



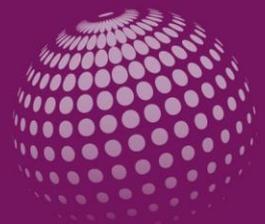
**OECD Eurasia**  
Competitiveness Programme



**SECTOR COMPETITIVENESS STRATEGY  
FOR UKRAINE – PHASE III**

**Enhancing Competitiveness  
in Ukraine through a  
Sustainable Framework for  
Energy Service Companies  
(ESCOs)**

**Project Report  
Working Group on Energy Efficiency  
December 2015**



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The OECD project “Sector Competitiveness Strategy for Ukraine” was launched in 2009. During the initial phase, the project prioritised and defined sector-specific sources of competitiveness and policy barriers for improved investment promotion, particularly in the key sectors of agribusiness, machinery and transport equipment manufacturing, renewables and energy efficiency. The second phase of the project aimed to address specific policy barriers to focus on short-term results through practical and effective measures. The project is currently in Phase III, which aims to put in place the mechanisms for a sustainable reform process and support the Government of Ukraine in implementing them effectively. It does so by sharing OECD expertise and methodologies, identifying remaining policy challenges to private sector competitiveness in the target sectors, consulting closely with the private sector, and organising capacity-building events to strengthen government institutions. The project’s Phase III will conclude in December 2015, and is **co-financed by the European Union and the Government of Sweden.**

[www.oecd.org/countries/ukraine/ukrainesectorcompetitivenessstrategy.htm](http://www.oecd.org/countries/ukraine/ukrainesectorcompetitivenessstrategy.htm)

This note was peer reviewed on 25 November 2015 at the OECD Eurasia Competitiveness Roundtable. The roundtable is a policy network for knowledge sharing on the implementation of competitiveness reforms that brings together high-level representatives and technical experts from Eurasia countries, OECD member countries and partner organisations.

## TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	4
KEY INDICATORS: UKRAINE.....	6
ENHANCING COMPETITIVENESS IN UKRAINE THROUGH A SUSTAINABLE FRAMEWORK FOR ENERGY SERVICE COMPANIES .....	7
Context: The country needs private sector participation in energy efficiency activities to increase competitiveness and enhance investment opportunities .....	7
Overall recommendation: Develop a framework for a sustainable ESCOs market in Ukraine to foster private sector participation in energy efficiency activities .....	10
Challenges: Ukraine faces an underdeveloped framework for ESCOs and a lack of trust among key stakeholders in a scenario of economic instability.....	10
Access to finance is limited.....	10
Demand for energy services is low .....	10
Demand and supply of energy services are mismatched.....	11
Awareness and understanding of ESCOs is low .....	11
Notes .....	11
RECOMMENDATIONS FOR DEVELOPING A FRAMEWORK FOR A SUSTAINABLE ESCO MARKET .....	13
Ease access to finance to push the supply of energy services .....	14
Introduce incentives to stimulate demand for ESCO services .....	16
Match supply and demand through co-ordination and improved capacity among market players .....	17
Raise awareness and promote the ESCO model.....	18
Notes .....	20
IMPLEMENTATION GUIDELINES.....	22
ANNEX A: SUPPORTING ANALYSIS.....	24
ANNEX B: METHODOLOGY AND PROJECT APPROACH.....	51
ANNEX C: BIBLIOGRAPHY.....	53
ANNEX D: ACKNOWLEDGEMENTS.....	58

### Figures

Figure 1. ESCOs' services at each phase of an energy efficiency project .....	8
Figure 2. Activities for developing a sustainable energy savings market with ESCOs .....	14
Figure 3. Roadmap for implementing the actions.....	23
Figure 4. Four main areas of actions for developing a sustainable framework for an ESCO market .....	26
Figure 5. Draft action plan to improve ESCO market in Ukraine (1/2).....	27
Figure 6. Draft action plan to improve ESCO market in Ukraine (2/2).....	28
Figure 7. Companies operating in Ukraine experience a lack of financing options but there are multiple solutions available .....	29
Figure 8. The market may rely on both public and private financing.....	30
Figure 9. Supply can be stimulated through Energy Performance Contracts (EPCs), Shared/Guaranteed Savings, or Chauffage .....	31
Figure 10. EPC contracts do not require dedicated budget because they finance themselves .....	32

Figure 11. How private-public funds can enhance ESCO financing and strengthen the market: the Bulgarian Energy Efficiency Fund .....	33
Figure 12. The US property-assessed clean energy (PACE) programme helps to build trust in the market 34	
Figure 13. The public authority can create clear incentives to facilitate the growth of the ESCO market at relatively low cost.....	35
Figure 14 Introducing white certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (1/3).....	36
Figure 15 Introducing white certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (2/3).....	37
Figure 16 Introducing white certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (3/3).....	38
Figure 17. Austria has strong incentives for stimulating demand for energy services .....	39
Figure 18. In Denmark high taxes on energy are a strong incentive for energy saving services.....	40
Figure 19. In the UK, the Green Deal project encouraged residential owners to embark on energy saving projects through ESCOs .....	41
Figure 20. Better co-ordination in the market builds trust and lowers transaction costs .....	42
Figure 21. Procurement and implementation via ESCOs requires important skills that are currently lacking in Ukraine.....	43
Figure 22. Market facilitators serve as intermediaries between ESCOs and EE suppliers and their potential clients.....	44
Figure 23. RE:FIT in London creates a direct channel between public building managers and ESCOs, easing the matching process (1/2).....	45
Figure 24. RE:FIT in London creates a direct channel between public building managers and ESCOs, easing the matching process (2/2).....	46
Figure 25. NAESCO serves as the national voice of the ESCO industry in the US through advocacy on its strategic interests.....	47
Figure 26. Raising awareness of the ESCO model through better promotion is crucial for the success of the action plan.....	48
Figure 27. Networking campaigns and cross-sectorial information efforts in Austria and Ireland ....	49
Figure 28. The US Lawrence Berkeley National Laboratory manages the world's largest database of ESCO projects	50

## Boxes

Box 1. What is an ESCO?.....	8
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## ACRONYMS AND ABBREVIATIONS

bcm	Billion cubic metres
ELENA	European Local Energy Assistance
EE	Energy efficiency
EED	Energy Efficiency Directive (2012/27/EC)
EPC	Energy performance contract
ESCO	Energy service company
EUR	Euro (currency)
GDP	Gross domestic product
GLA	Greater London Administration
IFI	International financial institution
LFI	Local financial institution (focusing on private, not state-owned, financial players)
LBNL	Lawrence Berkeley National Laboratory
LIEN	Large industry energy network
MEPS	Minimum energy performance standards
Mtoe	Million tonnes of oil equivalent
MWh	Megawatt hour
M&V	Measurement and verification
NAESCO	National Association of Energy Service Companies
OECD	Organisation of Economic Co-operation and Development
O&M	Operations and maintenance
PPP	Purchasing power parity
SAEE	State Agency on Energy Efficiency and Energy Saving of Ukraine
TJ	Terajoule
TOE	Tonnes of oil equivalent

TPES	Total primary energy supply
TWh	Terawatt hour
USD	United States dollars (currency)

## KEY INDICATORS: UKRAINE

Country profile	
Population, July 2015 estimate	44 429 471
Surface area, 2014	603 550 km <sup>2</sup>
Gross domestic product (GDP), current prices, 2014	USD 131.8 billion
Real GDP growth, constant prices, 2015 forecast	-11%
Exports of goods and services, share of GDP, 2014	49%
Imports of goods and services, share of GDP, 2014	53%
Energy statistics	
Energy production, 2012	85.4 Mtoe
Net imports, 2012	38.5 Mtoe
Total primary energy supply (TPES), 2012	122.7 Mtoe
Energy intensity (TPES/real GDP PPP), 2012	0.36 Toe/thousand 2005 USD PPP
Total final consumption of energy, 2012	73.1 Mtoe
Heat total production, 2012	599 429.0 TJ
Heat final consumption, 2012	496 868.0 TJ
Electricity total production, 2012	198.9 TWh
Electricity consumption, 2012	166.0 TWh
Electricity consumption per capita, 2012	3.6 MWh
ESCO statistics	
Number of ESCOs <sup>1</sup>	2009-2012: around 30 small local companies active in conducting energy audits, energy consulting, information services and project management (not full range of ESCO services) 2015: less than 5
ESCO market size and potential	Estimates of the potential market size range from EUR 100 to 130 million/year. In SAEE estimates, the market can reach a potential EUR 311 million/year in 2020
ESCO average dimension	Small, 3-15 employees
Examples of ESCO projects in Ukraine	<ul style="list-style-type: none"> <li>▪ Mid-90s: ESCO-West (financed by USAID) helped Ivano-Frankivsk <i>oblast</i> meter electricity, which has helped the regional government reduce its energy debts</li> <li>▪ 1998-2005: Various projects implemented by UkrESCO (mainly financed by EBRD) in cogeneration stations, compressed air, heat and cold supply systems as technological equipment modernisation</li> <li>▪ 2014-2015: Dnipropetrovsk Municipal Energy Management Company (financed by EBRD and European Investment Bank) for a local ESCO to implement energy efficiency measures in public buildings through energy performance contracts (EPC).</li> </ul>

*Notes:* <sup>1</sup>The actual number of ESCOs is unclear since most companies do not offer the full range of ESCO services  
*Source:* World Bank (2015), *World Development Indicators*, (database), <http://data.worldbank.org>, accessed 28 October 2015; IMF (2015c), “GDP forecast from IMF”, <https://www.imf.org/external/np/sec/pr/2015/pr15457.htm>, accessed 28 October 2015; CIA World Factbook, <https://www.cia.gov/library/publications/the-world-factbook/geos/up.html>, accessed 28 October 2015; IEA (2015a), *Ukraine: Indicators for 2012*, database, [www.iea.org/statistics/statisticssearch/report/?year=2012&country=Ukraine&product=Indicators](http://www.iea.org/statistics/statisticssearch/report/?year=2012&country=Ukraine&product=Indicators), accessed 15 May 2015; Bertoldi, P. et al. (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>; Dubovyk (2015); EBRD official website, [www.ebrd.com/work-with-us/procurement/p-pn-150220b.html](http://www.ebrd.com/work-with-us/procurement/p-pn-150220b.html), accessed June 2015; UkrESCO official website <http://www.ukresco.com/en/content/12.html>, accessed June 2015; Econoler (2015a), “Energy efficiency financing, experience from Canada and Turkey”.

## ENHANCING COMPETITIVENESS IN UKRAINE THROUGH A SUSTAINABLE FRAMEWORK FOR ENERGY SERVICE COMPANIES

Ukraine's economy is one of the most energy-intensive in the region, around three times more intensive than the OECD average. Ukraine could greatly benefit from increased energy efficiency. The country's housing stock is old and inefficient; at least 80% require energy saving or energy distribution refurbishments. Energy efficiency is also a national priority for achieving energy independence and energy security. Energy service companies (ESCOs) could help Ukraine to improve energy efficiency by stimulating private sector development of measures that in the long term will greatly benefit the economy. However, the market for ESCOs faces several challenges, including limited access to finance, low demand for energy services, a mismatch between demand and supply, and lack of understanding and awareness of ESCOs. This peer review note focuses on the possible role of ESCOs in the Ukrainian market, and the policy reforms needed to foster the development of a private sector to encourage implementation and participation in energy efficiency.

### **Context: The country needs private sector participation in energy efficiency activities to increase competitiveness and enhance investment opportunities**

1. Given that almost every production process is energy-dependent, energy efficiency can enhance the competitiveness of a country's businesses (ECEEE, 2012). The benefits of energy efficiency in the industrial sector include reductions in resource use and pollution, improved production and capacity utilisation, and lower costs of operation and maintenance. In the construction sector, properties with better energy performance usually have a higher asset value. Energy efficiency does not only benefit businesses; it also helps: 1) households, as greater energy access and affordability mean more disposable income (in particular considering the recent increase in gas retail prices in Ukraine<sup>2</sup>); and 2) the public administration, leading to reduced energy-related budgetary expenses, higher job creation and improved energy security (IEA, 2012b). Furthermore, the globalisation of industrial activities is putting pressure on individual countries to improve energy efficiency.

2. Ukraine could greatly benefit from increased energy efficiency – its population of 44.4 million and strong energy consumption make it one of the largest energy markets in Europe. Ukraine's economy is one of the most energy-intensive<sup>3</sup> in the region, at 0.36 tonnes of oil equivalent (toe) per USD 1 000 of GDP (in real 2005 purchasing power parity terms). This is around three times higher than the OECD average (IEA, 2015b). The country's housing stock is old and inefficient; at least 80% of the required refurbishments are related either to energy saving or energy distribution (IFC/World Bank, 2010).

3. Energy service companies (ESCOs – see Box 1) could help Ukraine to improve energy efficiency by stimulating private sector development of measures that in the long term will greatly benefit the economy. ESCOs provide a broad range of energy savings solutions, financed by the expected future savings made. In times of tight public budgets, both at national and local levels, ESCOs represent a mechanism to attract and allocate private sector resources to long-term investments in energy efficiency. In addition, active ESCOs can also create jobs in the energy service market, while improving competitiveness of industrial and service sectors, making them better equipped to compete on internal and international markets. It is well understood that an ESCOs market cannot by itself guarantee a full transition to an energy-efficient economy. Indeed, improved energy efficiency should be pursued also through other means, such as the development of coherent data and reliable statistics, monitoring of implementation,

development of energy efficiency targets, application of test standards and measurement protocols of appliances and equipment (IEA, 2011a). Of course, the implementation of reliable standards such as minimum energy performance standards (MEPS), energy rating levels and the standards indicated in the European Union’s Energy Efficiency Directive (EED)<sup>4</sup> are also fundamental for improved energy efficiency. And greater effort to make utilities and distribution grids more efficient would also be useful in enhancing the overall energy efficiency in the country. However, these additional areas are beyond the scope of this paper, which focuses on the possible role of ESCOs in the Ukrainian market, and the policy reform needed to foster the development of a private sector to encourage implementation and participation in the energy efficient sector.

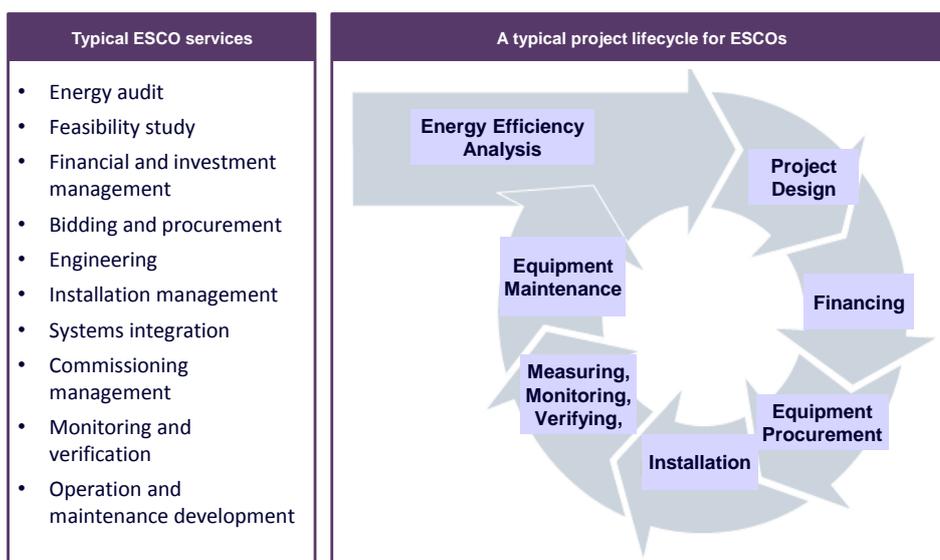
**Box 1. What is an ESCO?**

Energy service companies offer a range of services to develop and implement energy efficiency investments for their clients. They also provide or arrange financing for these investments. Repayments from savings in energy allow clients to compensate ESCOs for financing the investments, for ongoing savings monitoring and measurement and verification (M&V) costs, and for adoption of risks through energy performance contract or third-party financing.

ESCOs may guarantee full, partial or none of the risk depending on the financier of the project. This can be the ESCO itself, a credit institution, or the client (such as the end user, which can be industrial or service companies, households, and public building administrators among others). The ESCO guarantees a certain amount of annual energy savings to be achieved over the duration of the contract. The contract must also clearly define what happens if these guaranteed savings are not achieved, as well as how the ESCO deals with any negative difference between guaranteed savings and actual savings. When the guaranteed savings are exceeded, there has to be a clear description of how the excess savings (above the guaranteed level) are distributed between the client and the ESCO.

Therefore ESCOs accept some degree of risk when undertaking to improve energy efficiency in a user’s facility, especially as their payment for the services delivered is based (either in whole or at least in part) on the achievement of those energy efficiency improvements.

**Figure 1. ESCOs’ services at each phase of an energy efficiency project**



- ESCOs can guarantee energy savings and/or provision of the same level of energy service at lower cost.
- The remuneration of ESCOs can be directly tied to the energy savings achieved or to an upfront energy cost that is pre-determined.
- ESCOs can finance, or assist in arranging financing, for implementing energy efficiency improvement measures or operating an energy system by providing a savings guarantee.
- ESCOs are able to manage and offer a range of services, which can span across all the stages of an energy efficiency project, from conducting the energy efficiency analysis and project design to monitoring and maintaining the equipment.

