



COUNTRY REPORT ON THE ENERGY EFFICIENCY SERVICES MARKET AND QUALITY

Bulgaria



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, behavioral 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, behavioral 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 normalization 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 |

| Term | Definition |
|--|---|
| 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, 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.

Chapter 3 presents the key Government institutions related to EES, the national policy in the field and the status of Energy Efficiency Directive (Directive 2012/27/EU) implementation, the available information resources and support schemes in Bulgaria.

Chapter 4 contains an overview of the Energy Performance Contracting (EPC) market in the country –actors, development, common business models, client sectors, barriers, financing, and quality determinants. This chapter outlines the emerging status of the national EPC market – small EPC providers with a small number and size of projects, no established facilitators. Additionally, it illustrates the stagnation on the EPC market – both recent and expected one. Although public clients are still dominant, a shift to private ones can be observed in the last years. The market actors identify as main barriers to EPC (each specified by 63% of respondents) the lack of trust in the ESCO industry and the administrative barriers in the public sector. A large share (63%) of the projects is financed through a debt borrowed by the EPC provider, but 87% of the respondents find it difficult to obtain financing. EPC providers and facilitators believe that quality improvement is needed in almost all EPC areas.

Chapter 5 contains an overview of the energy supply contracting (ESC) market in Bulgaria – actors, development, client sectors, business models, financing schemes, quality, and barriers. Similar to the EPC market, the ESC market also seems to be an emerging one. In general, ESC providers are presented with a limited number of small projects. Although the total market size is estimated to be relatively low, a slight growth trend is observed. The main barriers are: raising affordable finance, high costs of project development and procurement, administrative barriers in the public sector, and complex concept / lack of information. The main financial sources are bank credits, borrowed by the clients, and grants, each used by 50% of

respondents. To assure high ESC quality, the most urgent measure is to improve the quality of the energy audits.

Chapter 7 shows the drivers of the EPC and ESC markets in Bulgaria and suggests actions to further develop these markets. One powerful action would be the liberalization of the energy market with expected price level increase and deregulation of energy supply. Other suggested actions include alleviation of limitations for EPC projects in municipalities, development of model contracts, quality assurance, wider availability of financial instruments, elaboration and dissemination of information resources, training, and networking.

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 within 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 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 S., Leutgöb K. 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)

✔ Other services.

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 "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 the energy performance contracts with the public sector or in the associated tender specifications. Moreover, according to Article 18 of the EED, the 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 about 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 risk of not achieving the contractually agreed savings as well as design risks, implementation risks and risks related to the operation of the installed measures. If an EPC project fails to achieve the 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 Bulgaria, the other EES mostly represent a combination of EPC and ESC. These projects typically target buildings and involve, among the other energy and cost saving measures, fuel switch to biomass, natural gas, or CHP, and the service includes not only technology replacement and maintenance, but also fuel supply.

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."

The commonly used term "ESCO" is used as an equivalent of energy service provider. The above-listed definitions also 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 two main sources:

- ✔ the results of a nationwide EES survey of the country's main actors within the EES market; and

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 author based on the support of EES market since 2009.

2.3.2 Questionnaire and interviews

To collect the data used in this document, 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 questionnaire 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. The answers were then analysed and the results are presented in this report in an aggregated form.

In Bulgaria, the online questionnaire was answered by 11 respondents:

- ✔ 4 representatives of EES providers, 2 of them having ongoing EPC projects and 2 - both ongoing EPC and ESC projects;
- ✔ 7 representatives of EES facilitators, 3 of them having ongoing EPC projects, 3 - ongoing ESC projects, and 1 - both ongoing EPC and ongoing ESC projects.

Throughout this study the results from the online questionnaire in Bulgaria are compared with the results from the online questionnaire across All Countries that responded. In total there were 188 respondents 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 questionnaire 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, six Bulgarian individuals participated in the personal interviews:

- ✔ 4 representatives of EES clients (3 public and 1 private), 2 of them EPC clients and 2 ESC clients – all having ongoing projects
- ✔ 2 representatives of financial institutions; these have supported financially (almost) all EPC projects in Bulgaria.

2.3.3 Literature and other sources of data

Apart from the surveys, the report builds upon review of local and national literature (legislative documents, publications and studies, official statistics and databases) and the market knowledge of the authors.

The report also grounds upon the data and information gathered primarily by Transparens and other EU-funded projects (ChangeBest, EESI2020, EPC+). In addition, it uses data from the Status Report on Energy Service Companies Market in Europe by JRC (JRC, 2017).

3 LEGAL AND REGULATORY FRAMEWORKS

3.1 Key governmental institutions

The Government institutions that exert influence on the development of the EES market in Bulgaria are:

- ✔ Ministry of Energy (ME) – responsible for the development of the national energy policy, including energy services;
- ✔ Sustainable Energy Development Agency (SEDA) – an executive agency to the Minister of Energy, responsible for the implementation of the national policy in the field of renewable energy, energy end-use efficiency, and energy services;
- ✔ Ministry of Regional Development and Public Works (MRDPW) – sets the requirements for the energy performance of new and refurbished buildings
- ✔ Other national authorities, local and regional authorities – they play the roles of both policy makers in their domain/territory and owners of facilities (buildings and street lighting systems).

3.2 Implementation of the EU Energy Efficiency Directive

The Directive 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 20% headline target on energy efficiency by 2020.

Article 18 of the EED also imposes obligations on the Member States to support the energy services market. In Bulgaria, these obligations are addressed, as follows:

- ✔ “encouraging the development of quality labels ...”, i.e. the Bulgarian Government supports several projects in this regard, including QualitEE;
- ✔ “making publicly available and regularly updating a list of available energy service providers ...”, i.e. SEDA’s website includes a list of the Bulgarian signatories of the European Code of Conduct for EPC;
- ✔ “supporting the public sector in taking up energy service offers, in particular for building refurbishment ...”, i.e. by specifying the minimum content of the energy performance contracts (EEA, 2017) and by adopting the Regulation №16-347;
- ✔ “providing a qualitative review in the framework of the National Energy Efficiency Action Plan regarding the current and future development of the energy services market”.

Despite the above, there is still much to be done in the country to fully transpose Article 18, including:

- ✔ Dissemination of information about the energy service contracts;

- ✔ Increase of the financing opportunities for energy services;
- ✔ Development of model contracts (and remaining parts of tender dossiers);
- ✔ Actions to overcome the regulatory and non-regulatory barriers (e.g. barriers listed in sections 4.6 and 5.5 of this report);
- ✔ Support of the development of independent market intermediaries, especially assisting the demand side

3.3 National strategy documents

3.3.1 Energy Efficiency Act

The Energy Efficiency Act (EEA, 2017) is the main document regulating EES. The definition of energy services given by EEA is very similar to the definition by Directive 2012/27/EU. The Act defines the objective of these services, the persons who can implement them, their scope, and others.

Additionally, there is a special regulation for the public buildings, subject to EPC, under EEA (РД-16-347 from 2 April 2009), regulating the terms and procedures for the determination of the prices and payments relating to EPC.

3.3.2 National Energy Efficiency Action Plan (NEEAP)

The latest Bulgarian NEEAP (NEEAP, 2017) presents a summary of the EES national legislation, EES (mainly EPC) market and market barriers, the role of SEDA in the market development, and ongoing initiatives to support this development, such as EU-funded projects.

The NEEAP highlights the slow EPC market development both in private and public sectors, attributing it mainly to the lack of trust, which in turn is due to the insufficient experience with this scheme, lack of ESCO certification, and lack of standardized tender dossiers and contracts.

The plan does not include specific measures to support the EES market, but some of the planned horizontal measures would indirectly contribute to the achievement of this objective.

3.4 Standardization for energy efficiency services

3.4.1 Model documents




As mentioned above, the Energy Efficiency Act (EEA, 2017) sets general requirements regarding the provision of EES. Additional more detailed requirements, specifically for EPC in public buildings, are set in Regulation РД-16-347.

There are no, however, official model documents (contract and other tender documents) for EES. Progress towards the development of model documents for public authorities has been

made within several past projects. SEDA intends to deliver such documents both for public and for private sectors.

3.4.2 Project implementation guidelines

A number of project implementation guidelines have been elaborated within the framework of several EU funded initiatives,. Among them, few have been fully or partially adapted to the Bulgarian conditions, or are applicable for Bulgaria, i.e.:

-  ChangeBest (IEE project, <http://www.changebest.eu>) – EES provider guidelines
-  EESI2020 (IEE project, <http://eesi2020.eu/>) – EES facilitator guidelines
-  EPC+ (H2020 project, <http://www.epcplus.org>) – EPC provider guidelines, specifically when the provider is a partnership of several SMEs

The Bulgarian Government has not developed comprehensive guidelines yet. There are some, coordinated by 3 Ministries and available at SEDA's website, but they are quite brief and outdated.

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 the 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 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.

The Bulgarian Code Administrator is SEDA. The Code, the signature procedure and forms, and the list of Code signatories are published on the SEDA's website and the organization regularly promotes these documents.





As of January 2018, the Code signatories in Bulgaria comprise 15 EPC providers, representing the majority of the national EPC market. The list of signatories could be seen as the list of EPC providers in the country.

The Code has been widely promoted to public clients and integrated in the tender dossiers used by these clients. Therefore, some clients demand compliance with the Code, even though they do not require the EPC providers to be Code signatories.

3.6 Support schemes

The Bulgarian Energy Efficiency and Renewable Sources Fund (EERSF) was established in 2004 through the Energy Efficiency Act. Its initial capitalization comes entirely from grant funds, its major donors being: the Global Environment Facility through IBRD (the World Bank) - USD 10 million; the Government of Austria - Euro 1.5 million; the Government of Bulgaria - Euro 1.5 million and several private Bulgarian companies. The fund is a public-private partnership with independent management and self-sustaining capacity (EERSF, 2018).

The Fund has provided support to the majority of EPC projects in the country. It offers the following products for EPC (EERSF, 2018):

-  Direct financing
-  Cessions - purchase of receivables of ESCOs
-  Partial Credit Guarantees
-  Portfolio guarantee for ESCOs - the Fund guarantees the first 5% of defaults in the portfolio of ESCO projects

4 ENERGY PERFORMANCE CONTRACTING MARKET

4.1 EPC market actors

The exact number of EPC providers in Bulgaria is unknown, because there is neither an official registry of all EPC providers or projects, nor they undergo any certification. There were 20-25 EPC providers in 2010 (JRC, 2017). In 2013, only 12 companies with experience in EPC were identified (BSERC, 2013), while the ones active in that year were only 5 (JRC, 2017). According to JRC study, as of 2016 there were at least 15 ESCOs (JRC 2017). The majority were small companies. Recently, an EES providers' association has been established – Alliance for Energy Efficiency (<http://www.alliance-ee.bg/>), members of which are most of the active EPC providers.

In Bulgaria, there is no information about the number of specialized EPC or EES project facilitators to support clients in identifying and procuring of projects. In 2014-2015, important progress was made in this regard through the IEE project “EESI 2020”, which developed guidelines for facilitators and trained about 100 individuals. Clients rarely use the services of individual consultants, energy consultancy companies, or energy agencies.

