



COUNTRY REPORT ON THE ENERGY EFFICIENCY SERVICES MARKET AND QUALITY

Slovakia



QualitEE Project

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The QualitEE consortium comprises 12 partner organisations covering 18 European countries, an expert advisory board, including the European standards body CEN/CENELEC, and 59 supporters from major financial institutions, government bodies, trade associations and certification bodies.

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Definitions and glossary

Term	Definition
Client	means any natural or legal person to whom an energy service provider delivers energy service
Energy Efficiency Directive (EED)	means Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency
energy efficiency improvement*	means increase in energy efficiency as a result of technological, behavioural and/or economic changes
energy efficiency*	means the ratio of output of performance, service, goods or energy, to input of energy
energy efficiency service (EES)**	means an agreed task or tasks designed to lead to an energy efficiency improvement and other agreed performance criteria
energy efficiency improvement*	means an increase in energy efficiency as a result of technological, behavioural and/or economic changes
energy management system*	means a set of interrelated or interacting elements of a plan which sets an energy efficiency objective and a strategy to achieve that objective
energy performance contracting* (EPC)	means a contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance criterion, such as financial savings
energy supply contracting*** (ESC)	means a contractual arrangement for the efficient supply of energy. ESC is contracted and measured in Megawatt hours (MWh) delivered
energy savings*	means an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption
energy service*	the physical benefit, utility or good derived from a combination of energy with energy-efficient technology or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to result in verifiable and measurable or estimable energy efficiency improvement or primary energy savings
energy service provider*	means a natural or legal person who delivers energy services or other energy efficiency improvement measures in a final customer's facility or premises
energy*	means all forms of energy products, combustible fuels, heat, renewable energy, electricity, or any other form of energy, as defined in Article 2(d) of Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics
EPC provider	means an energy service provider who delivers energy services in the form of Energy Performance Contracting
ESC provider	means an energy service provider who delivers energy services in the form of Energy Supply Contracting

energy service project facilitator (facilitator)	means an advisory company working on behalf of the client to procure and/or implement an energy service project
Integrated Energy-Contracting (IEC)	means a combination of energy efficiency measures with energy supply contracting typically with short term 'operational verification' rather than ongoing Measurement & Verification
Savings	means energy savings and/or related financial savings; the financial savings include the costs of energy provision and can also include other operational costs, such as the costs of maintenance and workforce
The International Performance Measurement and Verification Protocol (IPMVP)	is the widely referenced framework for "measuring" energy or water savings, which is available at www.evo-world.org

Notes:

*Definitions according to the Energy Efficiency Directive

**Definition according the European standard EN 15900:2010

***Definition is a simplified version of IEA DSM Task Force 16 definition

1 EXECUTIVE SUMMARY

The objective of this report is to compile evidence to inform the development of European & national quality criteria and the implementation of quality assurance schemes for energy efficiency services (EES). This report has been developed as part of the "QualitEE – Quality Certification Frameworks for Energy Efficiency Services" project supported by the EU's Horizon 2020 programme. The QualitEE project aims to increase investment in EES and improve trust in service providers.

Information has been collected through a market survey as well as literature review. An analysis has been conducted and conclusions formed to be presented in this report as well as in the online database on the QualitEE project website.

This report aims to improve the market knowledge of stakeholders so that they can make better informed decisions based on evidence. The barriers and success factors for energy efficiency services, their quality determinants and as well as the related legal, political and institutional framework have been mapped. Lessons learned from existing certification frameworks will serve to establish strategies for the implementation of national quality assurance schemes.

In the recent years, market with energy services in Slovakia went through a remarkable advancement. Overview of latest regulatory and legislative updates is provided in chapter 3 together with description of quality assurance background and possible supporting schemes.

Chapter 4 describes Energy Performance contracting market background. The market was boosted by adoption of Act on energy efficiency and establishment of Association of ES providers in 2014. In years 2014-2016 EPC market was considerably growing but QualitEE survey showed a little stagnation in 2017. Although the public sector prevails in the number of projects in recent years, a significant shift towards projects in private sector was experienced in 2016.

Energy Supply contracting market described in chapter 5 has in Slovakia more stable position. Although there is no special regulation connected to ESC, the market is still on good track. Majority of projects is focused on central heating systems renovations and improvement of heat delivery in municipal and public buildings.

Despite a lot of market improvements in last years, there is still a need for increasing awareness about energy efficient services and for definition of good quality EES project in Slovakia. Better communication of EES to all relevant stakeholders is essential for managing the expectations of potential clients. Respondents of QualitEE survey found as a key barrier subsidies and policy uncertainty. To overcome this barrier, better planning and set-up of supporting schemes and possibility to combine subsidies with EPC was recommended.

Substantial part of Quality survey was focused on EES providers and facilitators opinion about quality assurance scheme for energy efficient services. The last part of this report is dedicated to results emerging from the obtained answers about certification of EES.

2 INTRODUCTION

2.1 Objective of the report

The objective of this report is to compile evidence to inform the development of European and national quality criteria and the implementation of quality assurance schemes for Energy Efficiency Services (EES). The report has been developed as part of the "QualitEE – Quality Certification Frameworks for Energy Efficiency Services" project supported by the EU's Horizon 2020 programme. The QualitEE project aims to increase investment in EES and improve trust in service providers.

Information has been collected through a market survey in the form of an online questionnaire and personal interviews. In addition, literature review has been conducted in existing local and national publications and documents. An analysis has been conducted and conclusions formed to be presented in this report as well as in the online database on the QualitEE project website.


This report aims to improve the market knowledge of stakeholders so that they can make better informed decisions based on evidence. The barriers and success factors for energy efficiency services, their quality determinants and as well as the related legal, political and institutional framework have been mapped. Lessons learned from existing certification frameworks will serve to establish strategies for the implementation of national quality assurance schemes.

2.2 Scope of the report and definitions

2.2.1 Energy Efficiency Services (EES)

The European standard EN 15900:2010 defines EES as an agreed task or tasks designed to lead to an energy efficiency improvement¹ and other agreed performance criteria. EES shall include an energy audit (identification and selection of actions, e.g. according to EN 16247) as well as the implementation of actions and the measurement and verification (M&V, e.g. according to IPMVP) of energy savings. A documented description of the proposed or agreed framework for the actions and the follow-up procedure shall also be provided – often referred to as an Investment Grade Proposal. The improvement of energy efficiency shall be measured and verified over a contractually defined period of time through contractually agreed methods (Amann and Leutgöb et al. 2015).

This report focuses on the following key types of energy efficiency services:

-  Energy Performance Contracting (EPC)

¹ According to the EED "energy efficiency improvement" means "an increase in energy efficiency as a result of technological, behavioural and/or economic changes".

- ✔ Energy Supply Contracting (ESC)
- ✔ Of course, EPC and ESC are not the only types of energy efficiency services applied in the Slovakia. But other types of EES represent only minor share of market.

2.2.2 Energy Performance Contracting (EPC)

According to the Energy Efficiency Directive, "EPC means a contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance criterion, such as financial savings."

The energy efficiency measures as above may also be based on low or no up-front investment. EPC may also include additional services related to efficient energy supply.

Within the report, the focus will be on EPC projects where the above mentioned "contractually agreed level of energy efficiency improvement" is **guaranteed** by the EPC provider. The **guarantee of energy efficiency improvement** is the commitment of the service provider to achieve a quantified energy efficiency improvement (EN 15900:2010).

This is in line with the EED, Annex XIII of which lists guaranteed savings among the minimum items to be included in energy performance contracts with the public sector or in the associated tender specifications. Moreover, in Article 18 of the EED, Member States are required to promote the energy services market and access for SMEs to this market by, among other things, disseminating clear and easily accessible information on available energy service contracts and clauses that should be included in such contracts to **guarantee energy savings** as well as final customers' rights.

The European Code of Conduct for EPC (2014) defines that the EPC provider assumes the **contractually agreed performance risks of the project** throughout the duration of the EPC contract. These include the risks of not achieving contractually agreed savings as well as design risks, implementation risks and risks related to the operation of installed measures. If an EPC project fails to achieve performance specified in the contract, the EPC provider is contractually obligated to compensate savings shortfalls that occurred over the life of the contract. The excess savings should be shared in a fair manner according to the methodology defined in the contract.

2.2.3 Energy Supply Contracting (ESC)

"ESC means a contractual arrangement for the efficient supply of energy. ESC is contracted and measured in Megawatt hours (MWh) delivered". This definition is a simplified version of the IEA DSM Task Force 16 definition.

2.2.4 Other types of energy efficiency services

In Slovakia, the other energy efficiency services cover mainly operational contracting, usually for a short period. But as it represents only minor share of market, it was not included in the study.

2.2.5 Market actors

The main actors operating on the EES markets are the EES providers, clients and project facilitators.

Within the QualitEE project, we use the EED's definition of energy service provider:

- ✔ "An '**energy service provider**' means a natural or legal person who delivers energy services² or other energy efficiency improvement measures in a final customer's facility or premises."

We use the commonly used term "ESCO" as an equivalent of energy service provider. We also use the above-listed definitions to define the following terms:

- ✔ "An '**EPC provider**' means an energy service provider who delivers energy services in the form of EPC."
- ✔ "An '**ESC provider**' means an energy service provider who delivers energy services in the form of ESC."
- ✔ "A '**Client**' means any natural or legal person to whom an energy service provider delivers energy service."
- ✔ "An energy service project '**Facilitator**' means an advisory company working on behalf of the client to procure and/or implement an energy services." In the QualitEE project we use the shorter term "facilitator" to denote an energy service project facilitator.

2.3 Sources of data and methodology

2.3.1 Sources of data

The contents of this report are based on 3 main sources:

- ✔ the results of an EES survey conducted in Slovakia and across a further 14 EU Countries;
- ✔ personal interviews of the clients and main financial institutions acting within the EES market;

² According to the EED: "An 'energy service' means the physical benefit, utility or good derived from a combination of energy with energy-efficient technology or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to result in verifiable and measurable or estimable energy efficiency improvement or primary energy savings."

- ✔ a literature review (publications and studies, legislative documents, official statistics and databases) and
- ✔ the market knowledge of the authors based on 15 years of implementing EES projects and supporting EES market.

2.3.2 Survey and interviews

To collect the data used in this document, the market actors have been approached in the following manner:

- ✔ an online questionnaire was distributed to the country's most relevant EES providers and facilitators;
- ✔ personal semi-structured interviews have been conducted with financial institutions and client organizations implementing EES projects.

The market and quality survey focused on energy efficiency services gave the stakeholders an opportunity to provide their input and steer the development of quality assurance. The surveys and interviews contained questions about the EES market, barriers and success factors, EES quality determinants, minimum financial information requirements for financial institutions and certification frameworks, as well as EES-related legal, political and institutional frameworks. Then the answers were analysed and the results are presented in this report in aggregated form.

There were 11 respondents to the online survey in Slovakia:

- ✔ 8 representatives of ESCOs, where 7 of them operate on both the EPC and ESC market and 1 is focused only to ESC market; 7 of these ESCOs are the most active members of the ESCO association APES with a major share on the Slovak EPC market;
- ✔ 3 representatives of EES facilitators, all of them operating on the EPC market only.

Throughout this study the results from the online survey in Slovakia are compared with the results from the online survey across **All Countries** that responded. In total there were 188 respondents to the online survey across **All Countries**:

- ✔ Respondents operate in 15 European Countries; Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Greece, Italy, Latvia, the Netherlands, Portugal, Slovakia, Slovenia, Spain and the UK.
- ✔ Respondents include 109 representatives of ESCOs, where 53 of them operate on the EPC market only, and 11 operate on the ESC market only and 45 on both the EPC and ESC markets
- ✔ Respondents include 79 representatives of EES facilitators, where 37 of them operate on the EPC market only, and 17 operate on the ESC market only and 25 on both the EPC and ESC markets

Note - Full results from the QualitEE project's survey across 15 European countries - and trend analysis via comparison with previous surveys conducted in 2013 and 2015 by the Transparens project - can be explored through an interactive online navigation tool on the project website. (<https://qualitee.eu/market-research/>).

In addition, there are 6 respondents to the personal interviews:

- ✔ 3 representatives of finance houses, which are mostly the main sources of bank credits for the EPC projects in the Slovakia;
- ✔ 3 EES clients.

2.3.3 Literature and other sources of data

Apart from the surveys, the reports build on research from local and national literature (legislative documents, publications and studies, official statistics and databases) and the market knowledge of the authors based on 15 years of implementing EES projects and supporting the EES market in Slovakia.

The key sources of information were up-to-date national sources, such as:

- ✔ Data and studies by the Slovak Association of Energy Service Providers (APES)
- ✔ Publications by the Ministry of Economy of Slovak Republic
- ✔ The report also builds on the data and information gathered primarily by the Transparense project and other previous European projects (CombinES) and projects running in parallel (GuarantEE).
- ✔ In addition, it used data from the Status Report on Energy Service Companies Market in Europe by JRC.

3 LEGAL AND REGULATORY FRAMEWORKS

3.1 Key governmental institutions

Main institution responsible for strategy documents, planning and regulations in the field of energy efficiency is Ministry of Economy of the Slovak Republic.

Ministry of Transport and Construction of Slovak Republic is responsible for implementation of measures in buildings sector where the major potential for energy savings is identified.

A state subsidy organization Slovak Innovation and Energy Agency was established by the Ministry of Economy of the Slovak Republic. It is responsible for implementation of ESIF, operation of monitoring system for efficiency in energy use, energy advisory, etc.

3.2 Implementation of the EU Energy Efficiency Directive

Directive of the European Parliament and the council 2012/27/EU on energy efficiency (EED) establishes a common framework of measures for the promotion of energy efficiency within the EU in order to ensure the achievement of its 2020 20% headline target on energy efficiency.

Article 18 of the EED also imposes obligations on Member States to support the energy services market. The EU Energy Efficiency Directive (2012) is being implemented in Slovakia through Act No 321/2014 Coll. on energy efficiency.

Act No 321/2014 Coll. on energy efficiency provides regulation on:

- ✔ definition and evaluation of energy efficiency targets,
- ✔ refurbishment of buildings,
- ✔ energy audits and
- ✔ energy services.

Act on Energy Efficiency recognizes 3 types of energy services:

- ✔ Support (i.e. "soft") Energy Service – includes mainly advisory or education activities;
- ✔ Energy Service with guaranteed energy savings (Guaranteed Energy Service) – realisation of real complete energy services based on a project; and
- ✔ Energy Service for Public Sector – a special type of Guaranteed Energy Service, where either public authority or public financial resources are involved according to the rules specified in the Act.

The Act includes on the one hand collection of information about energy services providers by an authority specified by Ministry of Economy. On the other hand, the Act stipulates

obligations concerning information provision in the field of thermal energy as well as information provision gas and electricity distribution companies for final customers. Finally, offences against the Act and financial penalties are enumerated.

Details on the Energy Efficiency Act implementation are provided in Regulations issued by the Ministry of Economy of the Slovak Republic. Specific regulations cover details of energy audits elaboration, accreditation of energy auditors and certified persons for providing energy services. Specifically, details of Support Energy Services and Guaranteed Energy Services providing are described in Regulation of MoE No.99/2015 Coll.

3.3 National strategy documents

The basic energy efficiency policy targets of Slovakia are defined in the “Energy Policy of the Slovak Republic” (2014). It states the Slovak energy reduction targets up to 2020 and also describes the long-term strategy for the future energy supply. Further details of the energy efficiency targets are described in the “Conceptual Framework of Energy Efficiency of the Slovak Republic” (2007).

3.3.1 National Energy Efficiency Action Plan

Specific energy efficiency measures, based on the framework policy documents, are regularly elaborated and their results evaluated in the “National Energy Efficiency Action Plans” (2007, 2011, 2014, 2017). Last action plan “Action Plan for years 2017-2019 with perspective to 2020” is fourth in order and was approved in April 2017.

National Energy Efficiency Action Plan provide detailed description of energy efficiency measures on horizontal level as well as for specific sectors including estimation of required resources and responsible stakeholders.

3.4 Standardisation for energy efficiency services

Main standardisation body in Slovakia is Slovak Office of Standards, Metrology and Testing, www.unms.sk. Its primary goal is to create a competitive and effective environment in the Slovak Republic in the fields of quality, metrology, testing and technical standardisation and to support the protection of consumer.

Standardisation of energy efficiency services in Slovakia is corresponding with European union standards. There are no additional EES standards specifically for Slovakia.

EU standard EN 15900:2010 was transposed into Slovak standard STN EN 15900 (Energetické služby v oblasti energetickej efektívnosti. Definície a požiadavky.) in October 2011. This standard was translated by Slovak Standards Institute and has the same status as the official versions.

European standard EN 16212 about Energy Efficiency and Savings Calculation provides a general approach for energy efficiency and energy savings calculations with top-down and bottom-up methods. This standard was transposed into Slovak standard system as STN EN 16212 but was not translated and is available only in English.

3.5 European Code of Conduct for EPC

The European Code of Conduct for EPC defines the basic values and principles that are considered fundamental for the successful preparation and implementation of EPC projects. The Code of Conduct has been developed within the Intelligent Energy Europe project Transparens in cooperation with EPC providers, clients and European ESCO associations, among others. The two organisations representing ESCOs at the European level – the European Association of Energy Service Companies (eu.esco) and the European Federation of Intelligent Energy Efficiency Services (EFIEES) – endorse the European Code of Conduct for EPC and support its use when implementing EPC projects and continue in administering and maintaining the Code of Conduct. By the end of October 2017, the Code of Conduct had 234 signatories across Europe. This includes 148 EPC providers, 13 national associations (with 160 members in total), two European associations of ESCOs and 70 facilitators and other signatories. The European administrators organise regular conference calls with national administrators to exchange information about regulatory developments and new projects.

It is expected that the European Code of Conduct for EPC will serve as a harmonised European quality standard of EPC projects, raise potential clients' confidence in the business model and thus lead to higher demand for EPC projects.

The list of the Code signatories is available online and promoted within eu.esco and EFIEES activities (press releases, articles, national and international events). EPC providers who become signatories of the EPC Code undertake to conduct EPC projects in compliance with the EPC Code of Conduct. It is a voluntary commitment of the EPC providers and is not legally binding.

The Code has vast potential to support EPC market development, which can be exploited. For example, it has been used as a discussion guideline between client and EPC provider, guidance for the preparation of tender dossiers and contracts, and as a marketing tool. Within the QualitEE project, it is being used as a starting point for developing an energy service quality assurance scheme.