*Source:* EU Commission, Joint Research Centre (n.d.), “Energy service companies”, webpage, <http://iet.jrc.ec.europa.eu/energyefficiency/escos>, accessed June 2015; Econoler (2011), “Energy Efficiency Financing, experience from Canada and Turkey”; Frost & Sullivan (2013), *Dynamics of the Industrial Energy Efficiency Market: A Strategic Perspective*.

4. The potential of ESCOs in Ukraine is still largely untapped. Most of the ESCOs operating in the Ukrainian market are small (ranging from 3 to 15 employees) and cannot offer the full range of ESCO services for a typical energy efficiency project lifecycle (Marino et al., 2010). While it is complicated to formulate a precise estimate of the ESCO market in Ukraine, due to the different definitions of ESCOs and the lack of consistent data, the State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE) estimates that the ESCOs market could reach a cumulated volume of EUR 4.4 billion by 2030, starting with EUR 130 million/year in 2015 and reaching EUR 311 million/year in 2020. It also estimates that the expansion of the ESCO market should allow an annual natural gas savings of 200 billion cubic metres (bcm) in 2020, and 700 bcm by 2030, stimulating job creation and developing a side market in energy efficient equipment and technologies (SAEE, 2015). However, the recent situation in the country suggests that this scenario may be optimistic, considering the lack of ESCOs that can self-finance large-scale projects and the lending conditions in Ukraine which – coupled with inflation levels – are very complicated for investments with payback periods longer than one to two years (as is usual in the case of ESCOs).

5. The ESCO market in Ukraine has previously seen some development, but the market failed to reach sustainability and has faced implementation challenges. During the 1990s, the development of ESCOs and their activities in Ukraine began with the support of international financial institutions (IFIs), mostly in the industrial sectors. Although the companies did not offer a full range of ESCO services, some examples were UkrESCO, a state-owned joint-stock company mostly financed by the European Bank for Reconstruction and Development (EBRD); and several regional ESCOs, such as ESCO-East, ESCO-Centre and ESCO-West, established with the financial assistance of USAID (Econoler/IFC, 2011). By 1998, there were ten companies offering energy services<sup>5</sup> in Ukraine. By 2008, this number had increased to around 75, pushed by the clear need for significant energy saving projects in a context of rising gas prices. The 2008-10 global financial crisis negatively affected the growing energy services market, however, as projects were interrupted by the fleeing of foreign investment from Ukraine (Stepanenko, 2012). Today the number of companies that may be defined as ESCOs, offering the full range of services listed in Box 1, has fallen to less than five.

6. The ups-and-downs of Ukraine’s ESCO market over the past two decades highlight the lack of an adequate framework for a well-functioning and self-sustainable private sector for energy efficiency.<sup>6</sup> Numerous barriers exist, including difficult access to finance, lack of accounting and tax regulations on energy performance contracts (EPCs), lack of information, and skills shortages in the market.

**Overall recommendation: Develop a framework for a sustainable ESCOs market in Ukraine to foster private sector participation in energy efficiency activities**

7. In order to push energy efficiency and enhance investment in the country, Ukraine should develop a sustainable market for ESCOs. Doing so will require a comprehensive policy framework. Key factors such as financial solutions, technical and technological expertise, management skills, market knowledge and communication abilities should be further regulated and developed in order to drive an advanced market for energy services (Bertoldi, 2014). ESCOs are able to bring all these factors to the energy market, which explains why setting up the conditions for the development of ESCOs has become a policy priority in many OECD economies. Moreover, developing the ESCO market in Ukraine will serve a wide range of stakeholders. Public institutions (e.g. schools, hospitals, public offices), private businesses operating in every industrial or service sector, residential buildings, and other end users can all benefit from a sustainable ESCO market.

8. The energy service market has to allow for a wide range of bankable projects to unlock its potential in Ukraine. Private investments and financing of ESCO projects will have a chance to grow once a comprehensive framework for ESCOs is solid enough to build trust among all the players involved: ESCOs, financial institutions, businesses, individuals and public institutions.

**Challenges: Ukraine faces an underdeveloped framework for ESCOs and a lack of trust among key stakeholders in a scenario of economic instability**

9. Ukraine's current investment and regulatory framework cannot support the development of a self-sustaining ESCO market with private sector resources. OECD analysis has identified four main challenges hindering the development of the ESCO market: limited access to finance, low demand for energy services, a mismatch between demand and supply of energy services, and low awareness of ESCOs.

***Access to finance is limited***

10. The supply of energy services is hindered by limited access to finance for both end users (and potential ESCO clients) and energy service providers. OECD consultations in the country (Annex B) confirmed that ESCOs mostly depend on international financial institutions (IFIs) for funding, with local financial institutions (LFIs) playing only a marginal role. However, the current instability of the Ukrainian Hryvnia increases the currency risk both for foreign and domestic investors. In addition, LFIs usually grant loans for less than one year (which is insufficient as typical ESCO projects have payback periods of 10 years) and have limited capacity for measuring the actual savings and cash flows stemming from energy-saving projects. This in turn impairs their ability to assess the case for a loan. As a result LFIs evaluate projects based on common balance sheet debt/leverage (Energy Efficiency Financial Institutions Group, 2015). The current situation of financial instability in which Ukrainian banks must offer short-term loans at very high interest rates (between 20% and 25% or over 30% in some cases), further complicates ESCOs' access to finance (National Bank of Ukraine, 2015). Furthermore, given their limited financial capacity, ESCOs are usually unable to self-finance or access finance to implement energy services resulting from energy audits.

***Demand for energy services is low***

11. In Ukraine, the demand for energy saving services is neither sufficiently developed nor directly incentivised.<sup>7</sup> Energy efficiency targets are not mandatory for businesses, while limited subsidies for energy efficient technologies do not stimulate the market for investment and implementation via ESCOs. At the same time, residential building owners or managers, when present, do not have the incentive to

invest in energy efficiency measures. The lack of incentives and the weak enforcement of energy efficiency targets also undermine the energy-saving activities that could be implemented by ESCOs.

### ***Demand and supply of energy services are mismatched***

12. Currently, the country does not have a reliable mechanism for matching demand and supply in energy services. The lack of precise guidelines for contracting ESCO projects and energy performance contracts (EPCs), as well as the lack of market facilitators (e.g. legal advisors, EPC procurement advisors, private audit companies), heighten transaction costs and undermine trust. Lack of specific, well-directed government policies also adversely affects the energy efficiency market. Moreover, the market in the residential sector is extremely fragmented due to the lack of residential associations and building managers, with much renovation needed and common spaces left unmanaged. A skills mismatch affects the ability of ESCOs to reach out to the potential market and to offer the whole range of services needed for the energy efficiency projects (see Figure 1). Furthermore, in order to increase the demand for ESCOs, energy efficiency experts with a combination of managerial, financial and technical skills need to be encouraged and trained in the labour market.

### ***Awareness and understanding of ESCOs is low***

13. The ESCO services and payment models are not well known by businesses, households and LFIs. The benefits of ESCOs and the services they provide are not clear, and in general there is a perceived aversion to outsourcing energy management because of a lack of trust. This lack of awareness and understanding can mean that numerous potential clients (private and public) do not access the market, and energy efficiency is not perceived as a priority by residents and businesses despite the sharp increase in energy prices.

## **Notes**

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<sup>1</sup> The actual number of ESCOs is unclear since most companies do not offer the full range of ESCO services.

<sup>2</sup> On 1 April 2015, the retail gas price to households increased on average by 284%. This was part of the policy set by the government in accordance with the International Monetary Fund. Two additional increases will take place in April 2016 and 2017 to reach import parity for both gas and district heating (IMF, 2015b).

<sup>3</sup> Energy intensity is calculated as the ratio of total primary energy supply to real GDP (IEA, 2015b).

<sup>4</sup> In EED 2012/27/EU, it is clearly stated that “Energy audits should take into account relevant European or International Standards, such as EN ISO 50001 (Energy Management Systems), or EN 16247-1 (Energy Audits) or, if including an energy audit, EN ISO 14000 (Environmental Management Systems)”.

<sup>5</sup> Some of the companies identified themselves as ESCOs, but did not meet the definition in this document (see Box 1).

<sup>6</sup> It is important to note that the Ukrainian Parliament recently adopted a legal framework for Energy Saving Performance Contracts in Public Buildings that relies on the ESCO mechanism. Law 1313, “Introduction of New Investments Opportunities, Guaranteeing Rights and Lawful Interests of Business Entities for Conducting Large Scale Energy Modernisation” and Law 1409, “Amendments to the Budget Code of Ukraine (Regarding Introduction of New Investments Opportunities, Guaranteeing Rights and Lawful

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Interests of Business Entities for Conducting Large Scale Energy Modernisation)”. See the following sections for more details.

<sup>7</sup>Although it is worth noting that the recent, progressive removal of subsidies is driving an increase in retail gas tariffs, and acts as a strong indirect incentive for this kind of investment. In addition, an incentive scheme for investment in building heating has recently been approved by the government; see Action 5 for details.

## RECOMMENDATIONS FOR DEVELOPING A FRAMEWORK FOR A SUSTAINABLE ESCO MARKET

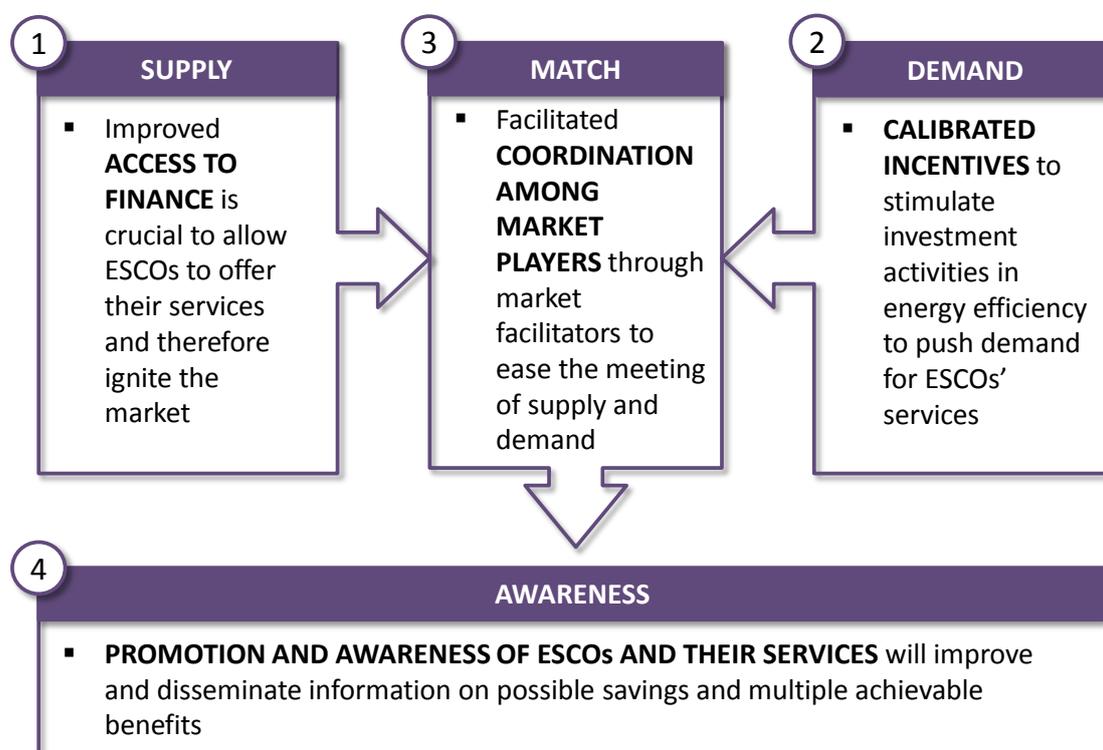
This section recommends 12 actions for developing an active ESCO market, clustered into four areas of actions, centred on supply, demand and awareness: (1) **ease access to finance** by improving the framework for innovative and long-term financing, introducing energy performance contracts, training and capacity-building programmes and public financial support programmes (2) **introduce incentives for investments in energy efficient activities** to boost demand for ESCO services in the business sector, and support households to engage with ESCO services; (3) **match supply and demand through co-ordination and improved capacity among market players** by building skills in the energy services market, supporting market facilitators, standardising ESCO contracts and providing step-by-step guidance, and supporting the formation of residential building associations; and (4) **raise awareness and promote the ESCO model** by encouraging quality control of ESCOs, developing awareness and capacity-building programmes, and creating a national database on ESCO projects and experiences.

14. Ukraine's successful transition towards improved energy efficiency, which will in turn contribute to higher competitiveness, sustainable growth and increased investment, depends on the active presence of private sector players such as ESCOs, energy service providers, energy savings products providers, and LFIs. Four areas of actions are recommended for developing an active ESCO market, centring on supply, demand and awareness (Figure 2):

1. Supply – Ease access to finance.
2. Demand – Introduce incentives for investments in energy efficient activities.
3. Supply/demand matching – Match supply and demand through co-ordination and improved capacity among market players.
4. Awareness – Raise awareness and promote the ESCO model.

Each of these areas of actions encompasses several actions (outlined below and summarised in Annex A, Figures 5 and 6).

Figure 2. Areas of actions for developing a sustainable energy savings market with ESCOs



### *Ease access to finance to push the supply of energy services*

15. Access to finance is a necessary condition for the development of a market involving ESCOs. Currently the difficulty in finding financing options is the main concern for ESCOs;<sup>1</sup> financial institutions' lack of familiarity with the model complicates the problem.

16. Naturally the stabilisation of the banking sector may increase trust in local banks and boost savings and deposits, thereby improving the funds available for investment (including in ESCOs).<sup>2</sup> This of course depends also on the country's economic environment and geopolitical situation. In this context, these recommendations should be considered as actions directed specifically to support the development of the ESCO market. The actions required to stabilise the financial sector are beyond the scope of this paper, but include needs for a stronger legal framework for enforcing collateral and bankruptcy procedures, more trustworthy credit rating procedures and credit registries, local currency/interest rate swaps or guarantees provided by the government, etc.

17. OECD countries with an advanced energy service market have usually put in place regulatory measures or financial stimuli in order to address the problem. The suggested actions for easing ESCOs' access to finance in Ukraine takes into account OECD international experiences and adapts them to the country's specific situation. The area includes three actions: (1) improve the framework for innovative and long-term financing, and introduce public financial support programmes; (2) introduce energy performance contracts; and (3) introduce training and capacity-building programmes for LFIs to understand and implement ESCO contracting.

*Action 1: Improve the framework for innovative and long-term financing, and introduce public financial support programmes*

18. It is recommended that the government regulates non-conventional financing such as forfeiting,<sup>3</sup> on-bill financing and repayments, and credit guarantee schemes to support long-term financing. A more effective legal framework to provide potential clients of ESCOs with sufficient protection against unfair practices would build trust in the market and allow for the introduction of more complex instruments. Tailored financial products would better fit the needs of the ESCOs in terms of type of loans, interest rate and duration, as per OECD experience. Moreover, the government should direct financial resources to support the energy services market. Given its strategic importance for the economic system in the long term and the current budget constraints, the involvement of IFIs can be a viable way of securing the necessary resources in the short term. International experience presents various solutions that may be implemented in Ukraine, including:

- A financing support scheme for energy efficiency projects in buildings. For example, the property-assessed clean energy (PACE) programme in the United States pays for 100% of an ESCO project's costs. The repayment period lasts up to 20 years and an assessment is added to the property's tax bill. This helps to overcome trust issues by building payment into property taxes (US Department of Energy, 2015; and see Annex A, Figure 12).
- A credit guarantee scheme that can help small and medium-sized enterprises (SMEs) to access the market. For example, the Bulgarian Energy Efficiency Fund provides three main products: direct loans, loan guarantees and portfolio guarantees to ESCOs carrying out EPCs (Annex A, Figure 11).

*Action 2: Introduce energy performance contracts models*

19. EPCs allow for funding energy upgrades from cost reductions, building trust among players by transferring the technical risk from the client to the ESCOs. It is recommended that the government introduces model contracts for various types of EPCs that have proven particularly useful in other countries and that could be adapted to the Ukrainian context. These include:<sup>4</sup>

- Guaranteed savings contracts: the ESCO guarantees a certain saving on the client's energy bill, taking on all the technical and design risk. The client gets the loan from the bank and either retains 100% of the savings and pays the ESCO based on performance, or pays 100% of the cost upfront and the ESCO reimburses the saving deficit every year (e.g. Czech Republic, Denmark, Germany and Sweden).
- Shared savings contracts: the ESCO provides financing as well as project development and implementation costs, and then the consumption savings are shared between the ESCO and the client over the years. In this situation the ESCO is assuming both the technical and the customer credit risk, so it may be very interesting for clients because the investment would be completely off the balance sheet. However, this model requires that ESCOs have enough financial capacity to open loans and balance their financial leverage, or that the banking sector is well enough developed to buy the debt from the ESCO through forfeiting (e.g. Czech Republic, Korea and the US).
- Chauffage contracts: the ESCO takes on the provision of a set of energy services to the client (e.g. space heat, lighting, motive power, etc.). This arrangement is an extreme form of energy management outsourcing. The fee to the ESCO is usually calculated by applying a 5-10% saving

on the energy bill. So the more the ESCO is able to reduce the energy cost the more it gains (e.g. several European countries).

Figures 9 and 10 in Annex A show how these three types of EPC could work in Ukraine.

