and strategies such as. NEEAPs. The governments of the Contracting Parties of Energy Community (Western Balkan countries, Moldova and Ukraine) have developed their National Energy Efficiency Action Plans (NEEAPs) targeting at least 9 percent energy savings by 2018. In all of the already prepared NEEAPs the energy services and ESCOs are mentioned as an instrument for implementation of EE measures. The governments of Turkey, Russia and Belarus also show strong political will and readiness to improve EE. The government of Turkey also started to develop the NEEAP.

Local authorities undertake commitments for energy sustainability and the improvement of energy efficiency with development of Local (Municipal) Energy Efficiency Action Plans (LEEAPs) and/or Sustainable Energy Action Plan (SE(C)AP). Municipal energy planning can be a key for improving EE in municipal public buildings if its application is supported by national EE Laws. Implementation of EE measures identified in Local Energy Efficiency Action Plans (LEEAPs) needs financial support either from the national government or from the private sector in the form of energy service companies (ESCOs). It will stimulate investment in EE and it will scale up the ESCO markets. Many municipalities from the Western Balkan Countries, Moldova, Belarus and Ukraine already signed the Covenant of Mayors Initiative and prepared and submitted a SEAP (see Table 2).

Table 2. The number of Covenant of Mayors signatories, and submitted and accepted SEAPs as of October 2018

Country	Number of signatories	Number of submitted SEAPS	Number of accepted SEAPs
Albania	3	1	-
Belarus	39	11	4
Bosnia and Herzegovina	21	19	12
Kosovo*	2	-	-
Moldova	20	14	10
Montenegro	3	3	1
Serbia	1	1	1
Russia	-	-	-
The former Yugoslav Republic of Macedonia	1	1	1
Turkey	16	11	6
Ukraine	181	85	46

Source Covenant of Mayors web page: <http://www.covenantofmayors.eu/>

In the process of preparation of LEEAPs and SEAPs, energy services and ESCOs shall be considered as one of the instruments for the implementation and/or possible solution to fund EE projects, in the public, residential and industrial sector. In most of the countries,

SEAP preparation has been strongly supported by International Donors and International Financing Institutions (IFIs) through their technical assistance. Therefore, international energy experts can transfer through local action plans and SEAPs their expertise and experience regarding energy services and ESCOs.

## **4.2 Supportive EE and ESCO legal framework**

EE and the ESCO legal framework are essential for the development of the ESCO market. The ESCO legal framework in most of the countries in the EU is an integral component of Energy Laws or Energy Efficiency Laws. Therefore, the implementation of the EE legal framework directly enforces the implementation of the ESCO legal framework. However, there are also countries where energy services and ESCOs are regulated by separate laws or by-laws.

The full transposition of EU acquis for EE in the contracting parties of Energy Community (Western Balkan Countries, Moldova and Ukraine) will scale up the ESCO market since the enforcement of the EE legislation will stimulate public and private investments in EE. However, the ESCO provisions in the Energy Efficiency or Energy Laws are not sufficient if for instance the necessary secondary legislation for EPC is missing. Therefore, legal framework (in particularly secondary legislation) has to be prepared and adopted in the very next future in Moldova, Montenegro, Bosnia and Herzegovina, Albania and Kosovo. The legal framework of Serbia and Ukraine, in which energy services in the public sector are regulated by separate laws and by laws, can be a good example for all other countries of the Energy Community.

## **4.3 Creation of an energy efficiency fund**

Creating an energy efficiency fund can help to overcome existing financial and implementation barriers for faster development of ESCO business in Western Balkan Countries. However, because of the lack of experience and know how in setting up this kind of financial facilities, this process should be supported by International Financial Institutions, which already have implemented similar projects all over the world. Each country should have adopted own models of EERF taking into account its own legal aspects and market circumstances. Involvement of the public sector (public agencies) will be necessary to stimulate the market for energy services. At the beginning of the operation EERFs can finance implementation of projects in the public sector buildings and facilities through loans with lower interest rate and longer pay-back period. Funding for start-up of EERFs can be provided by International Financial Institutions (in form of soft loans or grants) and from government budget allocations. The creation of a proper managing structure of EERFs will be a crucial issue for the smoothly functioning of the EERFs. In some countries it will be recommended to engage a private company with long years' experience in EE to manage the EERF. The positive example with EERF and development of the ESCO market from Bulgaria can be used in other Western Balkan Countries, since they have certain similarity to Bulgaria.

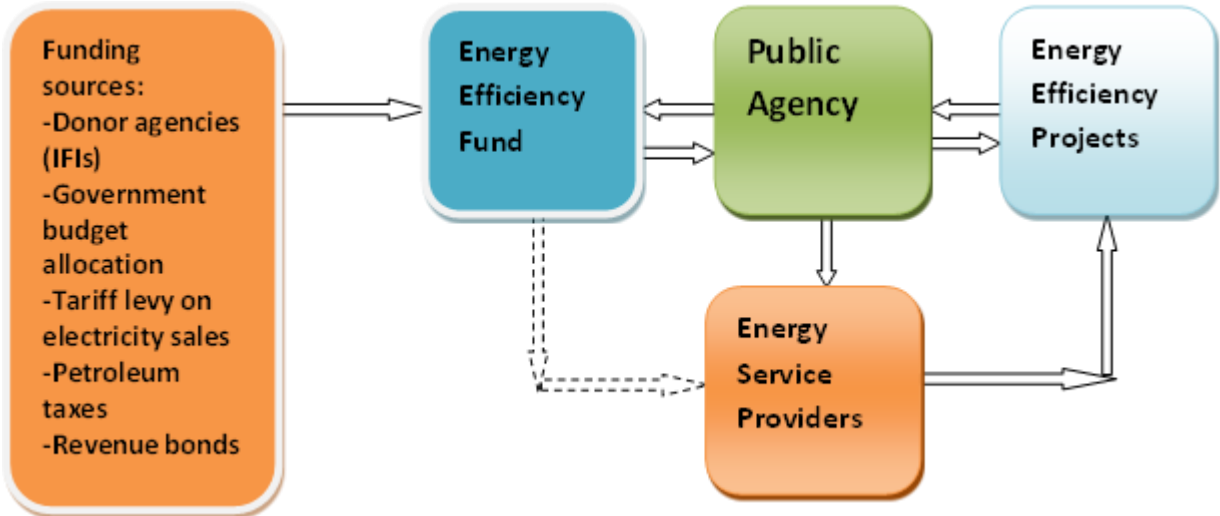
In the Guidance Note "Scaling Up Energy Efficiency in Buildings in the Western Balkans - Establishing and Operationalizing an Energy Efficiency Revolving Fund" prepared by Limaye Dili, Jas Singh and Kathrin Hofer for World Bank all aspects of Energy efficiency revolving funds (EERF) in Western Balkan Countries were analysed.

### **4.3.1 Creation of energy efficiency funds (EEF), financing barriers and implementation options.**

In the case of Energy efficiency revolving funds (EERF), some of the resulting savings are then used to repay the EERF until the initial investment is recovered, plus interest and service charges. The repayments can then be used to finance additional projects, thereby allowing the capital to revolve creating a sustainable financing mechanism. Since both the borrower and lender are publicly owned, such funds may often offer lower-cost financing with longer tenors (repayment periods) and less-stringent security

requirements than typical commercial loans. Because EE projects have positive financial rates of return, capturing these cost savings and reusing them for new investments creates a more efficient use of public funds than a typical budget or grant-funded approaches. This can help to demonstrate the commercial viability of EE investments and provide credit histories for public agencies, paving the way for future commercial financing. An EERF is generally capitalized from a range of sources, such as concessional loan or grant funds from donor agencies, government budget allocations, special tariffs or levies on electricity sales, petroleum taxes, revenue bonds, environmental charges or other sources. Options include creating the fund under an existing ministry, energy agency, or development bank; creating a new legal entity (independent corporation or new statutory agency); not-for-profit entity; or establishing a public-private partnership (PPP).

Figure 1. Process for establishing an Energy Efficiency Fund



Source: "Scaling Up Energy Efficiency in Buildings in the Western Balkans - Establishing and Operationalizing an Energy Efficiency Revolving Fund" Guidance Note prepared for World Bank

An EERF should be designed to serve the needs of all public agencies. Therefore, in addition to debt financing (i.e., loans) for EE projects, the EERF may have other financing options, or "windows," that may include energy service agreements, risk guarantees, grants, and budget capture; this guidance note presents a summary of these options.

The EERF should also provide technical assistance to public agencies and ESPs, and may provide procurement and implementation services that will transfer some of the implementation risk to ESPs and facilitate the development of an energy services market." (Limaye et al. 2014)

The EERF may also use a risk-sharing mechanism by providing credit or risk guarantees to commercial banks and other financial institutions (FIs) in order to leverage commercial financing for EE projects.

Under the ESA or EPC option, the EERF can engage private energy service providers to provide some implementation services using simple performance-based contracts. This approach can help transferring some of the project implementation risk to the private sector. It can also help to build the capacity of the ESPs and facilitate the development of an energy services market.

#### **4.4 Establishment of ESCO associations**

Associations of energy service providers and ESCOs play a very important role as facilitators and/or mediators of ESCOs. They represent the interest of their members (ESCOs) in front of the government and can participate as mediators in the case of dispute between ESCOs and their clients. They participate in the development of legislation and regulation in regards to energy services, especially in the public and residential sectors. Also ESCO associations promote energy services and ESCOs through organization of dedicated events as conferences and workshops. Therefore, the establishment of ESCO associations has to be supported by governments and international organization.

The Russian Association of Energy service companies (RAESCO) was established in 2014 and participate in the preparation and adoption of the standard named "Measurement and verification of energy efficiency.

#### **4.5 Development of guidelines, standard procurement procedures and EPC model contracts for the public sector**

The lack of understanding for ESCO concept by public administration in charge of the preparation of public tender documentation for energy services, the complex and very strict procurement procedures for public tenders as well as the lack of standard model contracts for EPC, are identified as the main barriers for the development of ESCO services in the public sector in all countries included in this report. High transaction costs resulted from long preparation and organization period for the public tendering of energy services can be reduced with the introduction of standardized tender documents and standardized tender procedures. In this context, the preparation of tender guidelines for energy services will be very useful. The introduction of EPC contracts model also can reduce transaction costs and increase the trust between the clients (public sector) and ESCOs.

International donors such as UNDP, GIZ, USID, and International Financial Institutions, EBRD, World Bank, can support governments in the preparation of guidebooks for tendering energy services as well as in the development of EPC.

Through the support provided by EBRD Serbia has prepared and already adopted the EPC contracts model for the implementation of projects in the public sector's buildings and municipality street lighting. Ukraine developed energy service agreements for the implementation of energy services in the public sector. In Bosnia and Herzegovina, draft versions of contracts model for EPC in public buildings and street lighting have been prepared but both have yet been not adopted.

In Russia, the two-stage procurement procedure introduced in January 2014 may partly help addressing the issue regarding the high transaction cost for the preparation of projects, as ESCOs will not have to undertake a full-scale investment-grade audit before bidding. Under the new procedure, this audit will only be required in the second stage of the procurement procedure when the public client has shortlisted a small number of ESCOs.

#### **4.6 Monitoring and measurement of energy consumption**

Introducing measurement and monitoring of energy consumption will result in producing reliable energy data, necessary for implementing ESCO (EPC) models. Introducing energy management systems and energy auditing in the public sector and in larger energy consumers (industrial and commercial enterprises) will improve the quality and quantity of energy data and will enable the preparation of pre-feasibility and full scale investment audit with higher accuracy.

In Serbia and Turkey the introduction of energy management systems and energy managers is enforced by law. Energy audits for larger enterprises and the public sector

are voluntary and they are still not enforced by a legislation in the Western Balkan Countries (except Serbia and Montenegro), Turkey and Moldova. In Russia, energy audit is mandatory for public buildings. However, by October 2017 contracting parties of Energy Community shall transpose and bring to force the Energy Efficiency Directive, which will result in introducing mandatory energy audits for all, larger enterprises as well as for public sector.

The measurement of energy consumption and consumption based billing is an issue that shall be addressed in the case of projects in the public and residential sector. In almost all of the Western Balkan countries (Serbia, the former Yugoslav Republic of Macedonia, Bosnia and Herzegovina), Ukraine, Russia and Belarus, the measurement of heat consumption in multi apartment buildings is still an issue. Tenants are not motivated to save energy and to invest in EE since it does not bring any benefits to them. Therefore, it will be important to enforce the legislation for mandatory measurement of energy consumption and to install metering devices in each apartment of residential buildings. Some countries (Serbia, the former Yugoslav Republic of Macedonia) have already adopted such a regulation.

#### **4.7 Development of a system for the measurement and verification of energy savings**

A credible method for measurement and verification of energy savings is necessary for transparency and correct implementation and running of ESCO projects. Furthermore, disputes between an ESCO and its clients about the project results (achieved energy savings), which in most of the cases has financial implication for both sides, can be avoided. Therefore, it is necessary to introduce either national or international protocols and standards or other instruments for measurement and verification of energy savings. Russia adopted the standard named "Measurement and verification of energy efficiency" which will allow assessing the indicators of energy efficiency and energy savings volumes during the implementation of specific projects and energy saving measures. Western Balkan Countries (Serbia, Montenegro, the former Yugoslav Republic of Macedonia, Kosovo, Albania) have prepared and adopted National Methodologies for Measurement and verification of energy savings from the NEEAP. In addition, the implementation of a web based platform for Measurement and verification of energy savings from NEEAP and SEAPs started in 2014. The development of both activities has been supported by GIZ since 2010. This platform can be used also for verification of achieved energy saving from EE projects implemented by ESCOs.

#### **4.8 Capacity building for energy efficiency and ESCO**

The lack of understanding for energy efficiency and energy services (ESCO) was mentioned as a barrier in public, commercial, industrial, financial and residential sector in all countries. In many cases the public sector is reluctant to contract private ESCOs for the implementation of EE measures, due to the lack of understanding for ESCO concept and low trust in ESCOs. Capacity building activities such as e.g. training of energy experts employed in the public sector for the identification/preparation of EE project (measures) from LEEAPs and SEAPs, can result in increased level of understanding and knowledge for energy services. These experts can participate in the preparation of bidding documents for EE projects, based on ESCO (EPC) model. For the commercial and industrial sector, capacity building training programs for energy managers and energy experts shall be developed to recognize benefit of EE projects implemented by energy services provided and ESCOs. In addition, capacity building trainings shall be organized for professional engineers (mechanical, electro, and construction) employed in private engineering companies (potential ESCOs), in order to be able to develop and implement EE projects by applying an ESCO concept. Dedicated training on capacity building should be developed also for the banking sector in order to obtain basic knowledge that allow acknowledging and recognizing the financial benefit of ESCO projects on the long term, as well as to evaluate ESCO projects.



With the development and implementation of capacity building programs supported by international donor and financial organization, the necessary know how and experience is ensured. EBRD, World Bank, GIZ, UNDP have been already involved in the implementation of capacity building activities in Serbia, Moldova, Ukraine and Bosnia and Herzegovina since several years. The involvement of international ESCOs for the realization of trainings will also be necessary.

#### **4.9 Promotion of energy services, the ESCO model and ESCOs**

Promotion of energy services and ESCOs is one of the most important drivers for the development of ESCO markets. Management of industrial enterprises, public enterprises and public authorities are often reluctant to outsource the maintenance of old and/or new installations of energy equipment (e.g. house's boiler or HVAC systems) since they are not familiar with the ESCO model. Therefore, activities (workshop, conferences) for the promotion of energy services and ESCOs have to be carried out in all countries. In addition, with the support of International Donor organization, pilot projects on ESCO basis including dissemination of project results should be realized. EBRD has already started the realization of pilot projects in the City of Dnepropetrovsk in Ukraine. (See information about the project in the Ukrainian chapter)

## 5 ESCO in the public sector and tertiary sector

The public sector in the Western Balkan Countries, Moldova, Ukraine, Russia and Belarus shows a significant energy saving potential. Estimated energy savings in public buildings range between 35 percent and 40 percent in the Western Balkan Countries and are the highest among the building sector (World Bank Group. 2014). This potential remains still underutilized, because of the many mentioned barriers (financial, legal,) that hamper investment in the public sector. ESCOs and energy services providers can help to overcome some of the existing financial barriers to scaling up implementation of energy efficiency. On the other hand, European and International experience shows that the public sector can encourage the establishment and growth of the ESCO market by providing a stable demand for services, clear procurement rules, and access to public financing (World Bank Group. 2014).

Although, ESCOs can provide many services to the public sector, ESCO market in this field is still underdeveloped in Albania, the former Yugoslav Republic of Macedonia, Kosovo\*, Turkey or is in a preliminary phase as in Serbia, Bosnia and Herzegovina, Ukraine and Russia. In Belarus, the ESCO market in the public sector is more covered, since the public ESCOs implement the project in the government owned buildings and utilities companies. In the developing countries, ESCOs are small private companies with limited technical and financial capabilities.

“Their ability to obtain commercial financing is constrained by their limited assets and weak balance sheets; their limited track record in the market; the perception of commercial lenders that EE projects are highly risky; the lenders’ unfamiliarity with, and the lack of technical due diligence capabilities to properly appraise, EE projects. These constraints prevent them from accessing financing or guaranteed savings, as with ESCOs in Western Europe and North America” (World Bank. 2014)

The development of the market for energy services faces a number of barriers in the public sector. The Guidance note “Municipal Budgeting and Finance” prepared by the Network of Association of Local Authorities in South-East Europe (NALAS ) addressed several issues that hamper investment in EE and development of ESCO market on local (municipality) level as (NALAS. 2014).

- **The low priority of investments to improve EE in municipal buildings.** The lack of information and awareness of local decision makers regarding the need and economic potential for improving EE in municipal public buildings and as long as the citizens experience deficits in public service infrastructure, EE investments in municipal buildings are likely to remain a low priority for municipal decision makers. Where municipal investment priorities include public building rehabilitation, they usually focus on critical and structural issues or the beautification of facades, rather than on EE improvements. In most cases, municipalities see EE as important only when necessary to comply with EE priorities set by international financial institutions (IFIs) or bilateral donors providing funds for building rehabilitation demonstration projects.
- **Low share of Energy Expenditures in Municipal Budgeting.** Although energy prices are increasing in all six countries, the political relevance of total energy expenditures of municipalities is still low. Mayors and council members are not aware of the amount of the total annual energy bill of their municipality. This is because energy is not a separate category in any of the municipal budget plans (it is usually subsumed under “goods and services”), and energy costs are scattered within a variety of budget categories. Energy costs also tend to form a relative low share of total municipal budgets—about 1-3 percent.
- **Lack of capacity to access to funds or to effectively implement EE projects and limitations on local borrowing.** Most of the municipalities in the six countries have borrowing restrictions, are not creditworthy, or they have limited access to credit. Those that are able to borrow often have debt levels near or at their legal

limitations for municipal borrowing. Debt limits are defined by law for municipalities in each of the six countries.