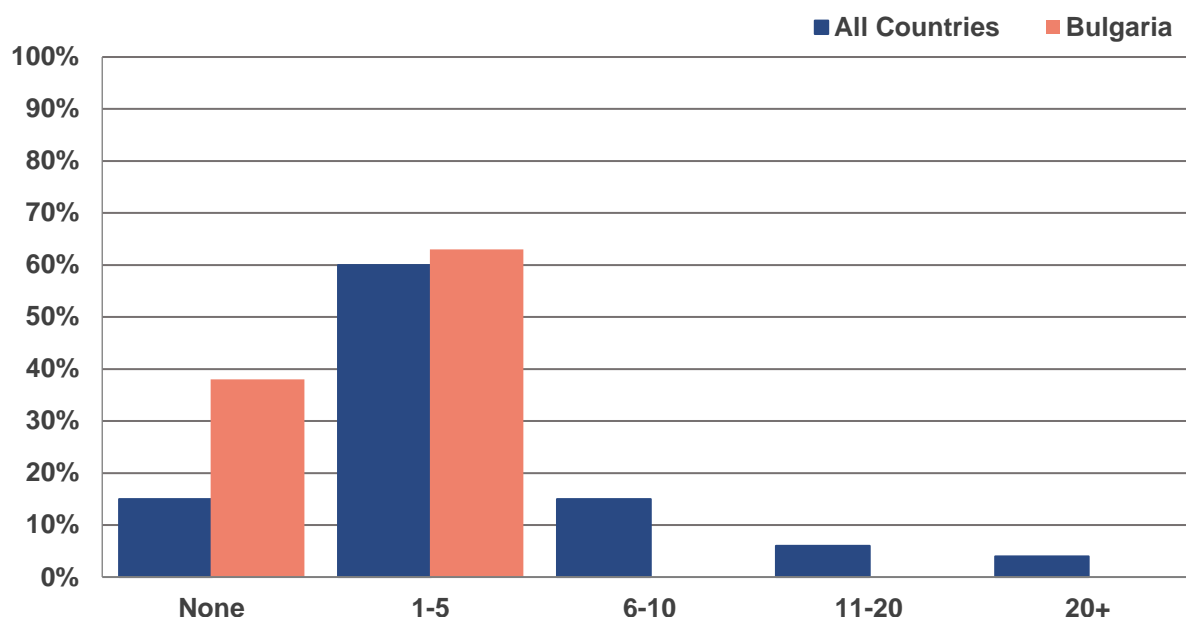
Former and current EPC clients are mainly State and municipal organizations, probably because they are more reliable financially and because the EPC concept had been widely promoted to them in the past. EPC projects target mainly educational and healthcare buildings, administrative public buildings, student dormitories, and street lighting (JRC, 2017). These services are seldom used by private clients. .

4.2 EPC market developments

In Bulgaria, the EPC market started its development in the late 1990s, but the number of contracts had been negligible until 2006. In 2006-2007, the market expanded sharply due to the activities of one large company, whose annual EPCs exceeded 5 million EUR in 2007 and 2008. After 2008, there was a decrease of the EPC market size and this can mainly be attributed to the financial crisis (BSERC, 2013). Then, until 2015 the EPC market was increasing (BSERC, 2015).

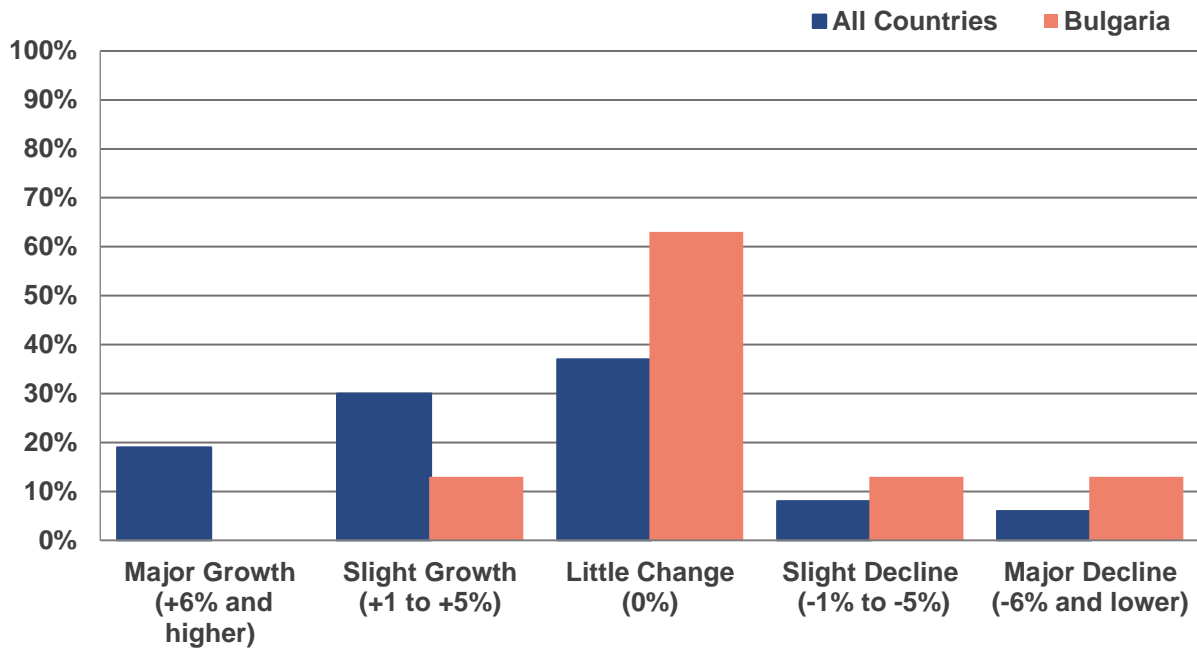
The market potential is estimated to range between EUR 500 - 900 million, although a reliable and official market size assessment does not exist. (JRC, 2017)

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



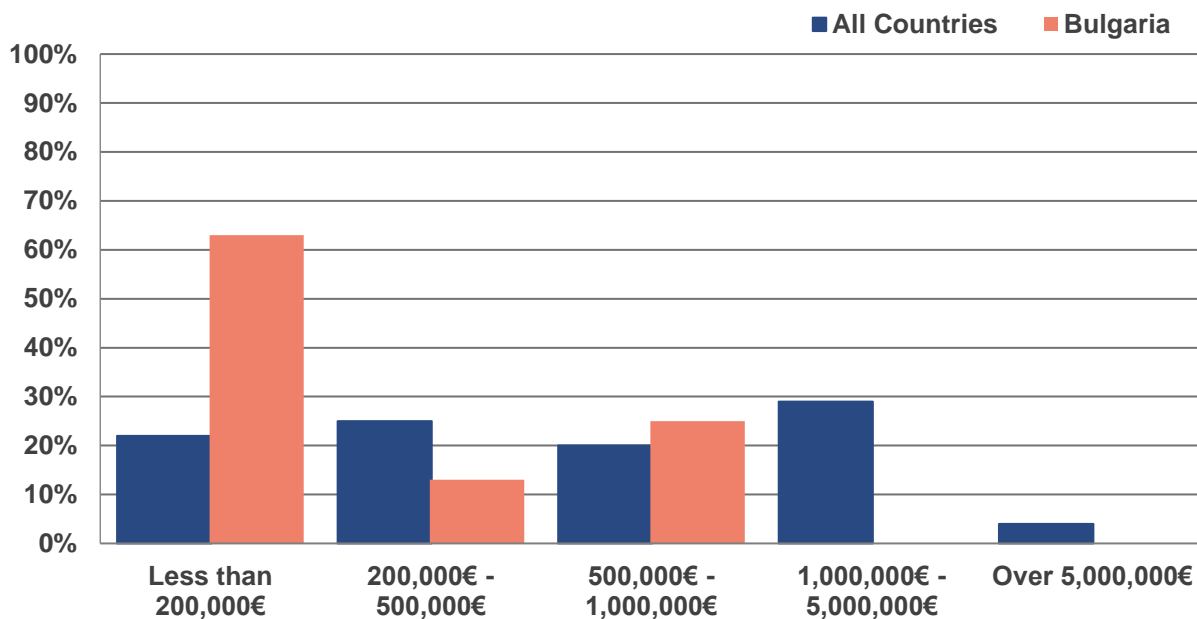
All QualitEE questionnaire respondents - EPC providers and facilitators – initiated or became involved in up to 5 new EPC projects during the last year. A substantial share (38%) did not have new projects. This shows the absence of large / dominant players and perhaps can be attributed to the poorly developed EPC market. The number of projects was considerably lower than the EU average. As reported in the JRC’s study (2017), the vast majority of EU EPC providers were SMEs.

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



In the last 12 months, the majority of the questionnaire respondents from Bulgaria had approximately the same number of EPC orders as before, while for 13% of them the orders slightly decreased and for another 13% they significantly decreased. This is in contrast with the clear growth trend in All Countries.

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)

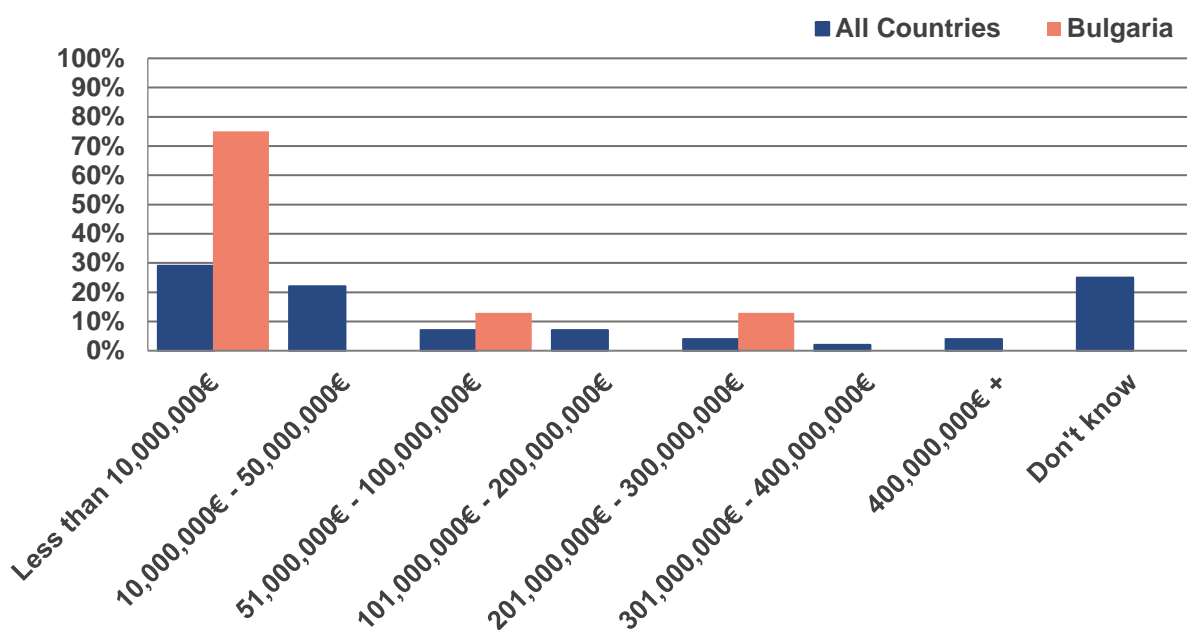


According to the Bulgarian EPC providers and facilitators, about 63% of the EPC projects in the country encompassed investments with a value below 200,000 €, 25% - between 0.5 – 1 million

€, and the remaining projects were between these two ranges. In Bulgaria, the investments are clearly below the level reported for All Countries where the most common value is between 1 and 5 million €.

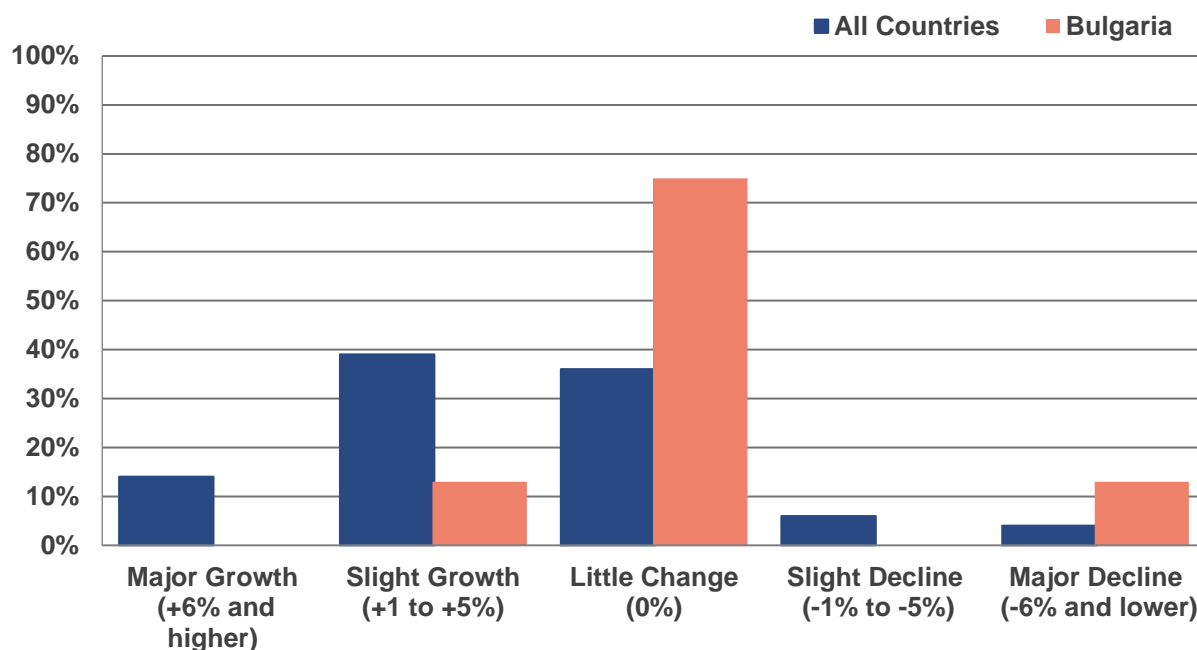
The responses from the interview with the Bulgarian financial institutions are different. Based on their experience in more than 50 projects altogether, the most common value is 200,000 – 500,000 €.