*Action 3: Introduce training and capacity-building programmes to help LFIs understand and implement ESCO contracting*

20. It is recommended that capacity building and financial training should be implemented for banking staff to increase their understanding of the specific characteristics of the ESCO models and their bankability in the long term. The focus of the capacity building should be on the assessment of unconventional revenue streams deriving from cost savings and how to include them in the procedures of commercial banks, as well as product development. Specifically, banks must know how to quantify risks associated with energy price developments and benefits resulting from energy savings. For example, the energy savings can increase the value of the assets that serve as collateral and diversify the lending portfolio of the banks with low-risk investments. These specifics should be considered and monetised in the banks' evaluation process; however, evidence shows that this is rarely the case in Ukraine. Banks must therefore build specific technical expertise for assessing energy efficiency projects, either internally or in partnership with external experts who can support the evaluation. For example:

- In Germany, KfW Bank relies on certified energy service providers to conduct energy savings assessments, so that transaction costs for banks are lower (Schopp, 2014).
- The Ukrainian Export-Import Bank (Ukreximbank) is developing in-house capacity for assessing and financing energy efficiency projects in the corporate sector. Over the course of the last few years, the bank has implemented energy efficiency credit lines extended by the IFIs active in the country.

*Introduce incentives to stimulate demand for ESCO services*

21. The typical structure of an energy efficiency investment, with high up-front cost and savings delayed over time, may discourage businesses, households and public agencies<sup>5</sup> from making new investments. A co-ordinated approach should address all these concerns. The introduction of calibrated incentives can overcome the obstacle of the high short-term opportunity cost. This recommendation includes two actions: (1) create incentives to boost demand for ESCO services in the business sector; and (2) support households in engaging with ESCO services.

*Action 4: Create incentives to boost demand for ESCO services in the business sector*

22. It is recommended that the government helps private businesses to access ESCOs. The following measures have been put in place by OECD countries successfully, and may be applicable to the Ukrainian situation:

- Targeted ESCO project/energy efficiency audit subsidies. For example, Austria has introduced subsidies for residential building owners and SMEs willing to assess their potential energy savings (Klima:Activ programme), while in Germany there are a number of financial incentives for building refurbishments available for ESCOs and building owners.
- Vouchers for energy efficiency services for SMEs. For example, the “*Bespaar en verdien!*” (Save and Earn!) programme in the Netherlands, implemented in Limburg Province, supports SMEs in

realising energy-savings measures for their company. The voucher is used to finance an energy audit performed by an ESCO or another certified company, and to finance up to 33% of the cost of the actual measures suggested.

- Introducing binding primary energy savings targets for large electricity and gas distribution network companies. The savings can be obtained either through their own activities, or through the purchase of White Certificates from ESCOs,<sup>6</sup> which receive them through projects for end users previously approved by the authority.<sup>7</sup> For instance, the White Certificate system implemented in Italy since 2006 has achieved positive results. It now constitutes the central pillar of the country's strategy to reach the energy efficiency target set in Article 7 of Energy Efficiency Directive (EED) 2012/27/EC. The estimated saving of 16.03 million tonnes of oil equivalent (Mtoe) of final energy represents 62% of the target (25.83 Mtoe of savings to be achieved between 2014 and 2020; see Annex A, Figures 14-16).
- Using tax measures to promote energy efficiency (e.g. exemptions for energy efficiency installation, and increased taxes on energy consumption). Denmark, for instance, imposes a particularly high tax on energy use, which compensates for the fact that energy prices usually do not reflect the long-term and strategic costs for society in terms of pollution and energy dependency (see Annex A, Figure 18).

#### *Action 5: Support households to engage with ESCO services*

23. It is recommended that the government implement measures to help property owners embark on long-term investments.<sup>8</sup> This would enable households to avoid the up-front payment for implementing energy efficiency measures, allowing them instead to repay the loan from the energy savings realised. For example, the Green Deal scheme in the UK allows residents to easily obtain information on energy-saving improvements to their homes (e.g. insulation, heating, draught-proofing). ESCOs may register as "Green Deal Providers" and offer both the assessment and the implementation for residents. Afterwards, through the Green Deal Finance scheme, the repayments are automatically added to the electricity bill at convenient rates. In this way, residents have the financial and procedural support to make their homes energy efficient (UK Government, 2015; see Annex A, Figure 19).

#### *Match supply and demand through co-ordination and improved capacity among market players*

24. Greater co-ordination among market players leads to a number of positive effects in a growing market. It can lower transaction costs while building the trust required for easier, less risky working arrangements both for existing players and new entrants. Market facilitators play a central role in this process. In addition, addressing the technical and financial skill gaps in the market can strengthen the capacity of ESCOs and co-ordination roles among energy efficiency players. This recommendation includes four actions: (1) build skills in the energy services market; (2) support market facilitators (agencies, consultants); (3) standardise ESCO contracts and provide step-by-step guidance; and (4) support the formation of residential building associations.

#### *Action 6: Build skills in the energy services market*

25. The Government of Ukraine should actively identify the skills gaps in the labour market to support the development of ESCOs in Ukraine. Skills needs should be assessed in close consultation with ESCOs and other energy-related players, and appropriate upskilling programmes should be created. In particular, to be considered as ESCOs the companies should be able to offer the full range of services from energy efficiency analysis to equipment maintenance after the completion of the project (Figure 1). This could include financial valuation and budget planning, technical knowledge, legal and financial valuation,

quality control and capacity management (see Annex A, Figure 21). Moreover, strengthening skills in energy services allows for better co-ordination in the market, and a larger and more diverse range of energy services and financial solutions.

*Action 7: Support market facilitators (agencies, consultants, etc.)*

26. It is recommended that the government support the development of agencies, consultants and other types of facilitators. Facilitators help potential clients understand what ESCOs have to offer; help with the procurement process; assist in carrying out a project, through helping to source suppliers and deciding between offers; as well as monitoring and assessing the results (see Annex A, Figure 22). The government should support these players:

- in the public sector, by supplying these facilitation services through its national energy efficiency agencies or by setting up local Project Delivery Units able to support both ESCOs and public building managers (e.g. see London's RE:FIT project, Annex A, Figures 23 and 24)
- in the private sector, by certifying and sustaining ESCO associations as well as independent professionals through promotion and co-ordination support. For instance the National Association of Energy Service Companies (NAESCO) in the US acts as a national trade organisation representing and promoting the energy efficiency industry in the market, in the media and with the government at both federal and state level (see Annex A, Figure 25).

*Action 8: Standardise ESCO contracts and provide step-by-step guidance for ESCOs projects*

27. It is recommended that the government introduces and promotes a step-by-step process to guide stakeholders when hiring an ESCO. It should also work to standardise contracts,<sup>9</sup> shorten the length of the process involved in hiring an ESCO, clearly state the responsibilities and liabilities at every stage of the process, and report and measure ESCO performance. Various international experiences suggest that low-cost measures can in fact have a very positive impact on the market by reducing administrative expenses and lack of understanding among both ESCOs and potential clients.

28. For instance in 1991 Canada introduced the Federal Building Initiative, which aimed to support EPCs by providing information on case studies, sample tender documents, training programmes and pre-qualification requirements of ESCOs. Moreover, a step-by-step guide was published which outlined all the phases of implementing an EPC. This led to more than 200 projects being implemented over 20 years, and annual fuel bill savings of USD 43 million (Econoler, 2015a).

*Action 9: Support the formation of residential building associations*

29. The government could encourage the establishment of residential associations to facilitate the discussion between ESCOs and potential clients, supporting the implementation of Law 1565.<sup>10</sup> In the Danish experience, residential associations play a key role in modernising residential buildings, acting as a reference point for companies offering energy services and creating the needed consensus among residents.<sup>11</sup>

***Raise awareness and promote the ESCO model***

30. Good awareness of ESCO services among clients and regulators is a pre-condition for their development. The ESCO model requires long-term trust among all parties, since the up-front investment of energy efficiency projects is relatively large and the positive returns are spread over time. In Ukraine the potential stakeholders of ESCO projects, such as end users and commercial banks, are unfamiliar with their

services and project financing and management schemes. Disseminating information on the potential for savings, low-cost solutions to obtain them and reliable players offering the services will enhance the development of the market. Specific actions included in this recommendation are to: (1) encourage quality control of ESCOs; (2) develop awareness and capacity-building programmes; and (3) create a national database with free and immediate access containing details of ESCO projects and experiences in the country.

*Action 10: Encourage quality control of ESCOs*

31. It is recommended that the government establish criteria for certifying ESCOs, as well as quality standards for the services provided.<sup>12</sup> This should result in an accreditation mechanism (based on the type of services offered) for tested, reliable national and international players operating in the country. The lists of accredited ESCOs should be transparent: clearly showing the admission process and being easily accessible for clients and interested parties. They should include a description of the projects, capacity and illustrative case studies. The utility of such a scheme is twofold: it builds confidence among clients and serves as a marketing tool for ESCOs. The government should also perform random quality checks to ensure the quality and accuracy of the list.

32. It is especially necessary to introduce in the tendering phase strict pre-qualification requirements on a project-by-project basis, which will help to reduce opportunities for corruption when trying to achieve qualification. In fact from a legal point of view it is complicated to distinguish between proper ESCOs and small companies offering a few specific energy services. The pre-qualification requirements in the tendering phase should guarantee that the company is able to offer a full range of energy-saving services and that its financial capability and cash flow history are suited to the size and complexity of the project.

33. There is wide international experience in this area. For example, an ESCO accreditation system has been implemented in the US by NAESCO (see Annex A, Figure 25); in Austria the Thermoprofit scheme introduces a quality label for both ESCOs and their products/services.

*Action 11: Develop awareness and capacity-building programmes*

34. It is recommended that the government engage in capacity-building programmes for businesses, residents and public agencies to support ESCO projects and key energy efficiency activities, and foster private sector participation. At the same time, it would be useful to put in place networking campaigns for the wider public, focusing on education and communication at both national and local levels, and to develop industry networks to push energy awareness. Ireland has set up the Large Industry Energy Network, which includes the major industrial energy users in the country. It provides networking opportunities, annual performance reporting and expert assistance on energy efficiency (see Annex A, Figures 26 and 27). This kind of effort may help achieve the critical mass in public opinion required to recognise energy efficiency as a priority for families and businesses. Given the limited resources available to set up such programmes, the government could initially benefit from the financial support of donors and implementation support of specialised non-government organisations.

*Action 12: Create a national database with free and immediate access containing details of previous ESCO projects and experiences in the country*

35. The government could set up a national database containing detailed information on the ESCO projects carried out in the country, including: savings achieved, time-span, internal rate of return of the investment, pay-back period, structures of the contract, names and contacts of ESCOs, clients and LFIs involved. This would give any interested party (public, business or residential) access to a full array of data, helping them identify the opportunities embedded in the ESCO model, and to find viable ways and

partners to implement it. For instance, in the US, NAESCO has collaborated with the Lawrence Berkeley National Laboratory to build the world's largest ESCO database. It contains 4 100 projects in 49 states, representing about 10 USD billion of total investment. The database has been constituted through voluntary agreement among the ESCO industry and government agencies and with the financial support of the US Department of Energy (see Annex A, Figure 28).

## Notes

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<sup>1</sup> All the ESCO representatives we met during the OECD missions in Ukraine highlighted access to finance as the single biggest obstacle for closing deals with clients.

<sup>2</sup> In general though, Ukraine's banking sector is facing a number of problems, including limited lending due to risks related to non-performing loans; consolidation of many banks (more than 50 over the last few months) following insolvency; and new prudential regulations introduced by the government and the National Bank of Ukraine (e.g. increasing regulatory capital, formal leverage ratios, appropriate risk management procedures, transparent shareholding disclosure rules) which may actually further limit access to finance.

<sup>3</sup> Like factoring, forfeiting is the practice of selling invoices or account receivables to financial institutions "without recourse" (at a discount rate based on the risk assessment).

<sup>4</sup> The introduction of Law 1313 (see note 6 in the previous section) allows for a more advanced public procurement mechanism for energy services; furthermore, SAEE is currently working with legal experts to develop EPC models to be made available to private players in the market.

<sup>5</sup> Law 1409, recently signed by the President of Ukraine, makes it possible for public agencies to sign the multi-year contracts that are typical in this sector. Moreover, it allows them to retain part of the energy savings achieved. Previously the budget was strictly related to investments lasting for only a single fiscal year.

<sup>6</sup> White Certificates, also known as energy efficiency certificates, are tradable instruments giving proof of the achievement of end-use energy savings through energy efficiency improvement projects. The energy-saving targets are expressed in tonnes of oil equivalent (TOE) saved; each certificate is worth one TOE saved.

<sup>7</sup> This action follows the main international experiences of energy efficiency obligation schemes in targeting projects for end users (RAP, 2012). For example, even if in Ukraine up to 30% of the losses are located in production and distribution, energy efficiency improvements are generally carried out directly by the utilities without the involvement of ESCOs in these instances. Such cases are beyond the scope of this paper.

<sup>8</sup> The government recently approved an energy efficiency state support mechanism for the acquisition of solid-fuel boilers to lessen gas dependency. It reimburses the principal of loans (up to 20%) for purchasing solid-fuel boilers, energy efficient equipment and material whose replacement could be implemented by ESCOs (Dubovyk, 2015).

<sup>9</sup> See Action 2.

<sup>10</sup> Law 1565, signed by the President of Ukraine in June 2015, is designed to dismantle the monopoly of municipal housing and maintenance organisations and engage residential and non-residential property owners in the management of multi-apartment buildings. The new law also allows homeowners to make binding decisions if they own at least 50% of the surface of the multi-apartment, or in some cases over 75% (this is easier than the previous requirement for unanimity).

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<sup>11</sup> As in the experience of the Gadehavegaard Residential Building, visited during the Study Visit to Denmark organised by the OECD Eurasia Competitiveness Programme.

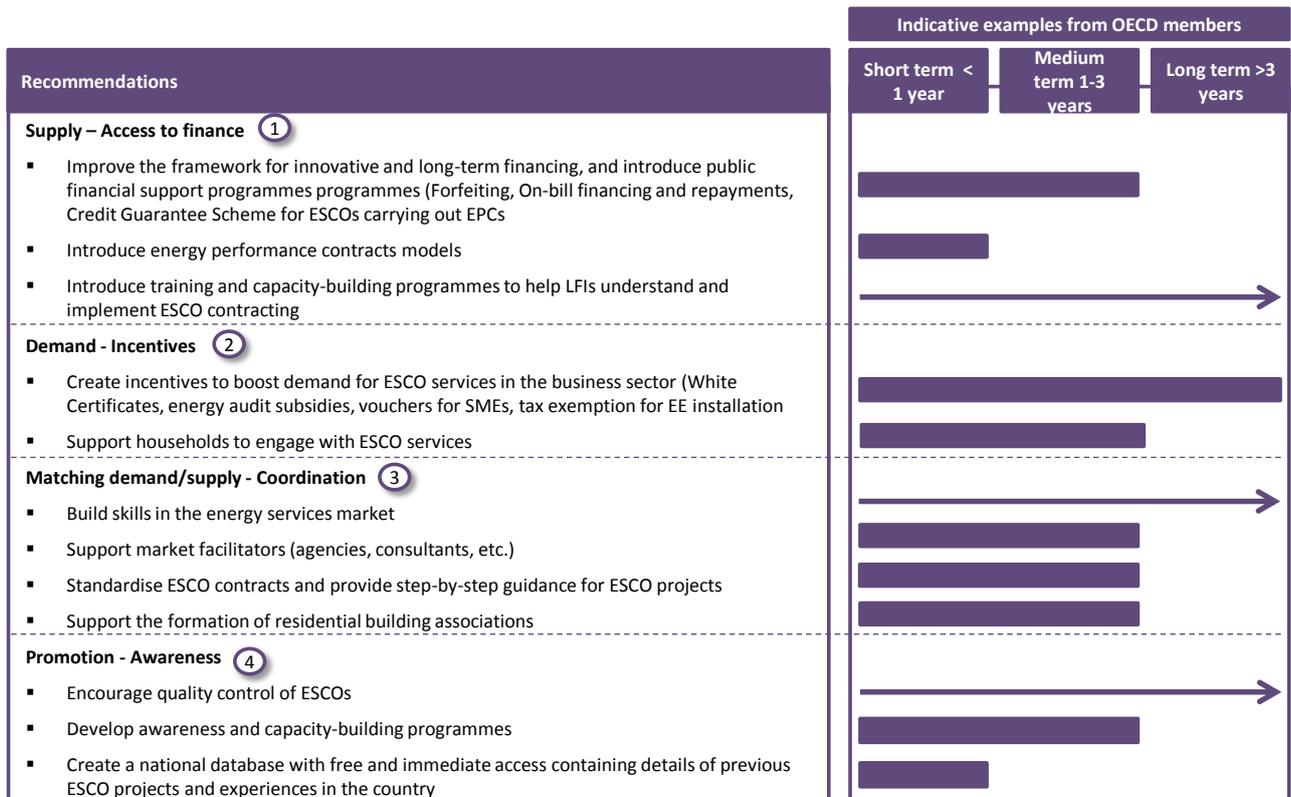
<sup>12</sup> In order to align more closely with European standards, it is worth noting that Article 16 of the Energy Efficiency Directive (2012/27/EC) stipulates that Member States “shall ensure that (...) certification and/or accreditation schemes and/or equivalent qualification schemes, including, where necessary, suitable training programmes, become or are available for providers of energy services, energy audits, energy managers and installers of energy-related building elements”.