- **One-Year Budgeting Process.** In Albania, Montenegro, and Serbia, municipalities lack reserves or other means to carry over budget provisions from one year to the next. They must balance their annual expenditures with revenues received in the same budget year, or by means of loans taken from financing institutes in the same year. Municipal budget rules do not provide for any internal accounting mechanism that would allow for the direct amortization of one year's investments using the next years' additional revenues or energy savings. This applies also for EE investments in municipal public buildings.
- **Lack of budgetary provisions for retaining energy cost savings in future years to repay any debts incurred.** Without the ability to keep cost savings, most public agencies in the Western Balkans lack the incentive to implement EE measures. Such rules also constrain the agencies' ability to repay loans or enter into multi-year EPCs if the payments would be derived from energy cost savings in future years. Municipalities and some autonomous entities (e.g., hospitals and schools) receive budgetary allocations based on a formula and thus may not experience budgetary reductions if energy costs go down. Resolving this often requires amending existing budgeting rules and procedures to allow public agencies to retain the energy savings at least for the length of the ESPC or EE loan period.
- **Lack of separate accounts for capital and operating expenditures makes EE investments** (which are considered capital expenditures) difficult to repay using energy cost savings (considered operating expenses). It is common practice in municipal budgeting all over Europe to separate the accounts for operating expenditures (such as salaries, goods and services, and fees) from those for capital expenditures (such as investments, reserves, and loans), where local authorities have full local budget autonomy. This approach is not feasible where local authorities have limited budget autonomy—particularly in countries like Albania, Bosnia and Herzegovina, Kosovo, Macedonia, and Serbia, where municipalities depend on state transfers for both capital and operating budgets. If EE investments generate savings on a municipality's energy bill, the saved operating funds may remain unused if they cannot be transferred to the capital budget (which would require prior national government approval). Further, the saved amount is usually deducted from the operating budget approved by the national government in future years, since budgets are often based on the prior year's actual expenditures.
- **Line-item budgeting** prevents municipalities from using money budgeted for paying energy bills for the repayment of loans for EE investments instead. The use of standard line-item budgeting means that the amount set aside in a municipality's budget to pay energy bills (measured, for example, in cost per liter, cubic meter, ton, or kWh of purchased energy) usually cannot be used for other purposes—in particular if it is taken from state subsidies. This creates a high uncertainty among local decision makers (as for example, in BiH and the former Yugoslav Republic of Macedonia) regarding whether and how they can use this money to procure EE services instead of purchase energy. This is independent from the question of whether energy supply is organized by the municipality itself, or one of its public utilities, or any other third party.
- **Short-Term Perspective of Local Political Decision Makers** .The office term of mayors and councils in the Western Balkans ranges from three (Albania) to four years (Bosnia and Herzegovina, Kosovo, Macedonia, and Serbia) to five years (Montenegro). The elected politicians are usually focused on the creation of visible and tangible improvements for their voters within their office term, to improve their chances of being reelected. Therefore, 6-8 year payback periods for EE investments, as presented in the ECS average calculated for hospitals and schools in the Western Balkans, are usually not compatible with the investment horizons of local politicians.

- **Lack of Municipal Budget Autonomy.** State government control of municipal budgets is high in the region's six countries. In each country the national government must regularly approve investment budgets, and then provide the municipalities with some or all of the necessary investment funds from the national budget. While this does not necessarily constitute a barrier for EE investments per se, it does mean that the municipal priorities must align with those of the national government which creates some unpredictability for budget planning purposes. In cases where a national government does not place a high priority on EE investments and building refurbishment, particularly when compared with other investment needs, such investment proposals may run the risk of being rejected by the Ministry of Finance. Loans taken by municipalities are also usually subject to national government approval.

Although the NALAS study refer only to Western Balkan Countries, above mentioned barriers exist also in Moldova, Ukraine and Turkey. Some of recommendation to overcome these barriers as well as to scaling up investment in EE (including ESCO) are: (NALAS. 2014)

- Development of a legal framework and accounting rules that allows municipalities multiyear budgeting and to establish long-term contracts with ESCOs. With multi-year budgeting, municipalities can enter into multi-year contracts, since they would not be allowed to commit future funding that has not yet been appropriated. The introduction of 3–5 year budget planning, such as under the medium-term expenditure framework (MTEF), can help reconcile multiyear obligations within the annual budget envelope, provided that the budget planning process is sufficiently robust.;
- Reclassifying EE investments as utility services, where long-term contracts are implicitly allowed;
- Changes of budgeting rules for EE and other cost-saving measures;
- Introduction of municipal fiscal decentralization and increasing of revenue sources for municipalities;
- Creation of Energy Efficiency (Revolving) Funds for financing EE measures in Municipalities.
- Allowing municipalities greater autonomy in borrowing without MOF approval;
- Integration of municipalities as privileged beneficiaries of national EE Fund schemes;
- Exclusion of EPC/ESA repayments from public debt. Since EPCs and ESAs are long-term contractual obligation;
- Introduction of energy accounting and energy management systems and appointment of energy managers;
- Bundling of public facilities at municipal level and standardization of documentation and procedures;
- Preparation and implementation of Local (Municipal) Energy Efficiency Action Plans, building renovation strategies for buildings owned by municipalities.

In the last years International Donor and Financial Organization have been helping the government of the Western Balkan Countries, Ukraine, and Moldova to solve the legal and other barriers and to scale up investment in EE and introduction of ESCO in the public sector. In Serbia the legal framework for ESCO improved in the framework of the EBRD "REEP program". In addition, few public tenders for street lighting projects based on EPC have been realized in Serbia. In Ukraine Dnepropetrovsk Municipal Energy Management Company (DMEMC) and the City of Dnepropetrovsk has received a loan from the European Bank for Reconstruction and Development ("EBRD") and a grant from the Eastern Europe Energy Efficiency and Environment Partnership ("E5P").The intentional use of the proceeds of the EBRD loan and the E5P grant is to finance energy

service companies ("ESCOs") to implement energy efficiency measures in public buildings through energy performance contracts ("EnPC")(EBRD 2016).

## 6 ESCOs in the residential sector

There is a significant energy saving potential in the existing residential buildings stock within the countries at analysis in this report. In the Western Balkans, the buildings consume about half of the energy. "Estimated energy savings in buildings range between 20 percent and 40 percent, with the highest potential expected in the public sector (35–40 percent), followed by the residential sector (10–35 percent)" (World Bank Group 2014). A 2012 regional market assessment commissioned by the Energy Community Secretariat (ECS) concluded that potential annual energy savings amount to about EUR 343.2 million or 6,162 GWh. In order to achieve 9% of this target (target until 2018 set by NEEAPs) Western Balkan Countries shall invest EUR 2,7 billion (World Bank Group 2014). As in the majority of European countries, a large part of the building stock in Russia, Turkey and Belarus is obsolete and hides huge energy saving potential and needs refurbishment and implementation of energy efficiency measures.

Although, the residential sector can attract investments in EE projects in the market for energy services and ESCOs is still not developed in the Western Balkan Countries, Moldova, Turkey, Ukraine, Russia and Belarus. Lack of supportive legislation and financing mechanisms for implementation of EE measures in residential buildings challenge the participation of the ESCOs on the market. However, some positive changes in legislation in Ukraine and Serbia resulted with implementation of few EE projects based on ESCO model.

Some common barriers in the countries for the ESCO markets in the residential sector are the following:

- Low energy tariffs. Although in the last years, in the Western Balkan Countries, Ukraine, Russia, Belarus and Moldova the prices for electricity, district heating and natural gas increased, they are still below the real market prices and subsidized by the governments. As a result, longer pay-back periods for EE projects are required and investments in EE are less attractive. ESCOs have, hence, to conclude EPC with long contracting period (more than 10-15 years).
- Lack of consumption-based billing for heating. In most of the existing buildings (constructed during the Soviet Period in Moldova, Ukraine, Russia and Belarus as well as during the former Yugoslavia time in Serbia, Bosnia and Herzegovina, Montenegro, the former Yugoslav Republic of Macedonia, Kosovo), metering of heat consumption is only possible with installation of individual heat meters on each radiator because of the vertical system for heat distribution. Nowadays, the heat consumption is measured in the heat substation and then divided per apartment per square meter. With this approach, tenants are barely driven to undertake EE projects (World Bank Group. 2014).
- Project size and high transaction costs. In the Western Balkan Countries, Moldova, Ukraine, the share of private dwellings is above 90%. In 2010 in Moldova, 96% of the dwellings were private and only 4% public owned. In 2011, in Ukraine, 95% of the dwellings were private owned and only 5% owned by state or local governments. Single family houses account for about 90% of the total number of buildings in the Western Balkan countries (e.g. in Serbia 89.6%, in Albania 84%). In Ukraine, Russia and Belarus, the share of single family houses on total number of buildings is much lower (e.g. in Ukraine is about 50%) (Panev et al. 2013). This "fragmented" structure of building stock particularly in the Western Balkan Countries increases the complexity of investment in EE and transaction costs, since many single private clients and small sized projects are involved.
- Lack of established *Homeowner association (HOA)*. HOAs are legal entities that could enter into contract with ESCOs, borrow money from Banks and open bank accounts. HOAs have the chance to ensure that any EE benefits are fairly distributed across all homeowners and that good behaviour in the energy consumption is rewarded (World Bank Group. 2014). Although in all Western Balkan Countries legislations related to

the creation of Homeowner associations (HOA) are in place the aforementioned practice of HOAs has not spread yet. Therefore, ESCOs investment in EE in multi apartment buildings implies dealing with multiple owners and not with HOAs.

Moreover, HOAs' creditworthiness and decision making process. In the countries (as e.g. the former Yugoslav Republic of Macedonia or Serbia) where the HOAs can be registered as legal entities, HOAs cannot borrow money from Commercial Banks, since they are not creditworthy. Other problem that occurs in multi apartment buildings is connected with a complicated decision making process. There are several countries in which according the legislation related to maintenance of buildings, 51 percent or simple majority or 100 percent of the apartment owners have to agree for capital investment up-grade (World Bank Group. 2014).

- "High risk perception. Commercial banks often consider EE investment in residential buildings as very risky operations because of the complex ownership structure of buildings, low creditworthiness of HOAs and often long payback period. Therefore, they are reluctant to issue loans for the residential sector or, in case the loan is issued, these show very high interest rates (World Bank Group. 2014).
- Lack of financing and incentive schemes. Initiating investments in EE in residential buildings requires state financing and/or incentive schemas Costs for energy audits and preparation of technical documentation for building renovation, can be covered by state funds/grants or supported by state incentives (e.g. tax reduction). These will reduce up front investments for ESCOs and/or for building owners (World Bank Group. 2014). Nowadays, all countries are facing a lack of state incentives for the residential sector, special initiatives are active for EE in industry, but not for residential sector.
- Lack of understanding of ESCO concept. Building/apartment owners are not familiar with ESCO concept, and therefore they are not aware of the benefit of the EE projects implemented through ESCOs.

Some recommendations to scaling up investment in EE in residential buildings were mentioned in the Final Report "Western Balkans – Scaling Up Energy Efficiency in Buildings" prepared by World Bank Group. These recommendations are (World Bank Group. 2014):

- Enforcement legislation for HOAs and creation of HOAs. Establishment of HOAs as legal entities with bank accounts will enable more investments in EE and more involvement of ESCOs. Therefore, implementation of the existing legislation related to creation of HOAs and maintenance of residential buildings have to be enforced. In some countries as e.g. Bosnia and Herzegovina legislation for maintenance of residential buildings shall be adopted.
- Introduction of financing and incentives schemas for the residential sector. The introduction of dedicated EE funds and incentive schemas will help to scale up implementation of EE projects in residential sector. Through funding programs and incentives (e.g. tax incentives for EE equipment and materials) can be financed part of EE projects as e.g. energy audits, preparation of pre investment studies etc. Creation of an EE fund will enable ESCOs to obtain loans with lower interest rates or to obtain guarantee for loans from commercial banks.
- With the introduction of heat metering and consumption based billing in the residential sector and particularly in multifamily buildings, EE measures will create the energy cost savings cash flows from which EE loans can be repaid. In Albania, Montenegro, Kosovo only small numbers of buildings or single houses are connected to district heating. While in all other countries metering on apartment level has to be introduced as soon as possible. Purchasing of metering devices can be financed by the district heating companies, owners or through state funds.

Several residential buildings can be bundled in one project to reduce transaction costs. This is possible where residential buildings are owned by state or local authorities. In

particular in Ukraine, Moldova, Russia and Belarus lot of buildings were built in the soviet period (e.g. in Ukraine 76%). Since these buildings show similar characteristics, they can be classified according to the building type and construction period This classification will enable to reduce the number of projects developed. Organization of awareness campaigns and public education on EE and ESCOs can provide a base level of information from which more informed decisions can be made. Information programs can involve a range of media, from utility fliers to public posters to radio/TV spots to websites. In particular, websites that gather the relevant information, contact details for financing and incentive programs, and advice for working through HOAs—can offer a simple “one-stop shop” and reduce the transaction costs associated with undertaking EE implementation. It will attract investments in EE projects from private sector and commercial banks. International ESCOs will have interest to enter the huge markets in Russia, Ukraine and Turkey.



## 7 ESCOs in the industrial sector

The industrial sector is particularly important for energy service provider (ESCOs) in Turkey, Ukraine, Russia, and Belarus. These markets have huge potential for EE since their governmental energy policies and strategies focus on EE.

The Russian market is huge and all industrial sectors need to increase their energy efficiency. Few ESCOs are currently active in the Russian industrial sector. Since 2014 in the industrial sector about 20 ESCO projects with an investment volume of EUR 40-50 million have been implemented. (ECEC, 2016) "Electricity is one of the major items of expenditure of any industrial enterprise. Optimizing electricity consumption will help to fulfil the main task of achieving a substantial reduction of overall costs and to increase the product's competitiveness" (Smolnikov, 2015).

The Turkish government is focusing on the industrial sector for the implementation of EE policies, since it plays a key role in the fast growing Turkish economy (6<sup>th</sup> biggest economy in Europe and the annual demand increase of Turkey is around 4,6% since 1990. It is expected to grow to 5% annually to 2023)). (Celikoglu 2015) The Turkish government has developed and implemented incentives schemas for the implementation of the "Energy Efficiency Projects (VAP)" in industry. Since 2000, 5 million Turkish lira (around EUR 1.6 Million) has been allocated each year for "Energy Efficiency Projects (VAP)" in industry. The EDV (ESCO) companies are involved in realization of different EE projects mainly in large industrial enterprises. They use standard service or sales contracting. Modified EPC were used only by a few ESCOs. The funding is provided by ESCOs own equity or by the customers if they are large industrial enterprises. Third part financing is not very common since there are not attractive conditions in the credit lines from commercial banks.

Nowadays, practically there is no ESCO market for the industrial sector in Ukraine. In the last 10 years, especially during the 2013-2015 period, Ukrainian industry lost its position on the market. Retrofitting projects are rarely implemented by the company owners, and in these cases, energy service companies are not involved (EC, 2016).

"In Russia, the common approach to increase energy efficiency is running austere projects with short payback periods, which the enterprise is able to implement with its own available resources. Naturally, such projects cannot have any impressive results." (Smolnikov, 2015)

In Turkey, Ukraine and Russia, the ESCO market in the industrial sector is well established. These governments may also focus on the promotion of ESCO industries in the residential and the commercial sectors, which have huge energy saving potential. ESCOs can offer a range of services providing necessary technical skills and resources and facilitate access to financing.

In the Western Balkan Countries the implementation of EE in industry is not the focus of governmental policies, since these markets are relatively small and they have very limited energy saving potential in the industrial sector. Therefore, the interest of energy services providers and ESCOs to invest in EE projects in industrial enterprises is very low and the ESCO market is not well developed.

In the industrial sector the main barriers that may jeopardise the implementation energy efficiency are financial. However, the lack of motivation (including the lack of administrative incentives, tasks by increasing energy efficiency, low energy tariffs, lack of understanding of EE and ESCO model etc.) makes such EE projects not a priority for the industry sector (EC, 2016).

The public sector should have the leading role in the promotion of energy services and ESCO business in all Western Balkan Countries. Governments can stimulate the ESCO industry through creation of favourable conditions for investments in EE projects. They shall adopt legislative and regulatory framework to remove barriers to public procurement of energy services. Clear regulations, rules and procedures will build the

trust in work between the public sector and ESCOs. Providing affordable financing through Energy Efficiency Funds can also facilitate investments in ESCO projects. International donor organizations and financial institutions should support governments in the formation of ESCO market. International ESCOs can bring necessary know-how and experience for ESCO business. As the markets for energy services are catalysed, ESCOs can extend activities to the industrial and commercial sectors.

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## **9 Development of the ESCO Market in Albania in 2015**

### **9.1 General overview of the market**

The energy service market in Albania is at its early stage. No significant changes have been recorded in the development of the ESCO market during the period 2013 – 2015 (ECEC, 2016)

Small private companies (e.g. distributors of equipment), that provide different kind of services as energy audit, installation and maintenance of equipment for heating and cooling, have the potential to become ESCOs. However, these companies need capacity building programs to be able to provide a full range of energy services (ECEC, 2016)

### **9.2 Legal framework**

The new Law on Energy Efficiency was approved in November 2015. This law replaced the Law on EE adopted in 2005 and it is complainant with the Directive 2006/32/EC (ESD). The new Energy Efficiency Law includes necessary provisions for establishment of ESCO market in Albania, as well as securing financing through the Energy Efficiency Fund. The Law prescribes also requirement for public sector to purchase energy efficient equipment and appliances. (ECEC, 2016)

The EE legislation needs to be completed with the Law on Energy Performance of Buildings and by-laws that will make the legislation applicable (ECEC, 2016). The Energy Community noted in its Assessment of the first NEEAP that "One of the main reasons for low implementation of the 1<sup>st</sup> EEAP was the missing supportive legal framework, as well as the lack of dedicated funding". (Energy Community 2014)

Furthermore, Albania needs to improve and adopt the second NEEAP (the first draft was submitted in November 2013), following the requirements of Directive 2006/32/EC and the template developed by the Energy Community Energy Efficiency Coordination Group. (Energy Community 2016) The 2nd NEEAP envisages further implementation of Energy Efficiency Law and puts focus on development of ESCO market as prerequisite for implementation of measures in building sector, water-supply systems, public lighting and industry. (Energy Community 2014)

In the 2<sup>nd</sup> NEEAP financing mechanisms proposed including strengthening the role of EE Fund, public budget, loans, subsidies, IFIs, ESCO financing etc. However, sources of financing were not clearly identified and presented. (Energy Community 2014)

### **9.3 Barriers to the development of the energy service market**

The main barriers for the development of the ESCO market in Albania were identified as follow (ECEC, 2016EC, 2016):

- Legal: There is no specific legislation for ESCO's. The EE legislation needs to be completed with the Law on Energy Performance of Buildings and the by-laws that will make the legislation applicable
- Financial: There are no convenient sources to finance the activities of energy services. In Albania the banking system is facing issues with non-performing loans in the last three years, with the 25% of their total loan portfolio as non-performing or bad loans. This pushes the banks to increase the interest rates and to add administrative burdens to loan applicants. Moreover, the government does not have subsidies for ESCO's and does not promote it as a viable mechanism and does not incentivise EE neither at national nor at local level

Other barriers that hamper development of the ESCO market are: (EC, 2016)

- Lack of reliable energy data from the consumers resulting from lack of monitoring,
- Lack of know-how on the market,

- Lack of legal framework for the government entities to apply ESCO mechanism,
- Low confidence in the EE expertise by the big consumers,

#### **9.4 Recommendations to overcome the existing barriers**

To overcome the identified barriers some steps and activities shall be carried out:

- Full transposition and implementation of EU directives into Albanian legislation;
- Strictly future implementation of the legal framework on Energy Efficiency, EE Action Plan and Building Codes;
- Incentives and financial supports for investments in EE;
- ESCO penetration in the domestic market;
- Programs for EE on local (municipality) level;
- Awareness raising activities
- Raising the level of professional capacities on EE within Ministry of Economy and Industry (MEI) with the support of European Commission, through KfW, EU, and other donors, such as USAID, GTZ, etc.;

#### **9.5 Energy services in the public sector**

In the draft version of the 2<sup>nd</sup> NEEAP measures for public sector are mentioned , including the ones dealing with stricter standards for new public buildings, refurbishment programs, promotion of public street lighting and SHW systems, information and awareness raising campaign, energy labelling and minimum standards for electric appliances (Energy Community 2014).