In Slovak Republic, the European Code of Conduct for EPC was officially approved and accepted by Slovak Association of energy providers (APES-SK). Members of the Association have committed themselves to support and comply with the European Code of Conduct for EPC including Rules for utilization of the European Code of Conduct for Energy Performance Contracting in Slovakia. This commitment is a part of an EPC contract templates used by APES members. the list of Slovak signatories of the Code of Conduct is available on the following page: <http://www.apes-sk.eu/o-nas/eticky-kodex/signatari/>

3.6 Support schemes

The most important public support schemes for energy efficiency regarding the available financial volume are based on ESIF. These are implemented within Operational Programme Quality of Environment and are focused on investments in public buildings, SMEs and District Heating Systems as well as support of energy audits in SMEs, preparation of low-carbon strategies in municipalities and preparation of EPC projects in public buildings. Support within these schemes is provided in form of non-recurring grant financing.

Other schemes provide financial support mostly in recurring form. These are more focused on private clients – industries and residential sector.

Several support schemes are focused on thermal insulation and refurbishment of residential buildings. Almost all of them are operated by the State Fund for Housing Development (SFHD). These schemes provide support in form of loans with long repayment period and low interest rate. Funding of the schemes is provided by state (regular allocation for the core scheme of the SFHD, allocation from sale of emission allowances for State Programme of thermal Insulation), EU funds (JESSICA innovative financing instrument) and repayments from the previous beneficiaries.

Certain support for energy efficiency projects is provided in form of grants (mostly in public sector) and loans from the “Environmental Fund” – the state fund established with the aim to implement state support for environment maintenance and environment creation.

In recent years, there were successfully implemented Sustainable Energy Financing Facilities – credit lines from European Bank for Reconstruction and Development to local financing institutions. These schemes (SlovSEFF targeted on industries and residential sector and MunSEFF targeted on municipalities) provided support in form of loans combined with grant (up to 20% of the loan principal) in case that the energy efficiency targets of projects have been met. These schemes are now suspended but a resumption is expected.

Only limited number of the schemes provided support for EPC and energy services in general. Description of the most relevant schemes is provided in the following table:

Funding / support scheme	Open to client and/or ESCO	Effect on energy services
ESIF – grant support for energy efficiency investments in public buildings. Considering the actual setup, this scheme crowds out private investments. With some adjustments (allowing combination of grants with third party financing through EPC), this scheme could significantly support the EPC market.	Client	- (+)
ESIF – support for development of EPC projects in public sector	Client	+
ESIF – support for development of low-carbon strategies in municipalities	Client	+

SlovSEFF – support for sustainable energy projects in industries provided as loan combined with grant in case of meeting the environmental objectives of the project	Client & ESCO	+
MunSEFF – support for sustainable energy projects in municipalities provided as loan combined with grant in case of meeting the environmental objectives of the project	Client & ESCO	+
Support schemes of the State Fund for Housing Development – soft loans for refurbishment of residential buildings	Client	0

Source: Lauko, M., Caban, R. (2017) Market Report on the Slovak EPC Market. Prepared within GuarantEE project.

4 ENERGY PERFORMANCE CONTRACTING MARKET

4.1 EPC market actors

4.1.1 EPC providers

According Slovak legislation (Act on Energy Efficiency 321/2014) Energy performance contracting can be provided by energy auditor or holder of certificate of professional competence for EPC providing. Ministry of economy administers on its website the list of EPC providers, with approximately 40 companies at present. But only 20 is actually active in EPC market and well experienced.

EPC business is usually treated as complementary to the core business for majority of the companies. These companies are of different backgrounds – technology manufacturers, utilities, system integrators, facility managers, and different sizes – from branches of large international companies to SMEs.

In 2014 the EPC providers active on the Slovak market established (with support from IEE project Transparence) Association of Energy Services Providers (APES-SK). The association, with 17 members (12 EPC providers and 5 EPC facilitators) at present, supports EPC promotion and utilization in Slovakia.

4.1.2 EPC clients

Although the public sector prevails in the number of projects in recent years, a significant shift towards projects in private sector was experienced in 2016. This resulted from availability of grants from ESIF for comprehensive refurbishment of public buildings and street lighting systems. This financing option has significantly constrained the interest and willingness of the prospective clients from public sector to implement projects based on commercial financing. The EPC providers reacted to this break in the market by increased activities within the private sector and several projects in industry and commercial buildings (including privately owned hospitals) have been implemented (or preparation started).

Energy savings through energy services [in TJ]	2014	2015	2016
Buildings – private sector	5.67	4.22	70.61
Public sector	22.64	40.64	14.93

Source: NEEAP 2017 – 2019, Ministry of Economy of the Slovak Republic

The EPC projects in Slovak **public sector** are implemented in buildings and in street lighting systems. The projects in buildings are usually focused on building technologies although some examples of combination with construction measures exist. It is possible to expect that this target group will remain an important source of EPC clients in future. The main potential lies







within local and regional administration as the ESIF grants will be used for financing of deep energy efficiency refurbishments in state government institutions predominantly.

EPC projects in **private sector** helped to replace the dropout of new projects in public sector in recent period (2015-2016). Several new and interesting approaches have been developed within this market segment. The new projects initiated vary in their structure as well as measures implemented. While some projects in industries focused strictly on energy efficiency measures, other ones (in healthcare facilities) combined them with utilisation of renewable energy sources. Several projects in administrative buildings) focused only on optimization of operation of energy consumption without investments. There are no EPC projects implemented in housing sector in Slovakia due to the scattered ownership (approximately 90% of flats in apartment blocks are individually owned).

It may be expected that the number of projects in private sector will increase steadily as the interest of potential clients to buy results (savings) instead of solutions is rising.

4.1.3 EPC facilitators

The role of EPC facilitators is underestimated at present. Especially in public sector, the potential clients are reluctant to hire experienced consultant due to the prevailing weak financial situation. This approach led to failure of several projects, prepared by not adequately experienced in-house staff of the clients, in the stage of development or procurement. Despite this situation, several EPC facilitators are active at the Slovak market and usually provide good results. The most experienced EPC facilitators offering this kind of services as part of their core activities are (in alphabetical order):

-  Energy Centre Bratislava
-  CityEnergy s.r.o
-  ENERGY SYSTEMS GROUP, s.r.o.
-  ENVIROS, s.r.o.
-  SEVEn Energy SK, s.r.o.
-  Tatra Tender, s.r.o.

4.2 EPC market developments

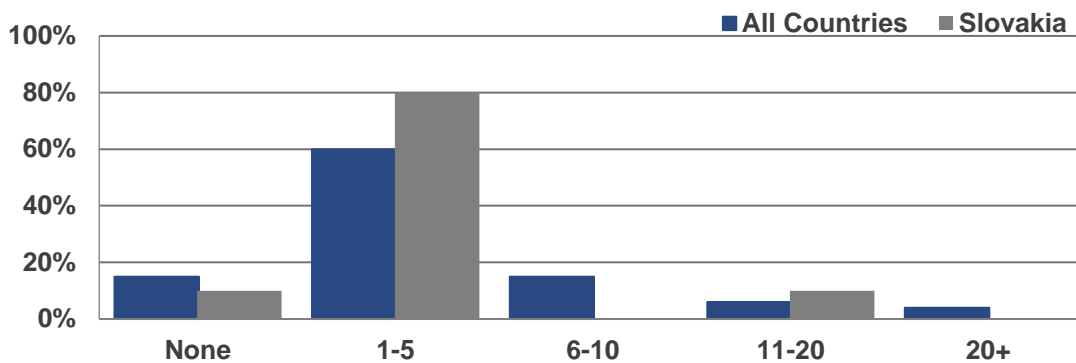
The EPC market in Slovakia may be, despite its start in late 90's, described as an emerging market. While at the beginning of the EPC projects in Slovakia the focus was almost entirely on public buildings, the structure of EPC projects has become more diverse in recent years (since the restart of the market in 2012).

Official numbers on the volume of the EPC market in Slovakia are not available. Following on information on implemented projects in public sector and information from ESCOs on projects

in private sector, the actual EPC market volume in Slovakia can be estimated on level of approximately 5 million EUR/year.

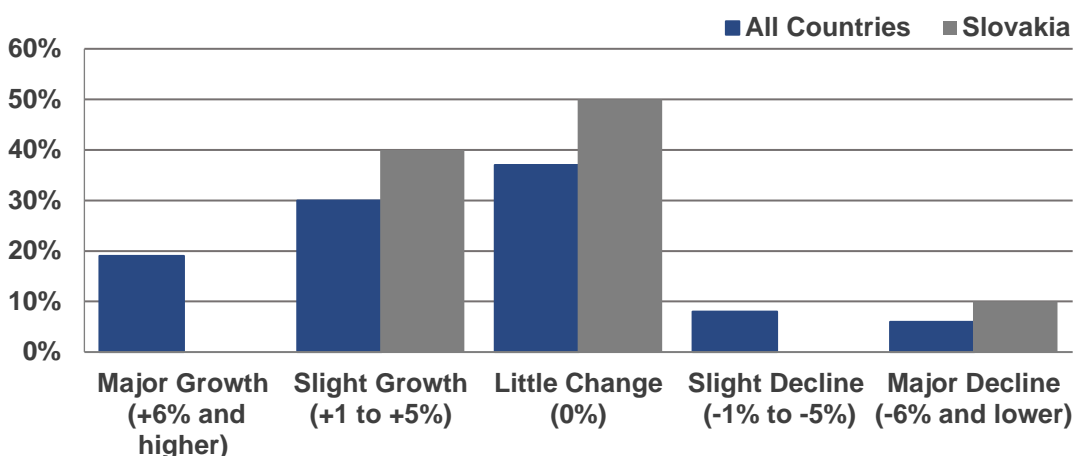
There were around 40-50 projects running during the period 2014-2016, which is a growth compared to the past. But as can be seen in Figure 1 majority of EPC actors in Slovakia has been involved in only limited number of projects per year. The majority (80%) of Slovak survey respondents - EPC providers and facilitators - became involved in between one to five EPC projects in the last 12 months, which is consistent with the results across All Countries in the survey (60%). On the other hand, almost 10% of Slovak respondents participated on 11 – 20 projects – that is slightly above 6% reported over the All Countries dataset. And 10% of Slovak respondents did not become involved with any new projects in the last 12 months.

Figure 1 How many EPC projects (that have reached Contract Signature) has your organisation initiated / become involved with in the last 12 months? (Percentage share of responses by providers and facilitators Sept 2017)



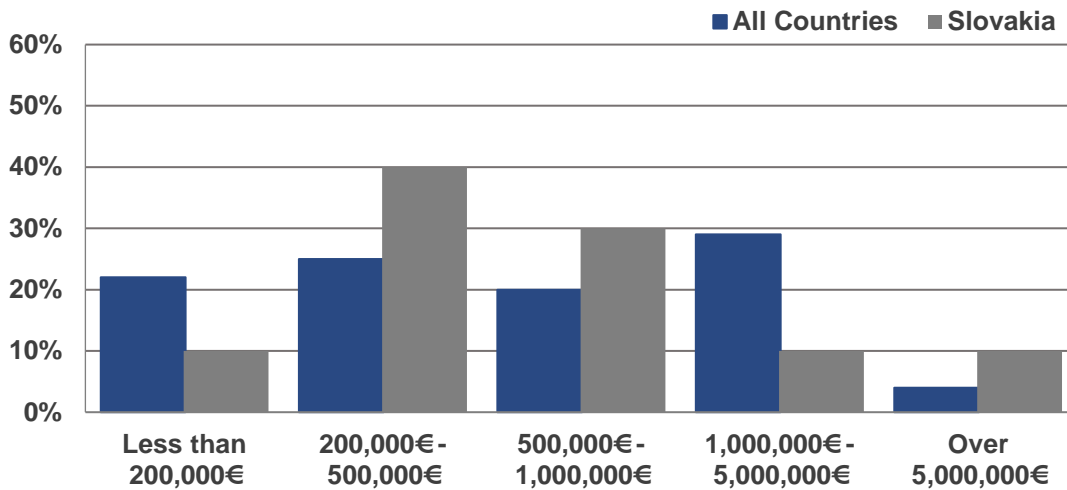
Year-on-year number of EPC orders is almost constant or only slightly growing. Together 50% of respondents – EPC providers and facilitators - in Slovakia experienced little or no change of EPC orders in the last 12 months. In 40% of cases, the number of orders slightly increased. While Transparens surveys (2013, 2015) reflected no decline in EPC orders in Slovakia, in QualitEE survey some of Slovak respondents (10%) witnessed major decline in number of orders (which is higher than 6% reported over All Countries dataset).

Figure 2 In the last 12 months your EPC orders have seen (Percentage share of responses by providers and facilitators Sept 2017)



Majority of EPC projects in Slovakia has overall value between 200,000€ and 1,000,000€ while 40% of investments is within 200,000€ – 500,000 €. A little bit less frequent (in 30% cases) are middle-sized projects with value of investments between 500,000 – 1,000,000 €. Split of projects based on investment value is in comparison more balanced in the EU countries, so it seems to be easier to implement projects with lower investments.

Figure 3 What is the most common overall value (investment outlay) of the EPC projects you are involved in? (Percentage share of responses by providers and facilitators Sept 2017)



Majority of Slovak respondents – EPC providers and facilitators (70%) – believe that EPC market in 2016 was worth less than 10,000,000€. Twenty% of respondents think that market generated revenue between 10,000,000 – 50,000,000€. To compare with All Countries responses - slightly over half of European respondents also consider their respective EPC markets not to be bigger than 50,000,000 €. Large proportion of respondents (10% Slovakia; 25% All Countries) were not willing to speculate.

Figure 4 How much revenue do you think the EPC market in your country generated in 2016? (Percentage share of responses by providers and facilitators Sept 2017)

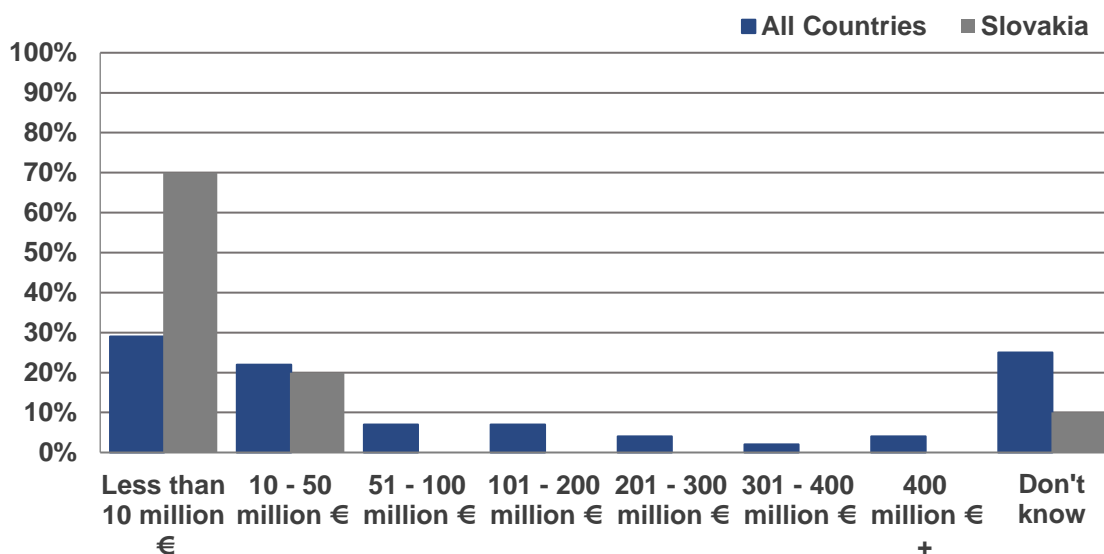
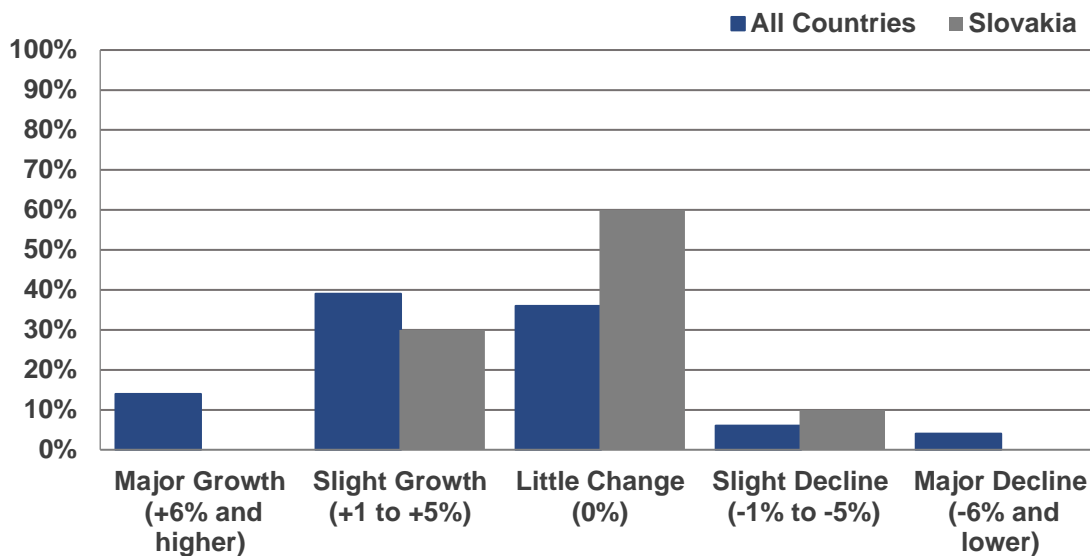


Figure 5 is describing development of EPC market. Based on opinion of EPC providers and facilitators, the market of EPC services is stagnating or experiencing slight growth in All Countries as well as in Slovakia. But Slovak respondents reported higher share (60%) for only a little change of market. Number of respondents who think the EPC market is declining is fairly small (6% All Countries; 10% Slovakia). On the other hand, 14% of respondents across All Countries believe their national market is growing rapidly.