## IMPLEMENTATION GUIDELINES

36. This section outlines some guiding principles for implementing the policy recommendations discussed in the previous chapter. Figure 3 presents a roadmap for implementation – each recommendation has a different expected implementation phase.

- **Develop policies and programmes in consultation with relevant stakeholders.** The government should keep ESCO associations, LFIs, local public agencies, industrial associations, residential building owners and market facilitators informed about the intended policy reform. Incorporating their feedback and suggestions can be crucial both for the design and implementation phases of the reform. For this purpose, the government may consider continuing to use the public-private working group established by the OECD as part of the project (see Annex B), and organising regular meetings to consult with working group members.
- **Ensure that policies and programmes are incentive-based.** The success of the reform of the energy service market will inevitably depend on the willingness of Ukrainian society to pursue energy efficiency measures. Therefore, the incentives for and advantages of financing and implementing energy savings projects should be clear, understandable and well-known across the whole country. For instance, the possibility of signing an EPC with an ESCO should be well understood by all parties (banks and beneficiaries) and should be encouraged both directly through fiscal incentives, and indirectly through awareness of the model. In addition, it is crucial that the focus is on viable initiatives in sectors where incentives can be translated into sustainable long-term growth on a commercial basis.
- **Use other countries' experiences to inform policy design and implementation,** as well as to build capacity in the country. International experience and good practice are essential to identify the most suitable features for a Ukraine-tailored approach as there is no one-size-fits-all. This report has provided examples of policies that have been introduced to support the energy service market by a range of OECD and non-OECD countries. There are many other examples that can be studied. However, not all policies are entirely applicable to the situation in Ukraine, where effective enforcement of policies and legislation is crucial to build trust among the players involved in ESCO transactions and limit the opportunity to abuse the ESCO model. It is therefore important to take account of the social, economic and political context in which the reforms were introduced before adapting and tailoring them to the local context.
- **Ensure adequate monitoring and evaluation.** Policies and programmes should be regularly monitored and evaluated to ensure efficient and effective implementation. In particular, policy makers need to ensure that budgetary resources are spent with care and that targets are met. In this regard, a scheme to assess the level of implementation of the various policies should be updated constantly, identifying milestones, responsibilities, budget needs, deadlines, next steps and expected results for each practical sub-action.

**Figure 3. Suggested implementation timeline**



## ANNEX A: SUPPORTING ANALYSIS

This annex contains a series of figures which present the project analysis and recommendations in greater detail. They provide additional data and information on the policy context, overall recommendations, policy challenges and detailed suggested actions. An electronic version of the slides is available to policy makers upon request.

### Figures

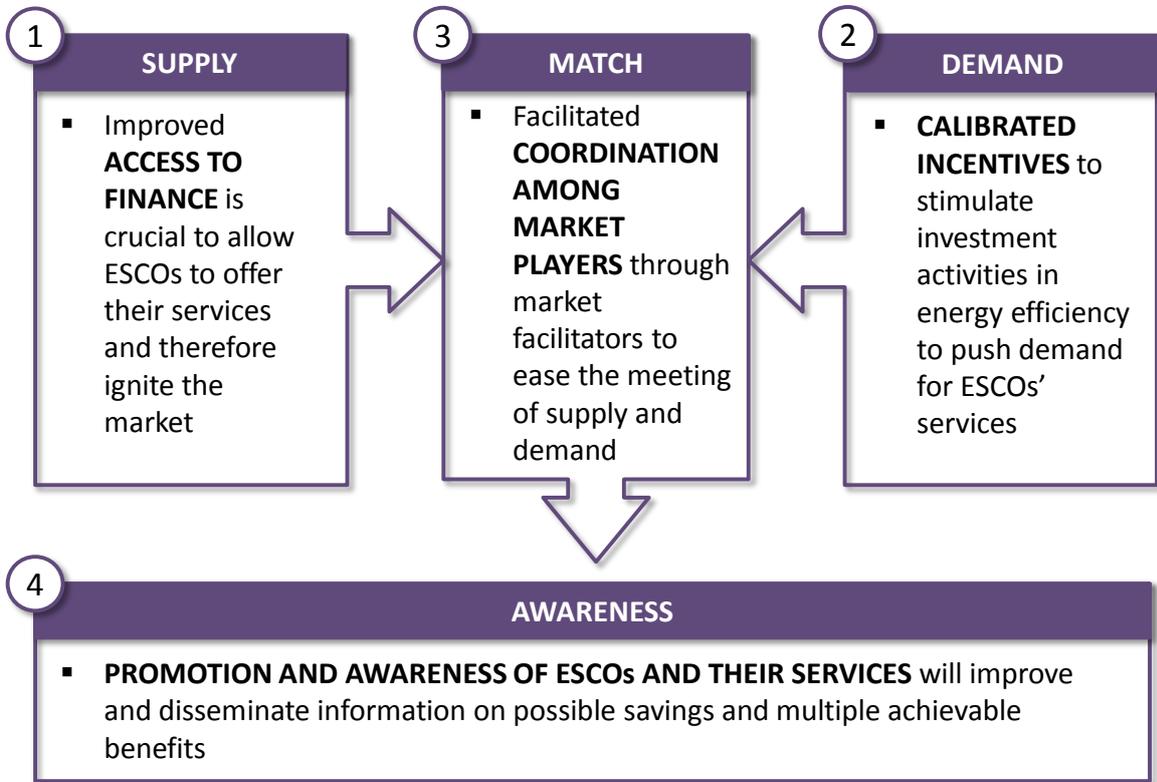
Figure 1.	ESCOs' services at each phase of an energy efficiency project .....	8
Figure 2.	Activities for developing a sustainable energy savings market with ESCOs .....	14
Figure 3.	Roadmap for implementing the actions .....	23
Figure 4.	Four main areas of actions for developing a sustainable framework for an ESCO market ...	26
Figure 5.	Draft action plan to improve ESCO market in Ukraine (1/2).....	27
Figure 6.	Draft action plan to improve ESCO market in Ukraine (2/2).....	28
Figure 7.	Companies operating in Ukraine experience a lack of financing options but there are multiple solutions available .....	29
Figure 8.	The market may rely on both public and private financing .....	30
Figure 9.	Supply can be stimulated through Energy Performance Contracts (EPCs), Shared/Guaranteed Savings, or Chauffage .....	31
Figure 10.	EPC contracts do not require dedicated budget because they finance themselves .....	32
Figure 11.	How private-public funds can enhance ESCO financing and strengthen the market: the Bulgarian Energy Efficiency Fund .....	33
Figure 12.	The US property-assessed clean energy (PACE) programme helps to build trust in the market	34
Figure 13.	The public authority can create clear incentives to facilitate the growth of the ESCO market at relatively low cost.....	35
Figure 14	Introducing white certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (1/3) .....	36
Figure 15	Introducing white certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (2/3) .....	37
Figure 16	Introducing white certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (3/3) .....	38
Figure 17.	Austria has strong incentives for stimulating demand for energy services .....	39
Figure 18.	In Denmark high taxes on energy are a strong incentive for energy saving services .....	40
Figure 19.	In the UK, the Green Deal project encouraged residential owners to embark on energy saving projects through ESCOs .....	41
Figure 20.	Better co-ordination in the market builds trust and lowers transaction costs .....	42
Figure 21.	Procurement and implementation via ESCOs requires important skills that are currently lacking in Ukraine.....	43
Figure 22.	Market facilitators serve as intermediaries between ESCOs and EE suppliers and their potential clients.....	44
Figure 23.	RE:FIT in London creates a direct channel between public building managers and ESCOs, easing the matching process (1/2) .....	45
Figure 24.	RE:FIT in London creates a direct channel between public building managers and ESCOs, easing the matching process (2/2).....	46
Figure 25.	NAESCO serves as the national voice of the ESCO industry in the US through advocacy on its strategic interests .....	47

Figure 26. Raising awareness of the ESCO model through better promotion is crucial for the success of the action plan.....48

Figure 27. Networking campaigns and cross-sectorial information efforts in Austria and Ireland ....49

Figure 28. The US Lawrence Berkeley National Laboratory manages the world's largest database of ESCO projects 50

Figure 4. Four main areas of actions for developing a sustainable framework for an ESCO market



The four areas of actions support the development of a sustainable market framework for ESCOs in terms of supply, demand, matching supply/demand and awareness.

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**Figure 5. Draft action plan to improve ESCO market in Ukraine (1/2)**

1	ACTIONS	EXPECTED RESULTS	RESPONSIBLE BODIES
SUPPLY	<ul style="list-style-type: none"> <li>▪ Introduce framework for innovative and long-term financing (Forfeiting, On-bill financing and repayments, Credit Guarantee Scheme for ESCOs carrying out EPCs)</li> <li>▪ Introduce Energy Performance Contract models</li> <li>▪ Introduce training and capacity-building programmes for LFIs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lower interest rates and collaterals required for bank financing of more “bankable” ESCO projects</li> <li>▪ Easier financial support for energy audits and implementation of energy saving measures</li> <li>▪ Higher awareness of possible financing mechanism leading to lower transactions costs</li> <li>▪ Larger support from IFIs and investors and wider involvement of local governments and SMEs</li> <li>▪ Overcome the liquidity constraint currently hindering the market</li> <li>▪ Make the ESCO market more attractive for new entrants</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ministry of Economic Development and Trade</li> <li>▪ Ministry of Regional Development</li> <li>▪ SAAE</li> <li>▪ Ministry of Finance</li> <li>▪ Municipalities</li> <li>▪ NGOs</li> <li>▪ Bank Associations</li> <li>▪ ESCO associations</li> <li>▪ IFIs</li> </ul>
	2	ACTIONS	EXPECTED RESULTS
DEMAND	<ul style="list-style-type: none"> <li>▪ Measures to incentivise industrial and service sector businesses to invest in EE (White Certificates, energy audit subsidies, vouchers for SMEs, tax exemption for EE installation)</li> <li>▪ Support households in engaging with ESCO services</li> </ul>	<ul style="list-style-type: none"> <li>• Overcoming the constraints for ESCOs projects due to economies of scale for SMEs</li> <li>• Unlock long-term public policy strategy in EE</li> <li>• Stimulate ESCO products and services demand in industrial sectors</li> <li>• Stronger trust in EE project management due to more efficient measuring and implementation</li> <li>• Create the conditions for the renovation of residential buildings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ministry of Economic Development and Trade</li> <li>▪ Ministry of Regional Development</li> <li>▪ SAAE</li> <li>▪ Municipalities</li> </ul>

The first two suggested areas of actions to develop a sustainable ESCO market derive from the supply and demand sides. Recommended actions outline expected results, and correspond to responsible bodies for implementation.

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**Figure 6. Draft action plan to improve ESCO market in Ukraine (2/2)**

3	ACTIONS	EXPECTED RESULTS	RESPONSIBLE BODIES
MATCH	<ul style="list-style-type: none"> <li>▪ Provide skills to energy service market</li> <li>▪ Create market facilitators (Agencies, consultants)</li> <li>▪ Standardise ESCO contracts and provide step-by-step guidance</li> <li>▪ Support the formation of residential building associations</li> </ul>	<ul style="list-style-type: none"> <li>• Offer model or template for ESCO contracts</li> <li>• Ease contracting and contract enforcement, building trust</li> <li>• Lower transaction costs</li> <li>• Increase the role of ESCO market facilitators: ESCO association, homeowner/ industry associations, agencies, consultants</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ministry of Justice</li> <li>▪ Ministry of Regional Development</li> <li>▪ SAE</li> <li>▪ Ministry of Education</li> <li>▪ Public Agencies</li> <li>▪ Associations</li> <li>▪ Private Quality Associations</li> </ul>
4	ACTIONS	EXPECTED RESULTS	RESPONSIBLE BODIES
AWARENESS	<ul style="list-style-type: none"> <li>▪ Encourage quality control of ESCOs</li> <li>▪ Awareness and Capacity-building programmes for SMEs, resident and public agencies</li> <li>▪ Create a National Database with free and immediate access containing historic records of ESCO projects and experiences in the country</li> </ul>	<ul style="list-style-type: none"> <li>• Create awareness among end-users about EE and savings measures via ESCOs, and financing options</li> <li>• Show the possibilities of outsourcing energy management</li> <li>• Engage end-users in EE and in committing to long-term contracts</li> <li>• Increase demand for EE experts considering the current limited supply (EE technical skills relatively recent)</li> <li>• Increase awareness of latest technologies and possible gains from relatively low-cost investments in Energy Efficiency</li> <li>• Widespread EE/ESCO information dissemination</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ministry of Regional Development</li> <li>▪ SAE</li> <li>▪ Ministry of Energy</li> <li>▪ Public Agencies</li> <li>▪ Municipalities</li> <li>▪ Local Governments</li> </ul>

The second suggested areas of actions address the matching of supply/demand and improving awareness in support of an ESCO market in Ukraine. Recommended actions outline expected results, and correspond to responsible bodies for implementation.

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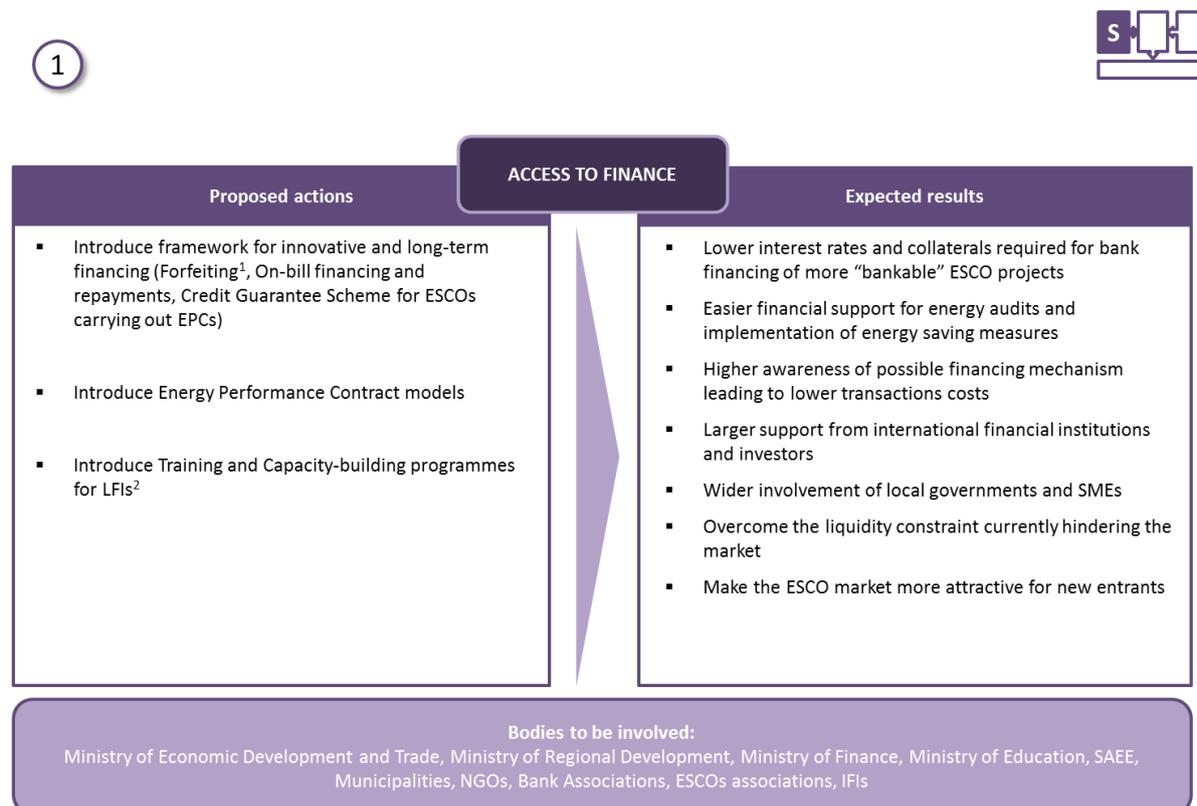
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## Supply

**Figure 7. Companies operating in Ukraine lack financing options, but there are multiple solutions available**



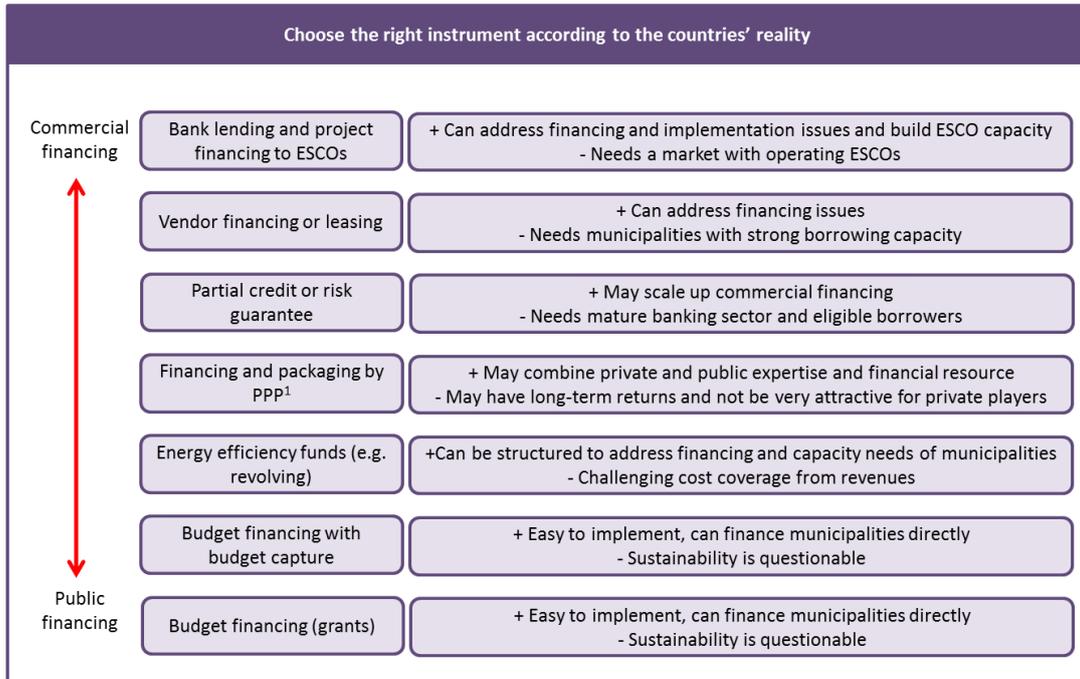
1 Similar to factoring, selling of invoices or account receivables to financial institutions “without recourse”(at a discount rate based on the risk assessment); 2 See Energy Efficiency Financial Institutions Group (Feb. 2015), *Energy Efficiency - The First fuel for the EU Economy* (e.g. evaluation based on project expected cash flow instead of usual balance sheet debt/leverage)

Source: OECD analysis as well as IEA (2011b), *Joint Public-Private Approaches for Energy Efficiency Finance - IEA Policy Pathways Report*, <https://www.iea.org/publications/freepublications/publication/finance.pdf>; *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>; Energy Efficiency Financial Institutions Group (2015), *Energy Efficiency - The First Fuel for the EU Economy: How to drive new finance for energy-efficient investments*, European Union.