Figure 3 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)



Three quarters of the respondents estimated that the Bulgarian EPC market in 2016 was worth less than 10,000,000 €, while some provided much higher estimates. Although the same response (less than 10,000,000 €) was the most common in the EU countries, it was indicated by only 30% of the respondents from these countries.

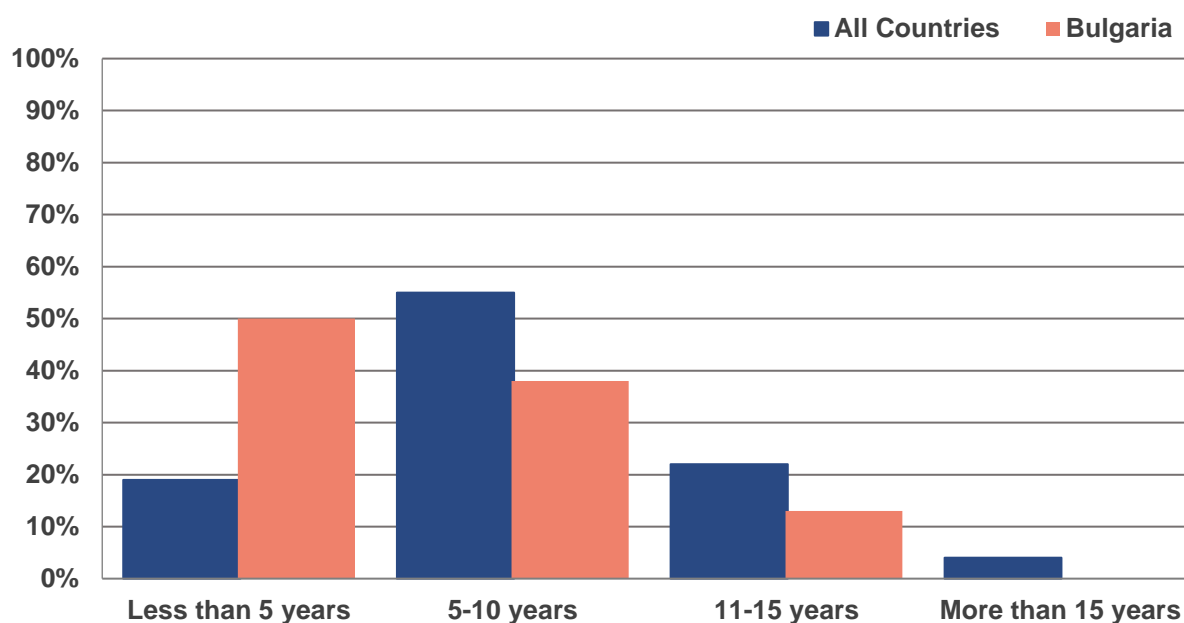
Figure 4 Over the last 12 months, the EPC market in your country has seen: (Percentage share of responses by providers and facilitators Sept 2017)



The Bulgarian EPC market was estimated by 75% of EPC providers and facilitators as stable over the last 12 months. In all countries, although the stagnation was also common, there were many positive trend estimations for the national markets. It seems that the Bulgarian market is lagging behind.

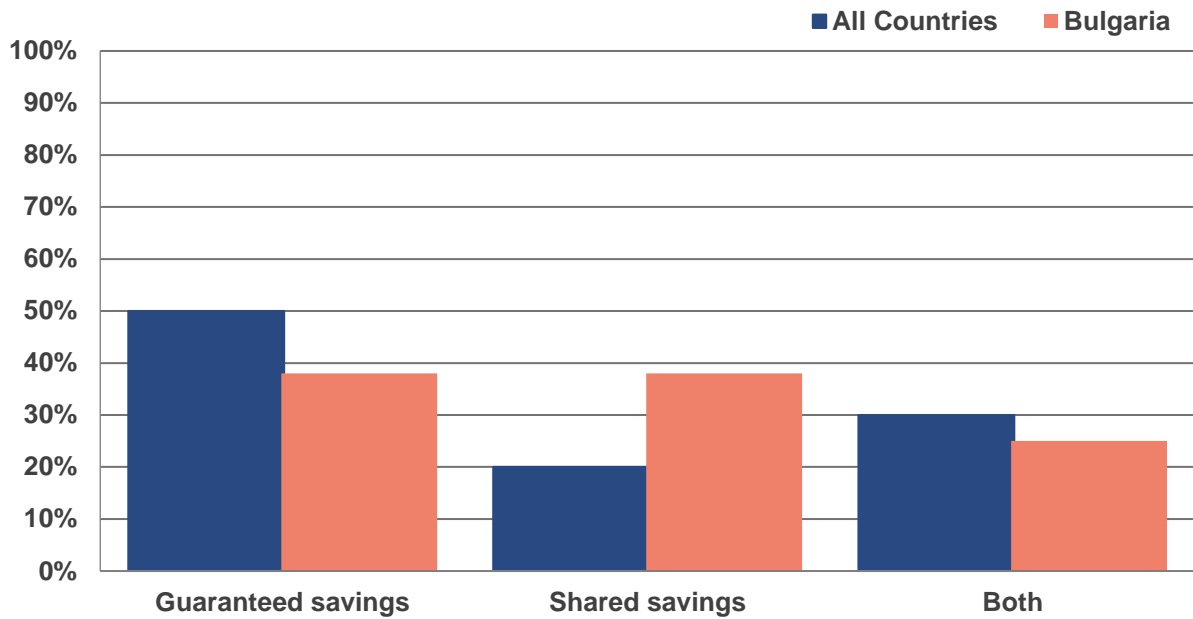
4.3 EPC business models

Figure 5 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)



In Bulgaria, the most common duration of EPC contracts, in which the respondents were involved is less than 5 years (50% of contracts) and 5-10 years (37% of contracts). Only 13% of the projects had longer duration. In all surveyed countries, there was a much lower number of projects below 5 years, while the long projects (11-15 or even more than 15 years) had a higher share, compared to Bulgaria.

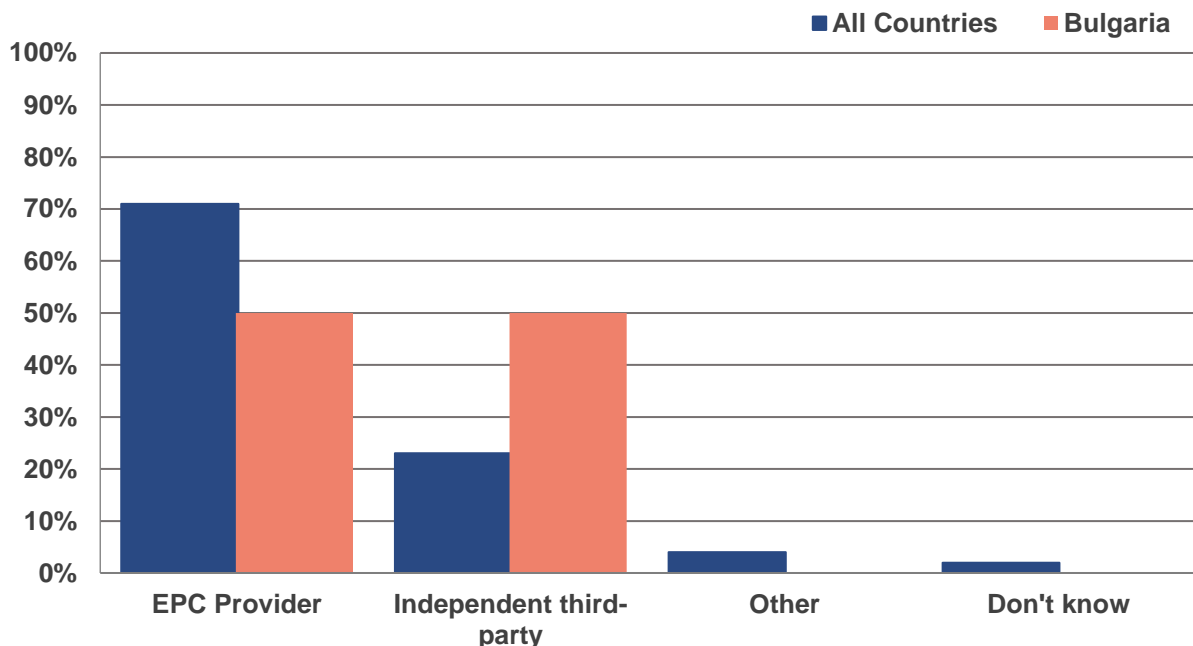
Figure 6 What type of energy savings model is offered in the EPC projects you are involved in? (Percentage share of responses by providers and facilitators Sept 2017)



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

The Bulgarian respondents – EPC providers and facilitators – were equally involved in guaranteed savings and in shared savings models (37% each). Other 25% were experienced in both types of contracts. This differs from the overall situation in All Countries, where the guaranteed savings model was much more common than the shared savings – 50% vs 20%.

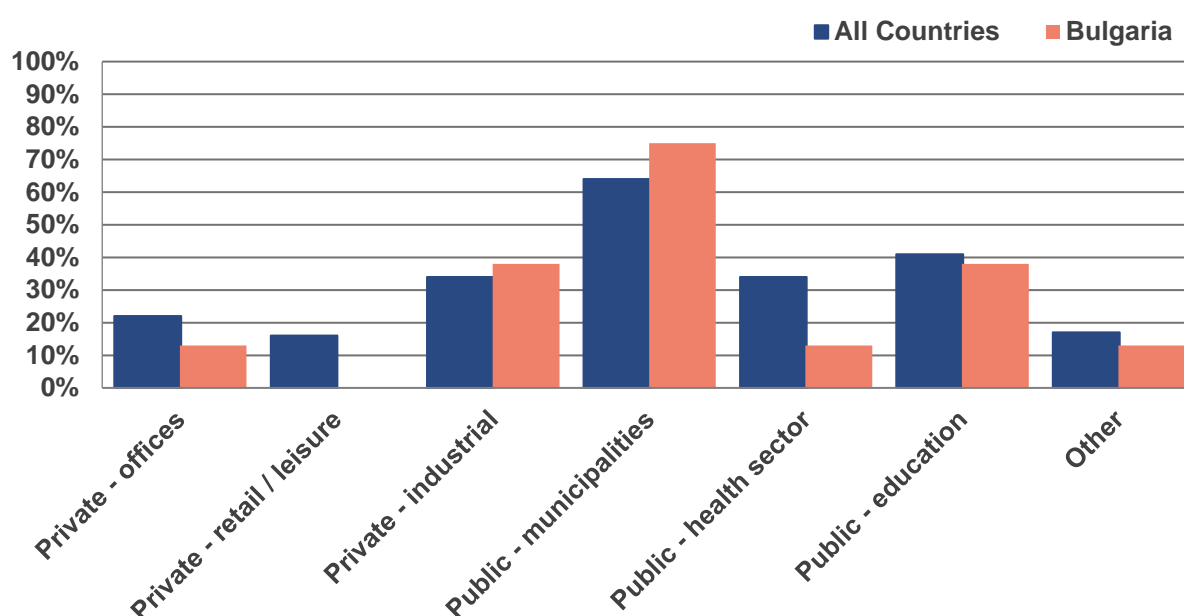
Figure 7 Who typically delivers the energy savings performance analysis in the EPC projects you are involved with? (Percentage share of responses by providers and facilitators Sept 2017)



In Bulgaria, a half of the respondents indicated that in their projects the energy saving performance analysis was delivered by the EPC provider, while the other half indicated an independent third party. In the EU countries, in more than 70% of all projects this role was taken by the EPC provider.