Figure 5 Over the last 12 months, the EPC market in your country has seen: (Percentage share of responses by providers and facilitators Sept 2017)



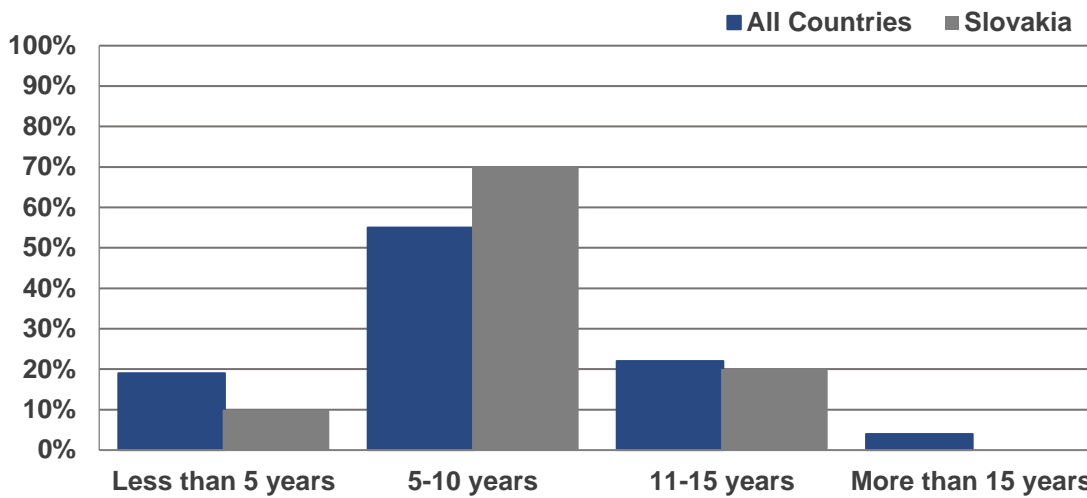
Comparison with survey from 2015 (Transparens) shows a recent shift towards stagnation of EPC market. While in 2015 over 80% of respondents experienced major or slight growth, in 2017 majority of EPC providers and facilitators noticed only little change.

The future market development will depend on removing the existing barriers - especially the accounting rules, based on EUROSTAT note (expected to be overcome in 2018) and the competition of extensive grant financing from ESIF in public sector). In a case of elimination of the barriers, it is possible to expect continuous growth of the market towards reaching its potential, which is estimated at level of 25 million EUR/year in energy savings.

4.3 EPC business models

In the last years (2013-2017) the most common duration of the Energy Performance Contracts is shifting towards shorter projects. While in 2013 (Transparens Project) the half of EPC projects were contracted for 11-15 years and there were no projects with less than 5 years duration, in year 2017 there is only 20% projects lasting for 11-15 years and 10% of projects with duration less than 5 years. This change is probably caused by major share of EPC projects in private sector in 2016 (see [chapter 4.1.2](#)) where short-term measures (as implementation of energy management, technology improvements, etc.) are preferred. All Countries dataset has very similar split of projects duration.

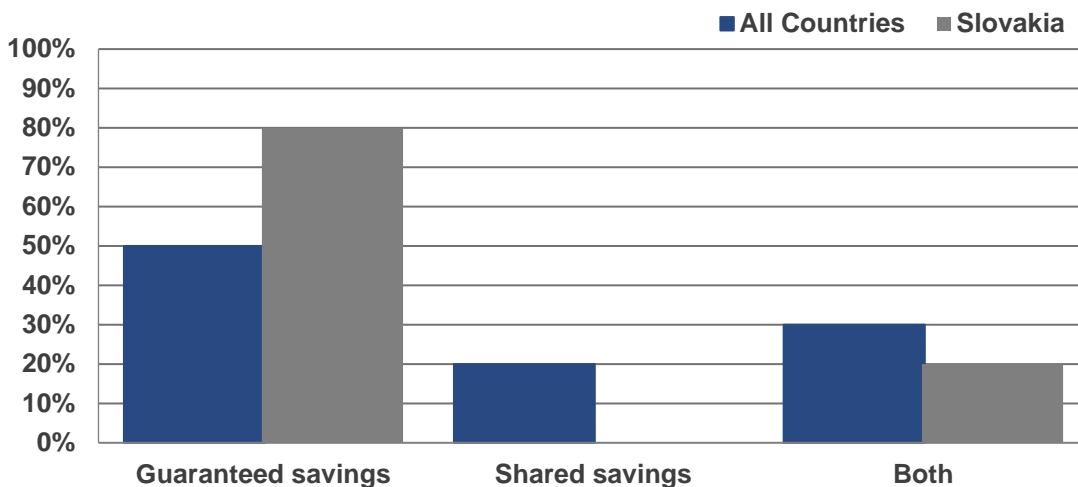
Figure 6 What is the most common duration of the Energy Performance Contracts you are involved in? (Percentage share of responses by providers and facilitators Sept 2017)



The EPC business model mainly used in Slovakia at present is based on the concept of guaranteed savings (in terms of technical measurements) in combination with the shared savings approach for the part of savings exceeding the amount of guaranteed savings. The guarantee of savings is usually provided in form of financial penalties to ESCOs for not achieving the savings guaranteed.

Answers from respondents clearly indicate that guaranteed savings are by far the most frequently offered energy savings model in Slovak EPC projects with 80% of EPC providers and facilitators stating guaranteed savings as primary model. Shared savings are not used in the Slovak EPC market at all while they represent 20% of projects across All Countries in the survey. Combination of both models - guaranteed savings and shared savings states for 20% of all projects what is a little bit less than in EU countries.

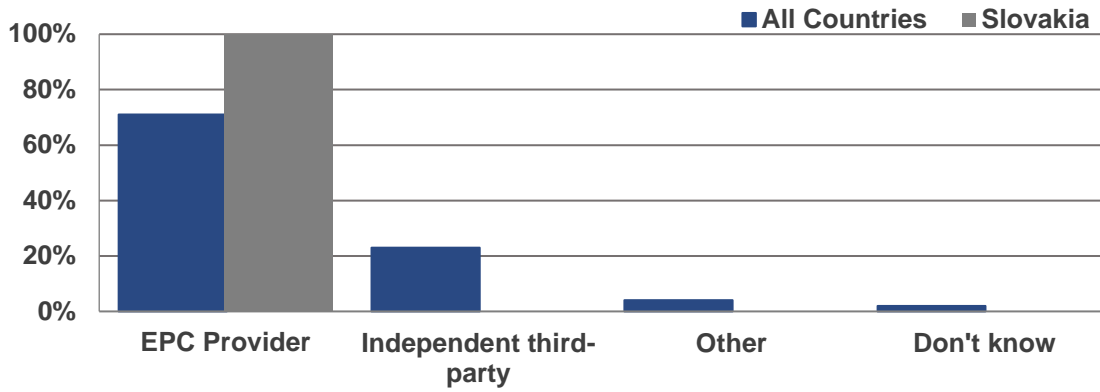
Figure 7 What type of energy savings model is offered in the EPC projects you are involved in? (Percentage share of responses by providers and facilitators Sept 2017)



Note: in a shared savings model, the client pays the ESCO a pre-determined percentage of its achieved cost savings from the project

Energy savings performance analysis is in 100% of cases delivered by EPC provider in Slovakia but according All Countries EPC providers and facilitators there are other means of delivering energy saving analysis. Higher support for independent EPC facilitators in Slovakia is needed.

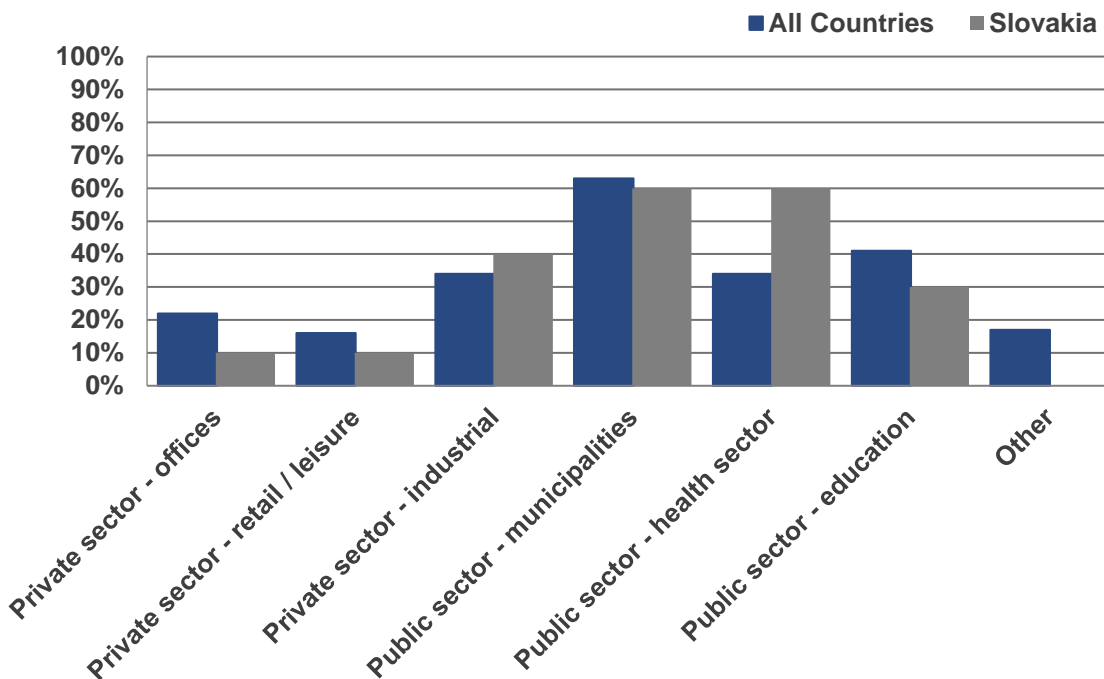
Figure 8 Who typically delivers the energy savings performance analysis in the EPC projects you are involved with? (Percentage share of responses by providers and facilitators Sept 2017)



4.4 EPC market sectors

Although the share of EPC projects in private sectors has increased rapidly in year 2016, historically there is a lot of ongoing projects in public sector. General overview about EPC market sectors was provided in chapter [4.1.2 EPC clients](#).

Figure 9 Which sectors do your EPC clients generally come from? (Percentage share of responses by providers and facilitators Sept 2017)

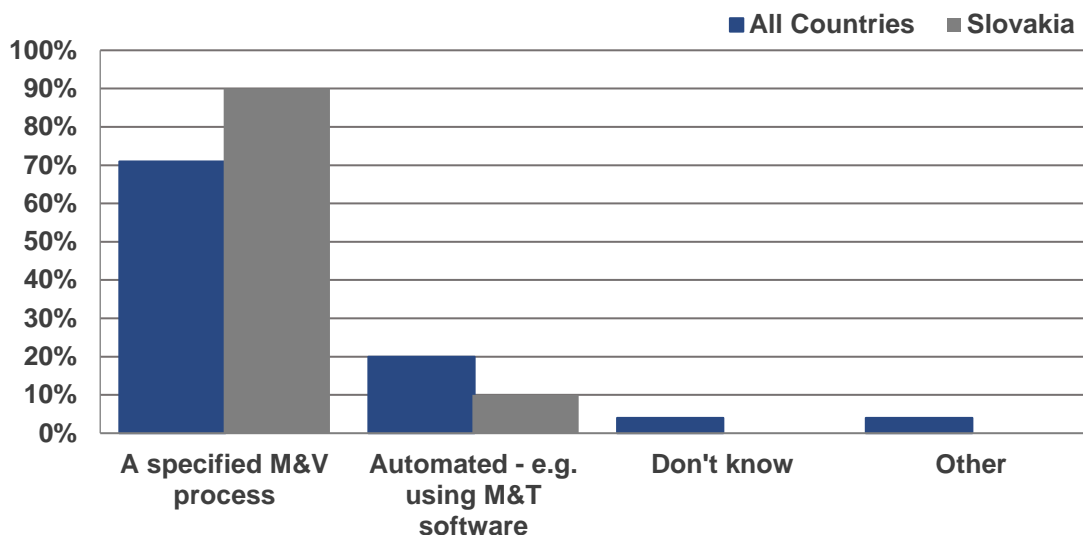


According to EPC providers and facilitators, majority of EPC clients in Slovakia come from municipalities and health-related public sector. But the share of private industrial companies 40 % cannot be neglected. In comparison with All Countries dataset, a share of EPC clients is similar, except for a health sector with 60% clients in Slovakia while in All Countries it is only 34%.

4.5 EPC measurement & verification





In each contract year of the EPC, the ESCO has to provide a proof of energy savings. In terms of measurement of EPC project related energy savings, specified M&V process is the main tool in Slovakia where 90% of EPC providers and facilitators stated this tool being the one they use. In comparison with All Countries dataset, a use of automated metering was implemented only in small number of Slovak EPC projects (20% for All Countries compared to 10% in Slovakia).

Figure 10 How is the energy saving performance of the EPC projects you are involved with typically measured and quantified? (Percentage share of responses by providers and facilitators Sept 2017)



4.6 EPC market barriers

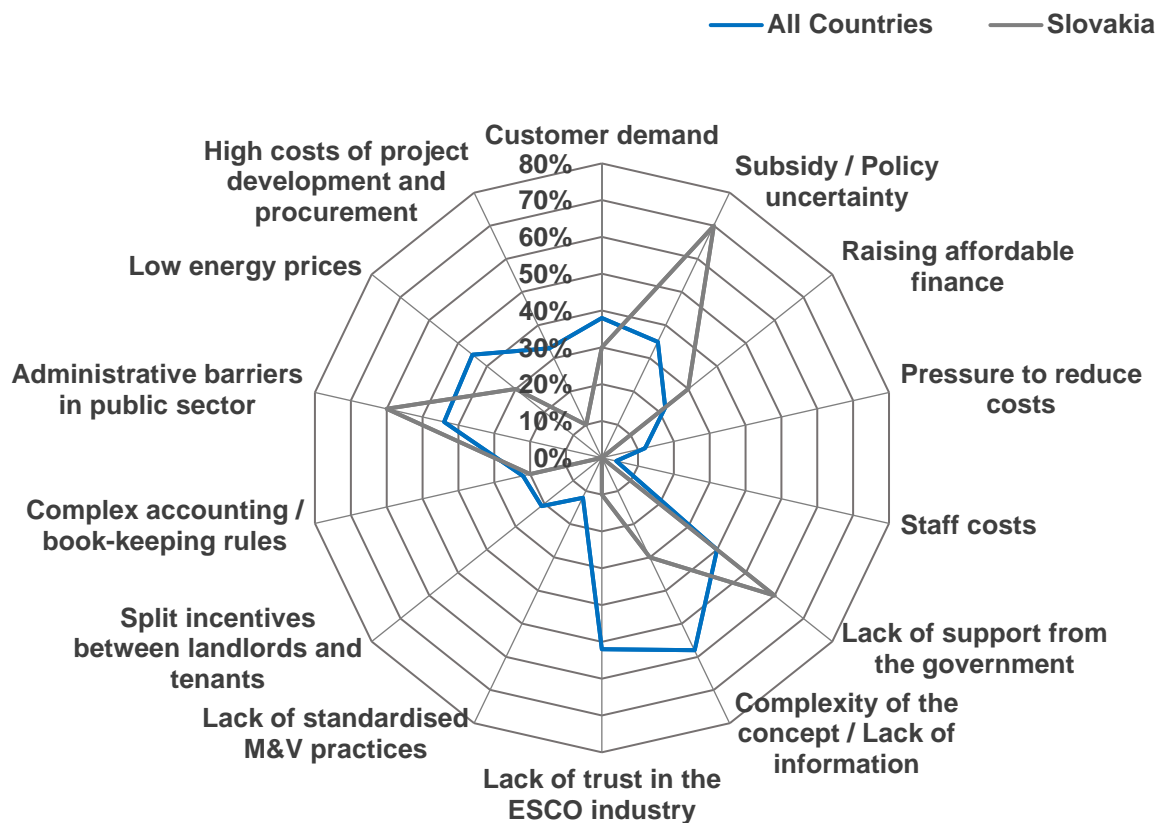
Number of barriers limits the full exploitation of the EPC market potential in Slovakia. In previous market surveys (Transparens 2013,2015) as the main EPC market barriers in Slovakia were equally identified:

-  Subsidy / Policy uncertainty
-  Regulation / Lack of support from the government
-  Complexity of the concept / Lack of information
-  Lack of trust in the ESCO industry

Comparison with QualitEE survey (2017) shows that complexity of EPC concept and lack of trust in ESCOs is not considered as the remarkable obstacle for market anymore. While Subsidies / Policy uncertainty is still considered as the main problem for EPC market development by EPC providers and facilitators. The availability of grants for implementation of energy efficient measures demotivates potential clients mainly from public sector from using commercial ways of financing, despite the low chance for obtaining the grant. This fact combined with quite generous funding for all types of measures crowds out the private investments into public infrastructure.

Administrative barriers in public sector and lack of support from the government were identified as the next major barriers with share of 60%. In other EÚ countries and in previous surveys in Slovakia, complexity of the concept / Lack of information and a lack of trust in the ESCO industry were identified as big barriers. This differs from last results were these topics are not seen as a significant problem anymore.

Figure 11 What are the main barriers to EPC business based on the activities of the last 12 months? (Percentage share of responses by providers and facilitators Sept 2017)



4.6.1 Regulatory and administrative barriers

A major bottleneck for EPC on the regulatory level was its reporting into the public debt. This made almost impossible to increase the energy efficiency for significant part of public clients. In September 2017, Eurostat released new guidance that has removed this barrier. It is expected that after implementation of Eurostat regulation into Slovak legislation, EPC in public sector will speed-up.

Some minor problem consists in the budgetary rules, that do not allow using financial resources allocated to operational costs (energy) for financing of capital expenditures (investments) what is the basic principle of EPC. This problem applies mostly to the schools founded by municipalities and regions.

4.6.2 Structural barriers

There is general awareness among relevant decision-makers and law-makers at central level (central state institutions) and within biggest ESCO companies (mainly those with international capital). Less information about EPC concept and benefits have relevant decision-makers at local or regional level, small ESCOs and financial institutions (banks). Level of real understanding in particular at local level is low.

The split incentives dilemma may be the challenge to the economisation of energy efficiency projects. The problem, that benefits of energy saving investments (usually done by the building owner) are not enjoyed by the owner but the user, results in a severe modernisation backlog. This problem is usual (but not only restricted to) rented residential or commercial premises.

4.6.3 Financial barriers

Financing of EPC projects is usually not a significant problem for ESCOs active in Slovakia. The financing institutions are able and willing to finance this kind of projects especially in public sector. It is possible to expect, that with rising number of implemented projects, also the procedures for approval of financing and arrangement of selling of claims will be standardized.