Municipal spending on EE improvements in public buildings is still marginal compared to other budget items. In Albania municipalities accounted for a total of €478 million of investments in 2013, of which only €92,600 were dedicated to EE improvements (i.e., 0.02 percent) (NALAS 2014)

The barriers that hamper investments in EE and development of the ESCO market in this sector are:

- Limited number of creditworthy municipalities and borrowing capacity;
- Legal Limitations on Municipal Borrowing. The Maximum ratio of net operating revenues to total debt service is 1.4.; (NALAS 2014)
- Lack of multi years budgeting in municipalities and retention of energy savings. Municipalities lack reserves or other means to carry over budget provisions from one year to the next. They must balance their annual expenditures with revenues received in the same budget year, or by means of loans taken from financing institutes in the same year. Municipal budget rules do not provide for any internal accounting mechanism that would allow for the direct amortization of one year's investments using the next years' additional revenues or energy savings. This applies also for EE investments in municipal public buildings. (NALAS 2014)
- Lack of Separate Accounts for Capital and Operating Expenditures. In their budget plans, municipalities may not foresee the transfer of a surplus from their operating budget to their capital budget, and vice-versa. If EE investments generate savings on a municipality's energy bill, the saved operating funds may remain unused if they cannot be transferred to the capital budget (which would require prior national government approval). Further, the saved amount is usually deducted from the operating budget approved by the national government in future years, since budgets are often based on the prior year's actual expenditures (NALAS 2014).

- Lack of budget autonomy. The municipalities depend on state budgets for their operational budgets, future energy savings would result in a deduction from their operational budgets, and the saved energy cost cannot be used for other local purposes—creating a huge disincentive to save energy. In Albania, local governments receive more than 40 percent of their revenues from conditional or earmarked grants from their national governments. Therefore, the central government has high control over local budgets (NALAS 2014)
- Short-Term Perspective of Local Political Decision Makers. The office's term of mayors and councils in Albania is three years. Therefore they are usually focused on implementation of visible and tangible projects for their voters within their office term, to improve their chances of being re-elected. Therefore, 6-8 year payback periods for EE investments, are usually not compatible with the investment horizons of local politicians (NALAS 2014)
- Complex public procurement procedures;
- Lack of model for EPC and standardized procedures for public tendering of energy services;
- Small project sizes, leading to high project development and transaction costs);

Some of the potential solutions to overcome above mentioned barriers are: (NALAS 2014)

- Integration of EE investments into Medium-Term Expenditure Frameworks (MTEFs) with rolling three-year budgetary plans (EU);
- Reclassifying EE investments as utility services, where long-term contracts are implicitly allowed;
- Fiscal decentralization and more budget autonomy for municipalities;
- Increased local revenue sources;
- Obligations to develop and implement Municipal EE Action Plans (MEEAPs) or Sustainable Energy Action Plans (SEAPs);
- Grants for energy audits and bundling of public projects at municipal level to reduce transaction costs;
- Standardization of documentation and procedures for public procurement of EE equipment and services;

## **9.6 Energy services in the residential sector**

The residential sector in Albania has high energy saving potential, since the majority of the existing building stock is obsolete. Moreover, high energy consumptions are recorded for electricity in this sector (49% for 2008) (NEEAP. 2011)

The primary policy that enables creation of Homeowner Associations (HOA) is in place, but must be enforced. The "Regulation on Management of Buildings" has to be implemented. Illegal buildings (10-15% of multi-owner buildings) and non-payment of utilities are core issues in the Albanian residential sector.

In addition this sector also faces a number of barriers hampering these Energy Efficiency investments. The key barriers are (World Bank. 2014):

- small project size and therefore relatively high transaction costs;
- low energy tariffs (especially for electricity).
- perception of high risk by commercial banks.
- relatively high commercial bank interest rates; and
- maintenance of buildings not regulated by legislation.

## 9.7 Energy services in the industrial sector

The energy consumption in the industry sector will be developed as a result of the industrial development that will occur in the upcoming year. The Industry Sector accounts for approximately 13% of total final energy consumption. The largest consumer of energy in industry is food and beverage 19.9%, the building materials sector by 18.6%, followed by chemicals 15.4 %, ore-extraction industry 12.5%, etc. This sector is expected to play a great role in the economic growth, employment and living standard (NEEAP 2011)

## 9.8 Conclusions

The approval and enforcement of EE legislation, implementation of the new Law on Energy Efficiency, adoption of the second NEEAP and preparation of the 3th NEEAP will create energy investment-friendly conditions, including obligation to conduct energy audits, national evaluation of energy saving potentials. The establishment of Energy Efficiency Fund will contribute essentially to the implementation of EE policies. Institutional framework for EEAP implementation should be further developed and strengthened, with clearly defined roles and responsibilities for EEAP implementation (ECEC, 2016)

Low interest loans for EE measures provided by IFIs for domestic commercial banks will make investment in EE interesting for both ESCO and the consumers. Incentives and/or subvention for energy audits of larger energy consumers shall be introduced by the Government. Creation of an EE Fund can improve investment in EE, especially in the public sector. (ECEC, 2016)

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## **10 Development of the ESCO Market in Bosnia and Herzegovina in 2015**

### **10.1 General overview of the market**

The energy service market in Bosnia and Herzegovina (BiH) is still at a very preliminary stage. Currently, there have not been significant changes in the development of the ESCO market in BiH in last two years (2014 – 2015) (ECEC, 2016)

It is difficult to estimate the number of ESCOs in Bosnia and Herzegovina, since the companies which provide energy services are mostly and, therefore, energy services are seldom their core business. Moreover, these companies are not registered as ESCOs. The number of ESCOs in 2016 in Bosnia and Herzegovina was less than 10 and there were no significant changes from the report of 2013 (ECEC, 2016).

ESCOs in Bosnia and Herzegovina are mostly small private companies (small enterprises) mainly involved in some other similar businesses (ECEC, 2016).

Most of the projects developed by these ESCOs are connected to heat energy supply: about 50 projects with 50 MW of installed power, mostly for heat energy production and/or without CHP plants. The most of these projects were implemented as fuel switch model (from fuel oil to biomass) and mostly realized in the public sector (health and education institutions) and partially service sector (ECEC, 2016).

As it is officially known, there are no EPCs, all the contracts concluded as ESCs. Some EPCs are in preparation, mostly regarding the improvement of performances in the public street lighting. Actually, some house management companies (companies dealing with the management of department buildings) realized small contracts as EPCs, but there is no evidence on that (ECEC, 2016).

### **10.2 Legal framework**

Republika Srpska adopted the Law on Energy Efficiency and the Energy Efficiency Action Plan (EEAP), while in the Federation of Bosnia and Herzegovina the Law on Energy Efficiency is still awaiting adoption (since September 2014). In the absence of a full package of primary and secondary legislation transposing the Directive 2006/32/EC in each entity and the Brcko District, as well as the adoption of a state-level EEAP and changes in the state-level Law on Public Procurement to include energy efficiency criteria, Bosnia and Herzegovina still fails to comply with the Directive (Energy Community 2016).

Three regulations came into force in Bosnia and Herzegovina's entity Republika Srpska, setting the minimum energy performance requirements for buildings, as well as implementing schemes for energy audits and energy certification of buildings. (Energy Community 2016)

### **10.3 Barriers for the development of the energy service market**

The main barriers for the development of the market for energy services in BiH are: (EC)

- Legal: The process of the adoption of the complete legislation for ESCOs has to be finished. ESCOs are mentioned in the laws on energy efficiency of both entities in Bosnia and Herzegovina (FBiH and RS), but the secondary legislation is not adopted. Apart from that, some changes and addition are needed in existing legislation, especially regarding the public procurement.
- Financial: There are no convenient sources to finance the activities of energy services. It means, there are no special credit lines for financing energy services. The interest rate from commercial banks on existing credit lines for SME, are too high. Of course, the credit rating of Bosnia and Herzegovina is one of the reasons for that. In addition there are no state incentives for EE. The absence of Funds and programs for financing EE in municipalities significantly reduces the potential of the companies.



Moreover, some other barriers hinder the further development of ESCO market in Bosnia and Herzegovina:

- lack of know-how of companies that would like to work as ESCO;
- lack of trust amongst potential contractors of ESCO and/or EPC model;
- lack of energy data (energy statistics is still at sufficient level, especially on biomass sources and consumption);
- lack of monitoring of energy consumption (there is no individual metering system in any of district heating system, apart from some heat metering at service and public sector connected to district heating systems);
- the low price of electricity demotivates investments in EE projects;
- the lack of possibility for apartment owners in multi apartment buildings to control and manage their consumption;
- the unclear structure of the state with undefined responsibility regarding the energy sector, but other sectors too.

#### **10.4 Recommendations to overcome the existing barriers**

Most of the barriers have to be removed by authority (legislation, establishment of clear road map for the development of ESCOs, etc.). Law for EE is not sufficient for the implementation of EE through ESCOs and therefore secondary legislation and procedures for public procurement of energy services has to be developed. EPC contracts for implementation of energy services in municipality buildings and public lighting, already prepared in the framework of REEP EBRD program, have to be adopted. A legal framework that allows municipalities to establish long-term contracts should be prepared. The development, implementation, monitoring, and regular updating of local EE action plans – SEAPs has to be ensured by local authorities. Earmarking of funds provided through national EE funds for municipalities and establishment of specific national support programs for EE in municipalities can stimulate the energy service market, as well as the establishment of national support programs for the setup and implementation of ESCO models in municipal public buildings and services.

Capacity building programs and events such as workshops, for the national and local public authorities have to be developed and organized. In the same time capacity building programs for potential ESCOs should be implemented.

#### **10.5 Energy services in the public sector**

Energy Efficiency projects implemented on the basis of EPC model in BiH are still missing. In some public utility companies (heat suppliers) projects based on ESC have been implemented.

Some of the barriers that hamper the implementation of EPC in public sector (buildings and street lighting) are (World Bank 2014, Barnett 2013):

- Limitation of multiyear budgeting (up to 3 years).
- In Federation of BiH (FBiH) EPC investments and payment obligations are treated as a public debt. In the PPP Law of Republika Srpska (RS) it is not clear.
- Unclear regulation in Federation of BiH (FBiH) or not regulated in (RS) whether individual EnPC projects do not require up-front feasibility studies but the concept as such is admissible and can be tendered on basis of walk through audits. Bigger issue is EPBD audit rules may preclude ESCO to carry out own audit.
- Lack of model EPC and standardized procedures for public tendering of energy services.

The European Bank for Reconstruction and Development (EBRD) has developed the regional project REEP (Regional Energy Efficiency Program) since 2013. One component of the project is the support to preparation of ESCO projects in municipalities. Within this project's component, the EBRD has prepared the detailed model of the contract for energy services (EPC) for buildings and street lighting, and support the development of two ESCOs projects (the hospitals in Zenica and Mostar, FBiH). The mentioned ESCOs projects are still under development, and this process goes very slowly, amongst other reasons due to abovementioned barriers.

## **10.6 Energy services in the residential sector**

The residential sector also faces a number of barriers hampering these Energy Efficiency investments. The key barriers are: (World Bank. 2014)

- small project size and therefore relatively high transaction costs;
- low energy tariffs (especially for electricity);
- perception of high risk by commercial banks;
- HOAs' decision-making processes is complicated and they have low creditworthiness;
- lack of heat metering devices installed in multi apartment buildings (norm-based billing systems for heating)- the owners are not motivated to invest in energy saving;
- relatively high commercial bank interest rates; and
- high discount rates (or hurdle rates) on the part of residential.

## **10.7 Energy services in the industrial sector**

ESCO projects are not developed in the industrial sector. Management of industrial enterprises is not interested in investment in EE, because of the lack of information and understanding for energy services, and the lack of confidence in ESCO business.

## **10.8 Conclusions**

The draft Energy Efficiency Law and the draft EEAP in the Federation of Bosnia and Herzegovina should be adopted without any further delay. Finally, a state-level EEAP and amendments to the State Law on Public Procurement in order to include energy efficiency criteria need to be adopted. The coordination between authorities at the entity and state levels needs to be improved as a precondition for further energy efficiency progress and for the development of the energy service market. A state-level structure for monitoring and reporting on the implementation should be established and adequately sourced with funds and personnel.

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## **11 Development of the ESCO Market in Kosovo<sup>5</sup> in 2015**

### **11.1 General overview of the market**

EC, 2016 There is no ESCO companies in Kosovo\*. However, in the last few months there have been some indications for ESC market, where companies have approached the Municipalities in particular for investments in the Street Lighting. However, due to the weak or unregulated legal framework for ESCO contracting the process is not feasible yet (EC, 2016).

### **11.2 Legal framework**

As a Contracting Party of the Energy Community Treaty, Kosovo institutions have to transpose the third energy package and adopt the EU acquis on energy efficiency and renewable energy.

The Kosovo National Energy Efficiency Action Plan (NEEAP) is a basic document for the implementation of Kosovo's policies on energy efficiency. Kosovo's NEEAP (2010 – 2018) was approved by the Ministry of Economic Development on September 30th, 2011. Kosovo's second National Energy Efficiency Action Plan (hereinafter – 2<sup>nd</sup> NEEAP) has been prepared on the basis of Article 10 of the Law on Energy Efficiency. It was adopted in December 2013.

With the adoption of the Law on Energy Efficiency in 2011, Kosovo made a significant progress towards the creation of an appropriate legislative and institutional framework for energy efficiency. The Law on Energy Efficiency transposes the key requirements of Directive 2006/32/EC and sets the legislative and institutional framework for the implementation of the energy efficiency policy in Kosovo. It sets the legal basis for future development/amendment of secondary legislation.

The Law on Energy Efficiency stipulates the development of energy efficiency plans, obligatory energy efficiency measures in the public sector, energy management, energy auditing and determines the role of different organizations dealing with energy efficiency. Amendments to this Law are planned, with the objective to improve the incentives scheme for energy efficiency measures and to introduce stricter penalty provisions.

Financing of energy efficiency projects suffers from the lack of developed framework for innovative financial mechanisms, including the setting up of the Energy Efficiency Fund stipulated in the Law, and the development of the market for energy services and operation of energy service companies (ESCOs).

Based on the Law on Energy Efficiency, the Kosovo Agency for Energy Efficiency (KEEA) was established and its core staff appointed in April 2012. KEEA is responsible for the preparation of NEEAP, for the progress reports and for the development of the system for monitoring and verification of the achievements of the indicative energy saving targets (Energy Community 2014).

A Draft Law on Energy Performance of Buildings was developed under the Regional Energy Efficiency Programme (REEP), funded by the European Commission - Western Balkans Investment Framework and implemented by EBRD and the Energy Community Secretariat. It was submitted to the Kosovo authorities on 6 February 2015. The law would transpose the Energy Community acquis on the energy performance of buildings (Directive 2010/31/EU).

The amendments to the Law on Public Procurement of 2011 introduced energy efficiency criteria in the procurement of energy efficient equipment and vehicles, in line with Annex VI of Directive 2006/32/EC. However, there is no secondary legislation in place.

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<sup>5</sup> \*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

Secondary legislation on financing instruments, metering and informative billing, ESCO etc. still needs to be adopted for full compliance.

### **11.3 Barriers to the development of the energy service market**

The main barriers for the development of the market for energy services in Kosovo are (EC, 2016):

- Legal: There is not a secondary legislation related EE Law (based on Directive 2006/32/EC) in place. Secondary legislation on financing instruments, metering, informative billing, ESCO's, etc. still needs to be adopted for full compliance. (Energy Community 2016) Both types of energy service contracts (EPC and ESC) are not applicable in Kosovo. According to the current legal framework the PPP or negotiated contract can be applicable. This creates a limitation for EPC, or ESC contracting (EC JRC, 2016).
- Financial: High interest rates from banking sector. The commercial banks perceive Investments in EE as a risky business since they do not have experience on how to evaluate EE projects. There are not financial incentive scheme on national or local level to support such investments (EC JRC, 2016).

Other barriers that hamper development of the ESCO market are (EC, 2016):

- Lack of a comprehensive and reliable EE data base for Kosovo. Poor quality of data leads to poor decision making which in turn results in ineffective investments.
- Lack of know-how for the ESCO.
- Low confidence of the potential consumers in the EE services.
- Energy efficiency is not a priority for the Mayors: larger cost savings can be achieved elsewhere in the Municipal Budget and focus on other priorities (e.g. waste management);
- Lack of internal expertise in financial and project management.
- Insufficient EE expertise and resources at municipal level.
- High transaction cost for the preparation of EE and ESCO projects (in funds and time).

### **11.4 Recommendations to overcome the existing barriers**

Some steps and activities shall be carried out to address some gaps: (EC, 2016)

- Full transposition and implementation of EU directives into Kosovo legislation (adoption of the legal framework for Energy Efficiency and ESCO);
- Strictly future implementation of the legal framework on Energy Efficiency, EE Action Plan and Building Codes;
- Incentives and financial supports for investments in EE;
- Preparation of EE programs and projects based on ESCO model for EE on local (municipality) level;
- Awareness raising activities and promotion of ESCO services in the domestic market;
- Capacity on EE within Ministry of Economy and Industry (MEI) and Energy Agency of Kosovo with the support of EU and IFIs as EBRD and KfW, and other donors, such as USAID, GTZ, etc.;
- Capacity building for energy professionals and potential ESCOs;
- Implementation of energy audits and energy management in larger enterprises;

- Preparation and implementation of EE pilot projects based on ESCO model;

## 11.5 Energy services in the public sector

Kosovo\* is already implementing renovation programs for buildings (especially public buildings to promote the leading example of the public sector). Numerous projects are running at the moment:

- EU funded project for the renovation of 60 schools and three hospitals – 3 year Projects, was foreseen to be finalized 2016.
- World Bank project – implementation of EE measure in central government buildings
- The Kosovo Sustainable Energy Project (KoSEP) – developed by the European Bank for Reconstruction and Development (EBRD) – supports energy efficiency investments and renewable energy development in the residential, commercial, industrial and agricultural sectors by providing tailor-made loan products, free of charge technical assistance and investment grants.

A World Bank's 2013 National Building Energy Efficiency Study for Kosovo calculated the total energy expenditures in Kosovo for all of their public buildings as €33.96 million, which would be equivalent to almost €20 per inhabitant and to about 9.5 percent of total municipal revenues in Kosovo, which were €352.4 million in 2012. While the share of goods and services (including energy) in the municipalities' total expenditures accounted for only 9 percent of the overall expenditures of municipalities in 2012.

"Municipal energy efficiency action plans (MEEAPs)—as required by the EE law in Kosovo, are similar to the concept of SEAPs promoted by the Covenant of Mayors in Europe. Each MEEAP, approved by a local council, includes a prioritized list of EE and renewable energy projects; this list then provides a basis for negotiations with national government as well as with the private sector and with IFIs"(NALAS,2014).