4.4 EPC market sectors

Figure 8 Which sectors do your EPC clients generally come from? (Percentage share of responses by providers and facilitators Sept 2017)

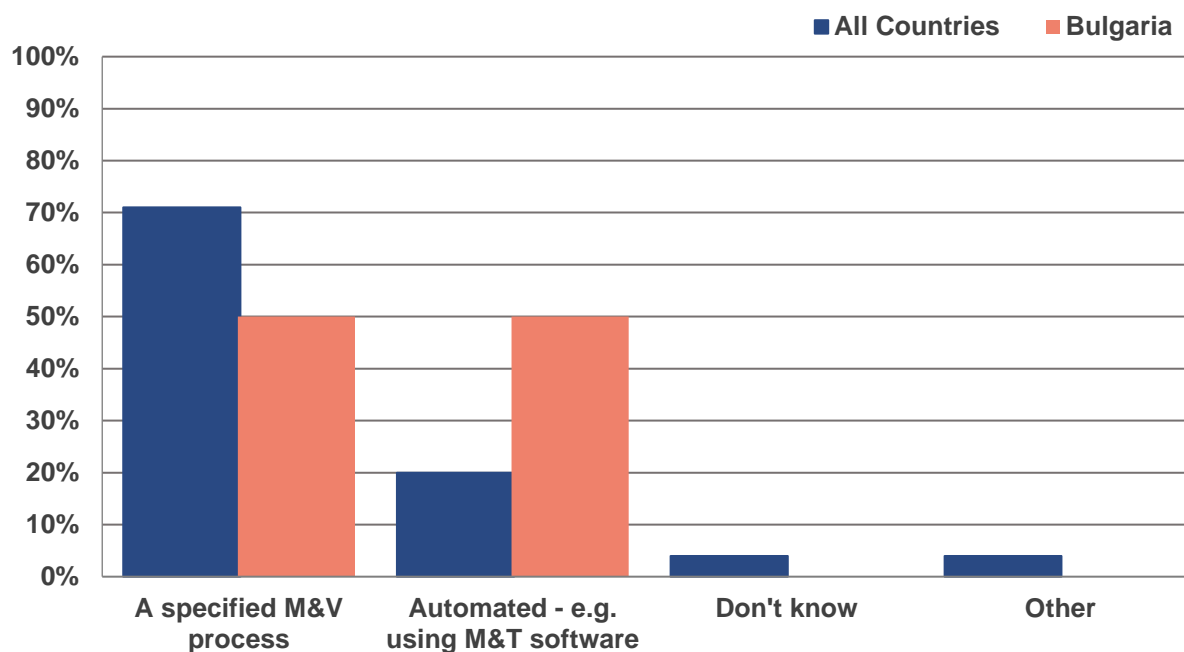


The majority of the clients of the Bulgarian EPC providers, participating in the survey, came from the public sector. In this sector, municipalities were the most common client (75%), followed by educational institutions (38%). It can be observed, that private industrial clients were indicated by 38% of the respondents, which represented a substantial increase compared to the surveys carried out in 2013 and 2015 within the IEE project “Transparens”³. The picture in all surveyed countries was somewhat similar to the Bulgarian one, but on average, the respondents’ projects came under a higher number of sectors.

³ <http://www.transparens.eu/eu/epc-databases/data-collection>

4.5 EPC measurement & verification

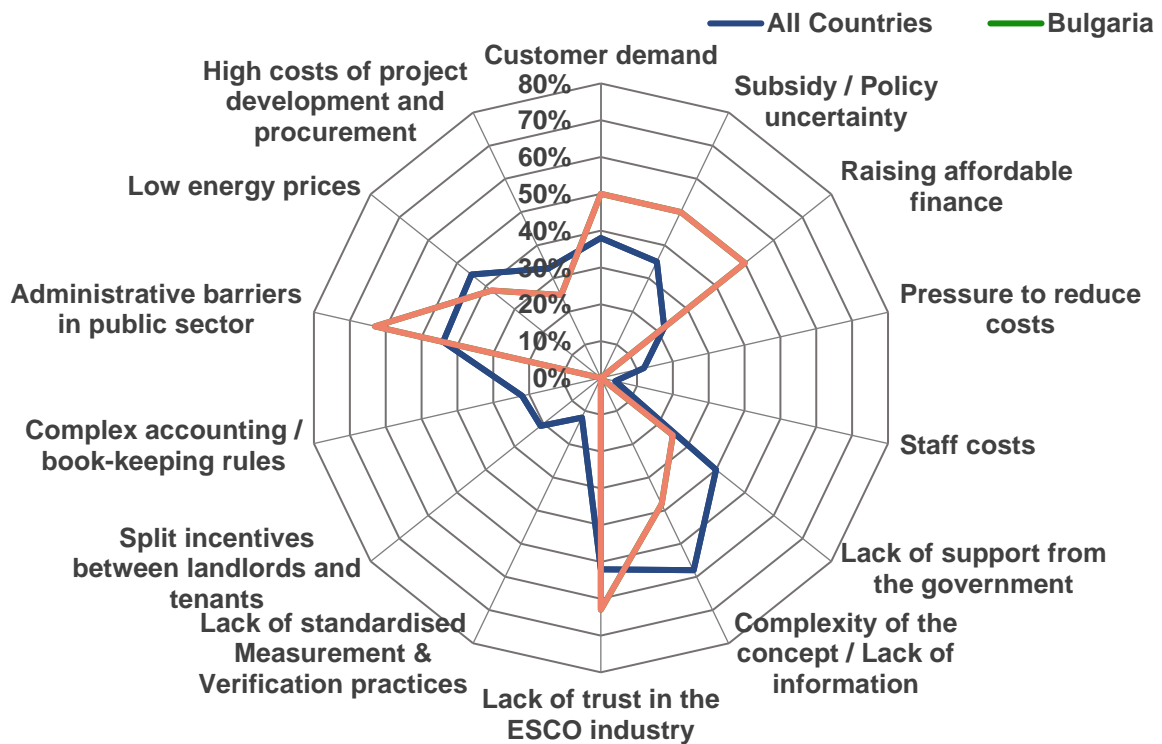
Figure 9 How is the energy saving performance of the EPC projects you are involved with typically measured and quantified? (Percentage share of responses by providers and facilitators Sept 2017)



In terms of measurement of the EPC project related energy savings, specified M&V process was equally used as automated M&V by the Bulgarian EPC providers and facilitators. In All Countries, the specified M&V process was more common than the automated measurement and verification.

4.6 EPC market barriers

Figure 10 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)



According to the questionnaire respondents, the main barriers to the EPC business in Bulgaria were the lack of trust in the ESCO industry and the administrative barriers in the public sector (63% of respondents specified each). These barriers were much less common in 2013 (BSERC, 2013). The other important barriers were the low customer demand, the uncertainty concerning the related policy and subsidies, and raising affordable finance (each specified by 50% of respondents). All abovementioned barriers were more relevant to Bulgaria, compared to the European countries that responded. Interestingly, although Bulgaria had the lowest energy prices in the EU, the share of respondents from all surveyed countries who reported such barrier was higher.

When a similar question was asked to EPC clients in the QualitEE interviews, they specified as main barriers the lack of trust and the complexity of the concept.

4.6.1 Regulatory and administrative barriers

Energy prices have a significant impact on cost effectiveness. Low energy prices mean that short-term returns on investment, in particular regarding extensive investments and associated services, are difficult to demonstrate (JRC, 2017). Bulgaria’s energy tariffs are to a large extent regulated and suppressed by the regulatory body. As a result, they discourage many investments in energy efficiency.

As discussed in the previous section, the administrative barriers in the public sector are essential for the EPC providers and facilitators. The most notable example is the amendment of Article 17b of the Municipal Debt Act adopted in 2015, which limits the debt of municipalities in relation to new EPC to 15 % of the average annual capital cost for the last 4 years.

4.6.2 Structural barriers

As mentioned above, the lack of information and the complexity of the EPC concept is an important barrier for the EPC providers and facilitators and the most important one for the clients. As reported by JRC (2017), this barrier is particularly relevant for emerging EPC markets, such as Bulgaria. Partly as a result of the lack of trusted information, the energy efficiency benefits are often regarded as less certain and energy efficiency is undervalued relative to other investment options (JRC, 2017). Official information on EPC providers, main types of EPC models and implemented EPC projects in the public sector is not maintained by the Government (NEEAP, 2017). Additionally, still there are no well-established EPC project and market facilitators in the country. While it may be unfeasible to train numerous potential clients on the EPC concept, independent facilitators can compensate clients' lack of awareness and knowledge by promoting appropriate project schemes and assisting in the project preparation.

An important barrier for Bulgaria is that often the actual energy consumption prior to the project is below the expected level, as the consumers cannot afford higher energy costs. For example, many buildings are underheated and many public lighting systems operate only a couple of hours per day. This not only increases the payback period of energy efficiency improvement measures, but the rebound effect (e.g. consumers afford better comfort) eats up a large part of the savings.

Another barrier to EPC (and other commercial EES) that is common in Bulgaria is that the condition of the sites is often poor, so the energy efficiency improvement measures need to be accompanied by additional investments (e.g. construction works) that would worsen the economic parameters of the projects.

EPC generally imply high transaction costs, so this scheme is generally not compatible with small scale projects (JRC, 2017).

4.6.3 Financial barriers

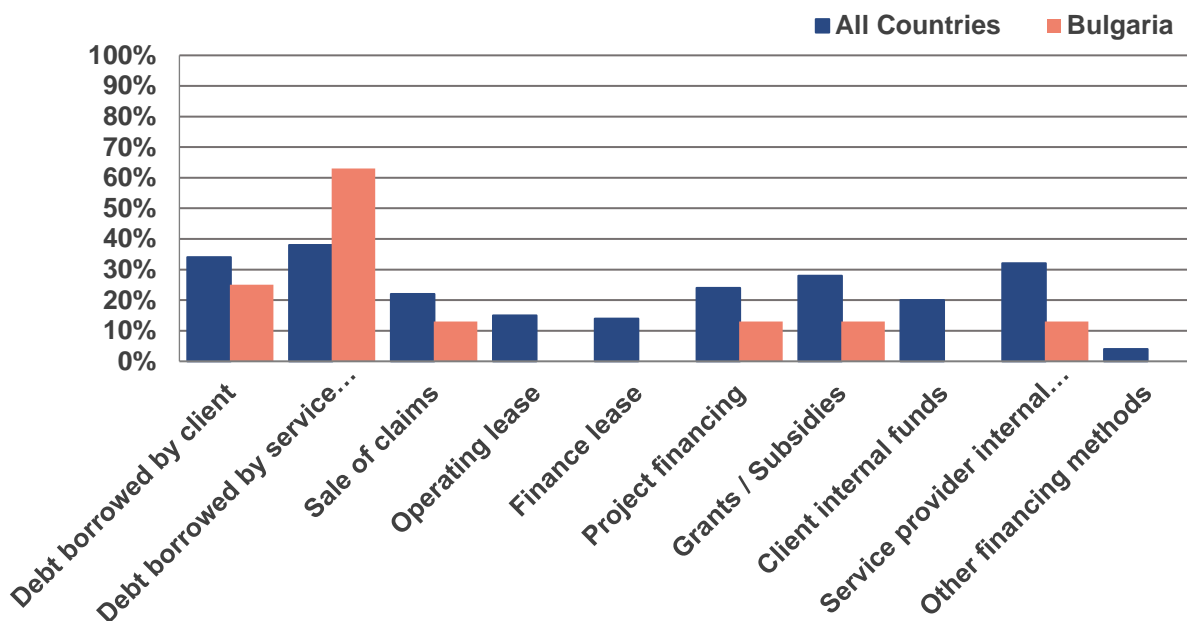
The key financial barriers to EPC business are the following (Markov, 2016):

- ✔ Highly capital intensive – negative effect on ESCO balance sheet;
 - ✔ Long term investments with typical payback period over 5 years;
 - ✔ Uncertainty (risk) of receivables – depend on both the achieved performance and the long term financial stability of the client
 - ✔ No “hard” collateral (the project assets related to EE measures normally cannot be used as collateral) – increases the risk premium for the banks
-
-
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- ✔ Technically complicated project, difficult to be understood by the financing institution
- ✔ The project is difficult to standardize from a financial point to view, resulting in high administrative costs for banks for relatively small projects.