4.7 EPC financing

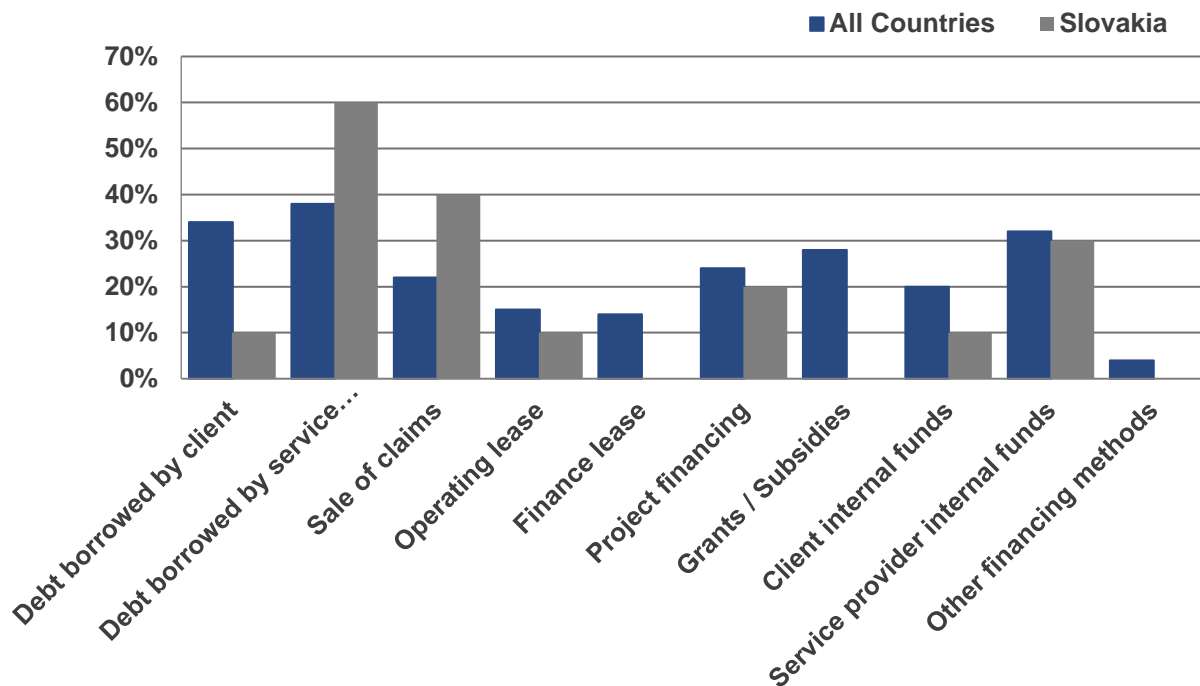
Public organisations in Slovakia often suffers from insufficient financial resources. Especially organizations under administration of ministries or municipalities (such as hospitals, schools, etc.) have limited budgets for refurbishment and usually no possibility to get commercial loan, therefore EPC is very often their only option.

Although obtaining viable finance for an EPC project was considered as difficult (in 70 %), it was not identified as a one of main barriers for EPC projects.

The most often type of EPC financing in Slovakia was identified a debt borrowed by service provider (in 60%). The reason is mainly because of above mentioned problem of public

institutions to ask for commercial loan. This type of financing is also attractive for private clients with lack of experiences with EPC.

Figure 12 How are the EPC projects you are involved with financed? (Percentage share of responses by providers and facilitators Sept 2017)



The second most used possibility of financing EPC projects is Sale of claims. Some ESCOs exploit by their EPC projects possibility to sell consequently the claims to a bank. A client repays contractually set instalments directly to a bank and ESCO guarantees agreed volume of energy savings achievement and thereby reduction in operational costs. There are no additional risks for customer and ESCO is increasing the ability to finance additional project.

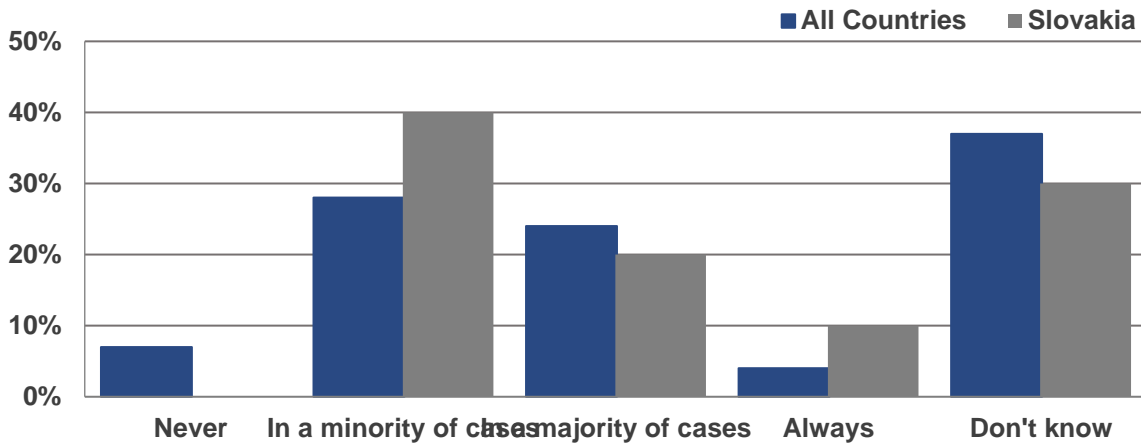
The most active and experienced ESCOs in Slovakia are usually branches of foreign companies with enough capital to finance EPC projects itself. This fact is represented in 30% of EPC projects financed by ES provider internal funds.

Less used types of financing EPC projects are project financing, debt borrowed by client, operating lease and client internal funds.

Grants and subsidies were not marked as possibility for EPC financing while according responses by All Countries they represent almost 30% of EPC projects. In Slovakia, grants and subsidies are seen as a barrier for EPC projects.

Roughly like in All Countries, Slovak EPC providers and facilitators indicated rather minor share of sale of claims in their contracts (40%) while for 20% of EPC providers and facilitators is sale of claims used in majority of projects. 30% of respondents also didn't know, which indicates that they do not use such solution as collateral. For 10% of respondents, sale of claims was always accepted as the main collateral.

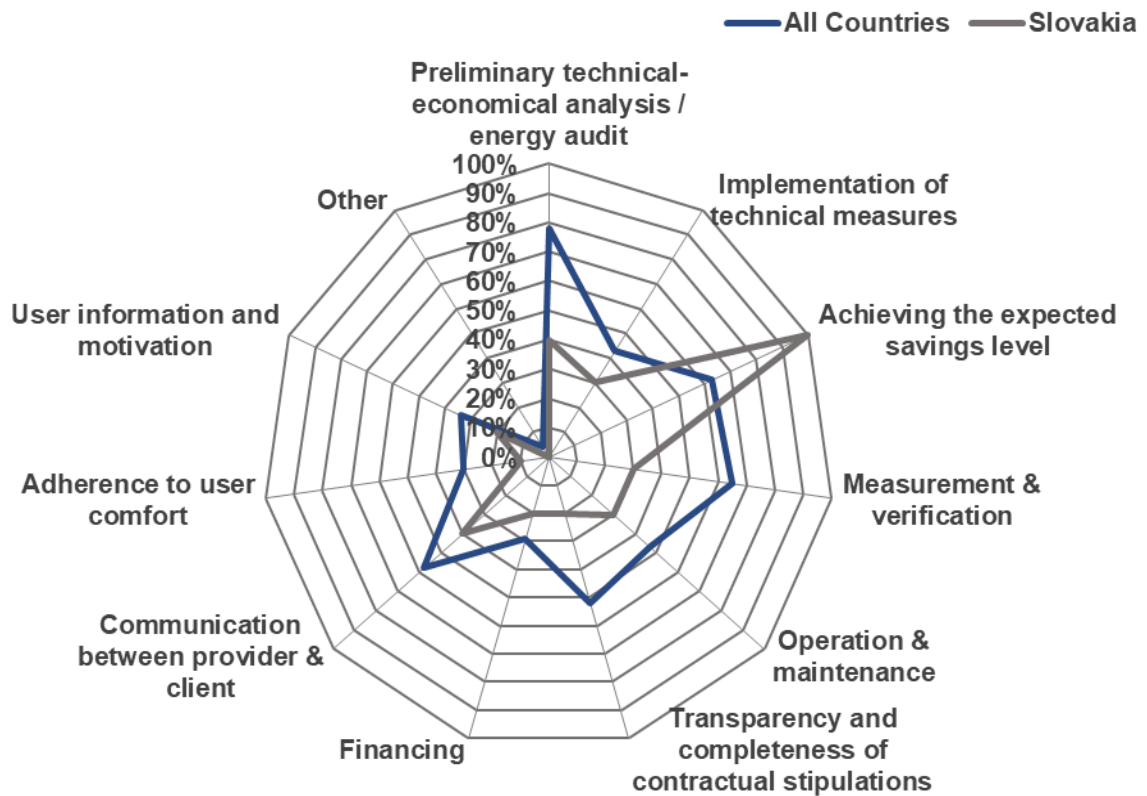
Figure 13 From your experiences, is the sale of claims (sale of receivables) accepted as the main collateral for EPC projects? (Percentage share of responses by providers and facilitators Sept 2017)



4.8 EPC quality determinants

The major determinants of EPC projects quality selected by QualitEE project can be found in Figure below.

Figure 14 What are the most important determinants of quality in EPC projects? (Percentage share of responses by providers and facilitators Sept 2017)

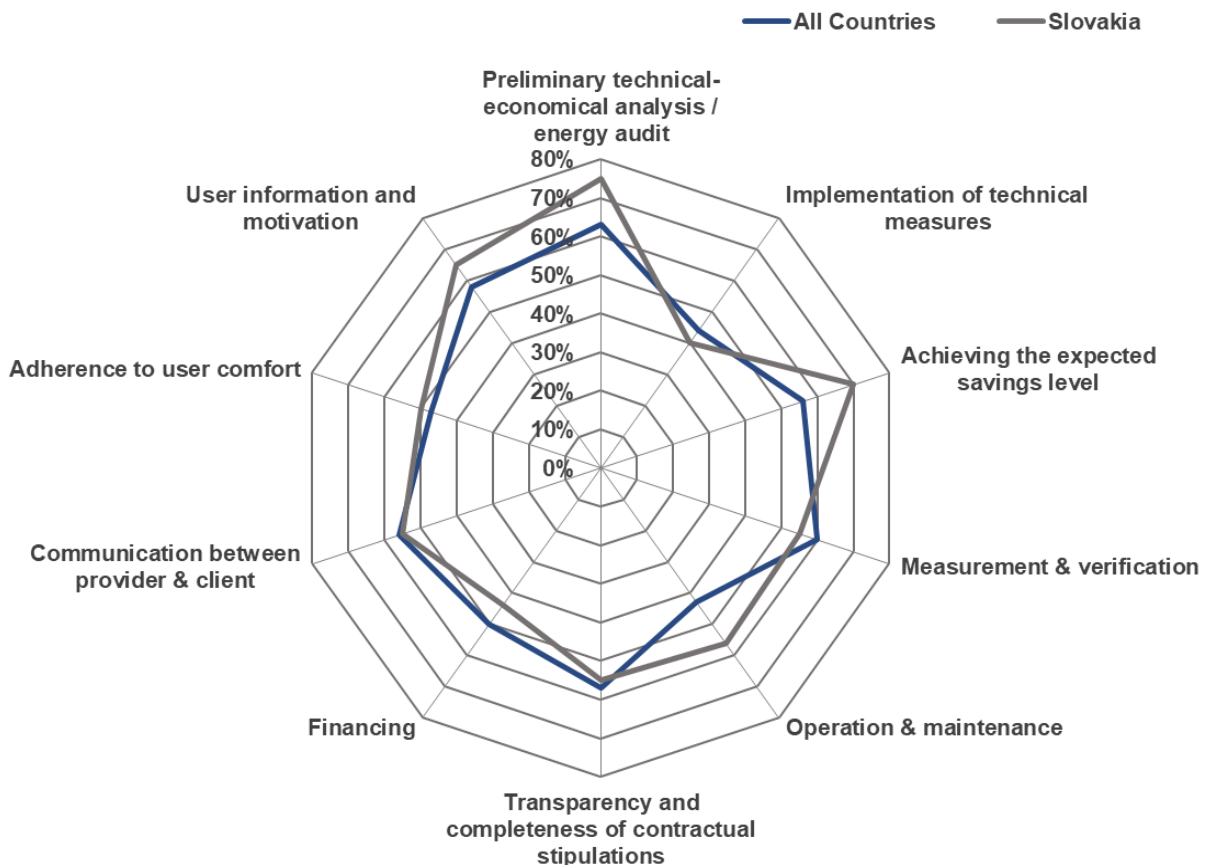


While All Countries main EPC quality determinant scored by 80% is a quality of preliminary technical and economical analysis / energy audits, in Slovakia 100% of respondents consider achieving the expected saving level crucial in terms of EPC project quality. All other factors were estimated by 40% or less. As this gap is significant and all other quality determinants are in Slovakia under All Countries dataset, it shows strong focus on energy savings and savings of costs combined.

Slovak EPC providers and facilitators see overall fewer needs for improvement of EPC projects in implementation phase, measurement and verification and in financing than their counterparts in All Countries. The highest demand for improvement is in preliminary technical and economical analysis and energy audits what is on the first place in All Countries responses as well.

Increase in quality of achieving the expected saving level and in operation and maintenance is in Slovakia more needed than referred in All Countries.

Figure 15 In which areas are quality improvement most needed in EPC project preparation and implementation? (Percentage share of responses by providers and facilitators Sept 2017)



5 ENERGY SUPPLY CONTRACTING MARKET

5.1 ESC market actors

ESCs have a more developed tradition in the Slovak market than EPC. Typical Slovak ESC provider is heat producer or technology supplier that can provide energy efficient services as an additional product. Number of ESC providers is not monitored or listed by any institution.

Part of ESCOs is offering both ESC and EPC, many set up their regional subsidiaries for delivery of heat. Therefore the real number of ESC providers is difficult to assess, but estimation can be approximately 50 companies in Slovak market.

There is no specialised association for providers of ESC. Although the Association of Energy Services Providers (APES-SK) is active in market since 2014 and name of association could indicate that it covers ESC as well, in practice focus of APES is on EPC and no member is offering exclusively energy supply contracting although many of APES members offers both EPC and ESC.

Clients of ESC are well-balanced between private and public sector. In comparison with EPS share of private client is more representative. Traditionally, ESC in Slovakia is connected to district heating systems and heat supply what resulted in big share of ESC project in residential sector. Many ESC projects connected with utilisation of renewable energy sources can be found in tertiary sector (hotels, aqua parks, ...). In public sector the most typical clients are municipalities, schools and kindergartens.

5.2 ESC market developments

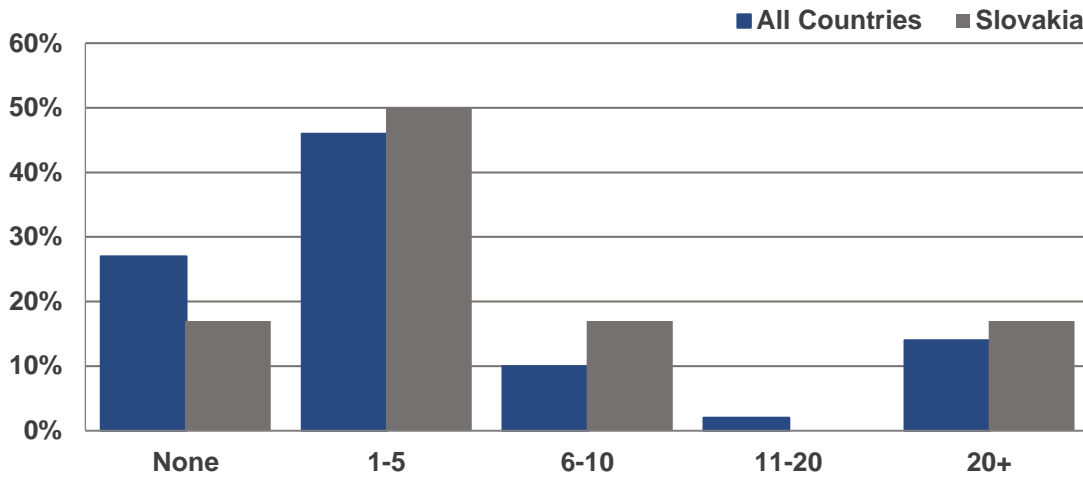
Although there were no rapid jumps in ESC development in history, ESC market in Slovakia is slowly but constantly on a good track. Typical ESC-based projects target heat management and supply and provide energy services at a lower cost than the cost of the heat before the project.

At the end of 20th and beginning of 21st century, ESC projects were mainly focused on energy efficient improvements in technically outdated district heating systems, typically with utilization of biomass. Within last years, ESC projects are more diverse, installation of heat pumps and CHPs is getting more common.

Validation of market volume is not available, number of ESC project is not monitored. Estimation based on QualitEE survey is about 50-60 projects per year.

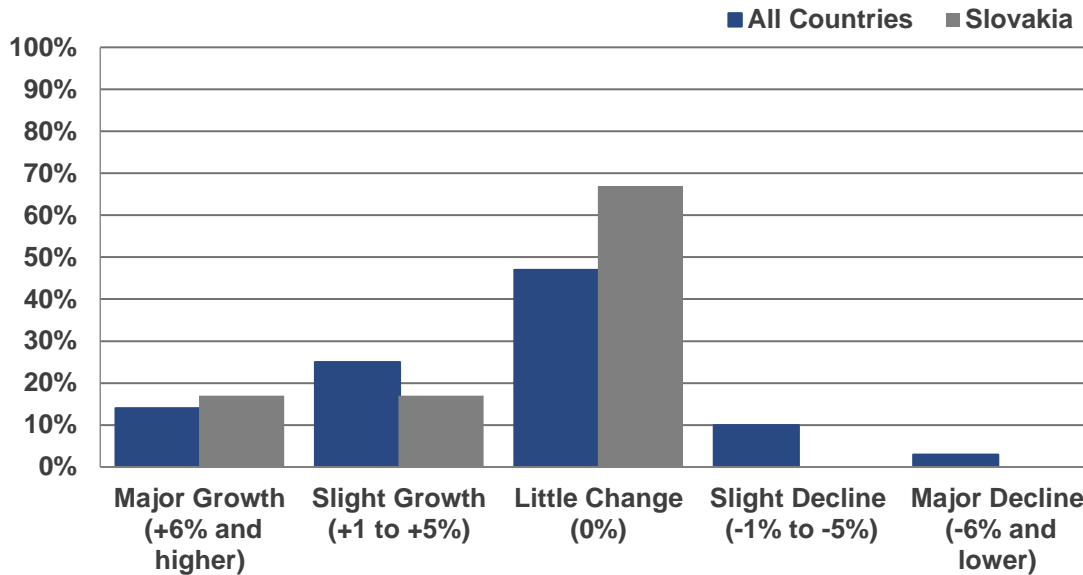
Majority of energy services facilitators and providers (84%) in Slovakia was involved in at least one ESC project within last year. Only 17% of respondents were not involved in any ESC project, which is less than across All Countries dataset (27%). As in the case of All Countries dataset (14%), some Slovak respondents (17%) became involved in 20 or more ESC projects in the last 12 months.