Although in Kosovo there are no legal barriers preventing municipalities from concluding ESCO contracts, developing a reliable calculation of ESCO fees on the basis of achieved energy savings is seen by the municipalities as a major challenge.

Other barriers that hamper investments in EE and in the development of the ESCO market in Kosovo are:

- Limited number of creditworthy municipalities and limitation on borrowing; The Law on public borrowing imposes various restrictions on municipalities' ability to borrow money, principally the need to have two consecutive years of unqualified accounts. As municipalities were unable to borrow in the past they have no credit history for the banks to evaluate. This is because municipalities in Kosovo may not incur any debt unless they have received unqualified audit opinions from the Office of the Auditor General as part of the mandatory annual audits for at least the previous two years. (NALAS 2014, World Bank 2013)
- Limitation on multiyear budgeting. The contract has a maximum duration of 3 years, so three year budgeting max it's allowed for public institutions to enter into a contract (EC, 2016).
- A lack of experience even for PPP or negotiated contract. The only way for contracting it's through public procurement contracts with max duration of 3 years. Time limitation increases the complexity of this issue.
- Budgetary rules do not allow municipalities to benefit from any energy savings they achieve in the longer term – each year's budget allocation is based on the previous year's outturn and energy savings cannot be used for investment purposes (World Bank 2013, NALAS 2014, and 2<sup>nd</sup> NEEAP of Kosovo).
- Lack of budget autonomy. The municipalities in Kosovo depend on state budgets for their operational budgets, future energy savings would result in a deduction from their operational budgets, and the saved energy cost cannot be used for other local

purposes—creating a huge disincentive to save energy. In Kosovo, local governments receive more than 40 percent of their revenues from conditional or earmarked grants from their national governments. Therefore, the central government has high control over local budgets (NALAS 2014).

- Municipal decision making is restricted by mandatory expenditures imposed on them by national law. This has a strong influence on the structure of local expenditures. In Kosovo, the municipalities must pay the full cost of preschools, primary schools, secondary schools, and primary health clinics, wages and salaries consume 59 percent of overall municipal expenditures (NALAS 2016).
- Complex public procurement procedures. The Law on Public Procurement should ensure that the process for evaluating government tenders takes into account any EE related benefits that a particular proposal will deliver.
- Lack of EPC models and standardized procedures for public tendering of energy services.
- Small project sizes, leading to high project development and transaction costs).

Some of the potential solutions to overcome above mentioned barriers are(NALAS 2014):

- Reclassifying EE investments as utility services, where long-term contracts are implicitly allowed.
- Fiscal decentralization and more budget autonomy for municipalities.
- Increased local revenue sources.
- Obligations to develop and implement Municipal EE Action Plans (MEEAPs) or Sustainable Energy Action Plans (SEAPs).
- Grants for energy audits and bundling of public projects at municipal level to reduce transaction costs.
- Standardization of documentation and procedures for public procurement of EE equipment and services.

## **11.6 Energy services in the residential sector**

The greatest potential for energy savings - almost 75% of the total - lies in the Residential sector, followed by the Private/Commercial sector at 17%. More than half of the Kosovo building stock was constructed in the period 1970 to 1985, which is reflected in the relatively high specific heat consumption of these buildings. The current level of heat consumption in Kosovo is estimated to be about 219 kWh/m<sup>2</sup> year, compared to 80–150 kWh/m<sup>2</sup> year in Western Europe, which indicates that there is a significant opportunity for EE improvements (2nd NEEAP of Kosovo 2013).

Since 2000, a large number of 'illegal' buildings have been constructed in Kosovo without the required building permits. As a result, building energy performance standards are not enforced or monitored, often resulting in excessive energy consumption (2<sup>ND</sup> NEEAP of Kosovo, 2013). Therefore policies to address the problem of illegal buildings and nonpayment of utilities shall be enacted and implemented.

This sector also faces a number of barriers hampering these Energy Efficiency investments. The key barriers are (EC, 2016, 2<sup>nd</sup> NEEAP of Kosovo): ECEC, 2016b

- Lack of secondary legislation to promote the establishment of Homeowner Associations (HOAs) and current structures to deal with refurbishment of multi apartment buildings. Maintenance of buildings not regulated by legislation;
- Small project size and therefore relatively high transaction costs;
- Inefficient energy pricing: electricity and heat tariffs are not yet fully cost-reflective, tariffs are subsidized and some inefficient tariff structures persist;

- Lack of affordable EE financing schemes for lower income households unable to access the loan market;
- Perception of high risk by commercial banks;
- Relatively high commercial bank interest rates;
- Poor or lack of energy consumption data.

The establishment of effective Homeowner Associations that have legal status in order to open bank accounts borrow money for building improvements; enter into contracts with service providers. This will contribute to faster penetration of energy services in the residential sector in Kosovo. Implement Financing and Incentive Schemes for Family Houses will stimulate the investment in EE. (World Bank 2014)

## **11.7 Energy services in the industrial sector**

Industry is the third largest energy end-use sector in Kosovo. In 2012, energy end-use in the industry sector was 290.68 ktoe or 23.04% of total energy end-uses consumption.

There are several barriers in addition of above mentioned barriers in the industrial sector of Kosovo:

- Low awareness for EE and energy services among the management in industrial enterprises,
- Lack of expertise and experts for EE and energy services in industrial enterprises;
- Low priority of investments in EE among Kosovo industrial enterprises;
- No legal obligations for improvement of EE.

## **11.8 Conclusions**

Kosovo made significant progresses during the reporting period 2013/2015, in particular with the adoption of the second EEAP. The priority for Kosovo remains the adoption of the missing secondary legislation under the Energy Efficiency Law of 2011. This includes the development of new financing instruments (including EE Fund) and a national framework supporting ESCOs, the preparation of local plans and the strengthening of inter-institutional cooperation. Secondary legislation to support the ESCO contracting framework would need to be prepared, as required by the Law on Energy Efficiency, to provide an enabling environment for the uptake of ESCO business. In addition, there is the need of some changes in legislation related budgeting, borrowing from financial institutions and accounting of energy savings municipalities to provide an enabling environment for the uptake of ESCO business.

Timely finalization and adoption of primary and secondary legislation on energy efficiency in buildings and procurement are a priority for implementation of the planned measures under the EEAP as well as to stimulate development of the ESCO market.

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## **12 Development of the ESCO Market in Moldova in 2015**

### **12.1 General overview of the market**

Like the other countries, the ESCO market in Moldova is at an early stage of development. The main reason characterizing the current situation is the high cost of capital, low prices for energy resources and lack of incentives for developing the ESCO market (EC JRC Survey 2016). However, in 2014-2015 some positive changes in the energy services market have occurred.

Since 2014, the ESCO Moldova project <sup>(6)</sup> has facilitated the development of a functional, sustainable and efficient market of the Energy Service Companies (ESCO) in Chisinau, through the removal of the legal, institutional and financial barriers. It shall set a solid base for promotion and implementation of the ESCO business model and energy performance contracting at a larger scale in Moldova (Nikolae 2014).

As of 2015, there are not active ESCO companies on the market in Moldova. There are only candidate companies willing to adopt the ESCO model, in particular the EPC. These companies are small or medium sized private companies working in the construction, utilities and engineering sectors that are looking for additional business opportunities (EC, 2016).

There are some initiatives to present some projects as ESCOs. However, in reality these projects are not based on ESCO model. Currently, EPC is the targeted type of contract for implementation of energy services.

### **12.2 Legal framework**

Generally, the energy efficiency legislation in Moldova has improved significantly since 2013. The main provisions of the Directive 2006/32/EC are transposed by the Energy Efficiency Law and the secondary legislation. The NEEAP for 2013 - 2015 was adopted in 2013 setting an energy savings target of 9% by 2016. The second EEAP is under preparation. The Law on energy efficiency performance of buildings (No. 128) was adopted on 10.10.2014 and the Law on heat and cogeneration promotion (No. 92) on 29.05.2014.

Specifically for energy services, the standard set of documents for energy service procurement in public sector was developed in 2015. In addition, shared and guaranteed savings Energy Performance Contract models were established. In addition, a model of an Energy Performance Contract for street lightning; was developed to facilitate the implementation of energy performance contracts, but still needs to be adopted (EC 2015).

### **12.3 Barriers to the development of the energy service market**

Existing barriers for development of the energy service market in Moldova are (EC, 2016):

- Legal: the major legal problems that constrained the development of the energy service market have been solved by the set of legal act adopted in 2014-2015. There is one issue remaining to be solved related to bookkeeping in the public sector.
- Financial: The cost of capital in local financial institutions is very high, reaching interests of above 22% which is an unbearable burden for companies to engage in EPCs.

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<sup>6</sup> "ESCO Moldova - Transforming the market for Urban Energy Efficiency in Moldova by introducing Energy Service Companies" was developed in 2014 to create a functioning, sustainable and effective ESCO market in Moldova by converting existing energy service provider companies into ESCO companies. It is financed by the Global Environmental Fund and implemented by UNDP

<http://www.md.undp.org/content/moldova/en/home/projects/esco-moldova.html>

- Lack of understanding and trust from the local banking sector: project based financing is unknown and not practiced locally. Only equity financing is a viable option to get financing for business projects.
- Lack of energy consumption data in the building sector. Only aggregated data is available. The monitoring as a function is not present in the public and/or residential buildings.
- Lack of understanding for energy services and ESCOs.

#### **12.4 Recommendations to overcome the existing barriers**

- Changes should be applied to the fiscal legislation in order to accommodate the energy performance contract peculiarities into the public bookkeeping system.
- Internal and external financing sources should be gathered specifically with the purpose of financing projects based on performance.
- An extensive capacity-building project shall be implemented in the banking and public sectors to stimulate the involvement of the private investments in public sector.
- As a consequence of capacity building activities, the public authorities will better understand the benefits of investing into energy efficiency and respectively in metering the consumptions/savings.

#### **12.5 Energy services in the public and commercial sector**

The total investment potential of energy efficiency measures is estimated at EURO 8,0 billion. About EURO 3,1 billion of this are needed to achieve the national EE goal for 2020 set by the NEEAP.

The estimated investment volume for the improvement of EE in public building is (EC, 2016):

- EUR 0.4 billion for thermal rehabilitation of public buildings.
- EUR 0.25 billion for thermal rehabilitation of governmental buildings and
- EUR 0.3 billion for procurement of energy efficient equipment, by public sector.

Since the public sector should have an exemplary role in the promotion of EE, international organizations provide support to the central and local government in the implementation of EE projects in public buildings.

The ESCO Moldova project is a project financed by the Global Environmental Fund and implemented by UNDP in the Municipality of Chisinau. Project partners are the Ministry of Environment, Ministry of Economy, Chisinau City Hall, Energy Efficiency Fund, Energy Efficiency Agency, Banking sector, Private sector. the total budget of the project is USD 1.5 Million (Zaharia 2015). ESCO Moldova project is assisting the municipality of Chisinau in tendering out some public buildings for energy service procurement. It was expected that in the second half of 2015, the first 4 projects would have been initiated. Under the project conditions, each project will reach a maximum of USD 200.000 as budget, having an average discounted payback period of up to 5 years. The target public buildings are schools, kindergartens, hospitals in the property of Chisinau municipality. The Energy Efficiency Fund will ensure the financing of the projects, which will provide preferential loans to winning companies. At the same time, the ESCO Moldova project will provide 100% guarantees to loans (EC, 2016).

In addition, ESCO companies, energy managers, financial institutions and specialized institutions are trained in the field of EPC (Energy Performance Contracts) in the framework of the project. 50 projects on energy efficiency were pre-selected and have been screened for relevance to be implemented using the EPC financing modality (Nikolae 2015).

## 12.6 Energy services in the residential sector

The Moldovan residential sector is the largest energy consumer in Moldova. The building stock shows poor technical conditions in terms of EE and is continuously deteriorating. As a consequence, the maintenance cost of the buildings (including energy cost) increased continuously.

EE renovation of existing buildings requires a high volume of investments. E.g. the thermal rehabilitation of Chisinau residential building stock is estimated at approximately EURO 0,6 billion. However, because of the lack of awareness for EE, lack of capacity to obtain financing for EE and lack of state and other incentives, the thermal rehabilitation cannot be realized in large part of the building stock.

The identified barriers for the implementation of EE measures in multi apartment residential buildings are (Rodina 2015):

- Lack of the ownership rights of residents over the building envelope (common property);
- Lack of clear rights and obligations of residents for the management , maintenance and improvement of the common property;
- Lack of effective **management** and maintenance of multi apartment buildings;
- Lack of proper **legal status and structure** of homeowners' associations (HOAs);
- Inefficient and non-transparent **decision-making** procedures;
- Lack of mandatory building's repairs and maintenance **fund**;
- Lack of **enforcement mechanism**.

As a result of those barriers, the multi apartment buildings (MABs) are facing a low level of confidence of the financial sector in the market and lack of financing. The above mentioned barriers constrain also involvement of ESCOs in the rehabilitation of residential buildings.

EBRD is supporting the Government addressing the EE issues in the buildings sector by improving the legal and regulatory framework for MABs. The EBRD project "Energy efficiency in buildings" is assisting the government in preparation of new legal framework for residential buildings. As of 2015 the new Condominium Law was in process of adaptation.

This law prescribes legal definition of joint ownership in MAB and clear rights over building envelope (common property), including transfer of ownership of the building and related assets to homeowners, clear and transparent rights and obligations of homeowners, creation of maintenance fund and mandatory contributions to repairs, fair and transparent decision-making procedures. HOAs is a recommended form of building management and they have to be registered as legal entities with clear structures (Rodina 2015).

Enforcement of the new Law on Condominium will help solving the existing problems related to the implementation of EE measures in residential buildings including based on EPC contracting of ESCOs.

## 12.7 Energy services in the industrial sector

In 2014-2015 the development of legislation and financial facilities for EE in buildings (public and residential) was the focus of the government and therefore industrial sector was not interesting for Energy services and ESCOs.

## 12.8 Conclusions

Moldova made a significant progress in the creation of better market conditions for faster development of energy services. New legislation for Energy Efficiency, model contracts

for EPC in the public sector, implementation of pilot project based on ESCO principles, will lead to establishment of a sustainable ESCO market. In addition, the creation of a Loan Guarantee Fund (regulation already drafted) will accelerate accessibility of the private companies to the financial market.

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## **13 Development of the ESCO Market in Montenegro in 2015**

### **13.1 General overview of the market**

The market for energy services showed slow progresses in the last years. The ESCO market remains at a very preliminary phase. Planned measures for the future development of the ESCO business exist, and they are particularly focused on the applications in the public sector. Some activities have been also planned and implemented under the existing "Regional Energy Efficiency Program" (REEP) managed by EBRD (EC, 2016).

There are not active ESCOs in the market, but some international companies (mainly equipment providers) show interest in street lighting projects.

### **13.2 Legal framework**

The adoption of the new Law on Efficient Use of Energy in December 2014 further improved setting of clearer procedures for measurement and verification of energy savings and for inspection and penalties, the establishment of a new register of large energy consumers, the energy performance certification procedures, the definition of energy-related products and the obligations for market players, etc. It includes also provisions from the Energy Efficiency Directive 2012/27/EU, namely on energy services, energy management, as well as inventory, plans and dynamics of renovation of central government buildings. (Energy Community 2016)

The Law on Efficient Use of Energy sets the basis for preparation of Energy Performance Contract. However, lack of clarity about the procurement procedure since the Law on Public Procurement does not directly recognize ESCO contracts. EC, 2016 The Law on Efficient Use of Energy (Article 49) introduces obligations for EPC:

"Mutual rights and obligations of ESCO and users of energy services shall be regulated by the Energy Performance Contract under which implementation of energy efficiency measures is paid according to the contractual level of energy efficiency improvement."

The adoption of the Law on Efficient Use of Energy enabled a more efficient implementation and further development of by-laws in the field of energy efficiency. ESCO legislation is under preparation through the support provided by Regional Energy Efficiency Programme (<http://www.wb-reep.org/eng>) financed by EBRD (EC, 2016).

The Ministry of Economy prepared new or updated packages of rulebooks in December 2015, following provisions of the Law on Efficient Use of Energy (OG of Montenegro 57/2014). These include (Energy Community 2016):

- Rulebook on methodology for determining annual consumption of primary energy, the content of the energy efficiency improvement plan and the report on implementation of the plan of big consumers.
- Rulebook on the content of the energy efficiency improvement program and plan as well as report on the implementation of the plan of local self-governing unit.
- Rulebook on information systems of energy efficiency and on the manner of submission of data.
- Rulebook on minimal energy efficiency requirements in buildings.
- Rulebook on certification of energy performance of buildings.
- Rulebook on performing energy audits of buildings.
- Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits.
- Rulebook on regular energy audits of heating systems and air-conditioning systems.

- Rulebook on methodology for determining the level of energy efficiency in the procedure for public procurement.

Montenegro set requirements and methodology for: procurement of energy-efficient buildings, equipment and services, in the Law on Efficient Use of Energy and in the Procurement Law (2<sup>nd</sup> NEEAP of Montenegro).

### **13.3 Barriers to the development of the energy service market:**

The main barriers for the development of the market for energy services in Montenegro are:

- Legal: The Law on Public Procurement does not cover ESCO contracts, since this kind of relations and investments cannot be treated as public procurement. As a consequence, a solution could be to put it through the Law on Public Private Partnership (EC, 2016).
- Financial: Lack of dedicated EE Funds which can stimulate private investment in EE projects in the private sector. State budget and budget of the local self-government (municipalities) are stated in the Law on Efficient Use of Energy as a main source for financing of EE in the public sector. This Law does not stipulate creation of an EE fund. Most of the EE projects in public buildings have been financed through grants received from IFIs (such as KfW, World Bank etc.) (EC, 2016).

Other barriers that hamper the development of the ESCO market are (EC, 2016):

- Lack of interest of the public sector to invest in EE projects.
- Insolvency of municipalities.
- Political instability (changing of leading administrative structure in municipalities).
- Lack of experience with ESCO projects.
- Lack of experience on local level with preparation and tendering complex projects.
- Relatively small market size.
- Small project size and high transaction cost.
- Lack of energy data is a problem at all level in Montenegro. System for monitoring and management of energy consumption with exemption of few municipalities is not established yet. The ministry has to Re-establish the Central Information System collecting and processing of data on energy consumption from all public institution. Municipalities have to establish their information systems, to prepare planning documents, and to report to the Ministry of Economy. But this circuit is not established yet and data are not collected in most cases. Without good data it is difficult to acquire full image on energy consumption and to estimate potentials for ESCO intervention.

### **13.4 Recommendations to overcome the existing barriers**

Some steps and activities must be carried out to address the existing gaps (EC, 2016):

- Strictly future implementation of the legal framework on Energy Efficiency, EE Action Plan and Building Codes.
- Incentives and financial supports for investments in EE- creation of EE Revolving fund.
- Preparation of EE programs and projects based on ESCO model for EE on local level.
- Awareness raising activities and promotion of ESCO services in the domestic market.

- Capacity building for energy professionals and potential ESCOs.
- Implementation of energy audits and energy management in larger enterprises.
- Preparation and implementation of EE pilot projects based on ESCO model.

Montenegro should improve statistical data collection and its system for calculation of energy efficiency indicators and savings, as well as the monitoring of EEAP implementation. The methodology and platform developed is a step forward. Nevertheless, Montenegro still needs to develop the system for its implementation. Adequate human and financial resources should be dedicated to improve the situation in this area (Energy Community 2014).