4.7 EPC financing

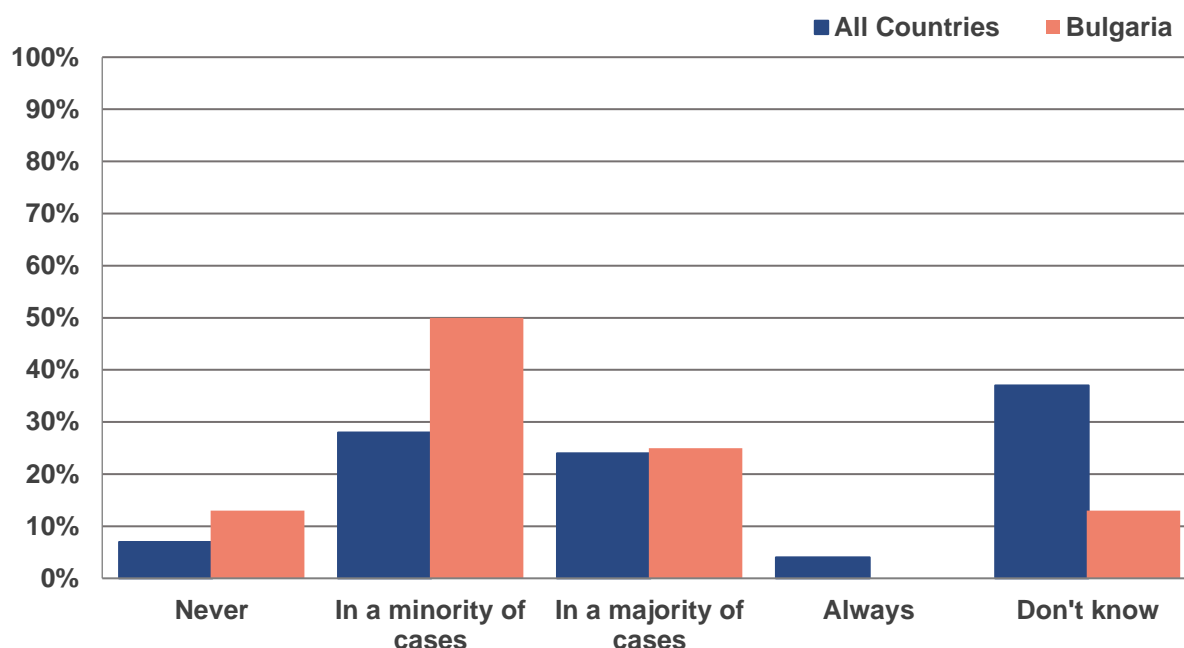
Figure 11 How are the EPC projects you are involved with financed? (Percentage share of responses by providers and facilitators Sept 2017)



In Bulgaria, according to EPC providers and facilitators, by far the most significant source for financing of EPC projects was the debt borrowed by the service provider (63%), followed by the debt borrowed by the client (25%). Maybe this can be attributed to the requirement for the EPC providers of projects in the public sector to arrange the financing. According to the figure, the respondents from all countries took advantage of higher variety of financial schemes and sources, compared to Bulgaria – apart from the debt borrowed by service provider, all the other responses were selected more often in All Countries.

The financial institutions, interviewed within the QualitEE, provided a different picture by reporting only two common types of financing: debt borrowed by the service provider and sale of claims.

Figure 12 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)

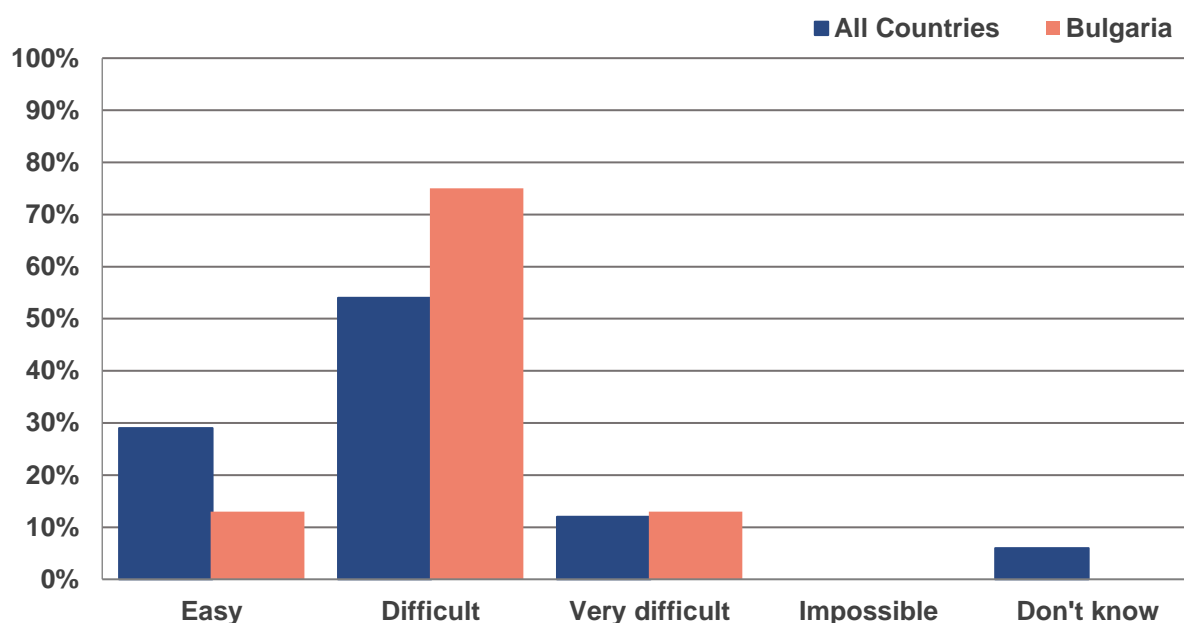


Only 25% of the Bulgarian EPC providers and facilitators believed that the sale of claims was accepted as a main collateral in most of the cases, while the majority thought that it was rarely (50%) or never (13%) accepted.

Probably the response depends on the particular financial institution contacted, for example commercial banks rarely accept such collateral, due to the conditions imposed to them by the Bulgarian National Bank (BSERC, 2018b).

The responses from All Countries are more balanced. Many of them were unable to specify any response, which might indicate that they were either not interested in that solution, or even did not know that it was possible.

Figure 13 Do you consider that obtaining viable finance for an EPC project is easy? (Percentage share of responses by providers and facilitators Sept 2017)



Only a minor share of the Bulgarian EPC providers and facilitators considered that financing was easy to obtain, while for the vast majority (87%), this was either difficult or very difficult. In All Countries, it was easier to obtain financing.

4.7.1 ESCO financing

In Bulgaria, the possibilities for ESCO financing are as follows (Markov, 2016):

- ✔ Financing from Commercial banks – it is rarely used, normally it is balance sheet financing (not project based), and collateral is required.
- ✔ Own funds of the ESCO - normally used by multinational companies, such as Siemens, Johnson Controls, Honeywell, Philips, etc.
- ✔ Cession to specialized funds, such as Energy Efficiency and Renewable Energy Fund (EERSF) and Energetics And Energy Savings Fund
- ✔ Credit lines of international institutions, such as EIB, EBRD, KfW, etc.

According to one of the interviewed Bulgarian financial institutions, the following requirements need to be met to obtain a loan:

- ✔ The EPC client must be credit-worthy;
- ✔ The EPC provider must be credit-worthy;
- ✔ The project must be profitable
- ✔ The project must be legally robust (project abides by all legal requirements)
- ✔ The Contract is well formulated (step in rights, penalties, receivables, bankruptcy etc.)

- ✔ The risks are clearly shared between the parties

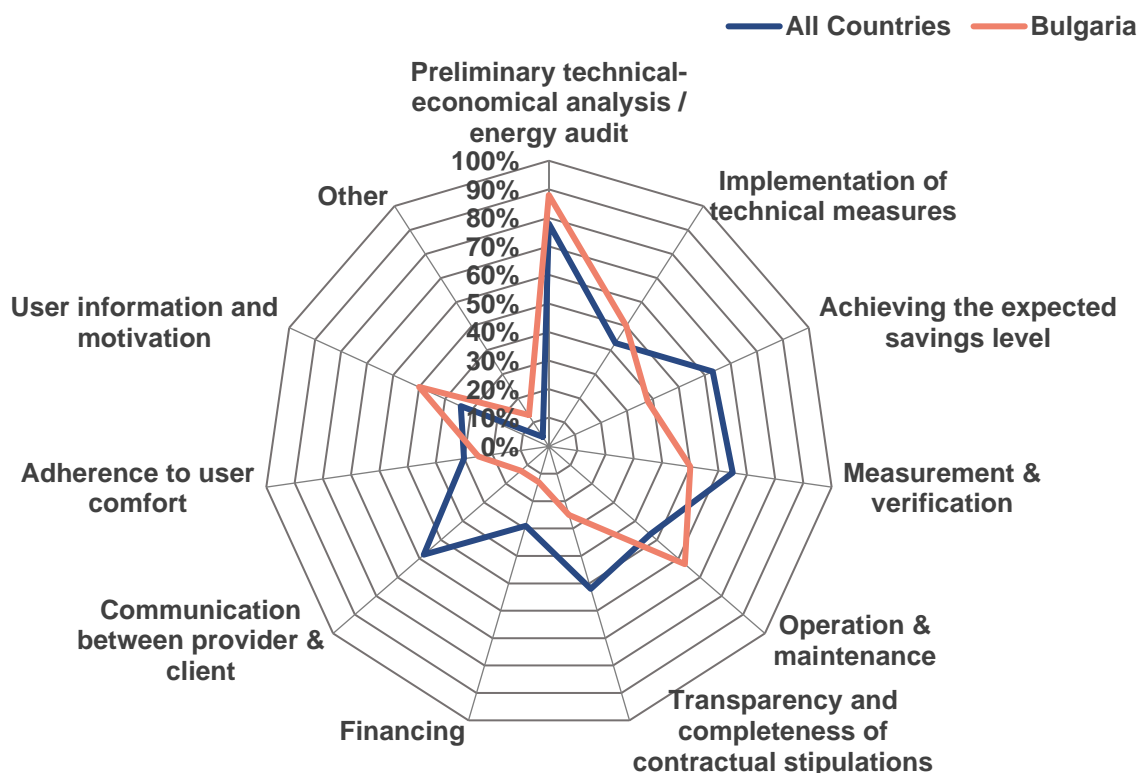
4.7.2 Client financing

Credit by the client is not an option in the public sector, due to the requirement of the Energy Efficiency Act for the EPC providers to secure the financing (EEA, 2017).

On the other hand, this option is possible in the private sector. The decision who and how would ensure the funding normally depends on the conditions of the different financial institutions and funding programs, the creditworthiness of the client and the provider, the availability of own funds of the client and the provider, the economic parameters of the project, and others.

4.8 EPC quality determinants

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

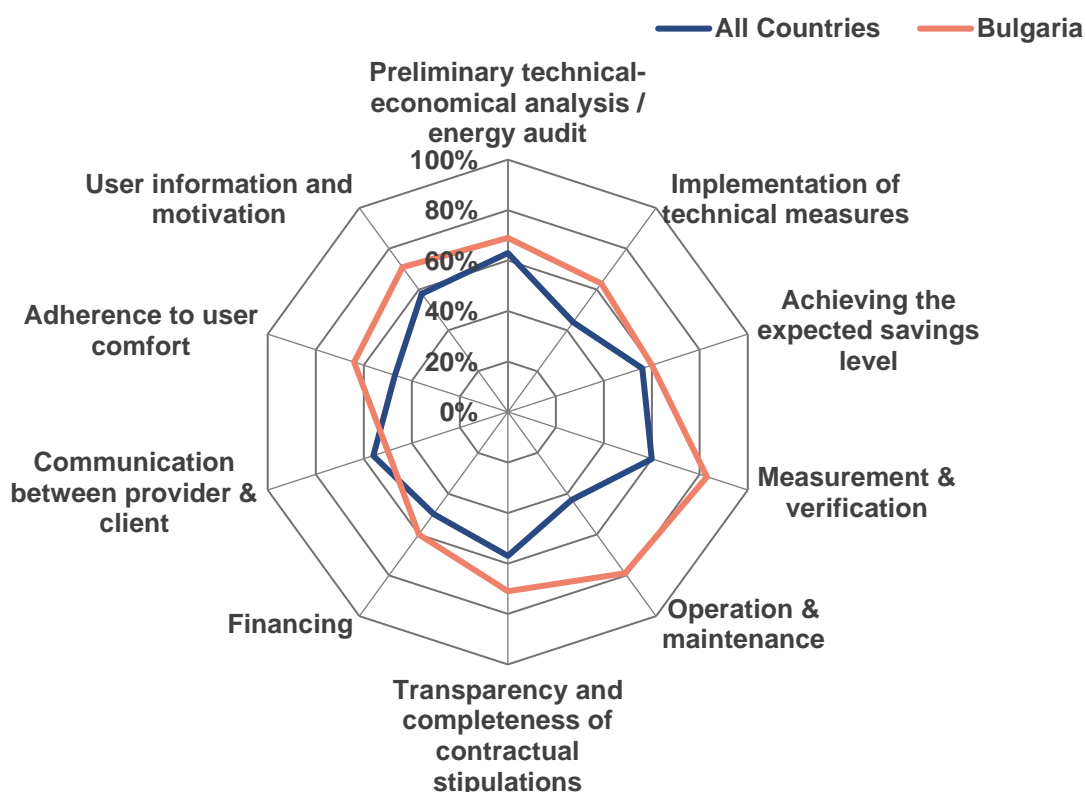


According to the Bulgarian EPC providers and facilitators, the most important determinants of EPC quality are the preliminary technical and economic analysis (specified by 88% of respondents), the operation and maintenance (63%), measurement and verification (50%),

implementation of the technical measures (50%), and user motivation and information (50%). The biggest differences with All Countries are that in Bulgaria: (1) the communication between provider and client and (2) the transparency and completeness of contracts are much more important.