Figure 16 How many ESC projects (that have reached contract signature) has your organisation initiated / become involved with in the last 12 months? (Percentage share of responses by providers and facilitators Sept 2017)



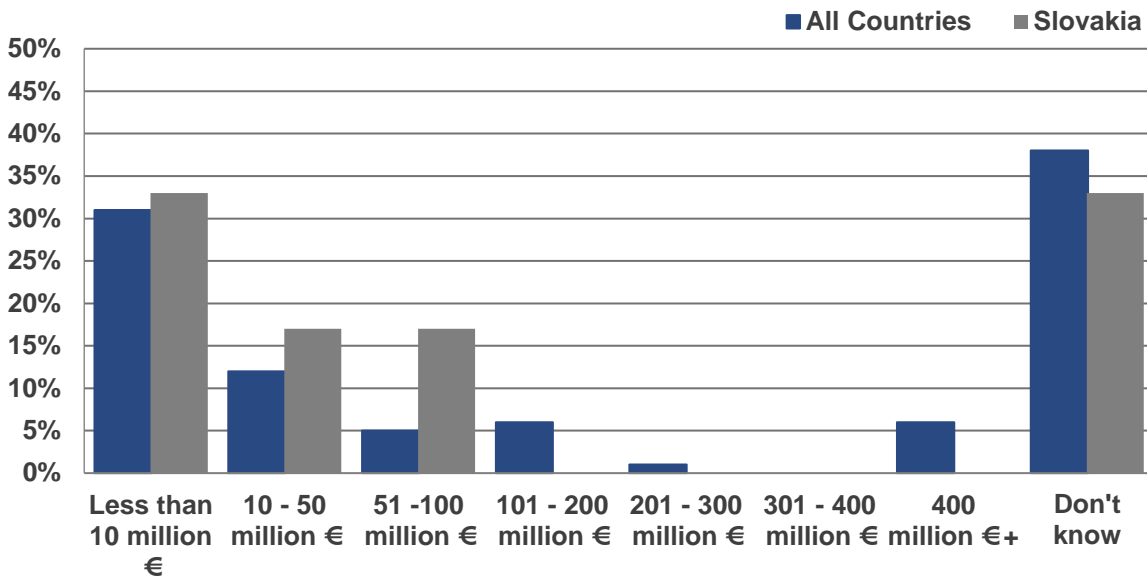
Number of orders within one year before the survey was approximately constant for majority of ESC facilitators and providers, similarly to the situation across All Countries. Rest of Slovak respondents encountered slight or major grow in their ESC orders influx.

Figure 17 In the last 12 months your ESC orders have seen: (Percentage share of responses by providers and facilitators Sept 2017)



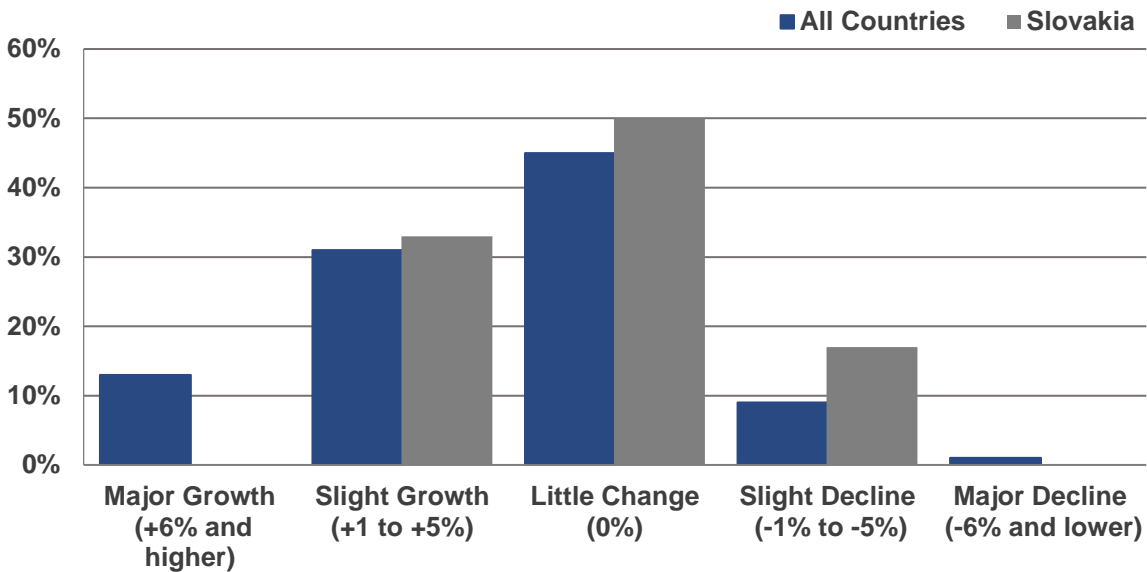
As the Slovak market is rather small it is not expected to bring such revenues as bigger and well-developed markets. The survey also reflected this situation. According the opinion of 33% of Slovak ESC providers and facilitators the Slovak ESC market was the most probably worth up to 10,000,000€. More than 30% of respondents were not able to say how much revenue (according to their opinion) was generated in ESC market in the Slovakia. Remaining share of respondents claimed that ESC market was worth between 10 – 50 million € (17%) or between 50 – 100 million € (17%) in 2016.

Figure 18 How much revenue do you think the ESC market in your country generated in 2016? (Percentage share of responses by providers and facilitators Sept 2017)



Slovak respondents expressed the opinion (Figure 19), that ESC market experienced slight growth (a little bit more than 30%) in last 12 months. Remaining half of ESC providers and facilitators considered the Slovak market to be rather stagnating. Share of 17% encountered slight decline of ESC market in examined period. European respondents across All Countries in the survey expressed greater trust in their markets when 13% of them considered their respective market to be growing by more than 6%.

Figure 19 Over the last 12 months, the market for ESC in your country has seen: (Percentage share of responses by providers and facilitators Sept 2017)



5.3 ESC business models

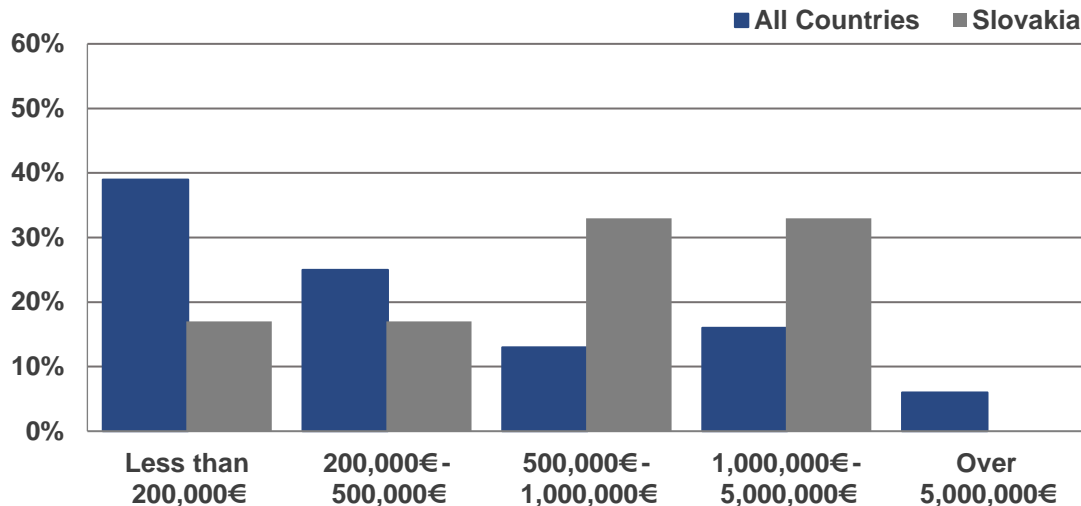
Typical for Slovak conditions is that ESCO takes over heating system and after implementation of energy efficient measures, it sells heat at a lower cost than the cost of the heat before the project.

Majority of ESC projects in Slovakia has investment outlay between 0.5 – 5 million €. Less than 40% of respondents stated that the value of their ESC projects does not exceed 200,000 € or is between 200,000 and 500,000 €. There are no projects exceeding the value of 5 million €.

The view across All Countries in the survey is that ESC projects tend to have a lower value than EPC projects, majority of respondents selecting categories under 500,000 € for ESC, where majority of responses for the same question asked in relation to EPC were in over 500,000 € categories. ESC providers and facilitators across All Countries in the survey reported the most of ESC projects are of smaller scale under 200,000 € but and 6% of ESC projects were over 5 million €. Comparing Slovak and All Countries data indicates projects with higher investment outlay in Slovakia than is usual in All Countries outcomes.

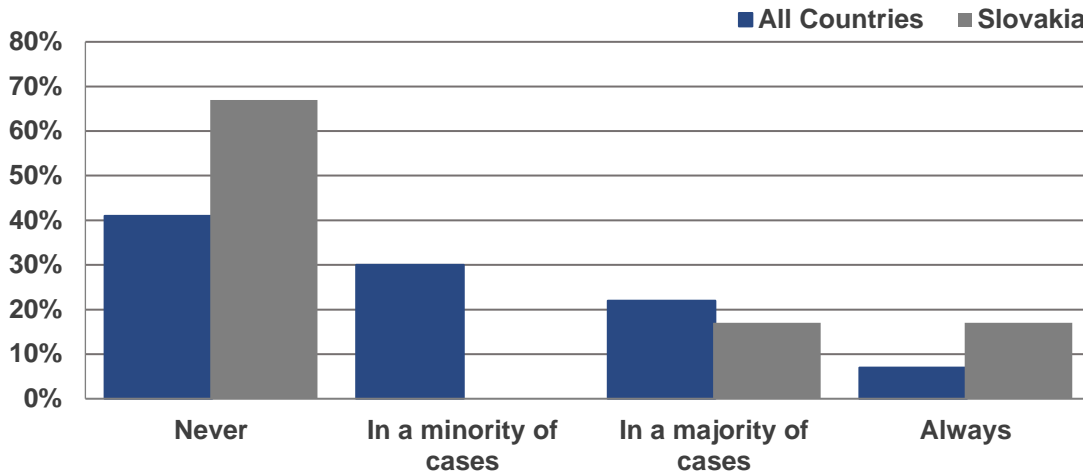
Binding achievement of energy savings with payments per energy may be a positive driver for ESC projects.

Figure 20 What is the most common overall value (investment outlay) of the ESC projects you are involved in? (Percentage share of responses by providers and facilitators Sept 2017)



According majority of Slovak respondents (67%), payments per unit of energy were almost never delivered in combination with payments per unit of energy saved. This differs to the picture across All Countries in the survey, where more than 20% of respondents reported to be involved in projects with such arrangement in majority of cases while for small share of them (7%) this is ever-present settlement. Still, for the biggest share of respondents across All Countries in the survey (of slightly above 40%) is delivery of payments per unit of energy in combination with payments per units of energy saved something they never involved in their ESC projects.

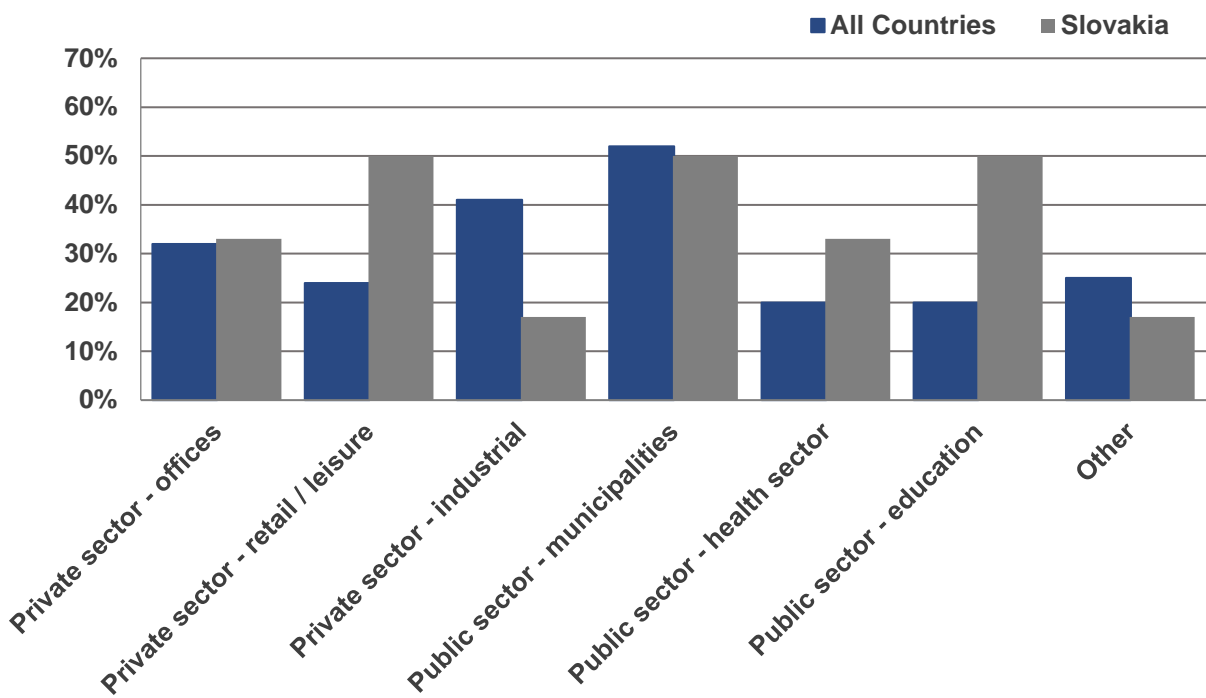
Figure 21 In the ESC projects you are involved in, were payments per unit of energy delivered in combination with payments per unit of energy saved (from installed energy efficiency measures)? (Percentage share of responses by providers and facilitators Sept 2017)



5.4 ESC market sectors

Main sectors where ESC projects were implemented in Slovakia are retail and leisure private companies and in public sectors municipalities and education. According the survey respondents, all these three sectors are represented equally in ESC market. Surprisingly, ESC projects in industry have only minor share on market in Slovakia while in Europe it is the second main market sector just after municipalities.

Figure 22 Which sectors do your ESC clients generally come from?



Comparing above mentioned ESC sectors with EPC sectors in chapter [4.4 EPC market sectors](#), shows that Industries and health sector are more focused of EPC projects, while sectors like retail, leisure and education have significant share on ESC projects.

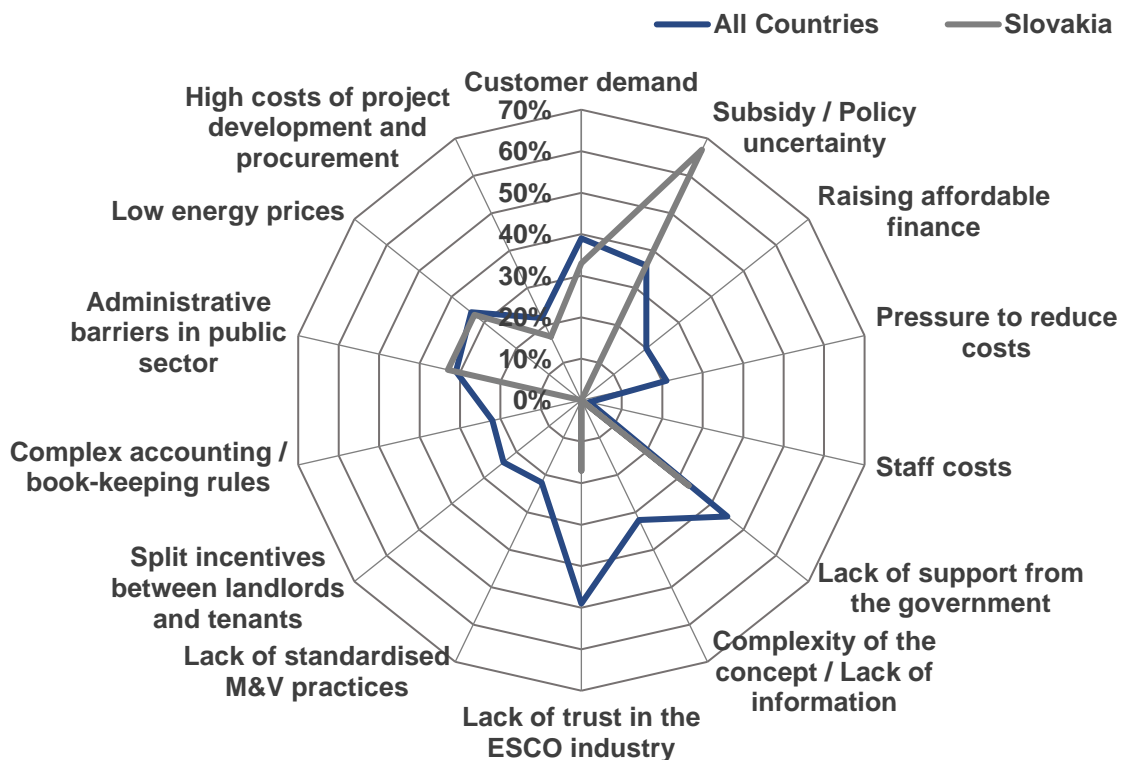
5.5 ESC market barriers

Although there is no direct regulation or legislation connected with ESC market in Slovakia, companies active in this field are not signaling any critical obstacles for ESC business. For the end user, a concept of ESC is not difficult to understand as they usually “listen to” a lower price of energy in their bills.