### **13.5 Energy services in the public sector and commercial sector**

Relevant studies and energy audits showed that there is a significant potential for EE improvement in many areas in public and commercial sectors, including heating/cooling systems, inner lighting and public street lighting, water supply system (with great water losses) etc. In the sector of commercial services, hotels and commercial buildings are major energy consumers (Ministry of Economy 2013).

As mentioned in the 2<sup>nd</sup> NEEAP, the implementation of EE projects in the public sector during the period 2011-2013 did not result from a systematic approach but was mainly carried out and financed by international donors and IFIs. Montenegrin Energy Efficiency Project financed by World Bank and Project Energy Efficiency Program In Public Buildings (EPPB) financed by KfW are the two most important programs focused on retrofit of public buildings (schools, hospitals, kindergartens).

Although the potential investment in EE in public and commercial sectors through ESCO was mentioned in 2<sup>nd</sup> NEEAP, no ESCO projects in the public and commercial sector have been implemented following the energy performance principle yet (EC, 2016).

The barriers that hamper investments in EE and development of the ESCO market in Montenegro are:

- Limited number of creditworthy municipalities and limitation on borrowing. Most of the municipalities in Montenegro are not creditworthy, or have limited access to credit. Those that are able to borrow often have debt levels near or at their legal limitations for municipal borrowing (NALAS 2014).
- Lack of interest to invest in EE (energy services). In Montenegro, the municipalities can rely on their own revenue sources for more than 80 percent of their annual budgets, local investment priorities usually do not include EE. (NALAS 2014)
- A One-Year Budgeting Process and Retention of Energy Savings. In Montenegro, municipalities lack reserves or other means to carry over budget provisions from one year to the next. They must balance their annual expenditures with revenues received in the same budget year, or by means of loans taken from financing institutes in the same year. Municipal budget rules do not provide any internal accounting mechanism that would allow a direct amortization of one year's investments using the next years' additional revenues or energy savings. This applies also for EE investments in municipal public buildings (NALAS 2014).
- Complex public procurement procedures. The Law on Public Procurement should ensure that the process for evaluating government tenders takes into account any EE related benefits that a particular proposal will deliver.
- Small project sizes, leading to high project development and transaction costs;

Some of the potential solutions to overcome the above mentioned barriers are (NALAS 2014):

- Reclassifying EE investments as utility services, where long-term contracts are implicitly allowed.
- Increased local revenue sources.
- Preparation and implementation of Municipal EE Action Plans (MEEAPs) or Sustainable Energy Action Plans (SEAP).
- Standardization of documentation and procedures for public procurement of EE equipment and services.
- Develop and implement EE pilot project based on simplified and standardized EPC.
- Implement training and capacity building programs on national and local level.

### **13.6 Energy services in the residential sector**

The residential sector is one of the most significant energy consumers (especially for electricity) in Montenegro. The households dominate in in final energy consumption in whole period 1997-2011 with a rather constant share of 60-65%. before 1990 Buildings were built in accordance with the standards of former SFRY and they have A relatively low quality. Low price of electricity in the past in the residential sector, as well as benefits related to the use of electric appliances for space heating, lead to a dominant use of electricity for space heating in residential buildings, especially in urban area. (Ministry of Economy 2013)

Primary and secondary legislation supported the creation of Homeowner associations HOA and maintenance of buildings. Enforcement should address HOA formation, consistent payments, and clear and efficient way of securing payments when a household does not pay.

The residential sector is also facing many barriers that hamper the development and investment in EE projects and the involvement of ESCOs. Some of them are (EC, 2016):

- Small project size and therefore relatively high transaction costs;
- Lack of affordable EE financing schemes for lower income households unable to access the loan market;
- Perception of high risk by commercial banks;
- Relatively high commercial bank interest rates;
- Poor or lack of energy consumption data;

Some of recommendations to overcome existing barriers in the residential sector will be:

- The establishment of effective Homeowner Associations that have legal status in order to open bank accounts borrow money for building improvements; enter into contracts with service providers. This will contribute to faster penetration of energy services in the residential sector in Montenegro. Implement Financing and Incentive Schemes for Family Houses will stimulate the investment in EE (World Bank 2014).
- Implement Financing and Incentive Schemes for Family Houses;
- Increase information outreach and organize awareness raising campaign to promote EE, ESCO and benefit of energy services among homeowners;

### **13.7 Energy services in the industrial sector**

Polices are not focusing on the industrial sector in due to long term financial problems of the two largest energy consumers<sup>7</sup> (the Aluminum producer –KAP and the Niksic

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<sup>7</sup> In the period from 1997 to 2011 the ferrous metallurgy and non-ferrous metals spent from 157.9 ktoe (2010) to 334 ktoe (2007) or constituted 87-94% of total final energy consumption in the industry. (Ministry of economy 2013)



Steelworks). From 2009 to 2011 the energy consumption in the industrial sector decreased by about 50% (344.7 ktoe in the 2009. 172 ktoe in 2010) due to reduced production of aluminium and steel products (Ministry of Economy).

In other smaller industrial enterprises there are several barriers that hamper implementation of energy services. Some of most common are (EC, 2016):

- Low awareness for EE and energy services among the management in industrial enterprises.
- Lack of expertise and experts for EE and energy services in industrial enterprises.
- Low priority of investments in EE among Montenegrin industrial enterprises.
- No legal obligation for improvement of EE.

### **13.8 Conclusions**

In the last four years Montenegro has been showing large progresses in transposing the EU legal framework for EE. Further, the priority should be the adoption of the missing secondary legislation. The approval and implementation of Rulebooks on will help stimulate markets for energy efficient goods and services in Montenegro (Energy Community 2016).

In order to achieve the indicative energy savings target set by the 2<sup>nd</sup> NEEAP, significant financial resources should be mobilized, in addition to public budget financing. It is necessary to develop further financing models in the field of energy efficiency, including funding of energy services and ESCOs.

Institutional structures in Montenegro should be further strengthened in order to enable successful implementation of energy efficiency policies including ESCO model.

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## **14 Development of the ESCO Market in Serbia in 2015**

### **14.1 General overview of the market**

In Serbia ESCO market is not well developed yet. Although the interest of the private companies in providing energy services is increasing, the public sector is slowly progressing in preparing and publishing tenders for energy services. Furthermore, low price of electricity and the lack of financial incentives remains a barrier.

In the market there are several international ESCO companies that have registered subsidiaries in Serbia, such as Eltec Petrol, GGE, Sun Energy Balkans, etc. and they have already started with implementation of EE projects based on ESCO concept. There is also a significant interest from a number of companies from the EU countries (Hungary, Romania, Italy, Austria, etc.) in developing ESCO projects. Few local companies such as ESCO - Energy Saving Company Belgrade, provide energy services to the private sector (industry and residential). Also, a high number of technology suppliers' show interest in ESCO market, such as Philips, Siemens, Minel Schreder, GE, etc.

### **14.2 Legal framework**

The Law on Efficient Use of Energy (OG 23/2013) , for the first time in Serbia, explicitly defines the energy services company ("ESCO") and sets out the rules for energy performance contracting generally in line with the EU acquis, aiming at providing the overall legal framework for energy efficiency arrangements (CMS. 2015) .

The Rulebook "Determining Model Contract for Energy Services for Implementation of Energy Efficiency Improvement Measures for Public Sector Users" was adopted on the 8<sup>th</sup> of May 2015 as secondary legislation under the Law on Efficient Use of Energy promoting investments in energy efficiency investments. This secondary legislation consists of ESCO contract templates for energy efficiency ESCO investments in public buildings and in public street lighting. (REEP. 2015)

To enable implementation of these principal possibilities introduced by the EE Law, the Rulebook on Model Energy Service Contracts for the Implementation of Energy Efficiency when Users are from Public Sector (published in the Official Gazette RS No 41) was finally adopted in May 2015. It followed the one-year work of the national working group within the Ministry of Mining and Energy (with the support of the European Bank for Reconstruction and Development in the framework of REEP<sup>8</sup>, involving GFA Consulting Group and CMS as their external consultants). This secondary legislation ("ESCO By-Law" ) consists of two energy services contract models for energy efficiency investments, one for public buildings and one for public lighting. Moreover, it generally allows the establishment of public private partnerships between the relevant public partners (a municipality, a public company, a State) and the relevant private partners (i.e. ESCO company) on a long-term basis wherein the installation and management of the energy efficiency measures by a private partner are to be financed from the savings achieved, thereby not involving public debt (CMS 2015).

Importantly, the receivables attributable to a private partner from the savings are to be further transferred to third parties, which will hopefully boost the overall bankability of ESCO projects in Serbia. (CMS. 2015)

The two model agreements set out by the ESCO By-Law envisage three main periods of the ESCO agreement (CMS. 2015):

1. Preparatory Period, mainly consisting of planning and design activities pertaining to the relevant project;

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<sup>8</sup> REEP is an abbreviation for the Regional Energy Efficiency Programme for the Western Balkans. The overall aim of the REEP policy dialogue is to support legislators and investors eliminate market barriers to energy efficiency and accelerate the take-up of energy services.

2. Implementation Period, in which activities related to the implementation of the respective energy savings measures by a private partner in cooperation with a public partner are to be undertaken;
3. Guarantee Period, in which utilizing the energy savings potentials of the contracted facility, in the course of which energy savings and financial savings are achieved as a result of the implemented measures.

The ESCO By-Law further contains sophisticated provisions relating to collateral packages, warranties regarding the performance, the insurance of the project, the force majeure clauses and detailed rules regarding the aforesaid three main contractual periods. (CMS. 2015)

The 2nd Energy Efficiency Action Plan for the period 2013-2015 was adopted in October 2013. In this document promotion of ESCOs was mentioned as a one of the four cross sector measures. In the "Assessment of the Second Energy Efficiency Action Plans of Contracting Parties" prepared by the Energy Community is stated "In order to achieve the indicative energy savings target, significant financial resources should be mobilized, in addition to public budget financing. It is necessary to further develop models for public private partnership in the field of energy efficiency (including ESCO)."

### **14.3 Barriers to the development of the energy service market:**

The barriers for development of the market for energy services and ESCOs in Serbia are:

- Lack of experience in the public sector for the development of ESCO(s) and PPP projects.
- Lack of experience in the preparation and tendering of complex projects at local level.
- Discrepancies in the provisions of primary legislation. Complex PPP project preparation and approval procedure.
- Low price of electricity.
- Lack of incentives.
- High-level of indebtedness of municipalities.
- Misleading price-structures caused long-lasting structural deficiencies through under-investment in efficient.
- Low awareness about EE projects and low priority of such projects.
- Lack of reliable energy data.
- Lack of trust between public and private partners.

### **14.4 Recommendations to overcome the existing barriers**

Some of the recommendations to overcome the existing barriers to the functioning of an ESCO market in Serbia are: the capacity building of the public administration through organization of workshops and events, development of a program website, development of successful pilot projects for broader dissemination, market studies, advertising, and educational programs for schools and other organizations to address the information and knowledge gaps related to EE, build demand for financing, and improve the sustainability of energy savings. In addition to these, other two options can also support the developing of the ESCO market in Serbia such as: developing procedures that help public agencies engage ESCOs under performance-based contract for preparation of performance-based tender documents for public procurement of energy services; and refining these bidding documents based on the implementation experience to provide standard documents for future use. Moreover, carrying out capacity building for energy service providers (ESCOs) and other market actors is crucial to enhance their ability to

conduct energy audits and to screen, design, evaluate, appraise, finance, implement, and measure EE investments, with special focus on the public sector.

Capacity building activities in Serbia have been implemented by the EBRD REEP Programme and "EnPC-INTRANS Capacity Building on Energy Performance Contracting in European Markets" in a project financed by the EU in the framework of Horizon 2020.

In addition to these, identification, assessment, and recommendation of changes shall be carried out, if needed, in rules for public accounting, budgeting, and procurement to facilitate the financing of EE projects and procurement of EE services. These may include policy development related to existing public procurement and budgeting rules for EE services and development of alternate financing models for EE in the public sector.

## **14.5 Energy services in the public sector**

The Energy Efficiency Budget Fund <sup>(9)</sup> was established in 2014 following the Law on Efficient Use of Energy. The Government adopted the Programme for financing activities and measures for EE for 2014 with a volume of around EUR 2.5 Million and the Programme for financing activities and measures for EE for 2015 with a volume of EUR 1.5 Million for financing of energy efficiency projects in Serbia through the Energy Efficiency Budget Fund. The promotion of the market for energy services can be also financed through the Energy Efficiency Budget Fund, managed by the Ministry of Mining and Energy. In 2014 and 2015 several selected municipalities received funds from the Energy Efficiency Budget Fund for the establishment of EE projects (Ministry of Mining and Energy 2016).

In 2015, the Ministry of Finance issued a note on "Public Debt" issue stating that repayments on the basis of guaranteed savings were not to be considered as public debt. Thus, the implementation of future ESCO projects is not subject to restrictions stipulated in the law with regard to borrowing by local government units (Brenke 2015).

Barriers for implementing EE and energy services in municipalities in Serbia are:

- Lack of interest for investment in EE. In Serbia, where municipalities can rely on their own revenue sources for more than 80 percent of their annual budgets, local investment priorities usually do not include EE (NALAS 2014).
- Retention of Energy Savings. In Serbia, municipalities lack reserves or other means to carry over budget provisions from one year to the next. They must balance their annual expenditures with revenues received in the same budget year, or by means of loans taken from financing institutes in the same year. Municipal budget rules do not provide any internal accounting mechanisms that would allow for the direct amortization of one year's investments using the next years' additional revenues or energy savings. This is also applied to EE investments in municipal public buildings (NALAS 2014).

Several tenders for street lighting projects are under preparation with support to municipalities provided within the EBRD Regional Energy Efficiency Programme. Also, within the programme "Development of a Sustainable Bioenergy Market in Serbia" (DKTI) GIZ is supporting municipalities in developing energy supply contracting (EC, 2016).

After the completion of the public tender, the city of Vrbovec and the selected bidder signed the first EnPC contract on 16/06/2015. The Energy Performance Contract (EnPC) model was developed as a part of the Regional Energy Efficiency Programme (REEP), funded by the European Union and implemented by EBRD (REEP 2015).

The construction phase of the street lighting project has started and the period of guaranteed energy savings will commence afterwards and the whole city and its surroundings will be illuminated with a new, efficient and comfortable lighting. It is

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<sup>9</sup> The Energy Efficiency Budget Fund is not a separate institution, as was previously foreseen, but it is a budget fund managed by the Ministry of Mining and Energy.

expected that after the implementation, the project will result with energy cost savings of EUR 165,702 per year and energy savings per year of 1,193,686 kWh (REEP 2015).

## **14.6 Energy services in the residential sector**

Primary and secondary legislations are in place, but enforcement is lacking. Enforcement should address HOA formation and payment arrangements. District heating consumption billing is still missing in most of the multi apartment buildings (MAB) (Ballard-Tremeer, 2015). In existing MAB according to the Law on Efficient Use of Energy the owners of apartments shall finance installation of heat meters on apartment level. Most of residents cannot finance installation of heat meters in their apartments. Therefore, the residents can not benefit from energy savings, although the legislation is in place.

Policies to address the problem of non-payment of utilities/ building maintenance charges need further enacting and implementation. Improvements are needed in the process of obtaining payments from owners who have not paid their obligations on time. Another related problem is the lack of incentives for financing of EE in residential buildings (EC, 2016).

However, there is one ESCO company (subsidiary company of Dutch ESCO) that started to implement EE projects in residential buildings based on energy supply contracting. They develop small scale projects for heating and cooling of residential buildings in Belgrade. In Tetovska Street in Belgrade the ESCO provide heating and cooling services to 16 apartments and in Zemun for 48 apartments. This building is equipped with combination of floor heating and fan coil units for heating and cooling. High level of individualization of apartments, with sophisticated control systems is still new on the residential market in Serbia. Geothermal energy is using to meet the energy needs for heating and cooling of the residents in both buildings. It covers about 80% of the total heating and cooling needs. The residents pay the price they would normally pay only for heating in the city (Sunenergybalkan 2016).

## **14.7 Energy services in the industrial sector**

The market for energy services in the Serbian industrial sector is not developed yet. The EE is not in agenda of the management of industrial enterprises since the benefit of EE cannot be recognized, although most of the companies are facing high energy consumptions, and obsolete technologies.

The Government is aware of high energy intensity of Serbian industry and is trying to push investments in EE through the development of EE policies and legislation. Pursuant to the Law on Efficient Use of energy all industrial enterprises are obliged to introduce energy management system (energy manager) and to prepare action plans for EE if they consume more energy than prescribed by the government. In addition, they are subject to energy audits, performed by certified entities (Ministry of Mining and Energy 2013).

## **14.8 Conclusions**

Serbia made a significant step towards the full transposition of the energy efficiency acquis with the adoption of secondary legislation on energy management, monitoring and reporting on the EEAP, labelling of energy-related products and ESCOs. However, more needs to be done in the near future for a full implementation. The institutional capacity of public institutions responsible for energy efficiency should be strengthened in the area of policy-making, at the implementation level, as well as in all the institutions involved in the implementation of the EEAP and energy efficiency legislation.

The remaining challenges regarding the overall operability of the EE Law include: the need to introduce particular sector-specific incentives for energy efficiency in the relevant legislation (notably, the real estate legislation and the tax-related one) and the gradual raising of financiers' perceptions of the actual feasibility of the ESCO projects. While some of the banks and other market players in the Serbian financial sector have recently

become acquainted with the overall concept, the remaining challenge is that the said players often assess the creditworthiness of the client instead of the project itself (CMS 2015).

Yet, similarly to other countries where such concepts were introduced for the first time, it may still be expected that, gradually – and with very first projects becoming (successfully) implemented – financiers may become more and more receptive for engaging in the financing of these projects.

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## **15 Development of the ESCO Market in the former Yugoslav Republic of Macedonia in 2015**

### **15.1 General overview of the market**

The energy service market in the former Yugoslav Republic of Macedonia is at a very preliminary stage. Currently, there have been no significant changes in the development of the ESCO market in last years (2014 – 2015) (EC, 2016).

There are no companies in the former Yugoslav Republic of Macedonia, which can provide full range of ESCO services. Few small private companies (e.g. distributors of equipment) provide different kind of services as energy audit, installation and maintenance of equipment for heating and cooling, replacement of heating systems in municipalities' buildings or develop and realize PPP in street lightning.

### **15.2 Legal framework**

Energy services and ESCOs are mentioned in the Laws on Energy adopted in 2011, but the secondary legislation for energy services has not been prepared and adopted yet. According to this Law, an Energy Efficiency Fund shall be created for financing of EE projects in the public sector.

The government adopted the "Strategy for promotion of EE until 2010" in 2010. The promotion of ESCO (energy services) was mentioned as one of the priority. Pursuant to the Strategy the Government should prepare and adopt National Energy Efficiency Action Plans (NEEAPs) to achieve the indicative energy saving target of 20% until 2020. The second National Energy Efficiency Action Plan (NEEAP) due in 2015 was prepared in 2014 but has not yet been adopted, because of the issues connected with the creation of the EE Fund. The second NEEAP takes into consideration ESCOs as a possible source for financing of EE measures in buildings (retrofit of residential, public and commercial buildings), improvement of public street lighting and industrial processes including introducing energy management and energy audits.