Access to finance is a necessary condition to promote the supply of energy saving services and to develop a sustainable market with ESCOs.

**Figure 8. The market may rely on both public and private financing**

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Notes: 1 Public private partnerships

Source: Econoler (2015a), "Energy efficiency financing, experience from Canada and Turkey"; Singh, J. et al. (2009), *Public Procurement of Energy Efficiency Services: Lessons from international experience*.

Various types of financing may support the ESCO market, on a scale ranging from state budget expenditures (public financing) to autonomous bank lending (commercial financing).

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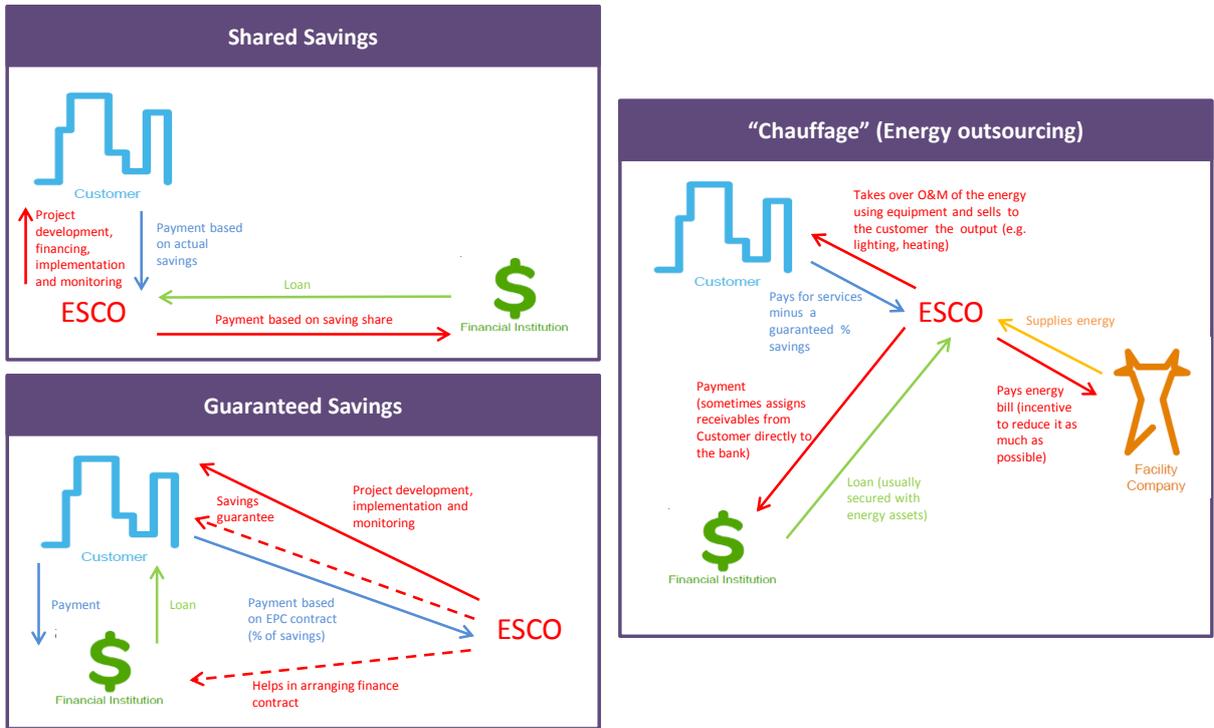
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**Figure 9. Supply can be stimulated through energy performance contracts (EPCs): shared savings, guaranteed savings or chauffeage**

1

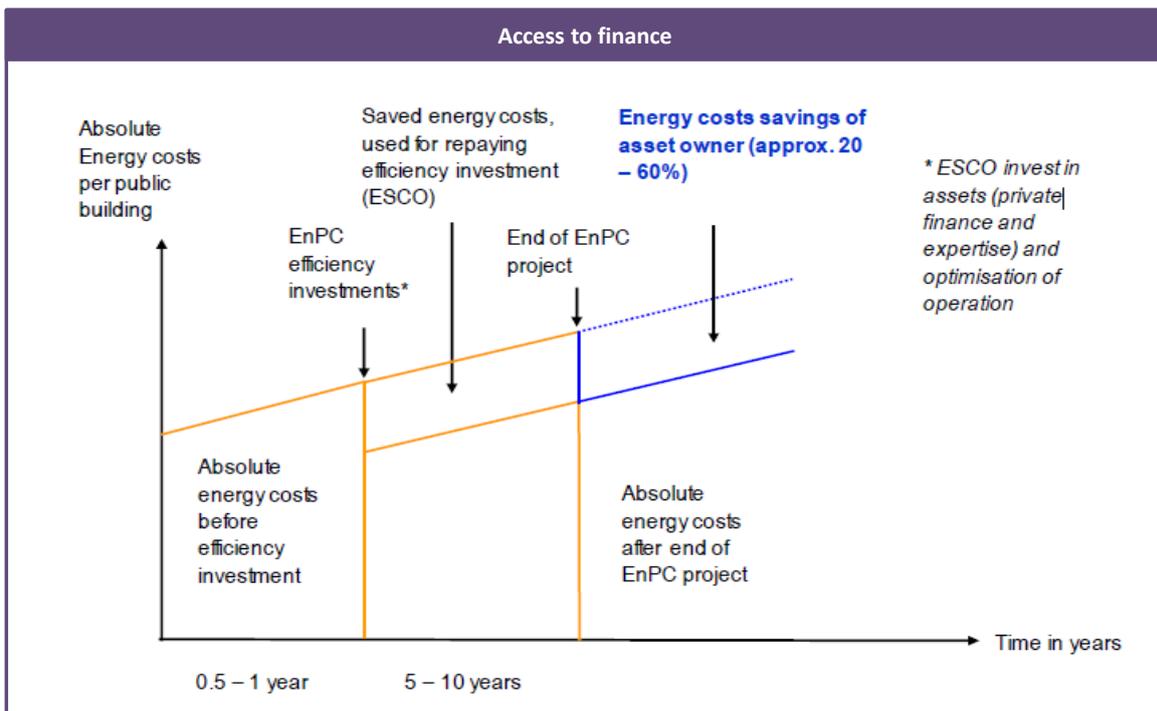


Source: OECD analysis; Bertoldi, P. et al., (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>; Taylor, R.P. et al. (2008), *Financing Energy Efficiency: Lesson from Brazil, China, India and Beyond*, World Bank; Singh, J. et al (2009), *Public Procurement of Energy Efficiency Services: Lessons from international experience*; Econoler (2015a), "Energy efficiency financing, experience from Canada and Turkey"; Schneider Electric (2015), "Being an ESCO in Denmark, a case of regulatory (un)certainty".

EPCs have proven particularly useful in international experience. EPCs fund energy savings improvements, helping to reduce costs and build trust among players by transferring part or all of the technical risk from the client to the ESCO. There are three main types of EPCs: shared savings, guaranteed savings and chauffeage contracts.

Figure 10. EPC contracts do not require a dedicated budget because they finance themselves

1



Note: Energy performance contract (EnPc)

Source: Borysova, O. (2015), "EBRD's activities and financial support for energy efficiency in building in Ukraine", European Bank for Reconstruction and Development, Kiev, presentation, [https://www.iea.org/media/workshops/2015/ukraine/Olena\\_Borysova\\_2015\\_03\\_23\\_Kiev.pdf](https://www.iea.org/media/workshops/2015/ukraine/Olena_Borysova_2015_03_23_Kiev.pdf).

EPCs can finance investments in energy efficiency measures through cash flow deriving from future energy savings, allowing for contracts across the medium and long term.

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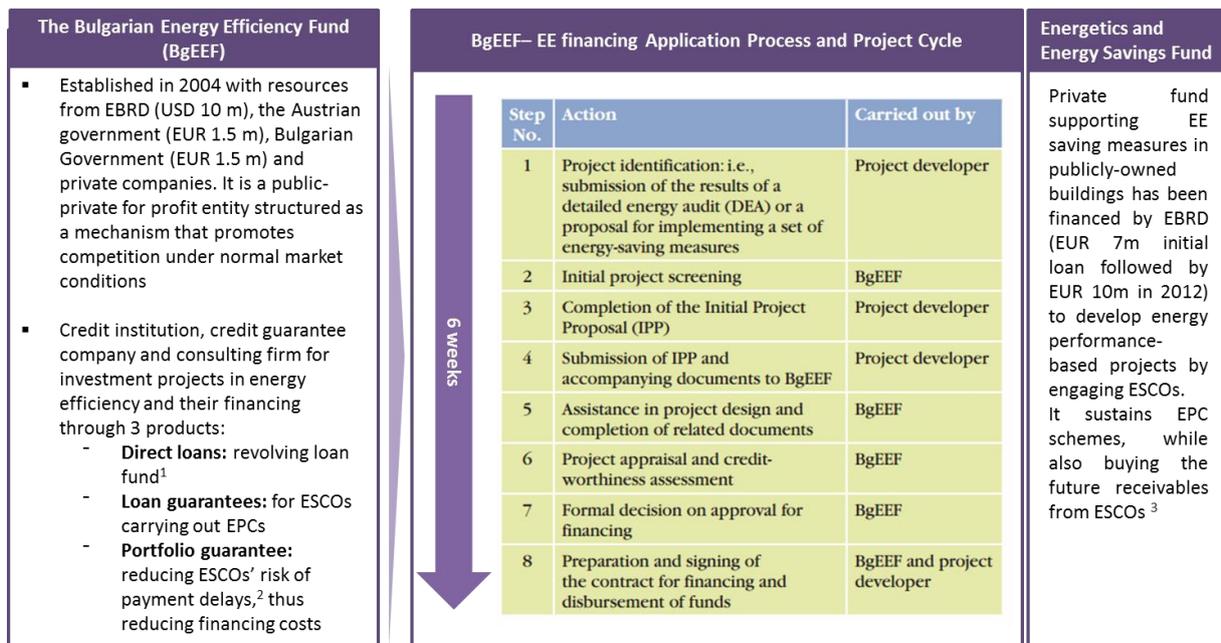
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**Figure 11. How private-public funds can enhance ESCO financing and strengthen the market: the Bulgarian Energy Efficiency Fund**

1



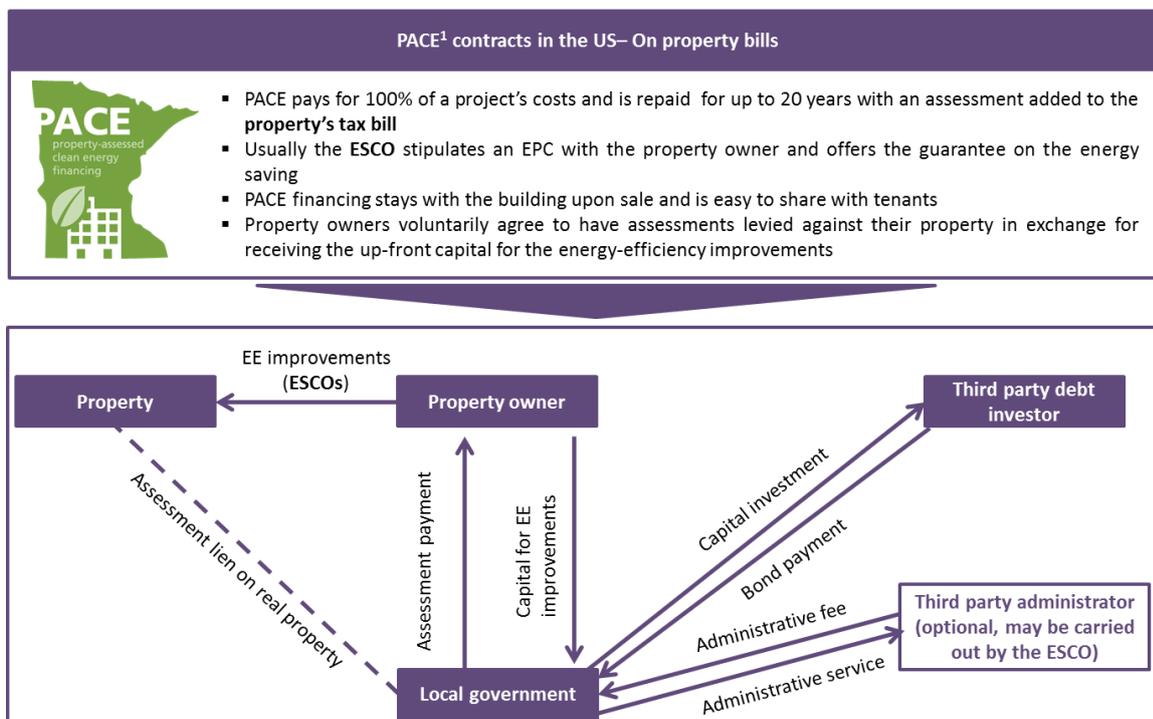
Notes: <sup>1</sup>Reimbursements from the first loans may be re-invested in a new project; <sup>2</sup>Up to 5% of the total payment. Being portfolio-based it levels the risk-premium between the different projects. Moreover it allows a leverage ratio of 20 for the equity of BgEEF (e.g. 500k to facilitate a 20m investment); <sup>3</sup>As a substitute for the forfeiting offered by commercial banks in more advanced markets (e.g. Germany), which is not possible in Bulgaria

Source: OECD analysis; Econoler/EESF (2015), *The Bulgarian Energy Efficiency Fund 2005-2014*; Bullier A. and C. Milin (2013), *Alternative financing schemes for energy efficiency in buildings*; EBRD (2012), "Sustainable energy financing facilities", <http://www.ebrd.com/downloads/research/factsheets/seff.pdf>.

The Bulgarian Energy Efficiency Fund (BgEEF) was set up in 2004 with the support of EBRD. It offers a clear and fast (six weeks) investment process, with three main products for ESCOs: direct loans, loan guarantees and portfolio guarantees.

Figure 12. The US property-assessed clean energy (PACE) programme helps to build trust in the market

1

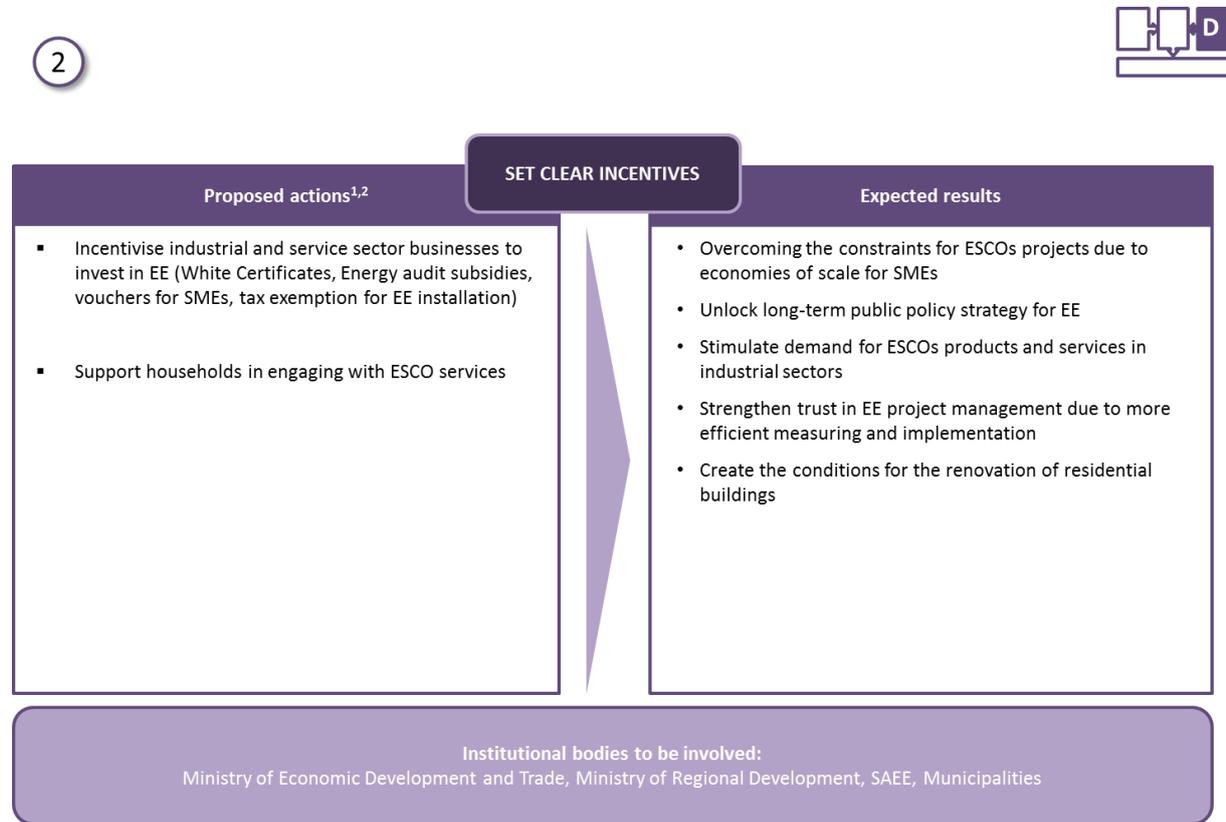


Notes: <sup>1</sup>Property asset clean energy financing

Source: OECD analysis; US Department of Energy (2015), PACE programs, website, <http://energy.gov/eere/slsc/property-assessed-clean-energy-programs>, accessed 29 June 2015; Kim, C. et al. (2012), *Innovations and Opportunities in Energy Efficiency Finance*, <https://www.wsgr.com/publications/PDFSearch/WSGR-EE-Finance-White-Paper.pdf>; Energy Efficiency Financial Institutions Group (2015), *Energy Efficiency - The First Fuel for the EU Economy: How to drive new finance for energy-efficient investments*.