As the main barriers for ESC market on the European level were identified:

- ✔ Lack of trust in the ESCO industry 49%
- ✔ Lack of support from the government 45%
- ✔ Customer demand 39%
- ✔ Subsidy / Policy uncertainty 36%
- ✔ Low energy prices 34%
- ✔ Complexity of the concept / Lack of information 32%
- ✔ Administrative barriers in public sector 31%

Figure 23 What are the main barriers to the ESC business based on the activities of the last 12 months? (Percentage share of responses by providers and facilitators Sept 2017)



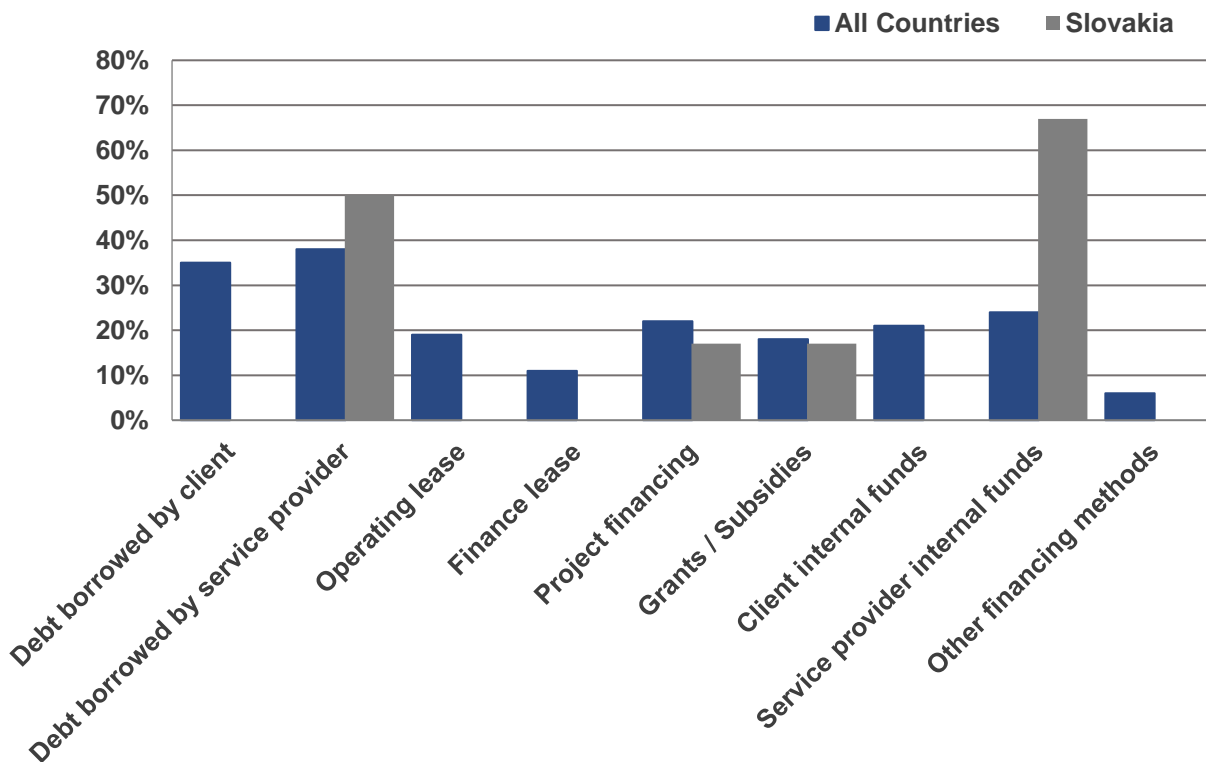
Situation in Slovakia is rather different. Slovak ESC providers and facilitators clearly identified as a major barrier to ESC business uncertainty about policies and subsidies (in 67%). This barrier is relevant mainly to subsidies based on ESIF in public buildings. Support within these schemes is provided in form of non-recurring grant financing for public sector and for ESC providers is impossible to compete with such scheme.

Minor barriers for wider enforcement of ESC model in Slovakia are administrative barriers in public sector, lack of support from the government, customer demand and low energy prices (all even share of 33%).

5.6 ESC financing

Financing of ESC projects is usually not identified as a problem in Slovakia, mainly because almost all projects are financed by ESC provider. Typically (in 67%) energy service provider internal funds were used and in about half of cases ESCO took a credit to cover ESC implementation costs. Only a few projects were financed by project financing and subsidies.

Figure 24 How are the ESC projects you are involved with financed? (Percentage share of responses by providers and facilitators Sept 2017)



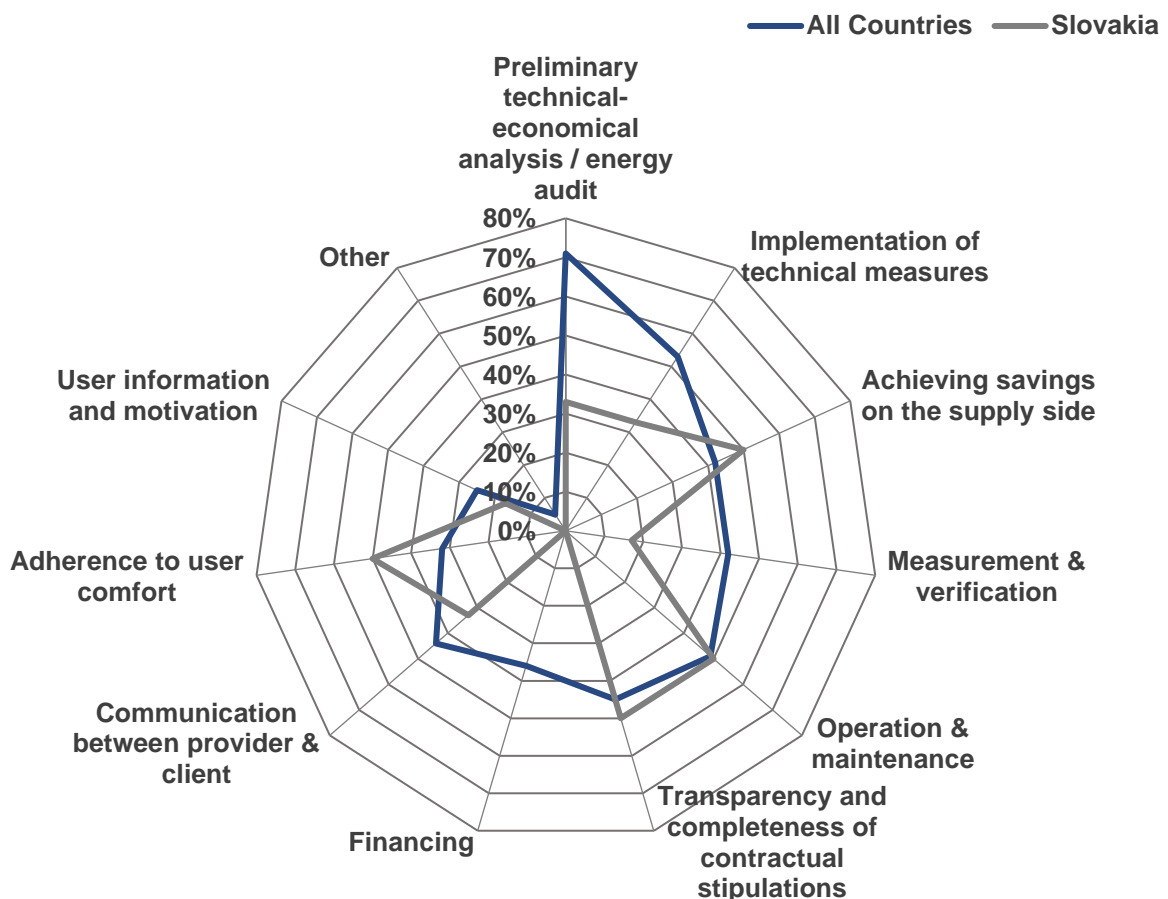
Half of providers and facilitators consider obtaining viable finance for an ESC project as difficult what could be one of the reasons for financing ESC project with their own funds.

5.7 ESC quality determinants

While by Slovak EPC projects achieving savings was identified as the critical determinant of quality, by ESC is the situation different and quality determinants are more scattered.

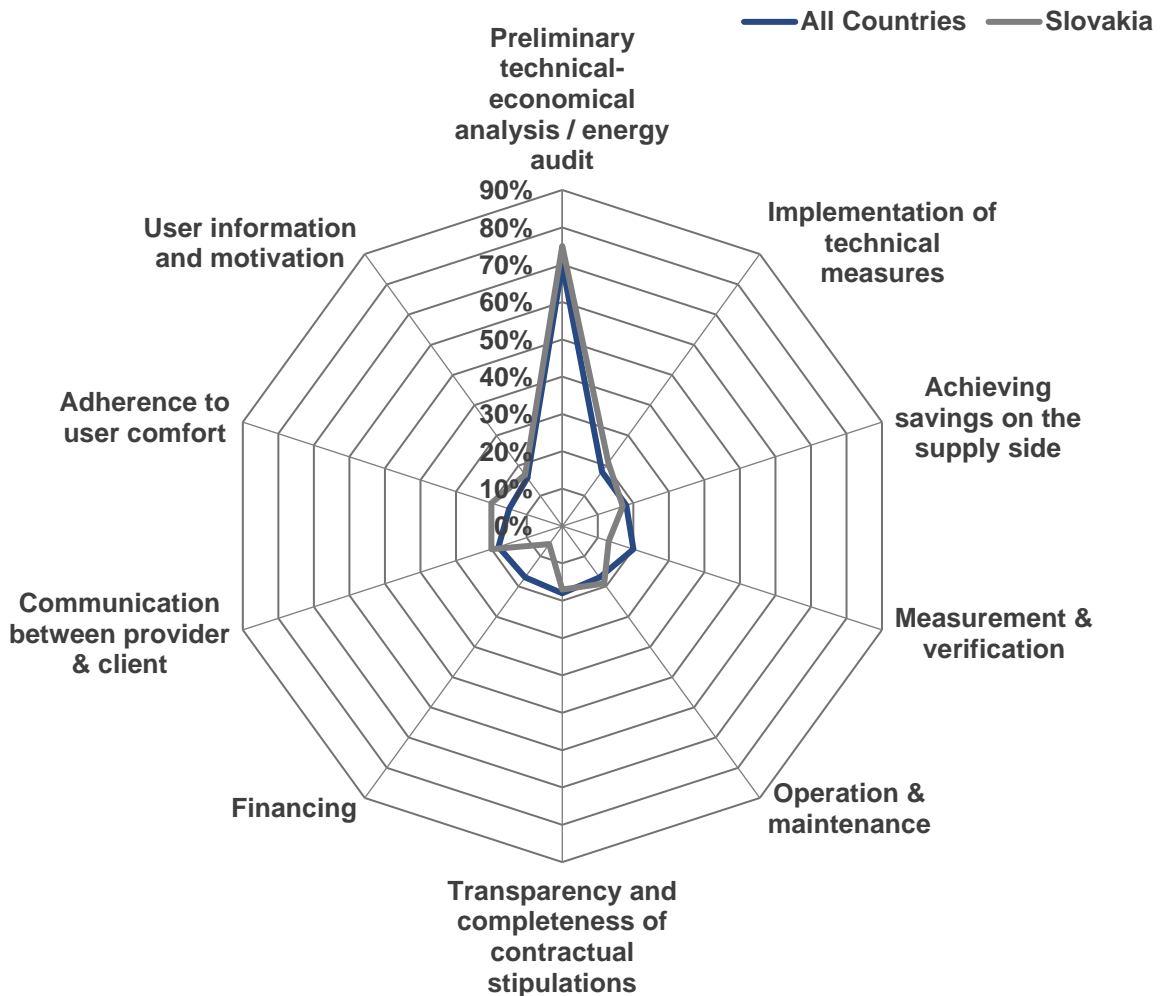
Slovak ESC providers and facilitators identified 4 fields in equal shares as the most important determinants of ESC projects' quality – achieving savings on the supply side, operation and maintenance, transparency and completeness of contractual stipulations and adherence to user comfort. Especially to the last one is given more attention in comparison with All Countries engaged in the survey. This could be caused by switch in district heating systems from natural gas to biomass which needs more attention by fuel supply and operation. Preliminary technical and economical analysis is seen as major quality determinant by All Countries respondents while in Slovakia it has rapidly less attention from the quality point of view.

Figure 25 In your opinion what are the most important determinants of quality in ESC projects? (Percentage share of responses by providers and facilitators Sept 2017)



In terms of needed quality improvements during ESC projects' preparation and implementation, both respondents from Slovakia and All Countries are utterly aligned in emphasis put on preliminary technical and economical analysis and need of its improvement. Other areas are not of greater importance according to all respondents.

Figure 26 In which areas are quality improvement most needed in ESC project preparation and implementation? (Percentage share of responses by providers and facilitators Sept 2017)



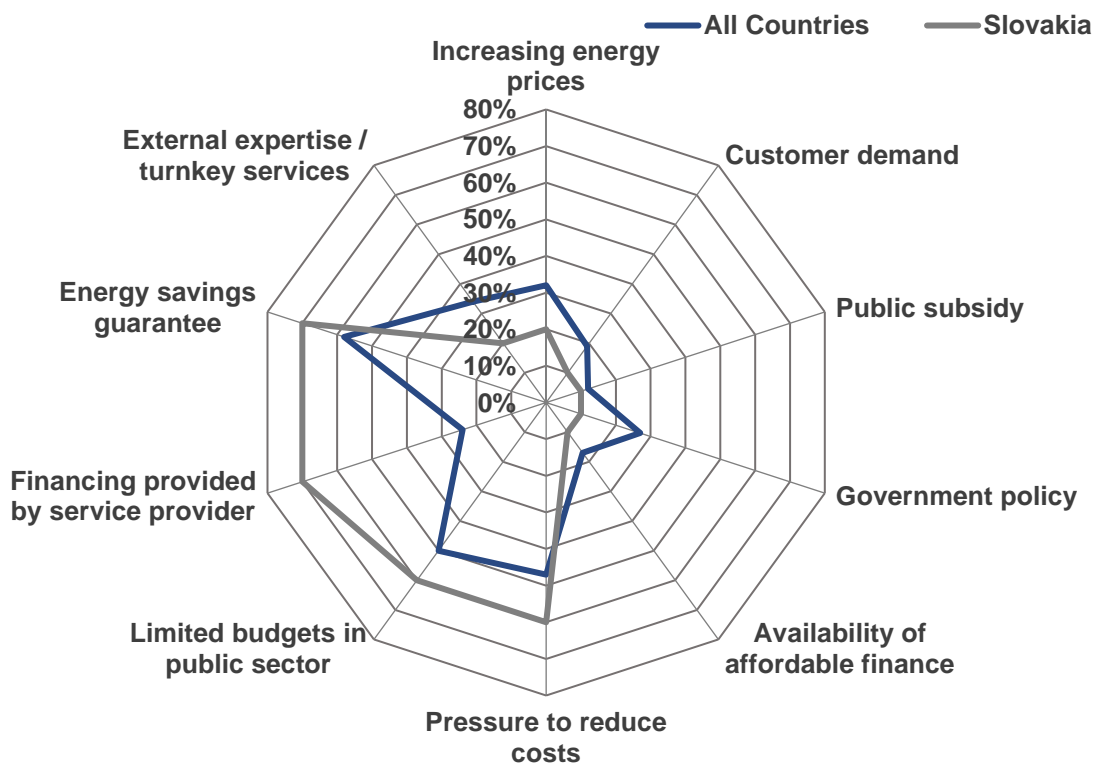
6 RECOMMENDATIONS TO SUPPORT MARKET DEVELOPMENTS

General motivation for the utilization of energy efficient services is a continuous need for refurbishment of buildings, modernization of technologies and interest in cost savings connected with energy savings. These motivators stood at the beginning of EES market push-off but during experiences with implementation of EES projects, a lot of obstacles and barriers were identified – like insufficient legislative background and regulation, unclear conditions for EES public procurement, low awareness and priority on energy efficiency, etc. Over the last years many improvements in market came into force but the need for additional detailed and specified uptake of the market is still in place.

To better specify market recommendations, it is necessary to find out the **main drivers** for the market actors.

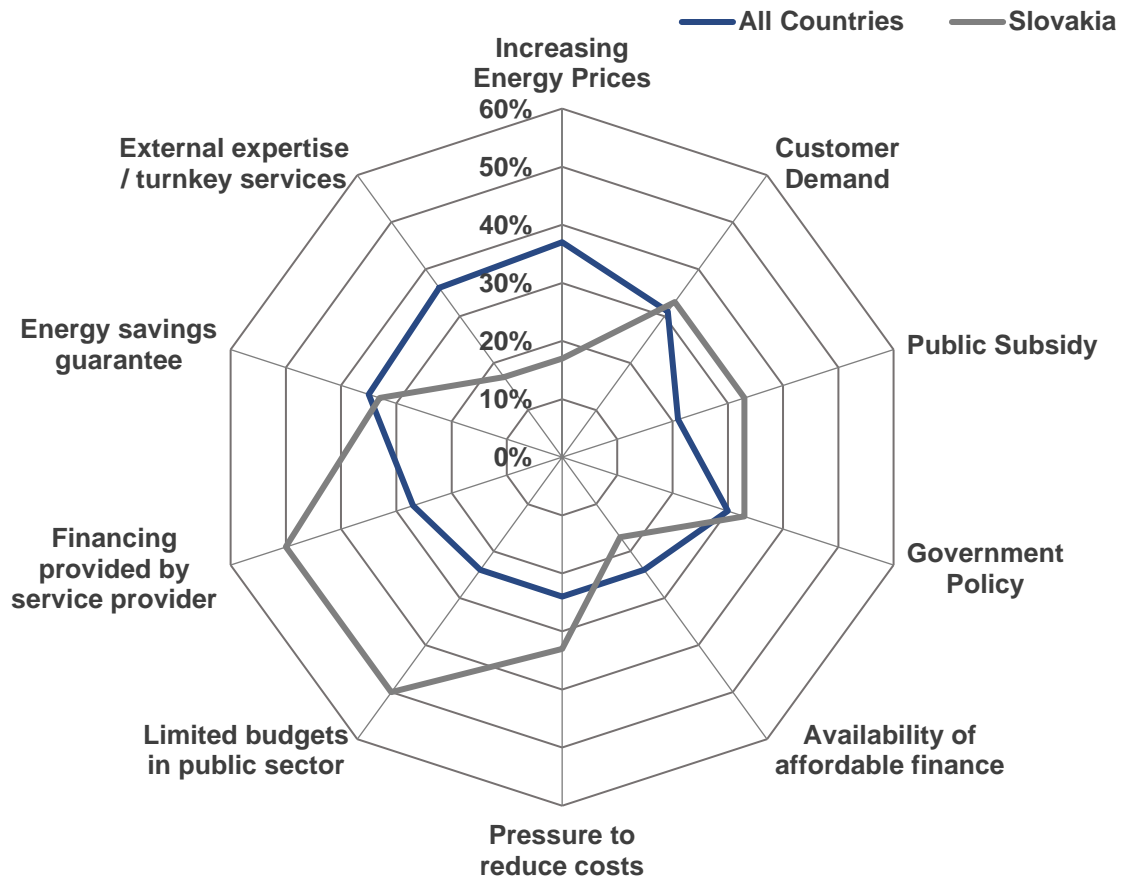
For **Energy Performance Contracting** business, Slovak respondents identified limited budgets in public sector and thus pressure to reduce costs of energy together with financing provided by service provider, guarantee of savings as the main drivers of EPC market in last year. These are in general confirmed by other European respondents, only with somewhat lesser emphasis on all except savings guarantee. On the other hand, increasing energy prices is one of drivers that European respondents identified but Slovak did not.