### **15.3 Barriers to the development of the energy service market**

The main barriers for the development of the market for energy services in the former Yugoslav Republic of Macedonia are:

- Legal: Need for a secondary legislative framework and predefined EPC. The process for the adoption of the complete legislation for ESCOs has to be finished. Apart from that, some changes and addition are needed in existing legislation, especially regarding the public procurement.
- Financial: There are no convenient sources to finance the activities of energy services. It means special credit lines for these financing energy services are not in place. In addition there are not state incentives for EE. Despite the Law on Energy prescriptions, the EE Fund has not been created yet. Finally, the absence of Funds and programs for financing EE in municipalities are not framed.

Other barriers that may hinder the further development of ESCO market are:

- Lack of understanding of ESCO business and lack of information of energy services and EPC in the public, residential and commercial sectors.
- Lack of capacity for development of EE projects.
- Lack of know-how of companies that would like to work as ESCOs.
- Small market and the low values of regular projects.
- Lack of trust among the potential clients and ESCOs.
- Lack of reliable energy data for establishment of base-line energy consumption.

- Lack of monitoring of energy consumption in public buildings (only in few municipalities);
- the low price of electricity.
- no possibility for apartment owners in multi apartment buildings to control and manage their consumption (absence of metering devices and regulation on the apartment level).

#### **15.4 Recommendations to overcome the existing barriers**

Most barriers have to be removed by authority (legislation, establishment of clear road map for the development of ESCOs). Law for EE is not sufficient for the implementation of EE through ESCOs and therefore secondary legislation and procedures for public procurement of energy services has to be developed and adopted. Standardized EPC agreement has to be developed.

Capacity building programs and events such as workshops for national and local public authorities have to be developed and organized. At the same time capacity building programs for potential ESCOs should be implemented.

#### **15.5 Energy services in the public sector**

The government approved the National Program for Energy Efficiency in Public Buildings (NPEEPB) in 2013 with proposed EE Fund as the main financing mechanism. The NPEEPB (Phase 1) seeks to renovate up to 2,441 governmental and municipal buildings over 7-15 years.

The reconstruction of public buildings shall be funded through the EE fund<sup>10</sup> using energy supply agreements. However, it is still not clear how the funding will be structured and the institutional set up of the EE fund. There are two possible options for management of the fund: (Singh 2015)

Option 1 – create a new state entity/corporation to act as EE Fund with competitively recruited fund manager;

Option 2 – EE Fund would be managed by Macedonian Bank for Development Promotion (MBDP) with recruited specialists;

There is still absence of Energy Efficiency projects implemented on the basis of the EPC model in the former Yugoslav Republic of Macedonia.

Some of the barriers that hamper the implementation of EPC in the public sector (buildings and street lighting) are (World Bank 2014, EC, 2016):

- Limited number of creditworthy municipalities and borrowing capacity.
- Limitation on municipalities borrowing. 30% is the maximum ratio of debt service to budget revenues.
- Multi years budgeting is allowed according the legal framework. However, in practice this process is difficult thereby discouraging municipalities to conclude multi-year contracts.
- Line-Item Budgeting. The use of standard line-item budgeting means that the amount set aside in a municipality's budget to pay energy bills (measured, for example, in cost per litre, cubic meter, ton, or kWh of purchased energy) usually cannot be used for other purposes—in particular if it is taken from state subsidies. This creates a high uncertainty among local decision makers as to whether and how they can use this

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<sup>10</sup> This fund should be and Revolving EE Fund with an initial capitalization of €30 million in 2016, with second capitalization of additional €30 million in 5-7 years



money to procure EE services instead of purchase energy. This is independent from the question of whether energy supply is organized by the municipality itself, or one of its public utilities, or any other third party. (NALAS 2014)

- Lack of Separate Accounts for Capital and Operating Expenditures. There may not be foreseen the transfer of a surplus from their operating budget to their capital budget, and vice-versa in the budget plan. If EE investments generate savings on a municipality's energy bill, the saved operating funds may remain unused if they cannot be transferred to the capital budget (which would require prior national government approval). Furthermore, the saved amount is usually deducted from the operating budget approved by the national government in future years, since budgets are often based on the prior year's actual expenditures.(NALAS 2014)
- Lack of budget autonomy. The municipalities have limited budget autonomy and depend on the transfer of state funds for both capital and operating costs. Therefore the state has very high control of the local budgets and the central government (Ministry of finance) must regularly approve the investment budget. It means that if investments in EE (e.g. for retrofit of buildings) are not a priority of the central government, local investment proposals can be rejected by the Ministry of Finance.
- Incomplete public procurement legislation. The provision of the Law on Public procurement made it impractical for the ESCO model to be implemented. The Law on Public-Private-Partnership should apply to contract between public entities and ESCOs.
- Complex public procurement procedures.
- Lack of model EPC and standardized procedures for public tendering of energy services.
- Small project sizes, leading to high project development and transaction costs.

Some suggestions to address these barriers are:

Model EPC contracts for implementation of energy services in municipality buildings and public lighting, has to be prepared and adopted. A legal framework that allows municipalities to establish long-term contracts has to be prepared. Energy saving criteria has to be introduced in the public procurement. Standardize agreements and procedures shall be developed and similar projects across municipalities and public entities should be aggregated.

The development, implementation, monitoring, and regular updating of local EE action plans and SEAPs has to be ensured by the local authorities. Earmarking of funds provided through national EE funds for municipalities and establishment of specific national support programs for EE in municipalities can stimulate the energy service market. In addition, the establishment of national support programs for the setup and implementation of ESCO models in municipal public buildings and services may reach the same result (Limaye et al. 2014).

The European Union and the International Financial Institution have supported the implementation of projects to promote energy services and EPC in the former Yugoslav Republic of Macedonia since 2014.

The City of Skopje and the Macedonian Centre for Energy Efficiency (MACEF) has participated as project partners to the "Streetlight EPC Project" since 2014. This project is co-financed by Intelligent Energy Europe Programme of the European Union. The project promotes energy services and EPC in the sector of public street lighting in municipalities. A short guideline for EPC was developed as one of the project goals.

In the framework of the World Bank project a three-year energy efficiency program for municipalities, methodology and templates for Energy Efficiency Programmers were prepared. In addition, a template for municipal action plans (MAP) was developed. Pilot projects for two Municipalities (Municipality of Staro Nagorichane and Municipality of

Radovish) have been prepared together with EEP and MAP. An excel tool was prepared for data collecting. The Energy Agency in Republic of Macedonia is a beneficiary in this project (EC 2016).

Pre-Feasibility Studies for three sectors were developed:

1. Municipal Buildings
2. Street Lighting
3. Water pump stations

According the experts after the implementation of the above mentioned projects, certain precondition will be crated which will enable introduction of an EE Found and the development of EPC projects in Macedonian municipalities. However, existing legislation barriers have to be solved in the meantime.

## **15.6 Energy services in the residential sector**

The residential sector in the former Yugoslav Republic of Macedonia has high energy saving potential, since the large part of the existing building stock is obsolete and need renovation.

Primary and secondary legislation for housing is in place, but enforcement is lacking. The Law on housing stipulates that every multi apartment facility must operate as a legal entity –to form a community of tenants of the building or delegate the housing maintenance function to a professional organization, is a big step forward in the legislation, which should enable faster renovation of these buildings. 60% of multi-owner residential buildings do not have created a Homeowner association or conclude a contract with professional company for maintenance of the buildings.

This sector also faces a number of barriers hampering these Energy Efficiency investments. The key barriers are: (World Bank. 2014)

- small project size and therefore relatively high transaction costs.
- low energy tariffs (especially for electricity).
- perception of high risk by commercial banks.
- HOAs' decision-making processes is complicated and they have low creditworthiness.
- lack of heat metering devices installed in multi apartment buildings (norm-based billing systems for heating)- the owners are not motivated to invest in energy saving.
- relatively high commercial bank interest rates.

Enforcement of the Law on Housing and establishment of Home-Owners association (HOAs) will ensure higher quality of contracts with all service providers, in that direction the ESCO services, too.

## **15.7 Energy services in the industrial sector**

Lack of understanding of EE and among the management of industrial enterprises is the main barrier for development of energy services and ESCO business in industry. Nevertheless in the past two-three years few EE projects were implemented in few industrial enterprises.

There are few initiatives focused on the promotion of investment in EE in industry. The USAID project "Energy Management in Industry" has promoted introduction of energy management in industry including development of guidelines for energy management and EE best practices. The Second initiative, funded by Global Environment Fund (GEF), UNIDO and Macedonian stakeholders is the project "Catalyzing market transformation for industrial energy efficiency and accelerate investments in the best available practices and technologies in Macedonia". The project will accelerate the transformation of the

Macedonian market for industrial energy efficiency by strengthening policy, regulatory and institutional frameworks for IEE and support increased diffusion of and investment in the best available industrial energy efficiency practices and technologies. Introducing energy management and energy audit in industry, training for EE of managers of industrial enterprises are key components of this project (EC, 2016).

## 15.8 Conclusions

The first priority for the former Yugoslav Republic of Macedonia in the next period remains to adopt the second EEAP and to implement its measures. The Ministry of Economy should take the initiative to promptly unblock the Government's approval of the second EEAP, as a key policy document enabling investments in energy efficiency. Strengthening the institutional capacity in both the Ministry of Economy (the Energy Efficiency department) and in the Energy Agency is extremely important, as the existing human resources proved to be insufficient during the realization of the first EEAP. The establishment of the Energy Efficiency Fund is expected to strongly support the implementation of energy efficiency measures (Energy Community 2016).

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## **16 Development of the ESCO Market in Turkey in 2015**

### **16.1 General overview of the market**

The ESCO market in Turkey is still considered as moderate, although it has a very high potential.

As of January 2016 there were 36 ESCOs (EDV)<sup>11</sup> authorized by the General Directorate for Renewable Energy (DGER) to operate in the Turkish market. 6 of them are large companies, the rest are small-medium sized private companies. They provide different kinds of energy services, including (Akuner 2015):

- Training and certification of energy managers,
- Carry out of energy efficiency audit and consulting studies using service agreements,
- Preparing a project including required measures to improve energy efficiency,
- Implementation of agreements with guaranteed energy saving determined after the energy audit and implementation of identified energy efficiency measures.

Turkish ESCOs carry out all type of projects including passive and active energy consuming systems in buildings and industry, including:

- Renovation or replacement of EE consuming passive (building envelope – insulation) and active (heating-ventilation-cooling)
- lighting, steam, compressed air, systems
- Automation of energy consuming system
- Recovery of waste heat
- Application of cogeneration/tri-generation systems
- Application of solar and wind energy, heat pumps
- Energy certification of buildings and green building studies can be regarded as secondary areas for ESCOs.

The commercial/service sector buildings and industries are preferred areas for the work of ESCOs.

Most ESCOs conclude regular service contracts or sales contracts (in the case where ESCO is a provider of energy efficient equipment/system). There are only few projects where a modified EPC was applied by ESCOs. (EC, 2016)

### **16.2 Legal framework**

The Energy Efficiency Law (EEL, Number 5327) adopted in 2007 and revised in 2011 stipulates the definition of energy services and set the basic requirements for the implementation of energy services in Turkey.

This Law prescribes the training of energy managers and energy auditors as well as procedure for authorization of the EDV (ESCO) companies. The General Directorate for Renewable Energy is the authorized body for issuing authorization for EDVs. A company to be authorized as EDV has to meet certain requirement as: to have minimum certified engineers, to hold a quality management certificate according to EN ISO 9001 and to have facilities and equipment authorized by the Turkish Accreditation Agency.

There are two types of certificate: A and B. For getting A class certificate the EDV has (Akuner 2015):

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<sup>11</sup> In the Turkish terminology ESCOs are called as «Energy Efficiency Consulting Company – Enerji Verimliliği Danışmanlık Şirketi (EVD)» defined by Energy Efficiency (EE) Law in 2007.

- To hold a TS EN 9001 certificate and
- **for the industrial sector:** in the desired sub-sectors at least 1 project with an agreement of 25 million TL (about EURO 7.756 Million <sup>12</sup>) and totally energy efficiency projects having over 250 million TL (about EURO 77.566 Million) budget and also at least one project component related to direct improvements of process and/or process instruments;
- **for the building sector:** at least one project with an agreement of 10 million TL (around EURO 3.1 Million) and totally energy efficiency projects having over 100 million TL (around EURO 31 Million) budget.

For an ESCO that only provides expertise, a class B certificate is given which shall be renewed every 3 years.

If any ESCO could not provide the guaranteed energy saving potential at least 3 times, ESCOs' certification shall be terminated for 1 year. (Akuner 2015)

In the legislation, industrial and building sub-sectors for ESCO (EVD) services are defined.

The Industrial sector is subdivided in 6 sub sectors: (Akuner 2015)

- Iron and Steel;
- Chemistry and Petro chemistry;
- Stone, Sand and Mining;
- Pulp-paper and Textile;
- Food and
- Transportation.

There are two sub sectors in the building sector:

- Residential and
- Commercial.

In July 2012, the Communiqué on the Energy Efficiency Support (CELL) was issued. This stipulated the principles and procedures to be enforced by the universities, chambers of mechanical and electrical engineers, and ESCOs in order to ensure a proper execution of energy services in the industrial and building sector.

In addition to the already approved strategic documents for improvement of EE in Turkey there are the EE Strategic Paper 2011-2023 and 10<sup>th</sup> Development Plan 2014-2018, since 2014 with the support provided by the EU and EBRD, Turkey has worked on the preparation of a National Energy Efficiency Action Plan ("NEEAP") as set out under Article 24(2) and Annex XIV of the Energy Efficiency Directive with appropriate adaptation of the content of Turkey's situation and its 2023 energy efficiency targets. The main objective of the NEEAP is to help the Turkish Government to ensure that Turkey can continue to successfully improve its energy efficiency performances and to harmonies its strategy with the European Union's 2012 Energy Efficiency Directive (currently 2012/27/EU) (the "Directive"), in the scope of the EU Accession negotiations (Calikoglu, 2015).

### **16.3 Barriers to the development of the energy service market**

The main barriers for development of the ESCO market in Turkey are (EC, 2016): EC, 2016

- Legal: Legislation related to the local self-government (municipalities) is not in favour for developing ESCO services in municipalities (see below). Procurement rules are very strict and complicated. Public-private partnership rules are very strict. An

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<sup>12</sup> Exchange rate on 15.03.2016 1 TRY =0.31 EUR

appropriate legislation for the promotion of EE in multi apartment building (housing sector) is not present.

- Financial: Lack of appropriate form of financing (including incentives) for energy services and ESCOs for building sector and SMEs. In the market, incentives have been provided by the government only for the industry sector; specifically, for the large industrial enterprises but they are not enough. Other specific incentives should be developed and applied to SMEs and especially to the building and commercial sector. Because, the incentives from the government has leverage effects meaning that providing one unit could result in additional investment of 10 units as stated by the ESCOs. Absence of a national “Energy efficiency fund” which can finance EE projects in the residential buildings and SMEs based on an ESCO concept. Commercial banks are mainly focus in financing of EE projects in industrial enterprises. They do not have appropriate portfolio or are reluctant to finance EE in the residential and commercial sector. Therefore ESCOs shall finance the projects with own equity.

Other barriers that hamper the development of the ESCO market are (EC, 2016):

- Lack of energy database especially for building and commercial sectors.
- Lack of system for monitoring and verification of energy savings.
- Lack of independent “energy agency” like institution to shape the market with strong control mechanism.
- Lack of strong umbrella institution (association) for ESCOs, which will promote ESCO business among public and industrial sectors, and will represent the interest of ESCOs in different governmental bodies for the development of ESCO legislation.
- Lack of understanding of EPC. Only very few demonstration projects have been realized under EPC. Therefore, the EPC concept is not very well known among public entities on national and local level.

## **16.4 Recommendations to overcome the existing barriers**

Some steps and activities must be carried out to address gaps (EC, 2016):

- At national level, an effective and/or independent institution (e.g. energy agency) for a proper management, control, verification, validation and database formation should be established. This institution should apply incentives/penalties effectively.
- Creation of independent institutions for monitoring, validation and verification of the EE projects according to specified international criteria.
- Standard EPC scheme should be developed and used in demonstration projects (recovering as much energy saving potential guaranteed as possible) with 10-15 years contract durations.
- There should be more active and financially strong umbrella institution like associations for ESCOs/EVDs in the market.
- “Energy efficiency fund” should be developed by the government, international funding institutions and local banks for the effective usage of allocated funds in long terms and low rates.
- Banks providing long term and low interest credits/loans
- For comparison within the sectors, reference performance indicators should be developed and calculated by user-friendly, verified tools/programs and their result should be publicly available.
- Local banks should be trained or cooperate with EE experts in terms of EE technology, products and systems for evaluating EE projects on the basis of true performance criteria.

- Correct understanding of the EPC concept and developing demonstration projects by international donors in order to demonstrate high energy saving potentials of using new EE technologies and to show the benefits of EPC.

## **16.5 Energy services in the public sector and commercial sector**

ESCOs are not so much involved in implementation of EE projects in the public sector (especially in municipalities) since they are facing with legal and other barriers that hamper the introduction of the ESCO concept. Therefore, ESCOs are not active in this segment of the market for energy services.

The main barriers are as follows:

- Limited number of creditworthy municipalities and borrowing capacity.
- Legal Limitations on Municipal Borrowing.
- Lack of multi years budgeting in municipalities and retention of energy savings.
- Lack of Separate Accounts for Capital and Operating Expenditures.
- Lack of budget autonomy. The municipalities depend on the state budgets for their operational budgets. Future energy savings would result in a deduction from their operational budgets, and the saved energy cost cannot be used for other local purposes—creating a huge disincentive to save energy. Therefore, the central government has high control over local budgets;
- Short-Term Perspective of Local Political Decision Makers.
- Complex public procurement procedures.
- Lack of financing mechanisms especially from the government side.
- Lack of awareness and interest in financing EE.

Some of the potential solutions to overcome the above mentioned barriers are:

- Reclassifying EE investments as utility services, where long-term contracts are implicitly allowed;
- Increasing local revenue sources;
- Preparation and implementation of Municipal EE Action Plans (MEEAPs) or Sustainable Energy Action Plans (SEAPs).
- Standardization of documentation and procedures for public procurement of EE equipment and services.
- Development and implementation of EE pilot project based on simplified and standardized EPC.
- Implementation of training and capacity building programs at national and local level.

The commercial sector has significant potentials for EE and therefore shall be of interest of ESCOs. These are mainly interested in projects in the hotels on the Turkish coast as well as in the commercial buildings. Projects for improvement of HVAC installations, in door lighting, installation of monitoring and controlling of energy consumption in commercial buildings can be realized by ESCOs. The foreign ESCO companies are very interested in investment in EE in the commercial sector, because of its huge potential for energy services. In the past few years some of them already realized projects in larger shopping malls. These projects were implemented through EPC and funded by commercial banks. The foreign ESCOs want to demonstrate a full range of energy services provided by ESCOs as well as benefit of EPC.