The property-assessed clean energy (PACE) programme in the US offers support for implementing energy efficiency projects by allowing repayment of project costs over a maximum of 20 years by adding an assessment or charge to the property's tax bill. This greatly reduces the administrative costs for the financier, leveraging an efficient payment system which can be built into an existing method of payment for the property.

Figure 13. The public authority can create clear incentives to facilitate the growth of the ESCO market at relatively low cost



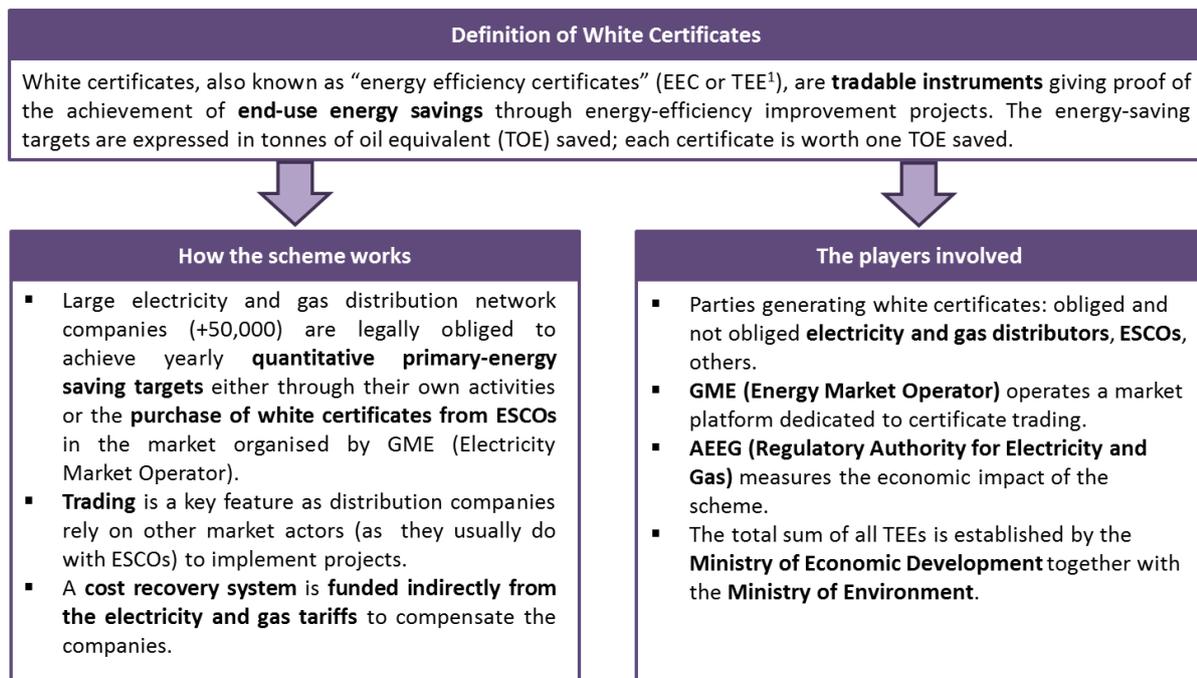
Notes: <sup>1</sup> It is important to take into account that the strongest incentive for energy saving and energy efficiency in residential buildings is the cuts to the subsidies on retail gas prices that will align prices with production costs in 2 years (last increase +284%, 1<sup>st</sup> of April 2015); <sup>2</sup> Multi-year contracting and possibility to subscribe to an EPC as in laws 1313 and 1409 (2015)

Source: OECD analysis; IEA (2011b), *Joint Public-Private Approaches for Energy Efficiency Finance - IEA Policy Pathways Report*, <https://www.iea.org/publications/freepublications/publication/finance.pdf>; Bertoldi, P. et al. (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>; IMF (2015b), "Ukraine - Request for extended arrangement under the extended fund facility and cancellation of stand-by arrangement", <https://www.imf.org/external/pubs/cat/longres.aspx?sk=42778.0>

Calibrated incentives for businesses and households can support the growth in demand for energy-saving services and products. Increased demand for energy savings helps stimulate the growth of an ESCO market.

**Figure 14. Introducing White Certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (1/3)**

2



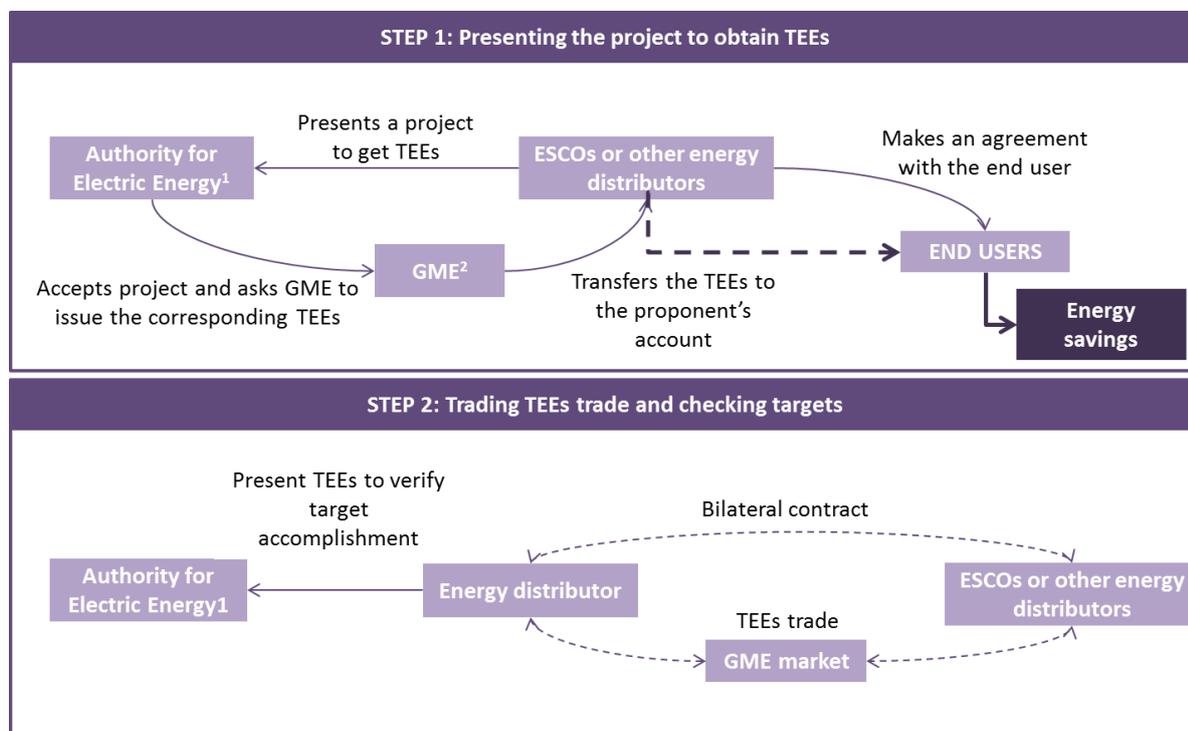
Note: <sup>1</sup> “Titoli di Efficienza Energetica” (energy efficiency certificates)

Source: OECD analysis; Di Santo, D. et al. (2011), “The white certificate scheme: the Italian experience and proposal for improvement”, <http://tinyurl.com/qgpgw2k>; Gestore dei Servizi Elettrici (2014), *I Certificati Bianchi: Stato dell'arte (White Certificates: State of the Art)*; Energy Efficiency Watch (2009), *Promoting Energy Efficiency in Europe*; Bertoldi P. (2011), “Assessment and experience of White Certificate Schemes in the European Union”, [https://www.iea.org/media/workshops/2011/aupedee/Paolo\\_Bertoldi.pdf](https://www.iea.org/media/workshops/2011/aupedee/Paolo_Bertoldi.pdf)

The Italian case is particularly interesting as the structure of this market-based instrument creates an active role for ESCOs in the market managed by the energy market operator.

**Figure 15. Introducing White Certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (2/3)**

2



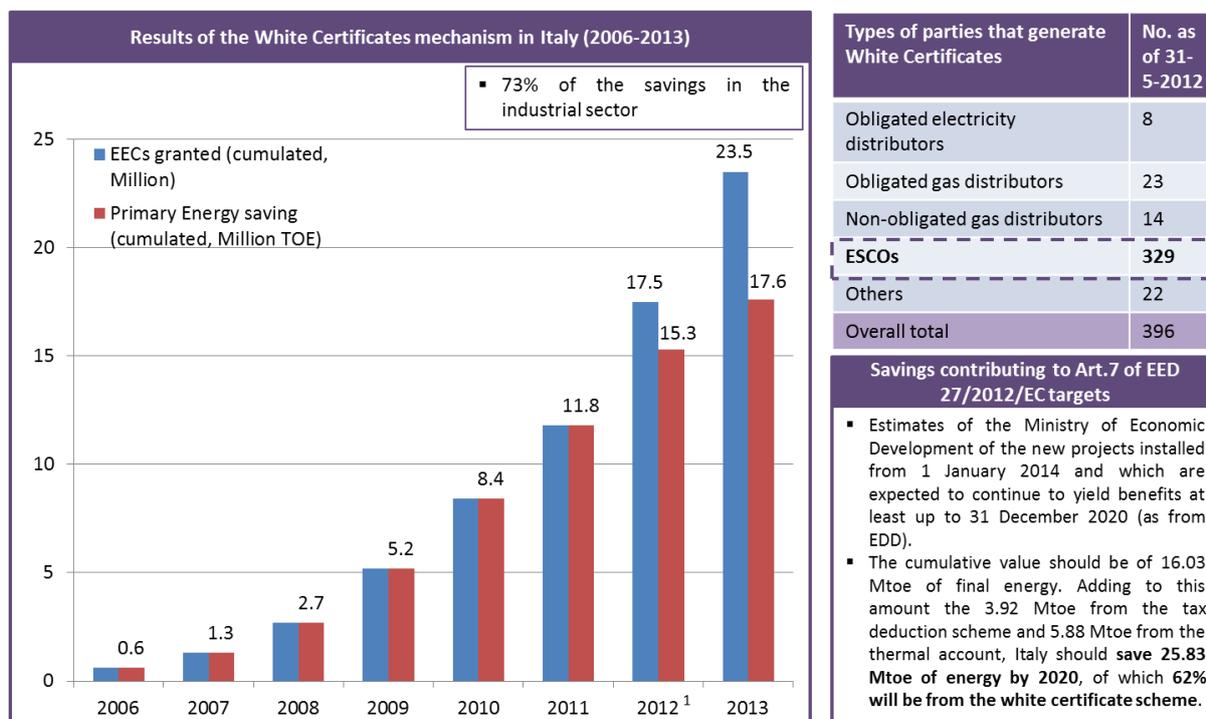
Notes: <sup>1</sup> In a subsequent modification, the responsibilities of the authority (AEEG) were transferred to the GME; <sup>2</sup> "Gsetore Mercati Energetic" (Manager of Energy Markets), the company established to organise and economically manage the electricity market

Source: OECD analysis; Di Santo, D. et al. (2011), "The white certificate scheme: the Italian experience and proposal for improvement", *eceee 2011 Summer Study*, <http://tinyurl.com/gqpgw2k>; Gestore dei Servizi Elettrici (2014), *I Certificati Bianchi: Stato dell'arte (White Certificates: State of the Art)*; Energy Efficiency Watch (2009), *Promoting Energy Efficiency in Europe*; Bertoldi P. (2011), "Assessment and experience of White Certificate Schemes in the European Union", [https://www.iea.org/media/workshops/2011/aupedee/Paolo\\_Bertoldi.pdf](https://www.iea.org/media/workshops/2011/aupedee/Paolo_Bertoldi.pdf)

The scheme in Italy includes two main phases: (1) the presentation of the energy-saving projects to obtain the White Certificates; and (2) their trade on the regulated market or through bilateral contracts to reach the targets.

**Figure 16. Introducing White Certificates for energy efficiency can stimulate the ESCOs market: the case of Italy (3/3)**

2



Notes: In 2012 a “tau” (durability coefficient) was introduced. It is used to take into account the difference between the lasting effects of an energy-saving investment and the granting period of the energy efficiency credit (EEC), which explains the decoupling among the number of EECs and the energy saved in that year.

Source: OECD analysis; Valenzano, D. (2014), *I Certificati Bianchi: Stato dell'arte (White Certificates: State of the Art)*; Ministry of Economic Development (2014), *Application of Article 7 of Directive 2012/27/EU on energy efficiency obligation schemes: Notification of methodology.*

The impact of White Certificates in Italy has been considerable. Italy achieved a cumulated primary energy saving of 17.6 million TOE in 2013, and estimates it will achieve an additional 16.03 million TOE of savings between 2014 and 2020 – equal to 62% of the estimated savings target of 25.83 million TOE imposed by Article 7 of EED 2012/27/EC.

Figure 17. Austria has strong incentives for stimulating demand for energy services

2



Clear incentives
<ul style="list-style-type: none"><li>• <b>Mandatory energy consultation is a prerequisite for subsidies</b> (creating demand for energy savings services)</li><li>• <b>Large-scale public building renovation</b> projects</li><li>• <b>Regional incentives</b> have provided stronger building standards than national building codes</li><li>• <b>Obligatory audits for public buildings</b> in some regions</li><li>• <b>Mandatory energy efficiency</b> criteria for public procurement of lighting</li><li>• <b>Minimum energy performance standards (MEPS)</b> in the residential sector since the early 1990s; these are adjusted over time</li><li>• <b>Extensive energy advice programmes</b> for households</li></ul>

Source: Bertoldi, P. et al. (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>; Boonekamp, P. and P. Vethman (2010), "ChangeBest Project, Task 2.3: analysis of policy mix and development of energy efficiency services", [www.ecn.nl/docs/library/report/2011/o11027.pdf](http://www.ecn.nl/docs/library/report/2011/o11027.pdf); Energy Efficiency Watch (2014), *Energy Efficiency in Europe 2013: Austria*.

In Austria, energy efficiency has been encouraged both at a national and regional level through a variety of stimulus actions. Such incentives create the demand for energy services, which can support an ESCO market.