Figure 27 What are the main drivers of the EPC business based on the activities of the last 12 months? (Percentage share of responses by providers and facilitators Sept 2017)







For comparison – main drivers for **Energy Supply Contracting** in Slovakia are limited budgets in public sector and due to financing provided by ESCO as shown in a figure below.

Figure 28 What are the main drivers of the ESC business based on the activities of the last 12 months? (Percentage share of responses by providers and facilitators Sept 2017)



Slovak EES clients appointed during interviews as main drivers:

-  Pressure to reduce costs
-  Limited budgets in public sector
-  Financing provided by service provider
-  Energy savings guarantee

Obviously, these drivers are the same as stated by EES providers and facilitators.

Main barriers for energy efficient services from the EES providers and facilitators point of view were analysed in chapters [4.6 EPC market barriers](#) and [5.6 ESC market barriers](#).

Interviews with EES clients added different view on obstacles to energy efficient services wider utilization. Key barriers from the clients' point of view are the same for both EPC and ESC:

-  Limited staff capacity on the client side

- ✔ Administrative barriers in public sector (e.g. Eurostat guidance note, debt regulations)
- ✔ Raising affordable finance

Activities listed in this chapter are meant to help overcome the barriers of EES market development in Slovakia summarised in Table 1 below. The activities relate to individual stakeholders and are listed in the Table 2 below. It is clear that these activities interrelate with each other and therefore must be dealt with together, not separately.

Table 1: Overview of key EES market barriers

Market barrier		EES affected
1	Subsidy / Policy uncertainty	EPC, ESC
2	Administrative barriers in public sector	EPC, ESC
3	Lack of support from the government	EPC
4	Lack of information	EPC
5	Raising affordable finance	EPC, ESC
6	Limited staff capacity on the client side	EPC, ESC
7	Customer demand	EPC, ESC

Table 2: Overview of actions to overcome market barriers

	Response to barriers	Actions	Who should act	Target groups	Description
1	1, 3,4	Clear communication of governmental strategies	Government and governmental organizations	EPC customers, decision makers, financial institutions, experts, media	Define and inform about EES subsidy strategy.
2	2	Removal of administrative barriers	Ministry of Finance, APES	EPC customers, EPC providers, EPC facilitators	Implementation of new Eurostat guidance note and ongoing explanations.
3	3, 4, 6	Quality assurance scheme for EES	Relevant ministries, Public bodies, APES, certification and standardization bodies	EPC providers, facilitators, clients, financial institutions	Ensure quality of EES projects.
4	1,3, 5	Development of financial mechanisms	Relevant governmental institutions, APES	EPC providers, facilitators, clients, financial institutions	Financing of long-term measures by combination of grants with EPC
5	2, 4, 6,	Support EPC facilitation	Decision-makers, public sector, APES	EPC facilitators, clients	Education of EPC facilitators by workshops, webinars and dissemination the key role of EPC facilitator widely.
6	4, 7	Promotion of best practice examples	APES, EPC providers	Potential clients, experts, media	Inspire new customers, spread best examples in form of databases, awards, in conferences
7	4, 7	Promotional activities focused on potential clients	SIEA, APES, EPC and ESC providers, facilitators	Municipalities, public sector, Industry, tertiary sector, ...	Promotion of EES – as a possibility for financing EE projects. The goal is to get better informed customers and such increase customers demand.

6.1 Regulation and standardisation

6.1.1 Clear communication of governmental strategies at national level

Two main barriers identified by EPC/ESC providers and facilitators in Slovakia are connected to governmental policies and support. Legislative framework for provision of energy efficient services is for current conditions of market generally properly adjusted. Governmental focus on EES is formally declared in the 4th National Energy Action Plan.

The problem is in unclear communication strategy on precise forms of subsidies. At present mainly grant schemes in form of non-recurring financial subsidies are widely promoted. The availability of non-recurring grants for implementation of energy efficient measures demotivates potential clients mainly from public sector from using commercial ways of financing. Even if they have a project suitable for EES, they usually wait for years for possibility to use a granting scheme and usually also with a low chance of a success.

It is recommended for governmental institutions to clearly and precisely define the possibilities, extent and timeline of grants. Expectations on client side need to become realistic by means of apparent explanation of all over possible volume of subsidy and estimated number of possible projects covered by the scheme. This should be communicated by responsible governmental institutions and in parallel also the alternative in form of EES utilization for co-financing of the project needs to be presented.

6.1.2 Removal of administrative barriers

In time when QualitEE survey was held, The Eurostat guidance published in August 2015 was in force. The guidance concluded that, in most cases, the additional capital expenditure undertaken by an EPC-contractor on an already existing government asset would be recorded as government expenditure. This regulation represented in Slovakia remarkable obstacle for implementation of EPC contracts as was identified also by QualitEE research. (One of three main barriers for EPC identified by QualitEE survey was “Administrative barriers in public sector”.)

In September 2017 Eurostat published an updated guidance note on the recording of energy performance contracts (EPCs) that is removing the barrier of accounting EPC contracts in public debt. Now the adequate implementation into Slovak conditions (by Ministry of finance of SR) is important. This regulation is combined with high expectations in Slovakia. Highly important is therefore consecutive dissemination of information on this issue so that the public and municipal institutions have sufficient and realistic perception.

This measure is also expected to foster the public sector to be a leading example in the area of increasing energy efficiency in Slovakia.

6.1.3 Quality assurance scheme for EES

Now there is only a few ESCOs and EPC facilitators acting in EES Slovak market for last years. These companies are well established in the market and have a good reputation and expertise. But it is expected that boost up of EES market after removal of administrative barriers (especially connected with new Eurostat regulation) will open the market for new players that are not very experienced and thus could provide EE services with low quality.

Interviews with EES clients showed that potential clients have only rough information about process of EES and its requirements. Although the clients usually trust ESCOs, they cannot assess the quality of provided service and for example compare offers from more providers. They also have only limited staff capacity for deeper immersion into problematic and therefore it is recommended to create a quality assurance scheme for EES to help them in this issue.

More information about certification of energy efficient services in Slovakia and QualitEE survey results in this topic can be found in [chapter 7](#).

6.2 Financial instruments

Financing of investments realized within implementation of EPC projects is important mostly in the public sector. The clients from this sector require due to the obsolete technical status of their buildings not only implementation of measures on the technological equipment but often also on the building envelope. As this kind of measures is connected to significantly longer period of repayment (more than 15 years) there is a problem for ESCOs to finance such investments from commercial resources. To enable the required complex energy efficient refurbishments of buildings through EPC it is necessary to develop financial mechanisms for financing of long-term measures. These could utilise the resources allocated to energy efficiency (within the EU Structural funds for example) and may be implemented in form of grants to public building owners/users for implementation of long-term measures to reach a reasonable pay-back period while short-term measures will be still financed through the ESCOs.

For the other sectors would be effective a support in form of loans combined with grant in case that the energy efficiency targets of projects have been met. Set up of this schema should be similar to successful schemes such as SlovSEFF or MunSEFF and the process is therefore familiar to clients.

6.3 Information dissemination, education and networking

6.3.1 Support the role of EPC facilitators

QualitEE survey results are pointing to underestimated role of EPC facilitators in Slovakia. Although All Countries respondents in QualitEE survey defined as the main EES quality determinant “preliminary technical-economical analyses / energy audit”, Slovak respondents

found it less important. On the other hand, the clients in the interviews stated they have only limited staff capacities and experienced EPC facilitators can support the demand side with technical, financial, legal knowledge. They can also support the project organisation and communication and therefore enable internal communication barriers on the client side. It is therefore needed to more develop the market with independent and expert facilitation services.

So far there is only limited number of EPC facilitators in Slovak market, so it can be recommended to organize series of trainings focused on EPC facilitators in form of workshops, webinars.

As part of EU Horizon 2020 project GuarantEE, Pool of EPC facilitators was created (see chapter 7). Wider promotion and dissemination of the Pool is needed.

6.3.2 Promotion of best practice examples

Best practice examples in EES projects is a good way of demonstration of EE implementation process and motivation of potential customers. Especially in small country as Slovakia, with a rather small EES market, services and products are usually purchased on recommendation. QualitEE interviews with EES clients confirmed importance of best examples when 2 respondents of 3 declared they got inspiration for EES implementation from best examples (one was a hospital in Czech Republic).

It could be recommended to promote best examples in form of databases, by giving awards, presentation on conferences and media.

6.3.3 Promotional activities focused on potential clients

In general, promotional activities should be focused on all target groups and stakeholders. But QualitEE results displayed that the main information gap represents potential clients.

A form of awareness rising of clients will consist mostly of workshops, trainings, seminars, communication through suitable media as well as participation on relevant conferences and other events. Complex approach consisting of awareness rising and education that will cover all aspects of energy efficient services and EPS/ESC projects will be necessary. Activities should be implemented by ESCOs and project facilitators active on the market (with partial support from national authorities) under the auspices of relevant ministries or other national institutions.

7 CERTIFICATION OF ENERGY EFFICIENCY SERVICES

One of the reasons why energy efficient service market has not matured in Slovakia encompass insufficient information about process and outcomes of energy services and thus EES clients found difficult to assess the work of ESCOs. QualitEE survey outlined that ESCOs and EPC facilitators are roughly in half of cases facing a lack of trust in their services. Responses indicate that there is overall greater trust in EPC/ESC service providers in Slovakia than in the Europe as a whole.

An absence of standardization and certification systems for EES is one of the reasons for a such scepticism and mistrust towards energy efficient services and its providers in Slovakia.

7.1 General framework for certification of products and services

According to ISO (2015) and Amann & Leutgöb (2015), certification can be a useful tool to add credibility, by demonstrating that a product or service meets the expectations of the client. **Certification** means the provision of a written assurance (a certificate) by an independent body (a certification body), that the product, service or system in question meets specific requirements (compliance with certain international standards). One certification body may execute several different certification programmes. They are evaluated and accredited by an authoritative body. Obligation to certify a products or services needs to be provided by law otherwise it is only optional.

Accreditation means the formal recognition by an independent body, generally known as an accreditation body that a certification body operates according to international and national standards. The foundations are given in ISO/IEC 17000:2004. In Slovakia, the accreditation body is Slovak National Accreditation Service (SNAS). SNAS is a public institution without state subsidy with an independent legal entity operating on a not-for-profit basis. Status of SNAS in SR is given by Act No. 505/2009 Coll. on Accreditation of Conformity Assessment Bodies and on amendment to certain acts.

Legal obligation for assuring quality of services in Slovakia is more often ensured by educational obligation on a person responsible for execution of the service. In this case it is referred to **Professional Qualification** which is indeed a basic approach of a quality assurance. Competences of qualified person are verified by somebody that is not an accredited third-party certification body, e.g. a national or local authority, this process is usually called attestation.

7.2 Certification of products and services in the energy sector

In the energy sector in Slovakia, the most often used scheme is professional qualification. In order to obtain a certificate on professional qualification, the person usually must have specific education, prove professional experiences and get through exam. Organization responsible for administration of this system in energy sector is prevalingly Slovak Innovation and Energy Agency (according the decision of Ministry of Economy).

List of actual obligatory qualification schemes in Slovakia:

- ✔ Certificate and licence for a business in the power engineering (Act 251/2012 Coll. about energy industries)
- ✔ Certificate and licence for a business in the natural gas supply (Act 251/2012 Coll. about energy industries)
- ✔ Certificate and licence for a business in the heat-power engineering (Act 657/2004 Coll. about heat-power industry)
- ✔ Certificate for an energy auditing (Act 321/2014 Coll. about energy efficiency)
- ✔ Certificate for providing a guaranteed energy service (Act 321/2014 about energy efficiency Coll.)
- ✔ Certificate for heating systems revision (Act 314/2012 Coll)
- ✔ Certificate for air-conditioning systems revision (Act 314/2012 Coll)
- ✔ Certificate for energy certification of buildings (Act 555/2005 Coll. About energy performance of buildings)

Voluntary but recommended (necessary when applying for subsidies) is:

- ✔ Certificate for installers of renewable energy sources in buildings (according Act 309/2009 Coll. About renewable energy sources)

Voluntary certification schemes based on **ISO standards** such as ISO 50001 (energy management systems) are available on the market, as well.

7.3 Certification of energy efficiency services

Quality of energy services and trust in energy service providers increased after implementation of EU directive 2012/27/EU on energy efficiency by Act No 321/2014 Coll. on energy efficiency. Under the provisions of the directive, it is at the discretion of the Member states whether to introduce an accreditation and certification system or an equivalent qualification system in the area of the provision of energy services. Slovakia chose plainer model of EES quality assurance – qualification of EPC providers.

EPC quality assurance

So far, no formalized system of EPC projects quality assurance was implemented in Slovakia. Simple conditions for EES quality were given by qualification. According the law, EPC (or guaranteed energy service as defined in the Act 321/2014) may be provided only by holder of certificate about professional qualification for providing Guaranteed Energy Services or an energy auditor. Obtaining of the licenses is subject to passing of exam. All holders of the license are obligated to take part at updating specialized courses every three years. This measure is in place since 2015.

Additionally, European Code of Conduct for EPC is in Slovakia well established and promoted by Association of Slovak ESCOs (APES) and Energy Centre Bratislava. The self-declaration of ESCOs by signature of Code of Conduct can be found as a supportive measure for EPC quality. Slovak 4th National Energy Efficiency Action Plan even declares: “Additional way of EPC quality assurance is the ESCOs self-regulation by signature of Code of Conduct for EPC.”

ESC quality assurance

There is no special definition of quality assurance for Energy Supply Contracting provision. In many cases, EPC providers offer ESC as well. But ESC provider as a supplier of energy needs to have a certificate and licence for a business in the power engineering (according the Act 251/2012 about energy industries Coll.) or a certificate and licence for a business in the heat-power engineering (according the Act 657/2004 about heat-power industry Coll.)

EPC facilitation

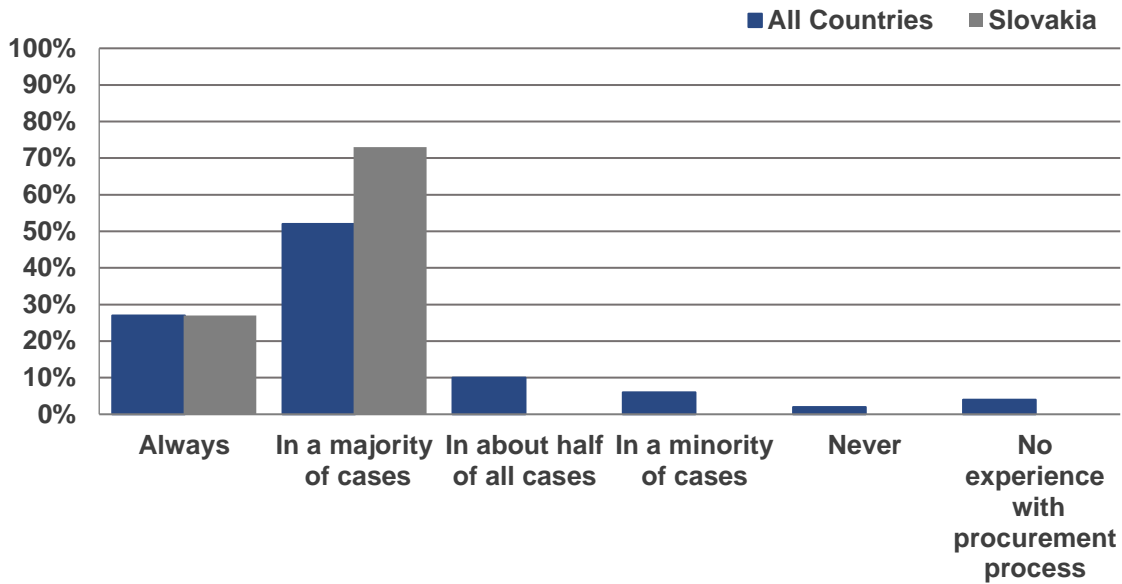
Within the scope of EU funded project GuarantEE, the Pool of Facilitators was created. For the demand side it is very important that the expertise, quality and independency of facilitators are guaranteed. Therefore every facilitator to be listed in the Pool of Facilitators has to sign a *self-declaration*. The *self-declaration* consists in acknowledging and supporting the GuarantEE qualitative criteria for EPC facilitators and the Transparence Code of Conduct. In addition, EPC facilitator has to provide a concise self-description on their personal qualification and references as EPC facilitator.

Slovak Pool of Facilitators has so far 10 members and can be found online <http://guarantee-project.eu/sk/poradcovia-ges/>.

The following pages highlight responses to the QualitEE survey relating to the development of a quality assurance scheme for energy efficiency services.

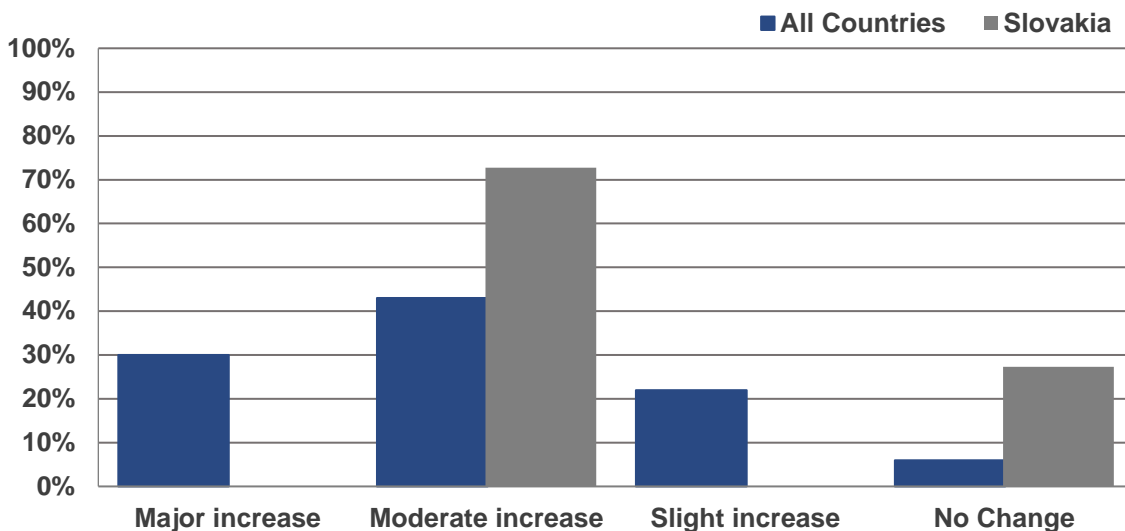
Slovak respondents clearly supported idea that well-defined procurement specification increases the quality level of services. Over 70% of EES providers and facilitators stated that in majority of cases it will increase quality and the rest of questioned (27%) is convinced it is helpful always. Respondents across All Countries in the survey indicated less need for better definition of procurement specification.