The importance of the preliminary technical and economic analysis was also confirmed by one financial institution, which shared that often projects had overestimated savings and underestimated costs (i.e. not all necessary costs, such as construction costs, were included). Neither clients nor financial institutions mentioned any other issue regarding the quality of their projects during the interviews.

Figure 15 In which areas are quality improvement most needed in EPC project preparation and implementation? (Indicator based on rating scale⁴ - Sept 2017)



The Bulgarian providers and facilitators saw much higher need for improvement of the preparation and implementation phase of EPC projects in comparison to their counterparts from All countries. All areas were specified by at least a half of the respondents. In Bulgaria, the key areas included M&V (83%), operation and maintenance (79%), transparency and completeness of the contract (71%), preliminary analysis (69%), user motivation and information (69%).

⁴ Respondents were asked to rank each determinant using the following options ‘not needed’, ‘needed’, ‘strongly needed’ and ‘don’t know’. An indicator was created by assigning a weighting of 0%, 50% & 100% to ‘not needed’, ‘needed’ & ‘strongly needed’ respectively and dividing by the number of responses. Where ‘don’t know’ was selected this was excluded from the calculation of the indicator.

5 ENERGY SUPPLY CONTRACTING MARKET

5.1 ESC market actors

ESC is offered by several large electricity, district heating and gas distribution companies, but it represents only a minor share of the sales of these companies. The other ESC providers are suppliers of energy equipment, mainly of biomass boilers and CHP. Furthermore, concessioners responsible to cover the energy costs of the contracted site, can also be considered ESC providers, although in this case normally the useful energy is contracted, not the total energy delivered and measured in kWh – for example, in a concession of public street lighting, the concessioner needs to guarantee a concrete illumination level, no matter the amount of energy used to achieve it.

Several ESC providers are members of the Bulgarian EES providers' association – Alliance for Energy Efficiency.

Clients of ESC are mainly public authorities. Other common clients are large office buildings, shopping centres, hotels, and residential complexes.

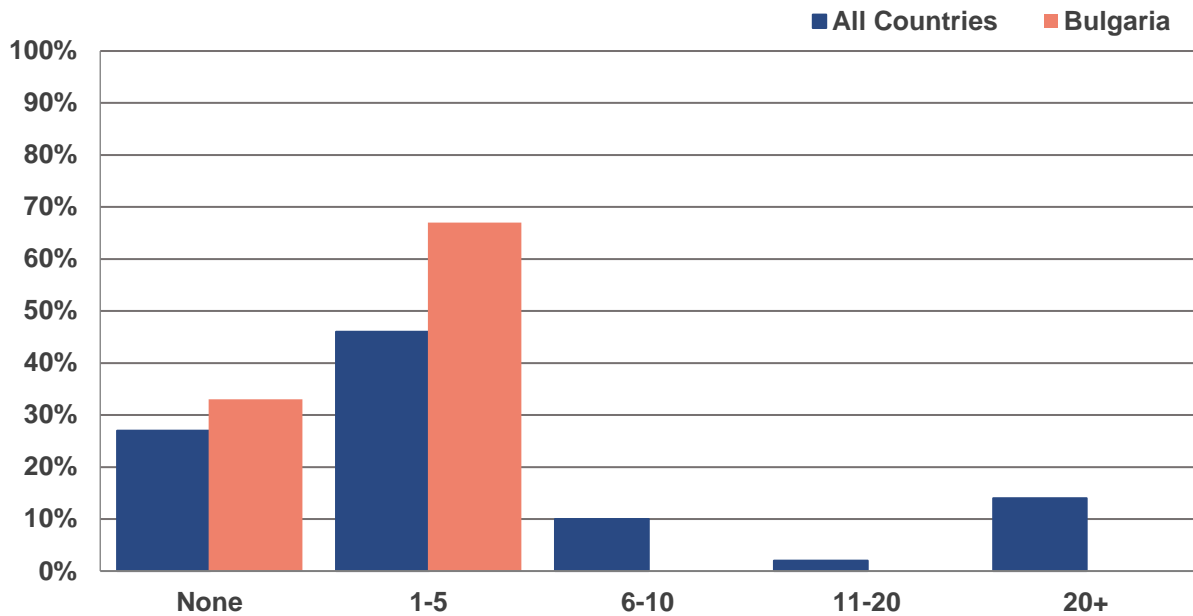
As mentioned in section 4.1, in Bulgaria, there are no widely known specialized EES project facilitators to support clients in identifying and procuring of projects.

5.2 ESC market development

The information about ESC is very scarce (JRC, 2017). No national ESC market studies have been identified.

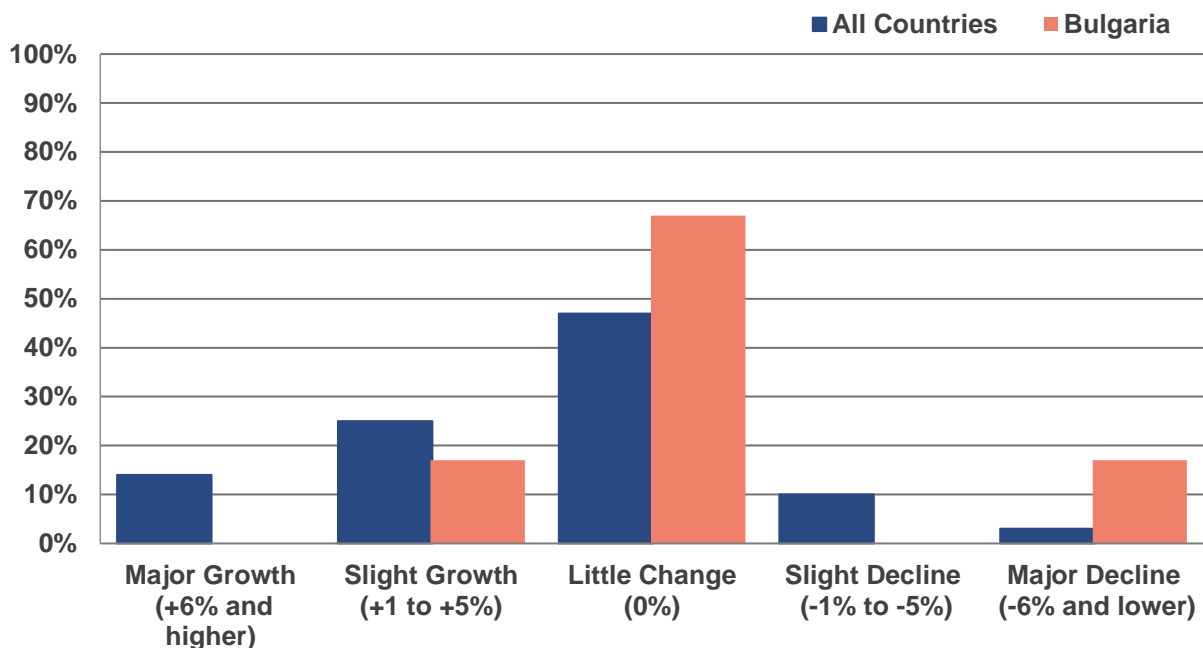
The main information provided in this chapter is based on questionnaires (BSERC, 2018a) and interviews (BSERC, 2018b).

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



The majority of the Bulgarian respondents (67%) started 1-5 new projects in the last 12 months and the rest (33%) – zero new projects. The EU respondents started much more new projects and even a considerable share (14%) started more than 20 projects.

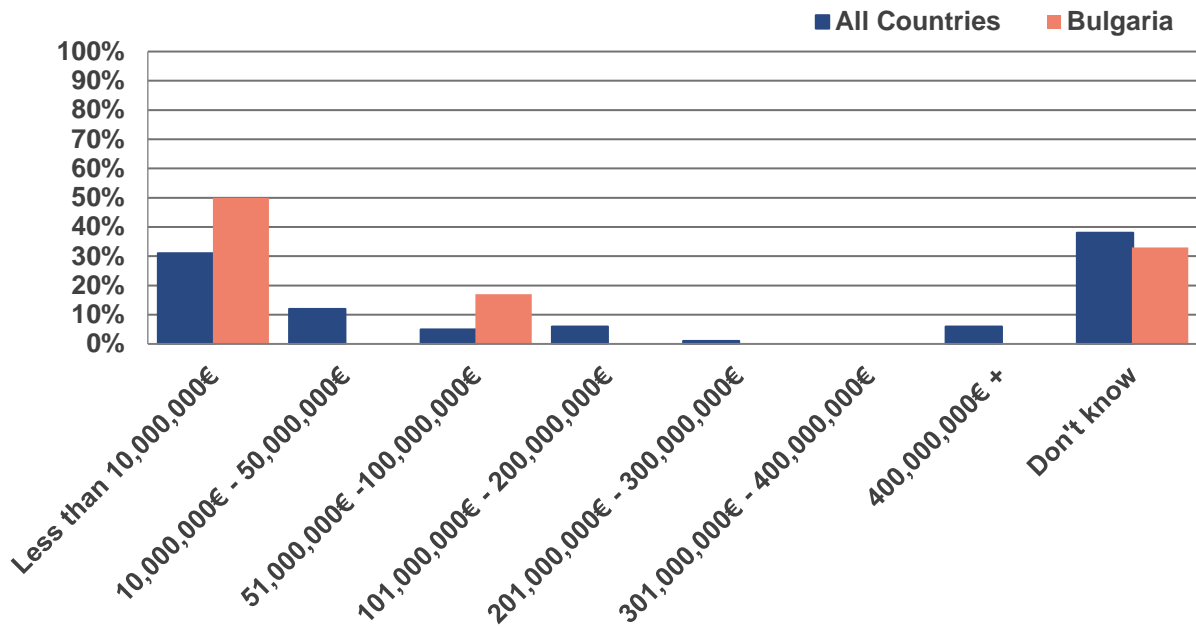
Figure 17 In the last 12 months your ESC orders have seen: (Percentage share of responses by providers and facilitators Sept 2017)



For most of the Bulgarian ESC providers and facilitators the orders in the last 12 months remained unchanged. The rest either experienced slight growth or major decline. The

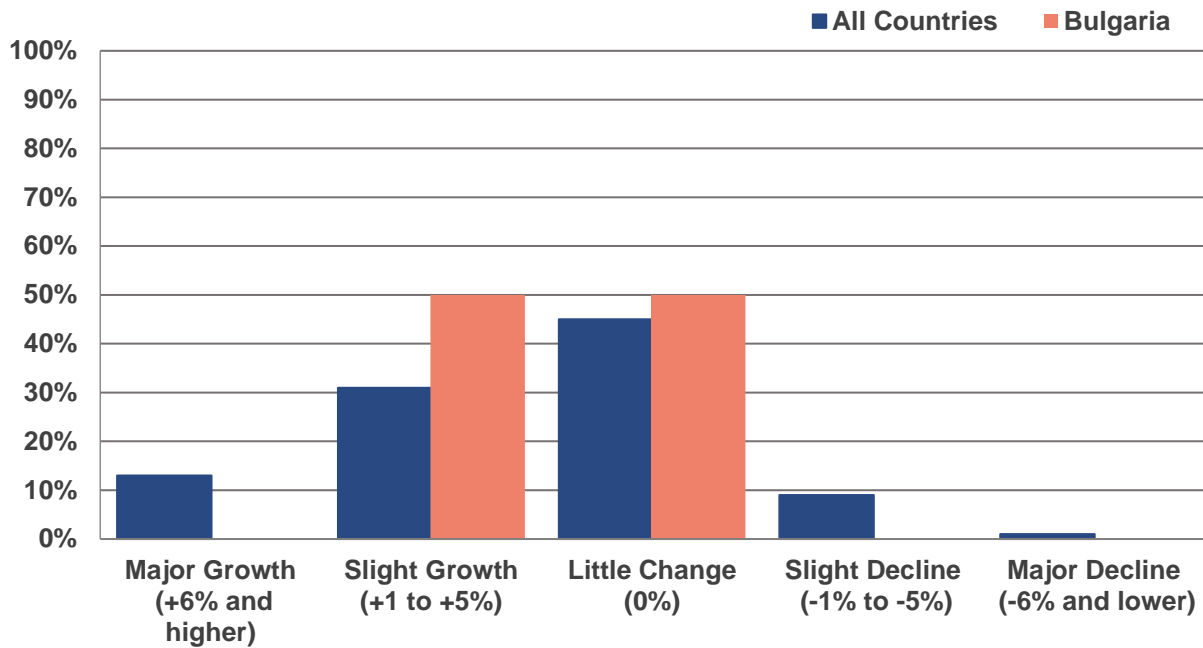
development in all surveyed countries was more positive – only 13% had fewer orders, while 39% had more.