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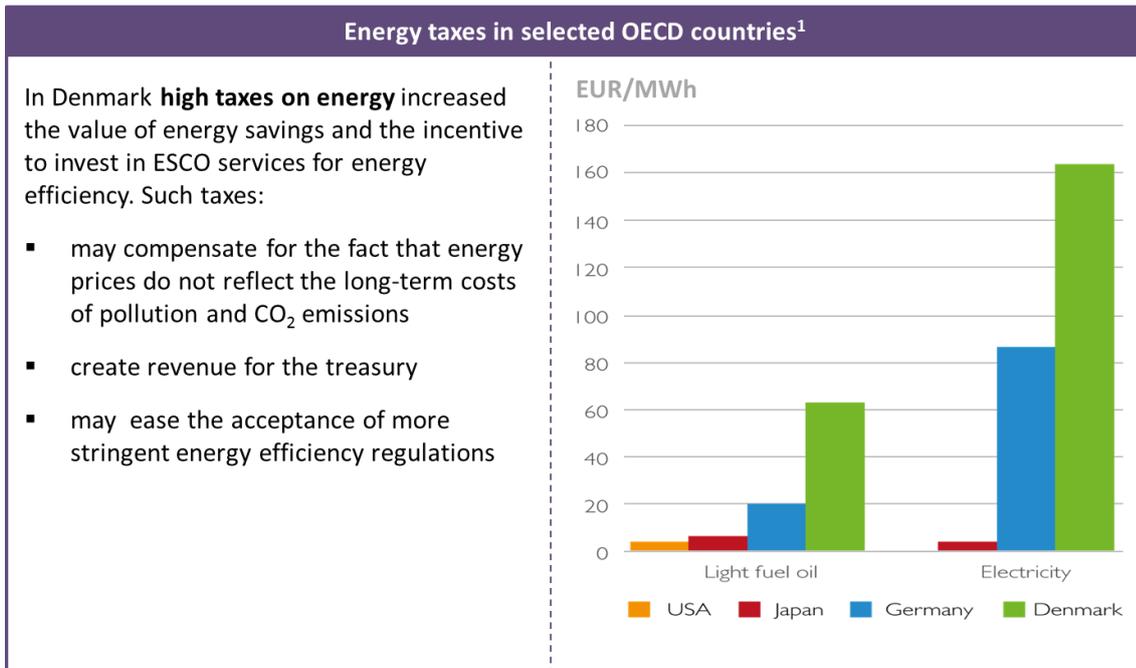
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**Figure 18. In Denmark high taxes on energy are a strong incentive for energy saving services**

2



Notes: <sup>1</sup> Data on US tax on electricity not available: EUR = euro; MWh = megawatt hour

Source: Denmark Energy Agency (2012), "Energy Policy in Denmark", [http://www.ens.dk/sites/ens.dk/files/dokumenter/publikationer/downloads/energy\\_policy\\_in\\_denmark\\_-\\_web.pdf](http://www.ens.dk/sites/ens.dk/files/dokumenter/publikationer/downloads/energy_policy_in_denmark_-_web.pdf); IEA (2012a), *Energy Prices & Taxes*, Quarterly Statistics - 1<sup>st</sup> Quarter 2012.

The high taxes on energy in Denmark helped to implement strict energy efficiency regulations in the country. They also helped to drive improvements in energy savings.

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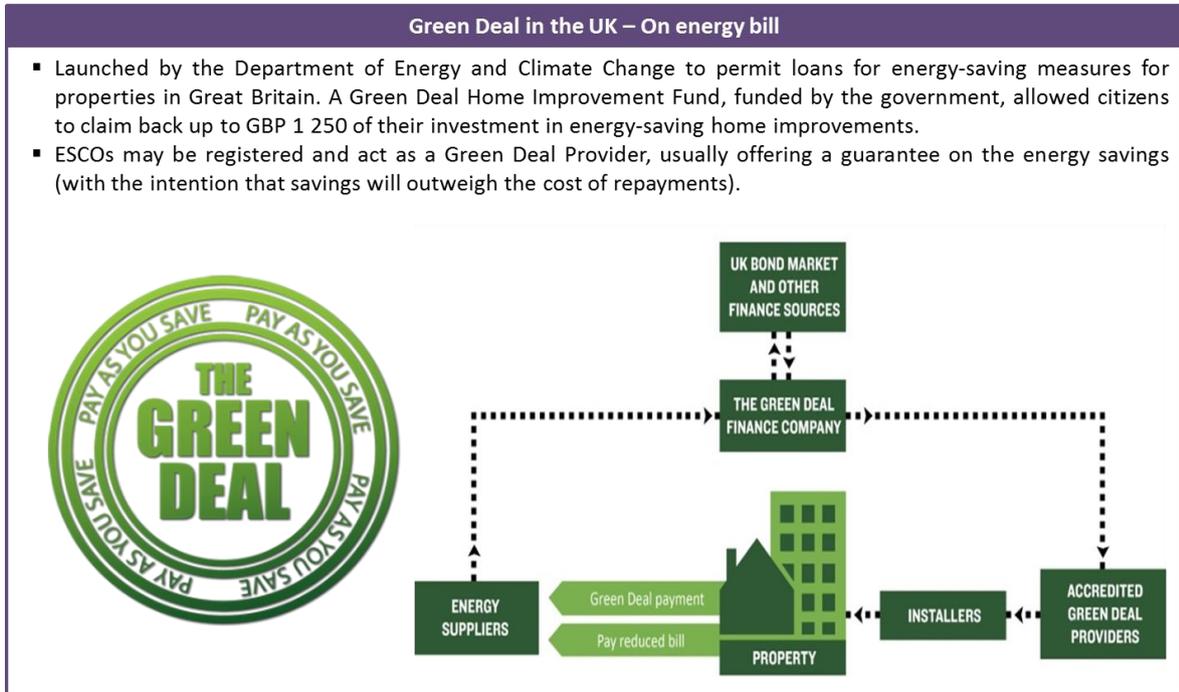
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**Figure 19. In the UK, the Green Deal project encouraged residential owners to embark on energy saving projects through ESCOs**

2



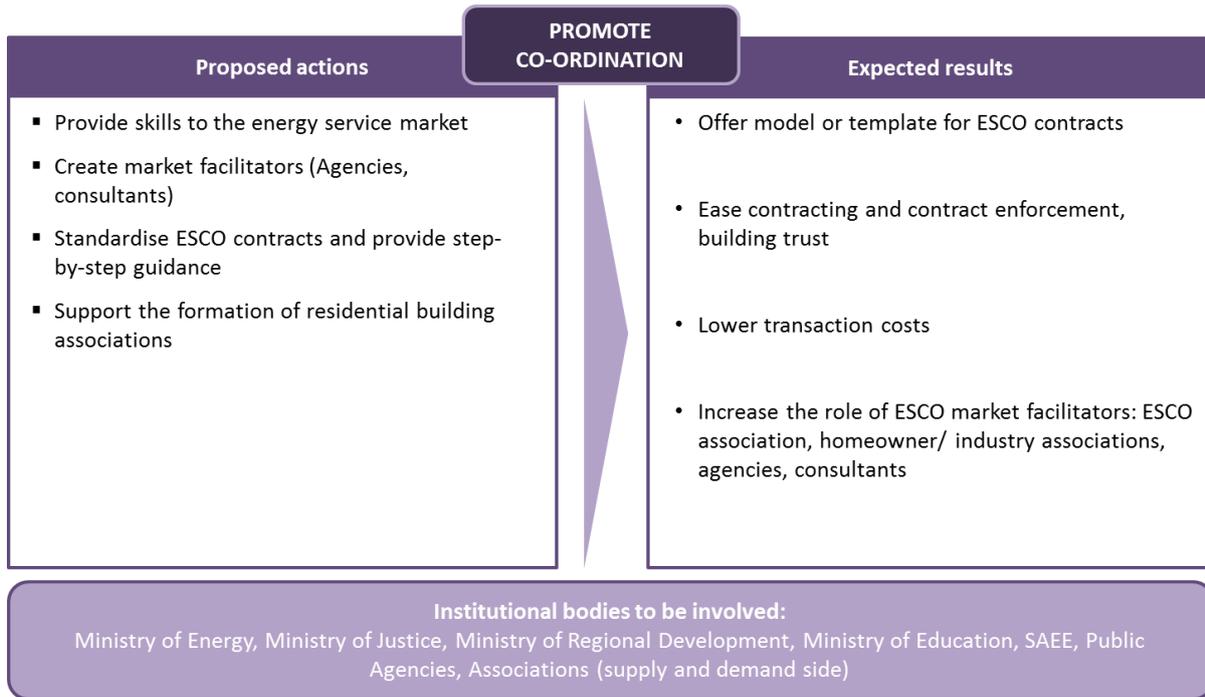
Source: OECD analysis; UK Government (2015), “Green Deal: energy saving for your home”, website, [www.gov.uk/green-deal-energy-saving-measures/overview](http://www.gov.uk/green-deal-energy-saving-measures/overview), accessed 15 May 2015; Morris-Marsham, C. (2012) “Delivering energy efficiency in the UK through domestic energy service companies (DESCos)”, <http://tinyurl.com/pu5d2o6>; Kim, C. et al. (2012), *Innovations and Opportunities in Energy Efficiency Finance*, <https://www.wsg.com/publications/PDFSearch/WSGR-EE-Finance-White-Paper.pdf>; Energy Efficiency Financial Institutions Group (2015), *Energy Efficiency - The First Fuel for the EU Economy: How to drive new finance for energy-efficient investments*.

The Green Deal Programme, launched in the UK by the Department of Energy and Climate Change, helps property owners to embark on long-term energy saving home investments through ESCOs (who are registered and act as Green Deal Providers).

Matching of supply/demand

Figure 20. Better co-ordination in the market builds trust and lowers transaction costs

3



Source: OECD analysis; IEA (2011b), *Joint Public-Private Approaches for Energy Efficiency Finance - IEA Policy Pathways Report*, <https://www.iea.org/publications/freepublications/publication/finance.pdf>; Bertoldi, P. et al. (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>.

Efficient matching of supply and demand is crucial to reduce transaction costs and build trust among players in the ESCO market.

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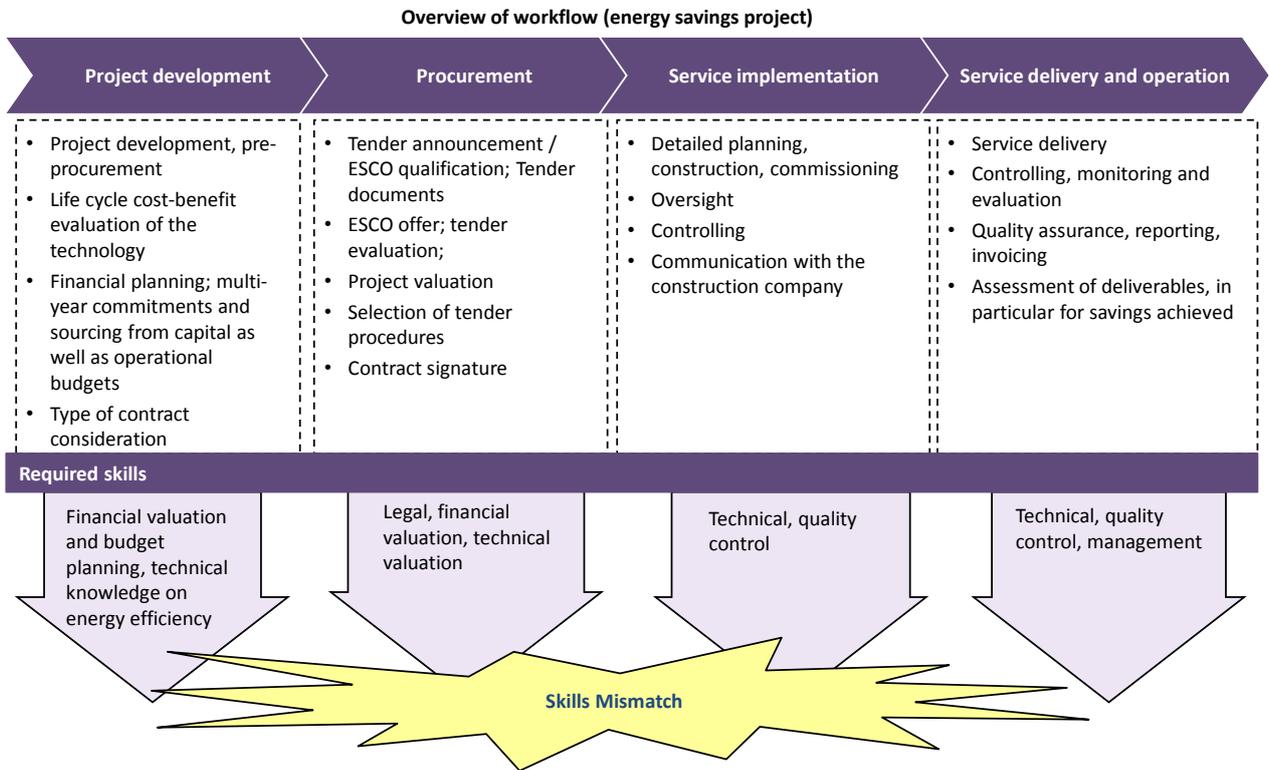
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**Figure 21. Procurement and implementation via ESCOs requires important skills that are currently lacking in Ukraine**

3



Source: OECD analysis; Bleyl, J. et al (2013).

Addressing the skills gap would support the development of the market by easing co-ordination among LFIs, ESCOs and clients, as well as strengthening the capacity of ESCOs, allowing them to offer the full range of services described in Box 1.

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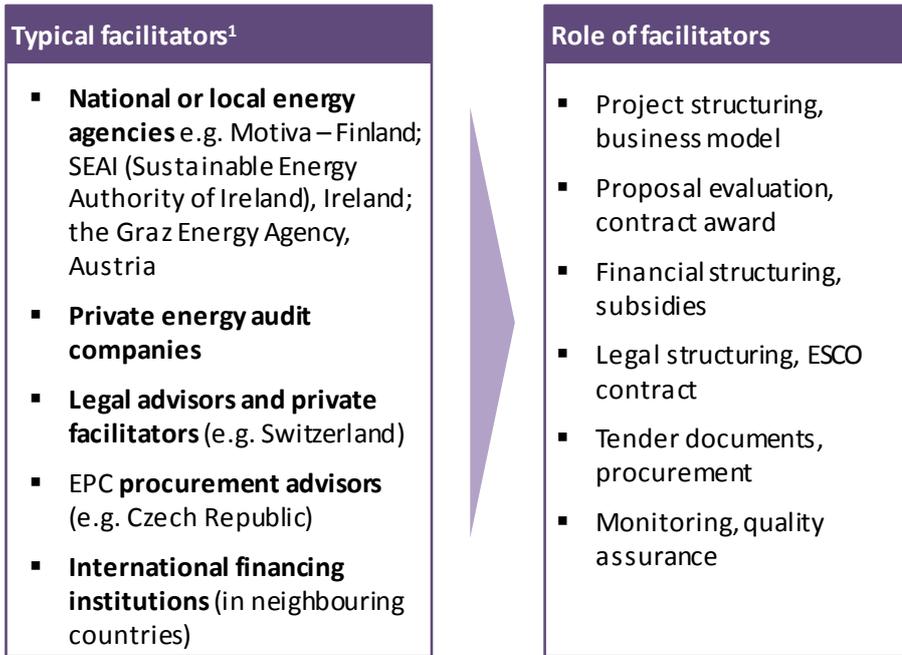
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**Figure 22. Market facilitators serve as intermediaries between ESCOs and energy efficiency suppliers and their potential clients**

3



<sup>1</sup> Facilitators can charge around 3% of total investment costs (average in Europe), decreasing with project size. This upfront investment is often a barrier to ESCO development

Source: OECD analysis; Bleyl, J. et al. (2013), “ESCO market development: A role for facilitators to play”, *eceee Summer Study Proceedings*, <http://tinyurl.com/qhb3qz4>; Bertoldi, P. et al. (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>.

Market facilitators, both public and private, support the development of the ESCO market by helping to match supply and demand and easing transactions. Facilitators help to support the implementation of energy savings projects.

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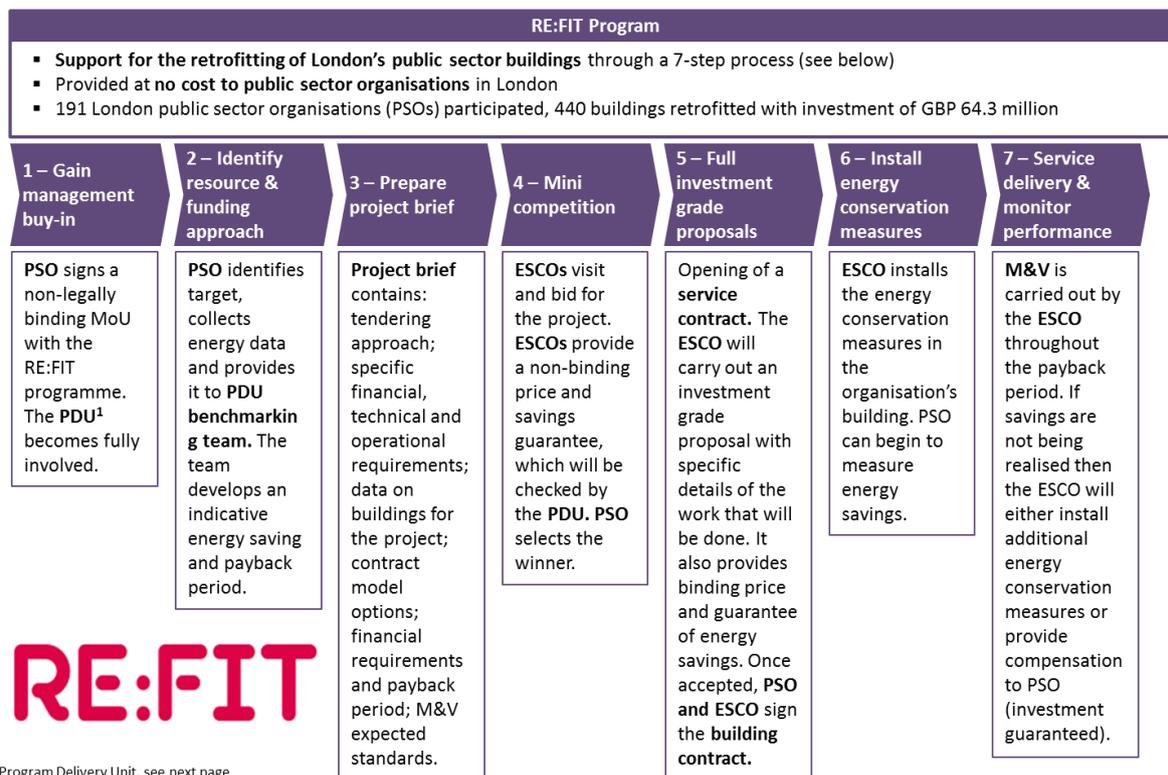
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**Figure 23. RE:FIT in London creates a direct channel between public building managers and ESCOs, easing the matching process (1/2)**