## 16.6 Energy services in the residential sector

Although the Turkish residential sector has a huge potential for energy services it is not attractive for ESCO because of several barriers. Some of these barriers are (EC JRC, 2016): EC, 2016

- Lack of primary or secondary legislation for the creation of Homeowner association (HOA) in multi apartment buildings or not in enforced.
- Small project size and therefore relatively high transaction costs;
- Low energy tariffs (especially for electricity);
- Perception of high risk by commercial banks;
- Relatively high commercial bank interest rates;

Some of the recommendations to overcome existing barriers in the residential sector could be:

- Formation of effective Homeowner Associations that have legal status in order to open bank accounts, borrow money for building improvements, enter into contracts with service providers. This will contribute to faster penetration of energy services in the residential sector in Kosovo. Implement Financing and Incentive Schemes for Family Houses will stimulate the investment in EE.
- Implement Financing and Incentive Schemes for the residential sector;
- Increase information outreach and organize awareness raising campaign to promote EE, ESCO and benefit of energy services among homeowners;
- Implementation of energy certification schema for buildings <sup>(13)</sup>

## 16.7 Energy services in the industrial sector

The EDV (ESCO) companies are involved in the realization of different EE projects mainly in large industrial enterprises. They use standard service or sales contracting. Modified EPC were used only by few ESCOs. The financing of the projects is provided by ESCOs own equity or by the customers if they are large industrial enterprises. Third part financing is not very common since the credit lines from commercial banks are not attractive conditions.

The Turkish government focuses on the industrial sector regarding the implementation of EE policies, since this sector plays the key role in the fast growing Turkish economy (6<sup>th</sup> biggest economy in Europe).

Therefore, the Turkish government has developed and implemented incentives schemas for the implementation of the "Energy Efficiency Projects (VAP)" in industry. Since 2009, 5 million Turkish lira (around EUR 1.6 Million) has been allocated each year for "Energy Efficiency Projects (VAP)" in industry. (Akuner 2015)

Up to 30% of the total project investment or up to EUR 113,000 can be subsidies by the government. Since 2014 the industrial enterprises which have interest to apply for state subsidies have to implement the ISO 50001 Energy Management Standard and to carry out energy audit. The Energy Efficiency Coordination board (EECB) approves the EE projects that should be supported by the state incentives (Celikoglu, 2015). In addition, starting from 2008 industrial enterprises with 100 TOE or greater energy consumption should share their annual energy consumption and CO<sub>2</sub> emission figures (EC, 2016).

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<sup>13</sup> Up to May 2017 all buildings in Turkey should obtain their energy certificate. If they not have certificate cannot be sell or rented after May 2017. For the buildings with energy class lower than C energy class, selling or rental price will be lower.



The numbers of the “Energy Efficiency Projects (VAP)” in industry supported by governments are (EC, 2016):

2009 – 17, 2010 – 15, 2012 – 11, 2013 – 59, 2014 – 68, 2015 – 72

The voluntary agreements with industrial enterprises are another form of state incentives for the industry in Turkey. Forty industrial plants have been applied for this kind of state incentives and 25 agreements have been signed since 2009. However, only 7 projects were successful (Celikoglu, 2015).

EDV companies can be involved in the preparation and implementation of “Energy Efficiency Projects (VAP)” as well as of voluntary agreement. Some of the ESCOs are involved in preparation of project applications.

Although the industrial sector is the most covered by the ESCOs, there are still issues for further development of ESCO services. Some of them identified by experts are (EC JRC 2015):

- Lack of interest of the owners to invest in EE.
- lack of specialized EE experts for the different industrial processes.
- lack of exact measurement of energy consumption within an industrial plants (installation of individual energy consumption meters).
- payback period concerns (i.e. acceptable range of 1-5 years).
- not aware of different funding mechanisms.

## **16.8 Conclusions**

The energy demand of Turkey has increased of about 4.6% per year since 1990. It is expected to grow to 5% annually to 2023. Until 2020 the electricity demand will increase to 6.7% according the low case scenario annually or 7.5% according to the high case scenario. The required investment in energy sector will be more than \$ 130 billion up to 2023. Savings potential conservatively estimated at about 20%. Over 50% of industrial EE projects expected to have payback period of less than 2 years. Economy would benefit from reduced demand for energy imports and CO<sub>2</sub> reduction (Celikoglu, 2015).

The vision of the government is to reduce the energy intensity (still above developed countries) at 20% until 2023 compared to 2011. EE is recognized as a win-win situation and therefore the government aiming to stimulate the investment in EE though introducing incentives in industry. However, these are not enough to achieve the overall energy targets. The private sector should be more involved in EE investment and not only in the industrial sector. ESCOs (EDV) companies can mobilize investment and provide the necessary know how for project development and project implementation in residential and commercial sectors. However, without any state support (legislative and financial) these sectors are still not attractive for ESCOs. The public sector especially municipalities should be better informed about energy services and ESCO business.

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## **17 Development of the ESCO Market in Ukraine in 2015**

### **17.1 General overview of the market**

The ESCO market in Ukraine has changed from stagnation of the market (in the period of 2013-2014) to its growth in 2015. This change of the market is associated with the new legal framework, which was adopted by the Parliament of Ukraine and formed the energy service market in the public sector in 2015 (EC JRC Survey 2016).

As of 2015 about 30 energy service companies (ESCO) were active in the Ukrainian market. Generally, these are 24 medium-size private companies, 4 municipal ESCO and 2 communal energy suppliers companies, which were established following the ESCO model (EC JRC Survey 2016).

The main types of projects, realized by ESCO, are thermal modernization of municipal buildings and transition to a bio fuel-based heating system of municipal buildings. Ukrainian ESCOs mainly utilize direct funding scheme (from own equity) and bank loans (EC, 2016).

Type of projects realized by ESCOs are (EC, 2016):

- street lighting – 10% of the projects,
- improvement of heating and cooling in buildings – 20% of the projects,
- improvement of district heating – 5% of the projects,
- renovation of building envelope – 60% of the projects;
- other – 5% of the projects.

Type of Contract used for the realization of the projects (EC, 2016):

- Energy Performance Contracts (EPC) - (in 90% of the projects)
- Energy Supplying Contracts (ESC) - (in 10% of the projects)

### **17.2 Legal framework**

The Law No. 327-VIII "On the Implementation of New Investment Opportunities, Ensuring Rights and Legitimate Interests of Individual Entrepreneurs for the Performance of Large-Scale Energy Sector Modernisation" ("ESCO Law") was adopted by the Parliament on 9th of April 2015. The ESCO law defines the concept of "energy services" and "energy service agreement", establishes basic conditions to regulate the relationship between the customer and the energy service providers; defines the mechanism for value assessment of services allowing budgetary institutions to be involved into one plus years long energy service contracts, secures payments for investors, the exclusively monetary remuneration for savings achieved within the framework of an energy service contract; defines a transparent mechanism for the selection of the tender winner for the provision of energy services (European Ukraine Energy Agency 2016).

The purpose of the "ESCO law" is to create a legal framework for the introduction of new investment opportunities (including ESCO) in the public sector, ensuring the rights and legal interests of business entities while conducting a large-scale energy efficiency projects through the mechanism of energy services. (European Ukraine Energy Agency 2016) An investor obtains guarantees of return of investments in 10 years after the implementation of energy-efficiency measures on account of saving of resources deriving from such measures. The government will not make any investments; moreover, it will receive up to 10-20% of saved funds, while up to 80-90% will go to the investor (Khachaturian et al. 2015).

Law No. 328-VIII "On Changes in the Budget Code of Ukraine (On Introduction of New Investment Opportunities, Guarantee of the Rights and Lawful Interests of Business Entities for the Large Scale Energy Modernization)" was adopted on 9th of April 2015.

Public entities carry out public procurement of energy services according to the procedures prescribed by the Law of Ukraine "On state purchases" for procurement of services, taking into account the peculiarities set by the ESCO Law.

In addition, in 2015 two by-laws prepared on the basis of the two above mentioned Laws were approved:

- Model Energy Servicing Agreement (ESA) developed in line with the new Law No. 327-VIII and approved by the Act of the Cabinet of Ministers.
- The methodology for estimation of the baseline annual level of consumption of the fuel and energy resources and utility services (Part 1 of Article 3 of the Law No. 327-VIII) – Act of the Ministry of Regional Development, Construction and Housing and Utility Sector.

The agreement's primary goal is to implement international ESCO practice in Ukraine, which is widely recognized as an efficient financial vehicle for funding energy efficiency programs.

The model ESA provides the following (CIM- Law Now 2016):

- An energy service is a package of technical and organizational energy efficiency measures, provided by an ESCO for a customer;
- The ESCO's remuneration is directly tied to the savings achieved. The cost of the initial investment and ongoing management will be paid back from the savings over the term of the contract (10 years maximum). If the savings fall short, the ESCO will either implement additional measures or cover the shortfall itself;
- In the ESA the ESCO and the customer shall determine:
  - - the customer's baseline consumption of energy resources and utilities (by volume and in monetary form), and
  - - the stipulated level of energy saving;

The baseline consumption will be equal to the customer's average annual consumption of energy resources and utilities over the last 3 years;

The level of energy savings is calculated as the difference between the baseline consumption and the customer's actual consumption, multiplied by the tariffs applicable during the reporting period;

The annual payments to the ESCO may not be less than 80 per cent and may not exceed 90 per cent of the customer's annual energy savings.

### **17.3 Existing barriers to the development of the energy service market**

- Legal: The ESCO law and the basic models of energy service agreements (actually EPC) have been developed by the State Agency on Energy Efficiency and Energy Saving of Ukraine in 2015 and have had no practical implementation yet. The implementation of the legislation has to be enforced by the authorities (EC, 2016)
- Financial: currently, the financial source for ESCO projects is the Western banks' funding. The current financial stability, in which Ukrainian banks have to provide short-term loans at very high interest rates - from 20% to 25% and even 30% in some cases - even more difficult access ESCO to finance (National Bank of Ukraine, 2015). Given the limited financial resources, ESCO usually are not able to put into practice Energy Services, the appropriateness of which unaudited and, at the same time unable to finance or access to finance those services. Under the conditions of the annual inflation rate at around 43% currency risks are extremely high. Energy tariffs

are approved in a national currency and the exchange rate is difficult to forecast and manage (EC JRC Survey 2016).

Other barriers for development of the ESCO market are (EC JRC Survey 2016)

- The low level of demand for the Energy Service;
- Inconsistencies between supply and demand in the Energy Services;
- The low level of understanding of the benefits of ESCO.

#### **17.4 Recommendations to overcome the existing barriers:**

Four steps with a focus on supply, demand and understanding / awareness for the development of an active market for ESCO to implement are recommended (EC JRC Survey 2016):

- From the supply side - Facilitate access to financing.
- On the demand side - Introduce measures to stimulate investment in energy efficiency.
- Achieving match supply and demand - build capacity and improve coordination among market participants, which will help balance supply and demand.
- Increased understanding - Provide informational support for the ESCO model.
- Implement and improve of the basic EPC model for the sector of municipal buildings.
- Under the condition of high inflation rate the currency risks will remain. It is necessary to establish the government guarantee fund, which is subsidized from the budget, in order to reduce the currency risks in the projects of municipal buildings retrofit.
- It is essential to establish municipal ESCOs and energy agencies, which would receive the functions of project management and operation throughout an entire project life-cycle.

#### **17.5 Energy services in the public and commercial sector**

There are 80 000 municipal buildings in Ukraine, which were built in the period of 1930-1990 and require now a thermal modernization. These buildings consume 1.65 milliards m<sup>3</sup> of natural gas and 55 milliards kWh of electricity annually. Taking into account the retrofit of engineering systems of buildings, total investment is considered to be 13 milliards euro. Annual loss of the budget resources is around 1.25 milliards euro (EC JRC Survey 2016).

The number of realized projects is amounted about 10 annually in Ukraine, which covers 2-3 buildings in the municipalities (cities). The projects usually include replacement of windows, installation of local heating systems, biofuel boilers and rarely, thermal modernization of buildings (EC JRC Survey 2016).

The main problem connected to the absence of legal framework for energy services, which occurred before 2014, have been diminished by two new laws (see above). However, there is an absence of implementation practices related to the new ESCO law. It is expected that in 2016 these laws will be thoroughly tested in some cities due to projects financed by the EBRD and NEFCO loans (EC JRC Survey 2016).

The lack of experience of EPC as a business models for improvement of energy efficiency in public buildings is a major know-how barrier which has to be overcome through the trainings of local decision makers, administrative experts, and potential local facilitators organized by International Organization as: GIZ, USAID and EBRD.

The barriers that hamper the faster development of the ESCO market in the municipal buildings sector identified by experts are (EC JRC Survey 2016):

- multi years budgeting,
- borrowing of municipalities limited by legislation,
- insolvency of municipalities,
- complicated public procurement procedures,
- accounting procedures.

“EnPC-INTRANS -” is an EU project funded in the framework of the Horizon 2020 Program of the European Union, aiming to develop capacity building on Energy Performance Contracting in European Markets in transition. Since the EPC for public buildings is a new concept for all stakeholders and actors in the country, all projects initiated by participants in EnPC-INTRANS project may be monitored on capacity development during the project duration, or during the first few years following the completion of the project (Wielhelm 2015).

## **17.6 Energy services in the residential sector**

The implementation of the ESCO and EPC concept in the residential sector started in Ukraine in 2001. Since 2001 around 100 projects were implemented in residential and public buildings. These projects were financed through the grants provided by international donors and IFIs. Most of them were successful and showed high energy saving potential of both residential and public buildings. However, this project concept was not sustainable, since the funding was provided only by grants. Third part financing was not introduced.

Mainly, the development of the ESCO market in the Ukrainian residential building sector is hampered by barriers (legal and financial). These barriers are: (EC 2016)

- Absence of owners association in multi apartment buildings.
- Low energy prices for residential sector. Because of the subsidized tariffs the payback periods of the majority of projects are beyond the boundaries of commercial interest.
- Lack of capacity and willingness of local financial institutions to invest in energy efficiency in the residential sector.
- Legislative Barriers for lending to Homeowner associations.

Since several years, EBRD has provided technical assistance for improving the energy performance of residential buildings to assist the government of Ukraine to prepare for introduction of market instruments for energy efficiency measures in residential buildings. The program includes further development of legislation and capacity building to lending for EE in residential buildings. ESCOs are perceived as a possible solution for underinvestment in residential buildings and therefore are included in the framework of the EBRD program (Borysova 2015).

In addition, in the City of Dnepropetrovsk a pilot project has been implemented through EBRD in buildings including financing of identified measures. The Pilot project in Dnepropetrovsk establishes commercial concept of Energy Performance Contracting (EnPC) and demonstrates the related financing. In the framework of the ESCO Budget Investment Program approved by the City Council of Dnepropetrovsk were identified 71 building for energy efficiency renovation and 4 tenders for EPC were prepared. The payback period of the projects is less than 7 years. EBRD provides funding for the technical component of this program with an amount of EUR 588,000 (Borysova 2015).

## **17.7 Energy services in the industrial sector**

Practically there is no ESCO market for the industrial sector in Ukraine nowadays. In the last 10 years, especially in the period of 2013-2015, Ukrainian industry lost its position on the market and now it is being destroyed. It would be singular if any retrofit projects are implemented by the real owners without involving energy service companies.

Moreover, gradually the energy management system is being implemented and energy audits are conducted, but there is no market demand on external ESCOs. (EC 2016)

The Barriers for implementation of EE projects in industry (e.g. lack of in house expertise, lack of interest of management are (EC 2016):

- Low interest of enterprises management in energy efficiency:
- Financial constrains;
- Lack of qualification and understanding of the staff for energy efficiency in industrial enterprises.

## 17.8 Conclusions

The adopted legislation for energy services establishes the legal and economic principles of energy services to improve the energy efficiency of the government and municipal property (buildings, energy utilities, street lighting etc.).

High energy saving potential in public buildings, lack of qualified personnel in the public sector (at national and local level) and public utilities, able to identify and to manage energy efficiency projects through the entire project life-cycle, new legislation for energy efficiency ( including energy services) shall raise the interest of the public sector for more investment in energy efficiency projects These measures will enable resolving the issue of energy efficiency in budgetary sphere and covering more objectives within 10 years, that will reduce current expenditures of municipal budget for maintenance of buildings. Energy saving companies can take the leading role in implementation of these projects.

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## **18 Development of the ESCO Market in Belarus in 2015**

### **18.1 General overview of the market**

ESCO market in Belarus is still moderate with slow progress in the last years.

Several energy service companies operate in Belarus. Companies such as BelinvestESCO, "Conecticum", ENECA and Vneshenergiserice, provide energy services with similar contracts to ESC. Mostly of the implemented projects regard improvement or reconstruction of heat energy supply systems and networks, since in this sector the potential for energy savings are large because of the old equipment, installation and huge energy loses. The energy supplier systems are mostly state owned. (UN Economic Commission for Europe.2013)

However the number of companies in the private sector that are really able to justify and qualify for ESCO services is not very large, as ESCOs will only seek companies with a sound credit rating and good trading record, i.e. those that are able to satisfy the investors of their long term survivability. (Iqbal et al.2006)

On the whole, ESCO operation could be possible in the private sector, mainly with larger robust organizations. However, while the public sector organizations in general may present a lower credit risk to the ESCO, the number of restrictive practices in that sector can make the breakthrough very difficult for private ESCOs.

### **18.2 Legal framework**

Although the existing laws do not provide for ESCOs explicitly, the ESCO concept and contracts may implicitly, be considered permitted within the existing laws of Belarus. However, taking into account Belarus' national culture and practices for running a business, it is almost certain that a dedicated law to enable ESCO operation would be required (Iqbal et al.2006).

According to the Investment Code of Belarus, the Government could provide the following types of financial incentives (Iqbal et al.2006):

- Lower rates of taxation and import duties;
- Guarantees to IFIs, foreign investors, foreign and Belarusian banks financing investment projects; and
- Direct financing of investment projects from the national budget.

Although at present, there is no specific ESCO contract provision in the Belarusian Contract law, a so called "mixed type" contract can cover most elements for the provision of standard services. An ESCO can act as a borrower and investors, or as a contractor and subcontractors like consultants, engineering/maintenance contractors and equipment suppliers.

The standard contract type suggested by Belarusian Civil Code may be devised to cover all aspects of ESCO operation but to achieve this in practice, it would become cumbersome and major amendments will be necessary.

A "Simple Project Agreement" (SPA) is a contract model similar to an ESCO contract, but developed for the Belarus market. This model of contract has been used by the International Energy Centre (IEC). The International Energy Centre was established in 2010 as a unit at the Energy Efficiency Department to help realizing energy efficiency policy through initiating energy efficiency projects. The Energy Centre was further utilized as an important component of the Project "Removing Barriers to Energy Efficiency in the State Sector in Belarus" implemented between 2007 – 2011 and whose objective was to increase internal investments in EE projects in the public sector.

"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. However, it has to be pointed out that many projects with foreign participation have not been entirely successful. The reasons for this include inadequate assessment of the risks involved, changes in taxation, exchange rate fluctuations, rising labour costs etc. Therefore, a pilot ESCO with foreign participation will need to make a very careful assessment of the risks, and be properly safeguarded by a tight legal document.” (Iqbal et al.2006)

### **18.3 Barriers for the development of the energy service market**

The main barriers for development of the market for energy services in Belarus are:

- Legal: Need for ESCO legislation and predefined EPC. The process of the adoption of the complete legislation for ESCOs has to be finished. Apart from that, some changes and addition are needed in existing legislation, especially regarding the public procurement.
- Financial: the Interest rates in Belarus are high and they vary from bank to bank. The Belarusian cabinet regulation provides for low interest financing specifically for the purposes of energy saving activities. In 2013, finance for such activities carried on average an interest rate of approx. 10-11% for USD; 32-35% for BYR. (Grebekov 2013). Most ESCO projects need loans over a longer term period. Some Belarusian banks are now actively negotiating long term credit lines from foreign banks so that they may make longer term loans available to their borrowers. The banking sector is also overregulated by very prescriptive laws within the national banking code. Banks are allowed to open affiliate companies that can do a wider range of financial activities including the provision of ESCO type services but they cannot act as ESCOs. In addition the grant funding does not provide motivation for other EE investments.