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)



A half of the Bulgarian ESC providers and facilitators considered that the total market revenue in 2016 was below 10M€, while some estimated it to 50M€-100M€. Many were unable to provide an estimate. Similar to their Bulgarian colleagues, most EU respondents who made a particular estimate, stated that the market in their country did not exceed 10M€ in 2016.

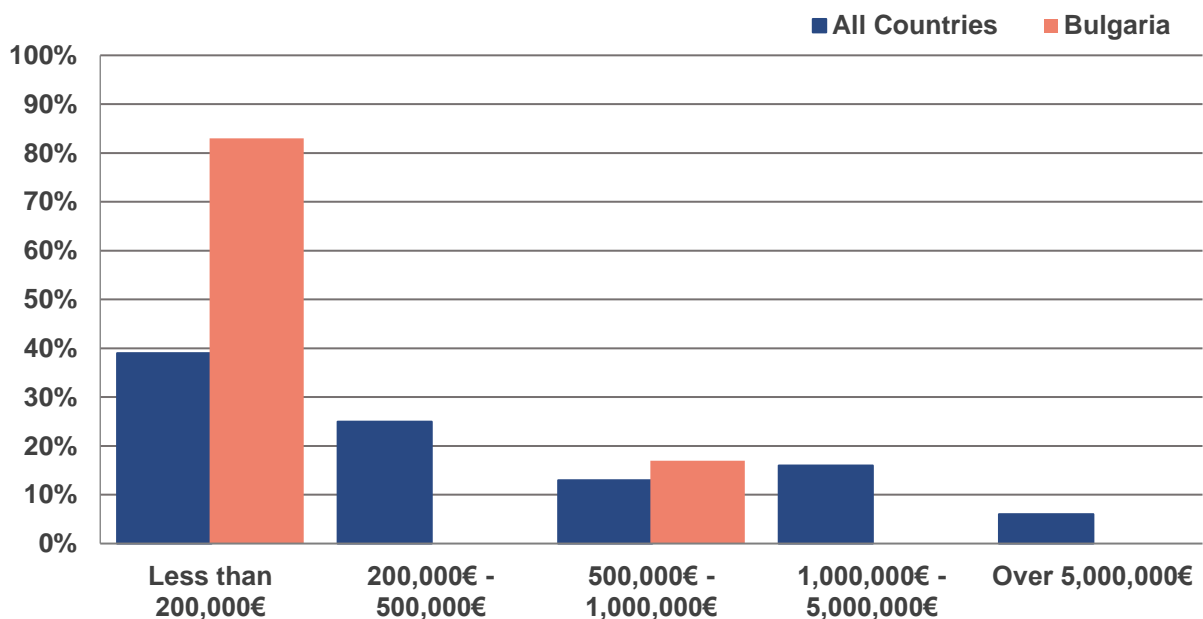
Figure 19 Over the last 12 months, the market for ESC in your country has seen: (Percentage share of responses by providers and facilitators Sept 2017)



According to the respondents, the ESC market was either stable (50% of respondents) or slightly (up to 5%) increasing (50% of respondents) during the last 12 months. This was in line with the opinion of the respondents in all countries, although their responses were more heterogeneous.

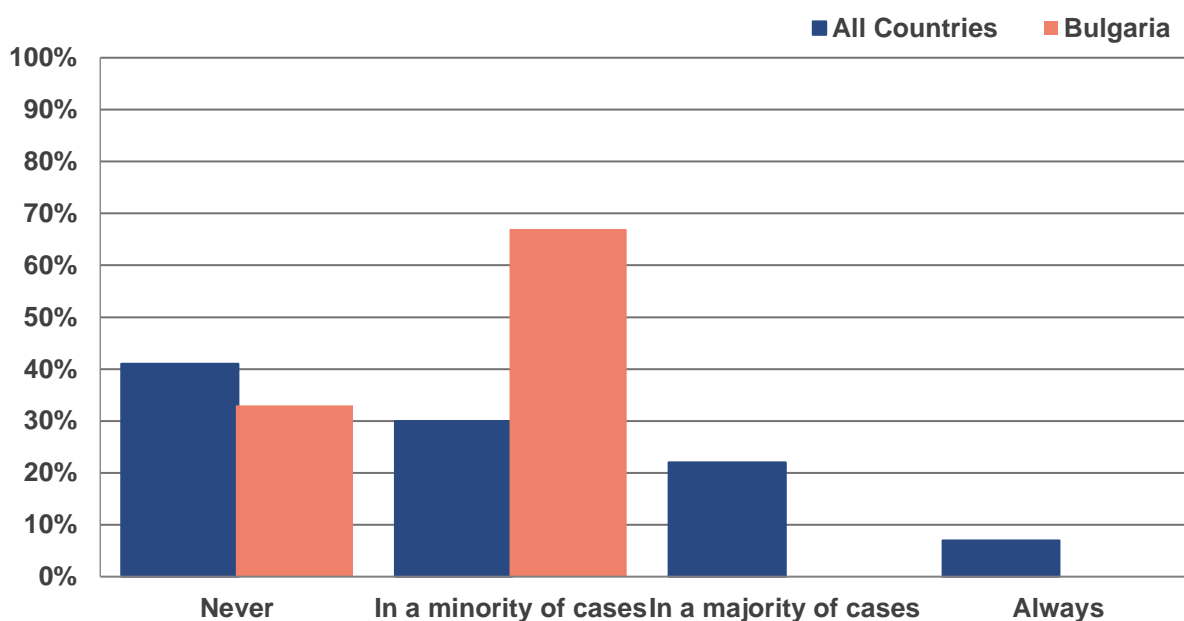
5.3 ESC business models

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)



The typical ESC projects of the majority (83%) of the ESC providers and facilitators had an overall value, measured in terms of investments, of less than 200,000 €. For a minor share of respondents (13%) these projects were between 500,000 and 1,000,000 €. In the European countries that participated in the survey, the distribution of the project value among the different investment categories was more balanced. Although the majority of the EU projects fell under the first and second category, respectively 39% and 25%, there were also many projects of large investment volumes.

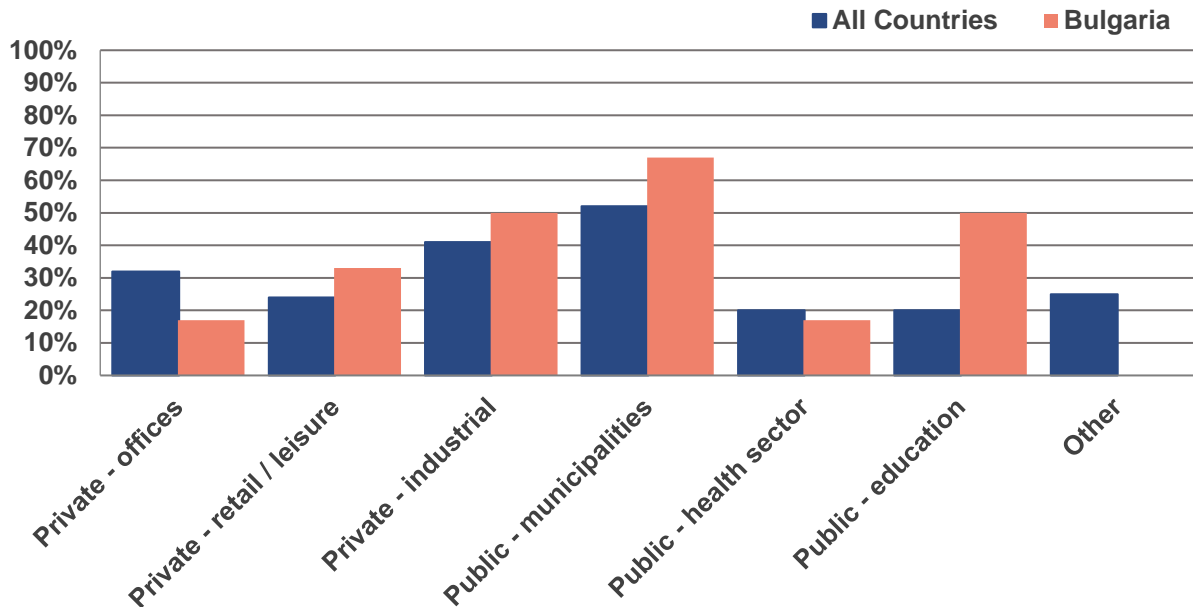
Figure 21 In the ESC projects you are involved in, were payments per unit of energy delivered in combination with payments per unit of energy saved (from installed energy efficiency measures)? (Percentage share of responses by providers and facilitators Sept 2017)



According to 67% of the Bulgarian ESC providers and facilitators, in a minority of their projects, the remuneration depended not only on the energy delivered, but also on the energy saved through energy efficiency measures. The remaining 33% of the respondents were not involved in projects where the saved energy would increase the payments. The situation in all countries was different – although the share of EPC providers and facilitators who had never experienced such an arrangement was high (41%), there were also respondents that considered remuneration for the saved energy in a majority of cases (22%) or in all cases (7%).

5.4 ESC market sectors

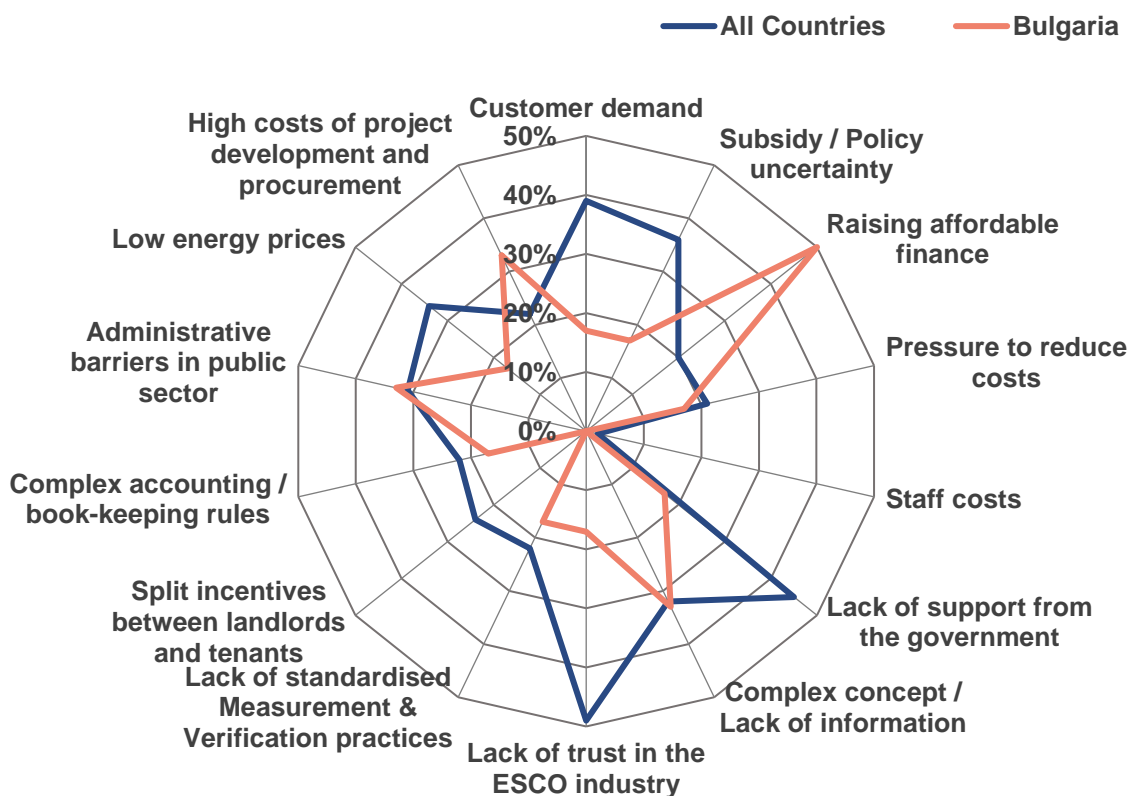
Figure 22 Which sectors do your ESC clients generally come from?