Figure 29 From your experiences, do well defined procurement specifications increase the quality level of EPC/ESC services? (Percentage share of responses by providers and facilitators Sept 2017)



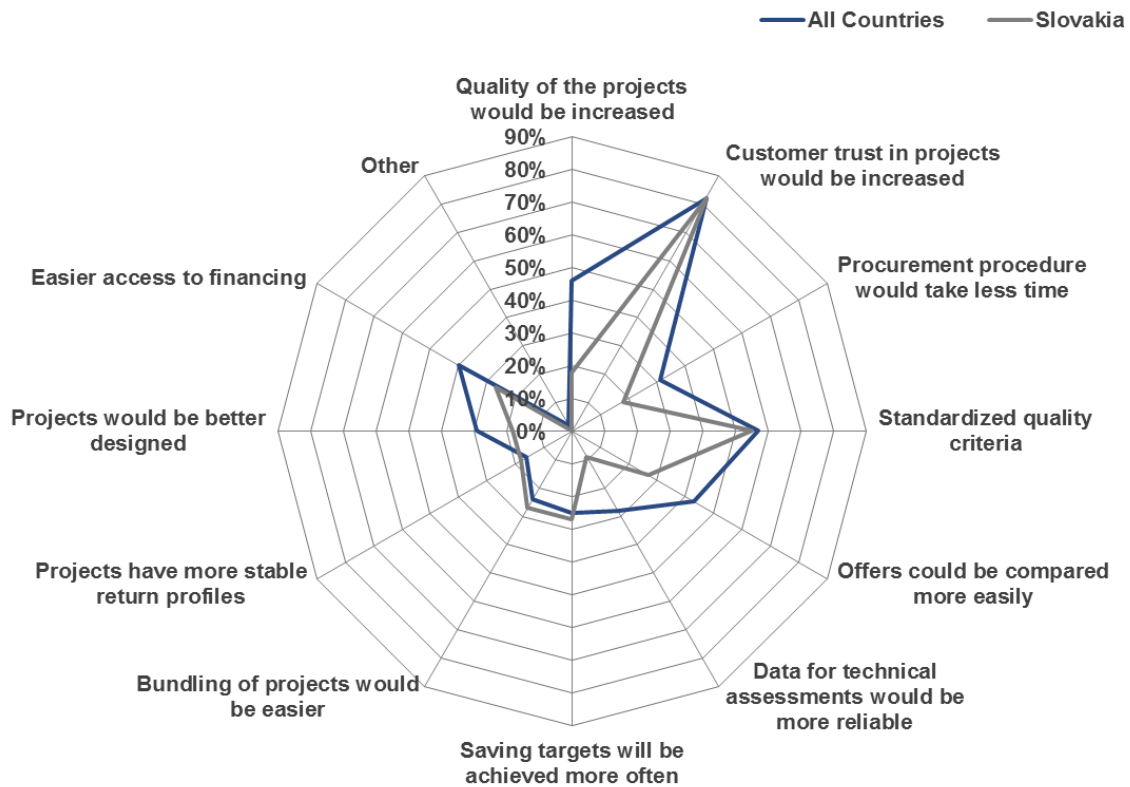
Majority of respondents in Slovakia and across All Countries in the survey stated that a quality assurance scheme would increase customer trust. Biggest share of respondents (slightly above 40% in case of European and 73% in case of Slovak respondents) think that a quality assurance scheme will increase trust moderately. Almost one third of Slovak ESCOs and facilitators is not expecting a change in confidence what is more in comparison with All countries dataset. European stakeholders presented belief in major increase in 30% and slight increase in 22%.

Figure 30 To what extent would a quality assurance scheme increase client trust in EPC/ESC services and providers? (Percentage share of responses by providers and facilitators Sept 2017)



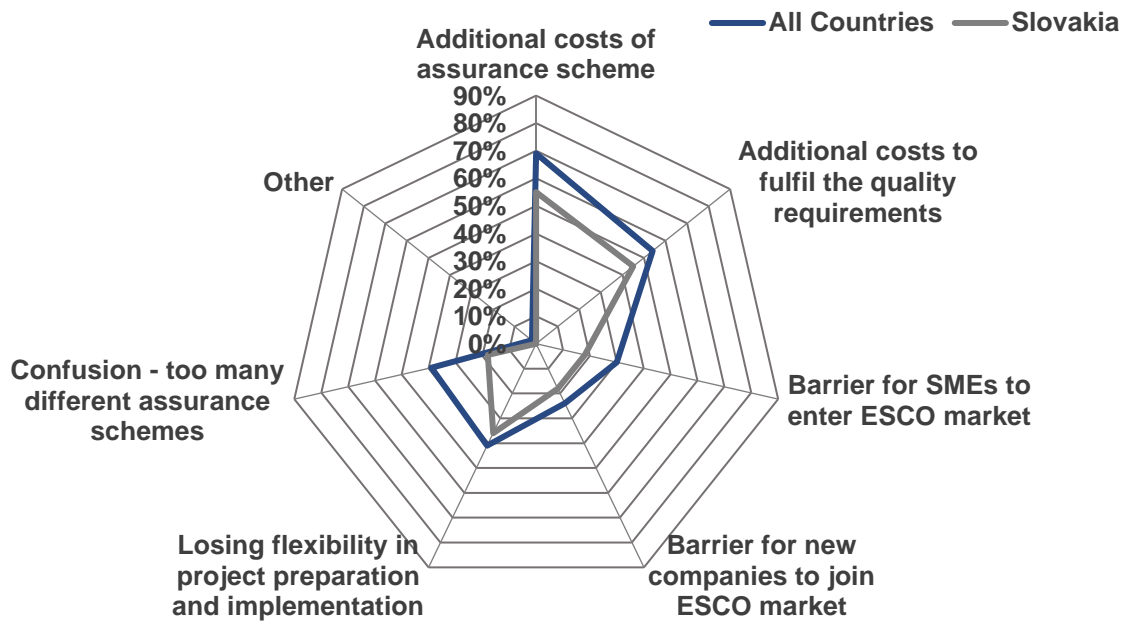
In general Slovak and European respondents across All Countries in the survey agreed upon which manner would quality assurance scheme bring added value. All agreed that it would be by identifying customer trust and standardized criteria of quality as the most beneficial features. European EPC providers and facilitators also considered increase in quality of projects, easier comparison of offers and easier access to financing to be relevant while for Slovak respondents these benefits are not so highly ranked.

Figure 31 In your opinion, what would be the added value of a quality assurance scheme like this? (Percentage share of responses by providers and facilitators Sept 2017)



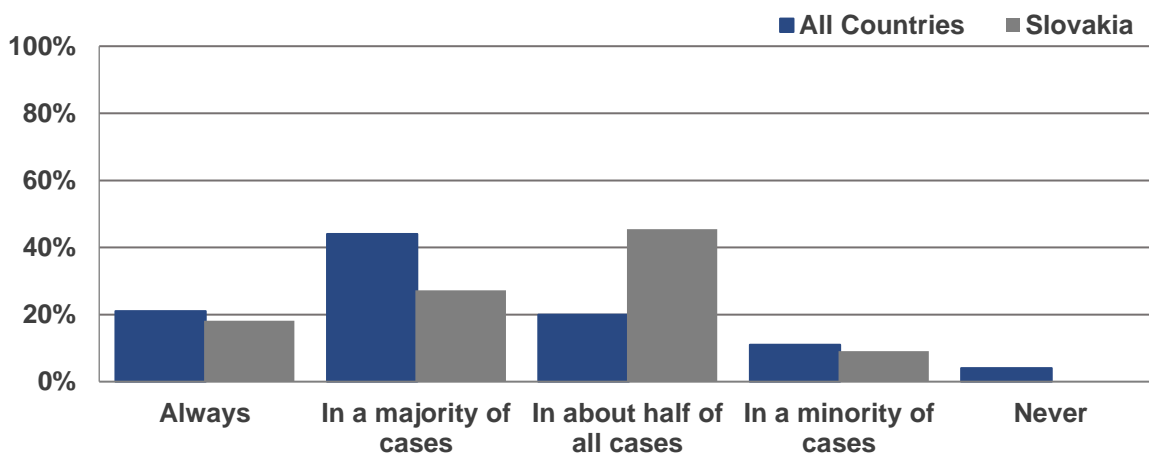
Even in opinion on challenges of quality assurance scheme were respondents from Slovakia and All Countries aligned. All agreed that quality assurance scheme could add additional costs to projects and can prevent new companies (especially SME) to enter ESCO market. But it needs to be emphasized that besides cost-related concerns, not many EPC providers and facilitators expressed concerns regarding remaining issues.

Figure 32 In your opinion, what drawbacks or barriers may be created by a quality assurance scheme like this? (Percentage share of responses by providers and facilitators Sept 2017)



EES providers and facilitators across All Countries in the survey generally indicated support to implementation of quality assurance schemes by stating that always or at least in majority of cases they would prefer project which includes such feature. Answers of Slovak respondents were more hesitant with 45% of them preferring project with assurance in half of all cases. On the other hand, 4% of All Countries respondents would never prefer project with quality assurance, while in Slovakia this possibility obtained no score. Slovak results may reflect that ESCOs and facilitators are not really aware what they should expect of quality assurance scheme as quality schemes are rare on Slovak market.

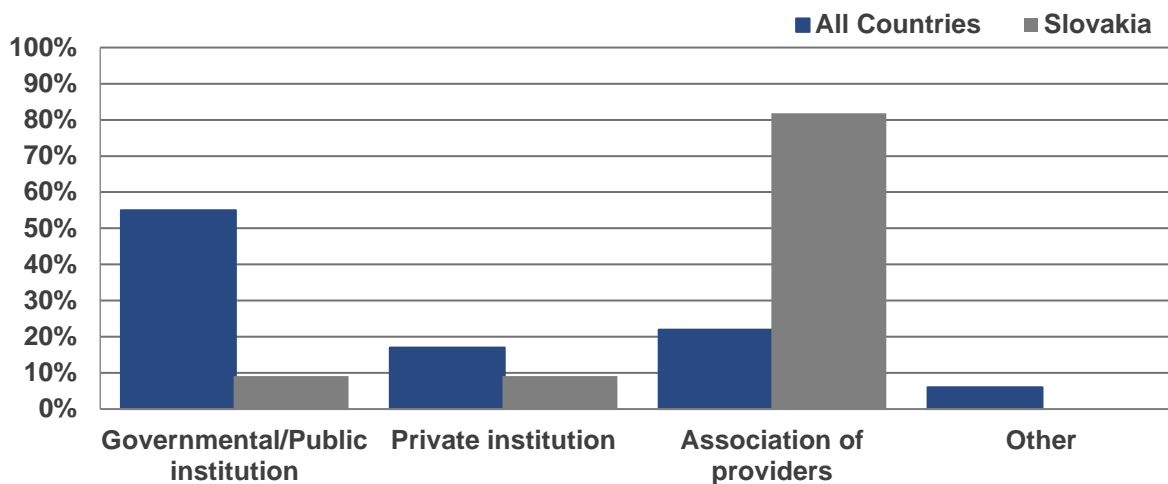
Figure 33 Would you prefer implementing a project, which is subject to quality assurance over a project without quality assurance? (Percentage share of responses by providers and facilitators Sept 2017)



In contrast to the view across All Countries in the survey respondents across All Countries, Slovak ESCOs and EPC facilitators agreed upon association of providers being the most respected body to issue quality assurance certification for EPC/ESC services in 82%. Provision of quality assurance by public institution or private institution got only marginal support (9% both). In the All Countries dataset, trust in public institutions was the most significant with 55% and trust in association of providers was positioned on the second place but only with 22% what is remarkably less than 82% in Slovakia.

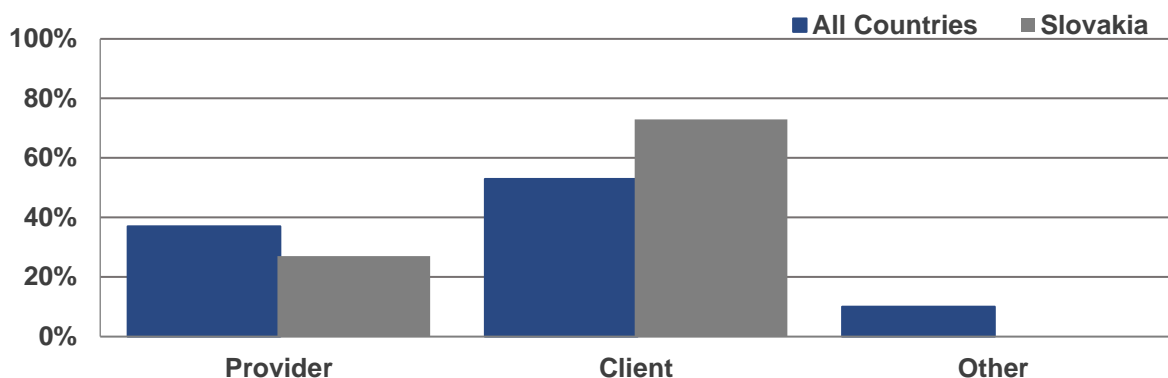
This preference of Association of providers and facilitators was also confirmed by interviews with EES clients and financial institutions where majority of them stated that certification scheme should be administered by motivated independent body with high expertise and information about EES such as Association of providers.

Figure 34 Which would be the most respected body to issue a quality assurance label or certification for EPC/ESC services in your country? (Percentage share of responses by providers and facilitators Sept 2017)



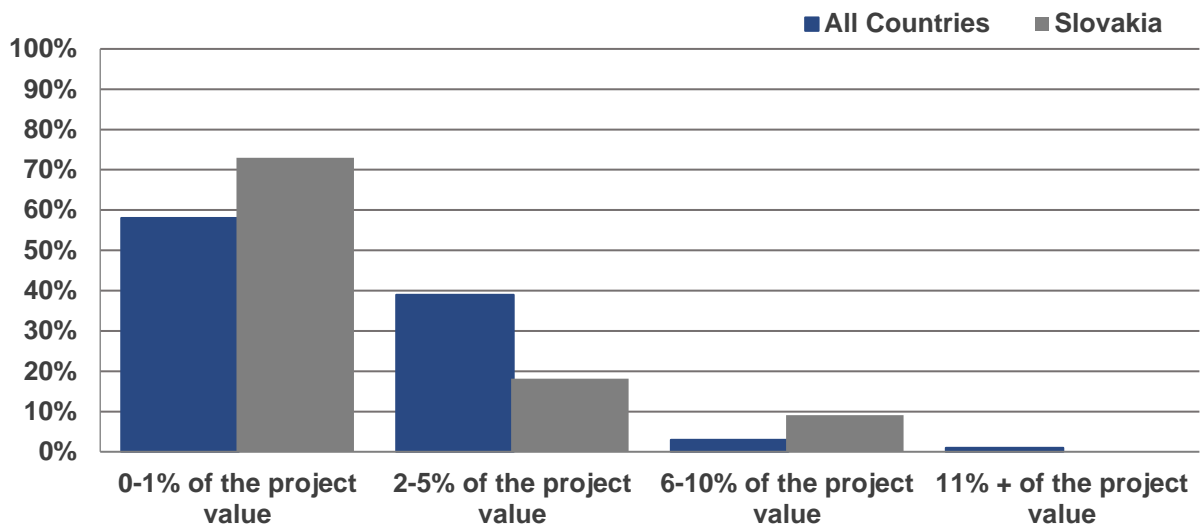
Slovak respondents in general consider client to be more suitable to pay for quality assurance (in 73% of cases) while support for financial involvement of provider instead is less significant (27%). Respondents across All Countries in the survey lean more towards opinion that provider should pay for quality assurance.

Figure 35 Who should pay for the quality assurance of EPC/ESC projects? (Percentage share of responses by providers and facilitators Sept 2017)



Majority of respondents in Slovakia and across All Countries in the survey agreed that viable fee for quality assurance would be up to 1% of value of particular project. However, around 40% of respondents across All Countries (and 18% of Slovak respondents) think it should be somewhat higher – between 2 and 5%. There is no observable difference between answers of Slovak and European EPC providers and facilitators. Only very small share of respondents across All Countries thinks the fee should be higher than 6 or even 11%. Surprisingly, 9% of Slovak EES providers and facilitators think that fee level should be 6-10%.

Figure 36 What would be a viable fee level for external quality assurance per EPC/ESC project? (Percentage share of responses by providers and facilitators Sept 2017)



8 REFERENCES

Amann S., Leutgöb K. et al. (2015): Quality Certification for EPC services. Download at <http://www.transparens.eu/eu/publications/quality>

Bertoldi P., Boza-Kiss B., Economidou M. (European Commission, Joint Research Centre, 2017): Energy Service Companies in the EU.

European Code of Conduct for Energy Performance Contracting (2014). Prepared within Transparens project. Version as of 11 July 2014. Download at <http://transparens.eu/eu/epc-code-of-conduct>

European Union (2012): Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC. Official Journal L315, pp. 1 – 56

Lauko, M. (2013): Overview of the EPC potential and market – National report for Slovakia. Prepared by Energy Centre Bratislava within CombineES project.

Lauko, M. (2013): Country Report on Identified Barriers and Success Factors for EPC Project Implementation – Slovakia. Prepared by Energy Centre Bratislava within Transparens project. URL:http://transparens.eu/tmce/ECB/D2-04_ReportOnBarriersAndSuccessFactors_SK_ECB_2014-01-09_v03fin.pdf

Lauko M., Caban R. (2017): Market Report on the Slovak EPC Market. Prepared by Energy Centre Bratislava within GuarantEE project. URL: http://guarantee-project.eu/sk/wp-content/uploads/sites/17/2017/01/D2-2_MarketReport_SK_ECB_v02a_2016-09-23.pdf

Ministry of Economy of Slovak Republic (MoE) (2017): National Energy Efficiency Action Plan of Slovak Republic for years 2017-2019. URL: <http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=26443>