Other barriers:

- Benefits from energy savings. The value of energy saved by an organization is lost in the overall cash flow of the company under the current accounting rules in Belarus. It gets transferred into a central budget elsewhere. Therefore organizations do not see any benefit from the energy they save and, hence, the incentive for saving energy is lost in the process.
- Lack of awareness and understanding of the ESCO concept among potential users and lenders.
- Very strict tendering rules applied to procurement in public sector.
- Business and banking sector in general are not directly interested in funding EE because of: (Grebekov 2013)
  - disincentive tariff mechanisms for independent energy producers
  - lack of knowledge and experience in EE project cycle and EE investment cycle, energy auditing, business planning and feasibility study for bankable proposals
  - limited foreign investments (by a factor of 10 less than for other EITs).
- Strict and complex bureaucratic procedures, delays and slow decision making process in the state owned organizations.
- Regulated Fuel Prices and Subsidies. The Government still regulates the energy prices and provides subsidies for households. Also there is differentiation between the energy tariffs for private and for the state owned companies. However, the government can no longer support these subsidies, and gas, electricity and heat are distributed to consumers at cost, and certainly above the cost level to industries. Availability of cheap gas from Russia makes small scale production of electricity and heat very cost-effective.
- Lack of motivation on demand side.

Much of the economy is still controlled by the state, there are many restrictive practices in place and there is a lack of coordination between different government bodies. There is heavy reliance on very prescriptive laws and detailed instructions and regulations in all areas of business. The inability of organizations to keep their savings remains biggest disincentive.

#### **18.4 Recommendations to overcome the existing barriers**

Some recommendation to overcome the existing barriers could be:

- Development and implementation of favorable legislative framework for ESCO.
- Development of favorable financial and fiscal climate.
- Introduction of capacity building trainings for experts, potential ESCOs and public sector for energy services and ESCO concept.
- Motivation and Incentives for the investment in the residential sector.
- Removal of restrictive procedures in public procurement of energy services.
- Introduction of training within the banking sector for ESCO concept.

#### **18.5 Energy services in the public sector**

State sector in Belarus is the largest energy consumer of fuel and energy resources. This sector accounts for 68% of the fuel and other energy resources consumption and the fixed basic assets represent 24% of GDP. (Greibenkov, 2013) The state sector can be divided in two types of organizations: state self-financed organizations and state budgetary organizations. The self-financed organizations are akin to state enterprises. The Belarus government is the main stakeholders and appoints their management. They have own incomes and therefore are profit motivated. They are entitled to access innovation funds provided by their oversight organization for energy efficiency investments (UNDP 2006).

The state budgetary organizations are financed from the state or local (municipal) budgets. They provide services free of charge and the only way of funding is the state budgets and grants.

Most of the implemented projects in the state organization are improvement or reconstruction of heat energy supply systems and networks, since in this sector the potential for energy savings is large because of the old equipment, installation and huge energy loses. The energy supplier systems are mostly state owned. (UN Economic Commission for Europe.2013)

There are several EE investments instruments in place in Belarus (Greibenkov 2013):

- 4 types of incentive mechanisms: subsidies, feed-in tariffs, tax remissions (0.5 of profit tax), soft loan;
- EE investments: owner's equities, bank loans, Ministry of Energy's Innovation Fund; Departmental Innovation Funds and state and local budget (repayable and non-repayable);
- Revolving Fund with 7.5% interest rate.

#### **18.6 Energy services in the residential sector**

The future projections estimate the construction of 120 million m<sup>2</sup> of new residential area during the period of 2012-2026 in the Republic of Belarus (UNDP 2012).

Traditional approach to building design is one of the shortages of the Belarusian system, where the architectural design and the design of the buildings' energy performance and HVAC systems are obsolete. Energy efficiency gains are primarily sought from

prescriptive insulation norms of the building envelope without considering the energy performance of the building and its HVAC system as a whole.

The panel buildings using prefabricated elements with well-organized quality control and supervision at all production and construction stages are currently expected to have the best compliance with the adopted norms. The survey conducted in 2006-2007 on the energy characteristics of old (constructed before 1993) and new panel buildings with installed heat meters support this assumption showing the specific heat consumption of monitored panel buildings to be close to the values shown in the design documents (UNDP 2012).

The Belarusian architects and engineers still lack the capacity and sufficient experience in designing energy efficient buildings. This gap can be filled by organizing awareness raising and training on new design principles, procedures and norms along with the design and construction of selected EE demonstration buildings. However, in the framework of the UNDP Project "Improving Energy Efficiency in Residential Buildings in the Republic of Belarus" training for energy experts and architects as well as for energy auditors have been organized. The energy certification and energy audits for residential and public (state) buildings is regulated by the new legislation, prepared according to the EPBD taking into account Belarus Norms. In addition, several pilot projects funded by international donors and/or state budget have been implemented in Belarus.

The residential sector in Belarus is facing with a lack of financial incentives to stimulate the construction of energy efficient buildings. "While the development and effective enforcement of new mandatory minimum energy performance standards together with the adoption of a new energy certification and labeling system for buildings should reduce the need for complementary financial incentives, the issue may still need to be considered during project implementation. The primary interest for the construction companies and investors is to minimize their costs by just taking into account the mandatory EE requirements, unless they can recognize some real value added and financial benefits from complementary EE investments. Similarly, the buyers of new apartments will primarily look the up-front costs. The long term energy savings are not currently appreciated by most purchasers of apartments, should the initial investment need be higher." (UNDP, 2012)

The Law of the Republic of Belarus "On joint housing ownership" (1998) created the basis for establishing the first housing associations (condominiums), which are currently over 750. From these, 630 are engaged in the maintenance and repair of buildings. The Council of Ministers of Belarus adopted in 1998 a Resolution "On Approval of the Typical Statute of Condominiums, Model Foundation Agreement of Creating Condominiums and Typical Agreement on Joint Housing Ownership", which stipulates the right for condominiums to use loans. Condominiums can be fully involved in implementing energy saving measures in existing buildings once the related legal and regulatory framework is further developed and attractive market incentive mechanisms will be in place (UNDP 2012).

## **18.7 Energy services in the industrial sector**

"The main attractions for ESCOs are projects aimed to modernization of energy sources, co-generation plants in large industry. The first ESCO contract followed the UK Energy Management Contract model. In this, the ESCO executes a turn-key project, including the delivery, installation and operation of a combined heat and power (CHP) plant or other energy efficiency installation. The ESCO owns the installation during the timeframe of the project, and is selling the service (electricity and heat) at a lower price than the local supplier, but when the project ends, the installation is handed over to the client. This is also referred to as build-own-operate-transfer (BOOT) contract. The ESCO project is financed by foreign bank loans through the ESCO, and a guarantee by local banks." (UN Economic Commission for Europe.2013)

## 18.8 Conclusions

Some significant movements towards market economy and economic stabilization have taken place recently, and along with improvements in legal framework, they make ESCO operation almost possible. A number of incentives are in place. Contracts are enforceable and rights of foreigners are well catered for.

Economic indicators are moving in the right direction and inflation has fallen considerably although still high by western standards. Interest rates are coming down and there are tax incentives available for investment in energy efficiency. Banks are willing to consider loans for energy efficiency but the loan terms are short and they continue to lend only on an asset based philosophy.

"The days of cheap gas from Russia are however coming to an end, and the higher gas prices will certainly be a key driving force for greater implementation of energy efficiency measures. This in turn will help the ESCO industry to get established and mature in Belarus." (Iqbal et al.2006). The goal of the Government is to further reduce the subsidies for energy to zero. The decision № 1180 of the Council of Ministers of Belarus dated August 9, 2010 "On Approval of the development strategy of the energy potential of the Republic of Belarus" calls for the phase out of all energy tariff subsidies, including those for natural gas used for food preparation by 2011, for electricity by 2013 and for district heating by 2014 thereby increasing the heating costs to the population and making the energy efficiency of buildings even more important.

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## **19 Development of the ESCO Market in Russia in 2015**

### **19.1 General overview of the market**

Despite the economic downturn in Russia, the energy services market has grown with moderate rate and few positive changes regarding better promotion of energy services can be pointed out since 2013 (EC, 2016):

- The Russian Association of Energy service companies (RAESCO) was established in 2014.
- The standard titled "Measurement and verification of energy efficiency" was analyzed and adopted by the Members of the RAESCO Council. This standard is the first standard of the Russian Federation in this area and it will allow to assess the indicators of energy efficiency and energy savings volumes during the implementation of specific projects and energy saving measures (EC, 2016).
- The state regulation (29 orders) on energy services were developed and adopted. Some laws were also changed and factoring was developed.

The Market structure was changed. A number of companies left the market for energy services, and new companies came. The Federal Energy Service Company (FESCO), a public ESCO created in 2011, failed to become a functional Super ESCO (EC, 2016) .

As of 2015 about 100 ESCOs were active in the Russian market for energy services (EC, 2016).

It has to be taken into account that most ESCOs do not take universal projects, but rather prefer to work in certain fields of specialization: some ESCOs choose lighting and heating systems, others, which are bank subsidiaries, specialize in funding EE projects and still others operate as dealers of certain kinds of equipment. Very few companies are capable of doing in-depth analysis and offer a whole spectrum of services, while funding all relevant activities -- from energy saving at the stage of generation (regardless of energy resources) to creating optimal energy consumption systems in various environments (workshops, offices, parking lots) (Smolnikov 2015).

Most of the ESCOs (85 %) are small private companies with credit lines up to 1-3 billion (11.6 - 34.8 million EUR) and the rest (15 %) are large private companies (EC, 2016).

The types of projects implemented by ESCOs are: Public Street lighting, residential buildings lighting, improvement of heating in buildings, improvement of district heating in public utilities, electric motors for utility and industrial sector, refurbishment of public buildings. (EC, 2016)

Energy Performance Contracts (EPC) with shared savings have been used for the implementation of most of the projects. The projects are financed through ESCOs' own funds since the private client are reluctant or unable to commit their own funds for project implementation. Only few projects have been financed by the customers themselves. However, the term EnPC is also used for different types of contracts. Some of these contracts cannot be considered 'real' EnPCs. In these cases the contractor (ESCO) does not take on a performance obligation, nor provides the project financing (EC, 2016).

According to the law ESCOs are obliged to finance the projects in the public sector. In contrast, Russian banks rarely provide direct loan financing for energy efficiency projects of ESCOs, but rather offer financial leasing contracts.

### **19.2 Legal framework**

The ESCO model was formally introduced in the Russian Federation through 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<sup>rd</sup> November 2009. This law allows the public organizations to enter into long-term EnPC contracts and set out energy

savings targets for public organizations and the obligatory introduction of energy certificates.

The federal public procurement law No. 94 "On the Placement of Orders for the Supply of Goods, Execution of Works and the Provision of Services for State and Municipal Needs" adopted in July 2005 sets out the basic rules for the procurement of EnPCs in the public sector. A new federal procurement law No. 44 "On the Contract System in the Realm of the Procurement of Goods, Works and Services for the Provision of State and Municipal Needs" adopted in April 2013 took effect on 1<sup>st</sup> January 2014 and allows a two-stage procurement process for EnPCs. This should increase the chances of a qualified ESCO being selected.

In November 2014 the Deputy Prime Minister of the Russian Federation approved the list of tasks on improvement of legislation in the field of energy service (29 tasks) of the federal executive bodies on improvement of normative legal acts. To date, most of the orders were fulfilled or is in the process of execution (ex: the draft law on improvement of housing legislation is developed and submitted to the Government). There are some issues when utility services providers implement energy service contracts (EC, 2016).

### **19.3 Barriers to the development of the energy service market:**

Although in the last two-three years, some positive changes give fresh impetus to the ESCO market in Russia, there are still barriers for its faster development as (EC, 2016):

- Legal: The regulatory framework for the public sector could benefit from further improvements such as the introduction of international monitoring and verification protocols, long-term budgeting for certain types of public organizations and the possibility to include other savings besides energy cost savings (such as maintenance cost optimization) in the contract.
- Financial: High interest rate on loans and the low cost of energy resources makes a large number of projects unattractive for investors. Financial infrastructure and special banking products for the energy service is still being formed. 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. To date, financial support for the sector by the state (for example, in the form of subsidies for compensation of interest rates) is missing.
- Political risks. There are problems with payment of energy service contracts previously concluded after the change of heads of municipalities or regions.
- Many enterprise directors still believe that electricity costs are a fixed value, and fail to understand that electricity consumption and, hence, the costs can be drastically reduced.
- Lack of understanding and confidence in the ESCO concept. Industrial clients often prefer to undertake the projects themselves instead of outsourcing these to an ESCO. Many public clients lack the expertise and resources to prepare the required tender documentation and EnPC.
- High project transaction costs. Project development costs are still relatively high which is especially an issue for those projects that are tendered under public procurement rules. This means an ESCO has to make significant investments up front in preparing its proposal without knowing whether it will be granted the project.

### **19.4 Recommendations to overcome the existing barriers**

According to the experts the development of the Russian energy service market can be accelerated if the following will be taken in consideration:

- Strict implementation of all instructions set out by the Deputy Prime Minister can solve some of the legal barriers;

- Creation of a special factoring company (with the participation of major banks) and introducing of special credit lines from the Central Bank to commercial banks at a reduced interest rate on the loan or interest rate subsidies financed from the federal budget; reduce the amount of redundancy on loans to implement energy service projects;
- Further promotion of the ESCOs and ESCO concept by the Russian Association of energy service companies (RAESCO). RAESCO should represent ESCOs in the dialogue with the authorities (to create political guarantees of compliance with obligations);
- Capacity building activities for ESCOs, energy specialists and public sector. The educational and training program for specialists in the field of energy saving and energy efficiency has been approved during the meeting between RAESCO and public authorities. It will be used for training the staff of organizations that are members of the RAESCO and for experts within the public sector (the Analytical Center plans to take part in the organization of this training), and well as a wide range of people interested in improving their skills in the field of energy services.
- The two-stage procurement procedure introduced on 1<sup>st</sup> January 2014 may partly help in addressing the issue regarding high transaction cost for preparation of projects as ESCOs will not have to undertake a full-scale investment-grade audit before bidding. Under the new procedure, this audit will only be required in the second stage of the procurement procedure when the public client has shortlisted a small number of ESCOs.

## **19.5 Energy services in the public sector**

The projects in the public sector typically focus on improvements in the heating system (e.g. through the installation of an individual heating point), energy-efficient lighting and low-cost measures such as the insulation of pipes. More capital-intensive measures such as the insulation of façades are usually not included as they do not pay back in a commercial time-frame given the existing tariffs and contract duration. (EC, 2016)

Some projects in street lighting have appeared in Russian medium-sized regional cities. Savings under these types of projects are typically in the range of 30% to 60%. These projects usually focus on replacing outdated mercury technology for High Pressure Sodium lighting, as well as dimming of lighting outside peak hours. LED technology is currently not being used widely as it does not make commercial sense under an EnPC (EC, 2016).

Public utilities such as district heating companies and water utilities are not limited to just one model of shared savings of the EnPC by the public procurement legislation. They can tender out such contracts according to their own existing procurement rules. However, an important issue for such contracts is the uncertainty regarding the future tariffs the utilities may use as the tariffs are typically fixed for a relatively short period (EC, 2016) .

As of 2015, 500 projects were implemented in public buildings and public street lighting with an investments volume of 1,5 billion rubles (<sup>14</sup>) (expected energy savings is about 1 billion kW-hour) (EC, 2016).

The program on granting subsidies to the regions was terminated and, therefore, the regions are facing the lack of financial resources. The underfunding of the public sector prevents them to implement energy saving measures. Therefore, the improvement of energy efficiency rarely occurs for refurbishment or reconstruction of buildings. On the other hand, this situation stimulates the development of the energy service market (EC, 2016).

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<sup>14</sup> 1.5 billion ruble = 1,696,1234 EUR (1EUR=84.76RUB/exchange rate on 24.02.2016)

## **19.6 Energy services in the residential sector**

There are objective problems with the efficiency of housing management. Management companies can vary each year, making them undesirable for the company energy service company. The conclusion of energy service contracts directly with the owners requires compliance with a complex set of formalized procedures (however, this process today is becoming more mature). Today, there is an extra fee on homeowners for major repairs of apartment houses. Credit mechanisms for improving energy efficiency of apartment buildings are missing. Systematic work on energy efficiency depends on income and the collection of payments for energy resources. To date, legislation on the indication of the energy efficiency class of apartment buildings is not completed (EC, 2016).

## **19.7 Energy services in the industrial sector**

Russian market is huge and all industrial sectors -- carmakers, steel mills, pulp and paper, glass industry, machine building -- need to increase their energy efficiency.

Few ESCOs are currently active in the industrial sector. Since 2014 in the industrial sector about 20 ESCO projects with an investment volume of EUR 40-50 million have been implemented (EC, 2016).

Electricity is one of the major causes of expenditure in industrial enterprise. Optimizing electricity consumption will help fulfill the main task of achieving a substantial reduction of overall costs and increasing the product's competitiveness. ESCOs work to achieve a reduction of all customer's energy and utility related costs, including: (Smolnikov 2015)

- costs of generation and distribution of energy and utilities, including compressor stations, water treatment systems, boilers, cooling towers, internal distribution networks;
- costs associated with work areas, including lighting, air conditioning, heating and heat insulation;
- costs of feedstock and costs associated with operations of efficiency monitoring and promotion of lean production.

In the industrial sector there are not significant legal barriers to implement energy efficiency. However, due to financial barriers and lack of motivation for energy efficiency (including the lack of administrative incentives, tasks by increasing energy efficiency, etc.) such projects are not a priority for the industry sector (EC, 2016). Common approaches to increase energy efficiency are running austere projects with short payback periods, which the enterprise is able to implement with its own available resources. As a consequence, such projects cannot have any impressive results (Smolnikov 2015).

Some complex projects on energy efficiency are economically impossible and practically not feasible because of the significant cost of imported equipment (due to the economic downturn in Russia) and the absence of domestic analogues (EC, 2016).

Furthermore, the issue of the predictability of energy consumption is a clear risk for ESCOs as the energy consumption is linked to production levels which may vary significantly over the contract duration (EC, 2016).

There are many companies that offer services for the implementation of energy management systems. These systems are implemented in some industrial enterprises (including at the direction of the parent holdings). These organizations typically integrate with each other and have certified the quality management system (ISO 9001), environmental management (ISO 14001), occupational health and safety (OHSAS 18001) (EC, 2016).

## **19.8 Conclusions**

The government program of energy saving and energy efficiency calls for achieving a 40% reduction in the GDP energy intensity by 2020. According to assessments made by experts, the target is achievable as far as producing industries are concerned. Therefore,



the Russian market is a very attractive market for EE projects. In Russia there are many industrial enterprises built in the second half of the 20th century, which are running outdated energy equipment. The equipment has been operating for 30-40 and even more years and is much inferior to the modern and innovative models in terms of EE performance.

Tax incentives will definitely catalyze the development of energy service business in Russia. Institutional stability and predictability is important in order to avoid errors in project calculations.

Finally, it is important for ESCOs to establish partnership relations with equipment manufacturers and vendors for the sake of integrity and price reduction and, eventually, for achieving a breakthrough in the competitiveness of the Russian economy.

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