3



**RE:FIT**

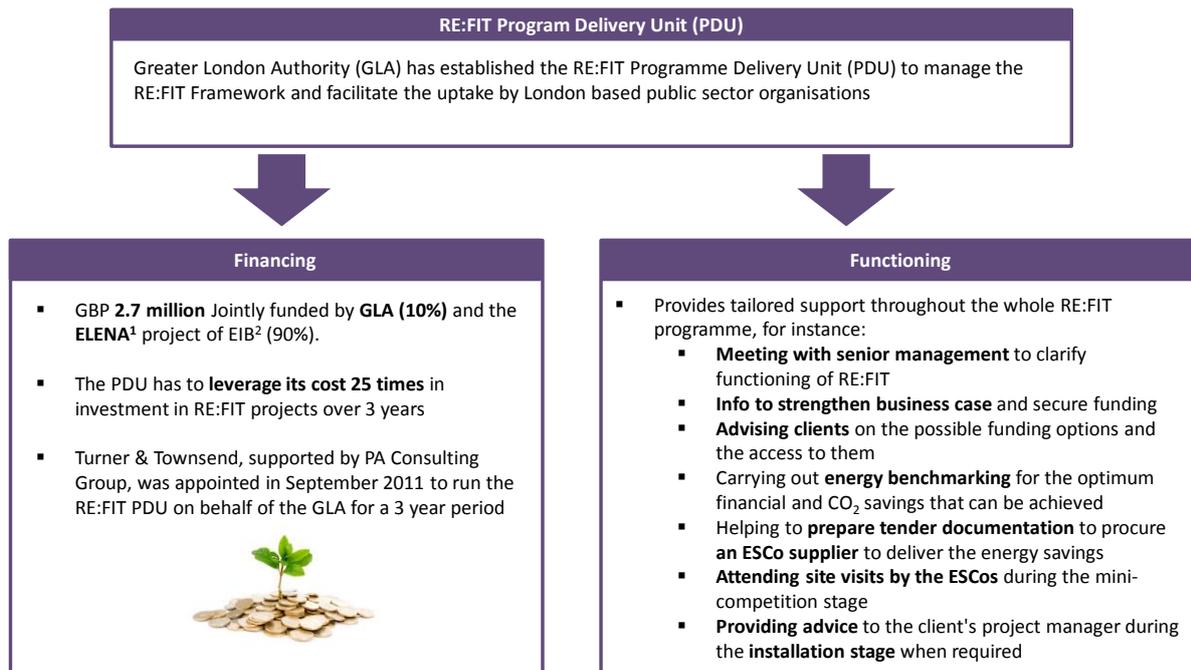
<sup>1</sup> Program Delivery Unit, see next page

Source: OECD analysis; RE:FIT London (2015), RE:FIT website, <http://refit.org.uk/>, accessed 29 June 2015.

The RE:FIT programme in London helps to accelerate the reduction of energy use. The programme is available to public sector organisations and provides a wide range of funding options, a simpler tendering process, clear pricing and contractual power.

**Figure 24. RE:FIT in London creates a direct channel between public building managers and ESCOs, easing the matching process (2/2)**

3



1 European Local Energy Assistance; 2 European Investment Bank

Source: OECD analysis; RE:FIT London (2015), RE:FIT website, <http://refit.org.uk/>, accessed 29 June 2015.

The Programme Delivery Unit acts as the fundamental facilitator of the project, leveraging the resources of the Greater London Administration and of the European Local Energy Assistance project to provide tailored support throughout all the phases of the implementation of the RE:FIT programme.

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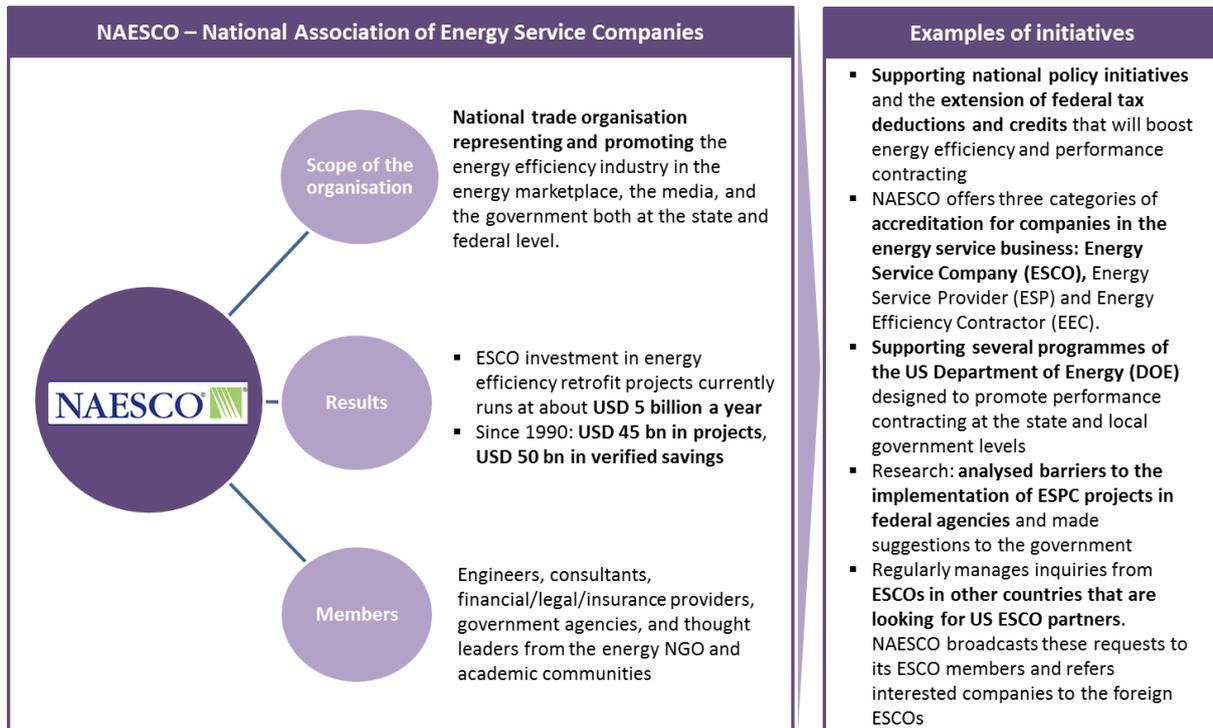
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**Figure 25. NAESCO serves as the national voice of the ESCO industry in the US through advocacy on its strategic interests**

3



Source: OECD analysis; NAESCO (2015), NAESCO website, National Association of Energy Service Companies, [www.naesco.org](http://www.naesco.org), accessed 29 June 2015.

NAESCO is the leading association of ESCOs in the United States. It is active in policy advocacy at both local and national governmental levels, acting as a counterpart for the Department of Energy. It is also a contact point for ESCOs all over the world looking for US partners.

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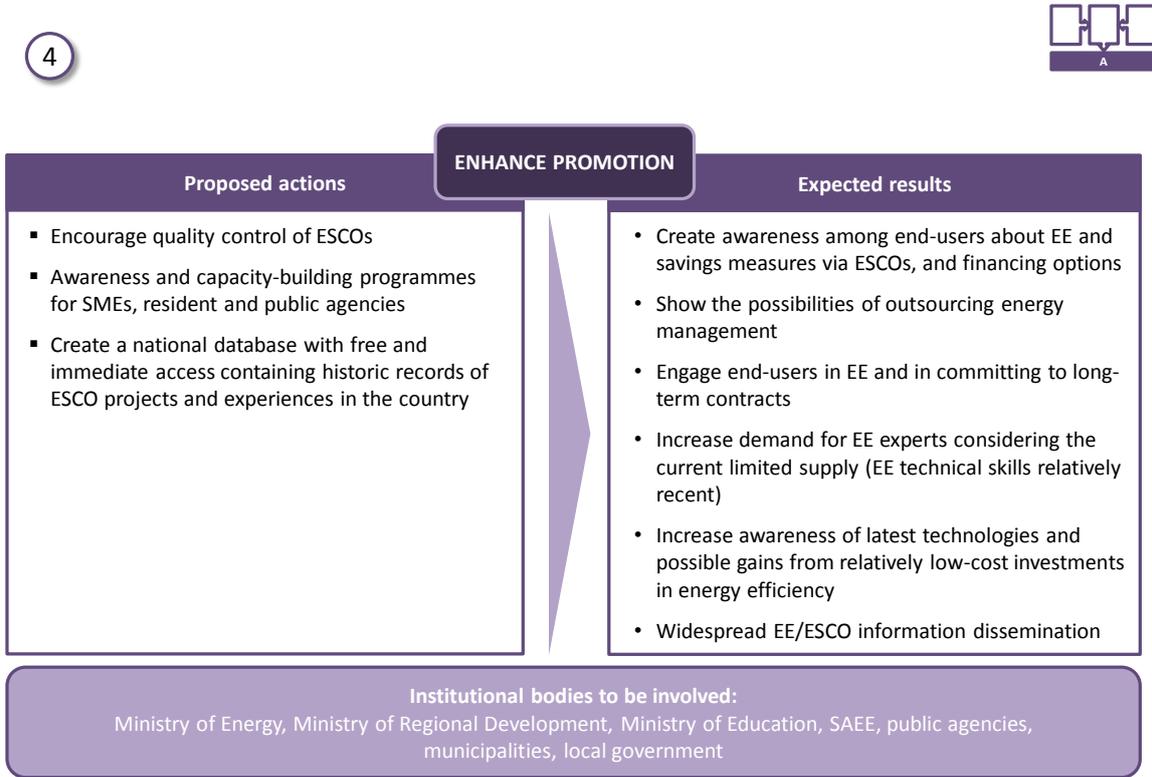


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**Figure 26. Raising awareness of the ESCO model through better promotion is crucial for the success of the action plan**



Source: OECD analysis; IEA (2011b), *Joint Public-Private Approaches for Energy Efficiency Finance - IEA Policy Pathways Report*, <https://www.iea.org/publications/freepublications/publication/finance.pdf>; Bertoldi, P. et al. (2014), *ESCO Market Report 2013*, <http://tinyurl.com/plp8gsn>; UNDP (2009), *Promoting Energy Efficiency in buildings: Lessons learned from international experience*, UNDP.

Improving awareness and understanding of the ESCO model by involved stakeholders such as end user clients and LFIs is a necessary condition for development of the market.

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Figure 27. Networking campaigns and cross-sectorial information efforts in Austria and Ireland

4



 AUSTRIA – Klima:Activ	IRELAND - Large Industry Energy Network (LIEN) 
<ul style="list-style-type: none"> <li>The Austrian <b>klima:aktiv</b> campaign focuses on information, communication, networking and advice.</li> <li>Klima:aktiv comprises 21 programmes for energy efficiency of buildings and appliances, renewable energy use and mobility management, through:                             <ul style="list-style-type: none"> <li><u>Traditional approach</u>: basic information and initial advice for private households, public authorities and companies;</li> <li><u>Innovative communicative approach</u>: involvement of decision makers, producers and companies with relevant influence on investment decisions, e.g. master builders, plumbers, property developers and managers, manufacturers of (prefabricated) houses, procurement operators to increase demand for ESCOs and in the market of energy service providers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The Irish Large Industry Energy Network (LIEN) is a well-established networking and information programme for large industrial energy users. LIEN members account for approximately 51% of Ireland's national industry primary energy requirement.</li> <li>Having already been in operation for more than 10 years, it has engaged 166 of Ireland's largest energy users in ongoing relationships including site visits, workshops and annual performance reporting.</li> <li>LIEN members share information on energy-saving technologies and techniques to maximise savings and maintain competitiveness. The LIEN Network provides members with expertise, special assistance and individual mentoring, and acts as a centre for communication across the network as a whole.</li> </ul>

Source: OECD analysis; Energy Efficiency Watch (2009), *Promoting Energy Efficiency in Europe*.

As part of their National Energy Efficiency Action Plans, both Austria and Ireland offer concrete examples of actions to enhance awareness of energy savings options in the country. The Klimaaktiv campaign in Austria focuses on traditional information as well as innovative approaches. LIEN (the Large Industry Network) in Ireland is a networking platform for the largest industrial energy-consumers in the country willing to share expertise and information regarding energy savings possibilities.

**Figure 28. The US Lawrence Berkeley National Laboratory manages the world's largest database of ESCO projects**

4



LBNL/NAESCO database project
<ul style="list-style-type: none"> <li>• 10+ year partnership between LBNL/NAESCO</li> <li>• Voluntary agreement between ESCO industry and government agencies to provide project data</li> <li>• Funding mostly from the Department of Energy</li> </ul>
Database structure
<ul style="list-style-type: none"> <li>• 4 100 projects in 49 states representing about USD 10 billion in total investment (~ 20% of the total industry activity since 1990)</li> <li>• ~ 15% of the database came from publicly-available sources including state energy offices and Federal Energy Management Program (~300 projects are from state energy offices)</li> <li>• The NAESCO accreditation process (~85% of database) requires that ESCOs report over two dozen types of information for each project</li> </ul>
Objectives
<ul style="list-style-type: none"> <li>• Track ESCO industry and market trends; project performance; market activity</li> <li>• Analyse trends in savings; investment levels; customer preferences; and market penetration of EE technologies</li> <li>• Objective information resource on EPC and ESCO industry.</li> </ul>

Source: OECD analysis; LBNL (2015), "Energy saving performance contracting", website, Lawrence Berkeley National Laboratory, <http://emp.lbl.gov/projects/energy-services-company-escos-industry-and-market-trends>, accessed May 2015.

LBNL and NAESCO in the US have created a database containing a variety of information on ESCO projects implemented in the country, providing an extensive and useful record of projects for the public. The database helps to track successful projects for reference and for benchmarking of potential future projects.

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## ANNEX B: METHODOLOGY AND PROJECT APPROACH

Within the framework of the Sector Competitiveness Strategy for Ukraine (Phase III) project, the OECD Eurasia Competitiveness Programme (ECP) and its project partners established a public-private working group to develop guidelines and recommendations for enhancing competitiveness and private-sector development in the energy efficiency sector. The OECD ECP, with contributions from international experts and peer reviewers from selected OECD member countries, carried out analysis, data collection and consultations with stakeholders in Ukraine to identify the need for developing a sustainable framework for energy service companies in order to enhance private sector competitiveness.

Several missions took place in preparation for the peer review of Ukraine:

- **15-17 October 2014:** fact-finding mission to Kiev and meeting of the Working Group on Energy Efficiency with international experts to present Danish best practices
- **11-13 February 2015:** fact-finding mission to Kiev and meeting of the Working Group on Energy Efficiency to discuss preliminary analysis
- **23-27 March 2015:** fact-finding mission to Kiev and first meeting of the Peer Review Focus Group with international experts to present Canadian and German good practices and Ukrainian legal framework
- **21-23 April 2015:** study visit to Copenhagen, Denmark, by 12 Ukrainian experts from SAEE, Ministry of Regional Development, Construction and Communal Living, Ministry of Economic Development and Trade, Ministry of Energy, and the Administration of the President of Ukraine (in collaboration with the Danish Energy Agency)
- **10-12 June 2015:** fact-finding mission to Kiev and meeting of the Working Group on Energy Efficiency with international experts to present Canadian and Czech good practices
- **29-30 September 2015:** fact-finding mission to Kiev and second meeting of the Peer Review Focus Group with international experts to present Czech and German good practices and discuss draft Peer Review report.

This report will be submitted for peer review on 25 November 2015 at the third session of the OECD Eurasia Competitiveness Roundtable, a policy network that brings together high-level representatives and technical experts from Eurasia countries, OECD members and partner organisations. The roundtable meets annually and serves as a platform for peer review and knowledge sharing on the implementation of competitiveness reforms in the Eurasia region.

The peer review will help Ukraine define further steps for policy reform implementation. In particular, the roundtable discussion will be facilitated by three experts who will provide an overview of the current situation in Ukraine and insights into the policy experience in OECD and Eurasia countries:

- Mr. Ivan Gerginov, Energy Efficiency Financing Expert, Econoler, Canada
- Ms. Vladimira Henelova, Senior Consultant and Division Director, Enviros, Czech Republic
- Mr. Robert Schachtschneider, Personal Advisor to the Executive, German Energy Agency (DENA), Germany.

Progress towards implementing these recommendations will be discussed in two years' time at the 2017 OECD Eurasia Competitiveness Roundtable.

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## **Enhancing Competitiveness in Ukraine through a Sustainable Framework for Energy Service Companies**

Energy efficiency is a national priority for Ukraine. Energy service companies (ESCOs) could help Ukraine to improve energy efficiency by stimulating private sector development that in the long term will greatly benefit the economy. However, the market for ESCOs faces several challenges, including limited access to finance, low demand for energy services, a mismatch between demand and supply, and lack of understanding and awareness of ESCOs. This note presents policy recommendations to build a sustainable framework for ESCOs, proposing 12 actions organised into four main areas necessary to allow the development of the market of energy services: supply, demand, matching system and awareness.

This note was peer reviewed on 25 November 2015 at the OECD Eurasia Competitiveness Roundtable. The roundtable is a policy network for knowledge sharing on the implementation of competitiveness reforms that brings together high-level representatives and technical experts from Eurasia countries, OECD member countries and partner organisations.



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