The main client sectors of Bulgarian ESC projects were local administrations (67% of the respondents), education (50%) and industry (50%). Other client sectors included private retail / leisure (33%), private offices (17%) and public health sector (17%). Generally, the Bulgarian respondents had clients from more sectors, compared to their counterparts from other EU countries (unlike the situation in the EPC market, reviewed above). The main sectors that were more common in EU were the private offices and “other”, so these could represent untapped market for future ESC in Bulgaria.

5.5 ESC market barriers

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)



The Bulgarian ESC providers and facilitators identified several major barriers to the ESC business – raising affordable finance (50% of respondents), high costs of project development and procurement (33%), administrative barriers in the public sector (33%), and complex concept / lack of information (33%). All these barriers were more relevant to Bulgaria than to the EU as a whole. According to the EU respondents, the main barriers in EU were the lack of trust in the ESCO industry (49%), lack of support from the Government (45%), and low customer demand (39%) – neither of these seemed to be important in Bulgaria, according to the responses. The respondents from all surveyed countries identified more barriers on average, which either indicated that the ESC market in these countries faced more barriers or that the respondents were more aware of the existing barriers compared to the Bulgarian respondents.

5.5.1 Regulatory and administrative barriers

Two regulatory barriers specific to ESC business have been identified:

- ✔ For large CHP plants, the prices of both electricity and heat are set by the Regulator (EWRC) and therefore cannot be negotiated freely by the ESC provider and the client;

- ✔ ESC providers are not allowed to trade with heat and gas on the territory serviced by the respective district heating or gas distribution company.

5.5.2 Structural barriers

Figure 23 shows that the complexity of the concept / lack of information about ESC is among the main barriers, according to ESC providers and facilitators. Indeed, there are very limited resources (promotional materials, best practice examples, guidelines, model contracts, registry of ESC providers, etc.), available on the subject. While EPC has been promoted during the last 15 years, ESC has been neglected.

Another barrier, shared by several Bulgarian EES providers, is the partiality of some public bodies for contracting particular fuel suppliers, without any economic, environmental, or other justification.

Additionally, there are several barriers that are common for all EES – underheating / underlighting, need of non-energy related investments along with the energy ones, and high transaction costs (see section 4.6 for details)

5.5.3 Financial barriers

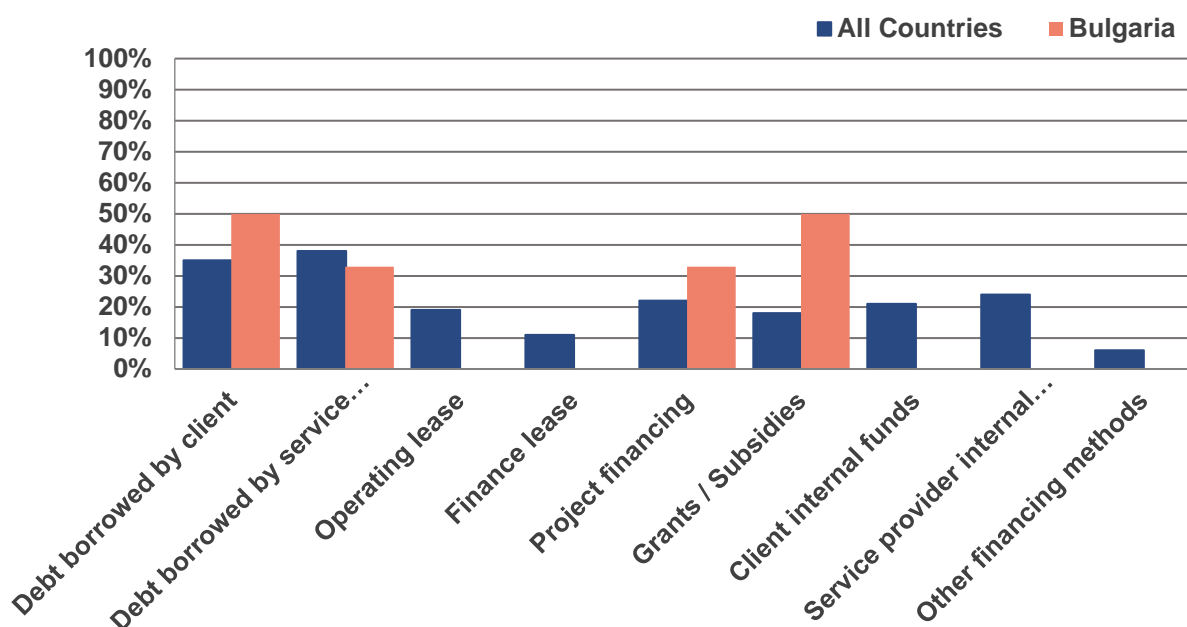
According to Figure 23 raising affordable finance is the most common barrier to ESC. The difficulty to obtain it is confirmed by Figure 26.

All financial barriers to EPC (see section 4.6) apply at least in some cases to ESC. The main ones are:

- ✔ Highly capital-intensive projects – negative effect on EES provider balance sheet;
- ✔ Long term investments with typical payback period over 5 years;
- ✔ Uncertainty (risk) of receivables – depend on both the achieved performance and the long term financial stability of the client.

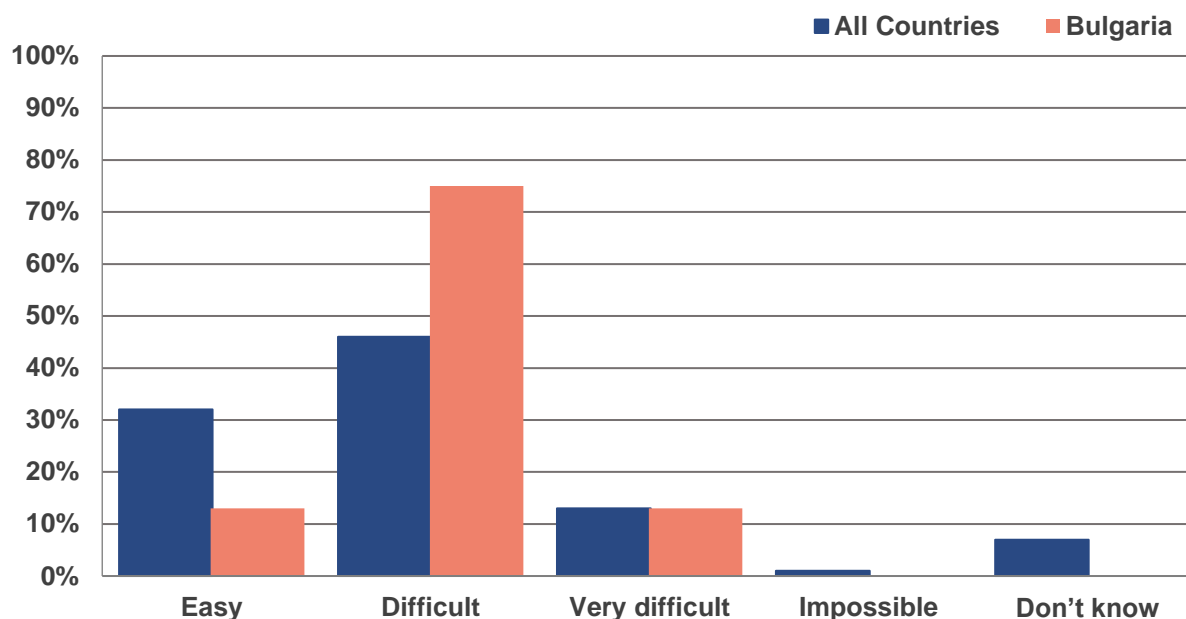
5.6 ESC financing

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



Among the 9 suggested sources of funding, only 4 were mentioned by the Bulgarian respondents, namely debt borrowed by the client (50%), grants (50%), debt borrowed by the ESC service provider (33%), and project financing (33%). In EU, in addition to these, the respondents identified other important funding sources for their projects: internal funds of ESC provider (24%) and internal funds of the client (21%).

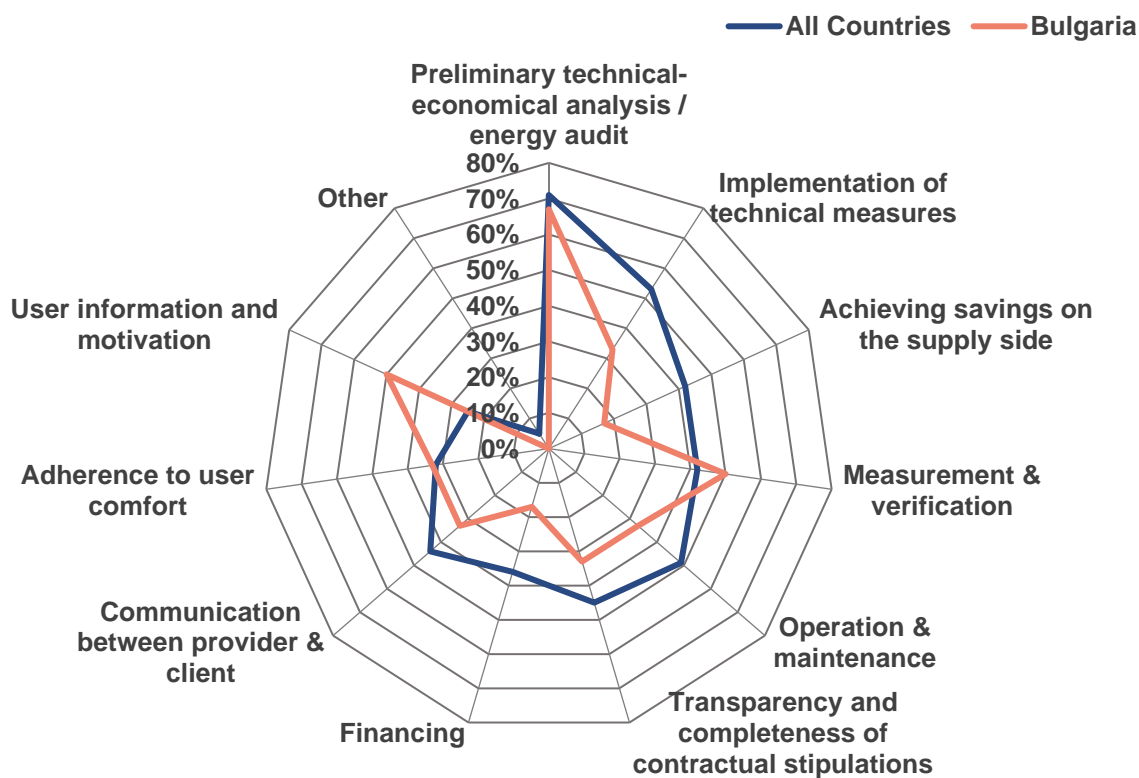
Figure 25 Overall, do you consider that obtaining viable finance for an ESC project is: (Percentage share of responses by providers and facilitators Sept 2017)



Among most of the Bulgarian ESC providers and facilitators (75%), it was difficult to obtain viable finance for ESC projects. Minor shares considered it either easy or very difficult. In all countries, similarly to Bulgaria, the largest group of respondents (46%) considered it difficult, but the share of EU respondents that considered it easy, was much higher compared to the Bulgarian ones.

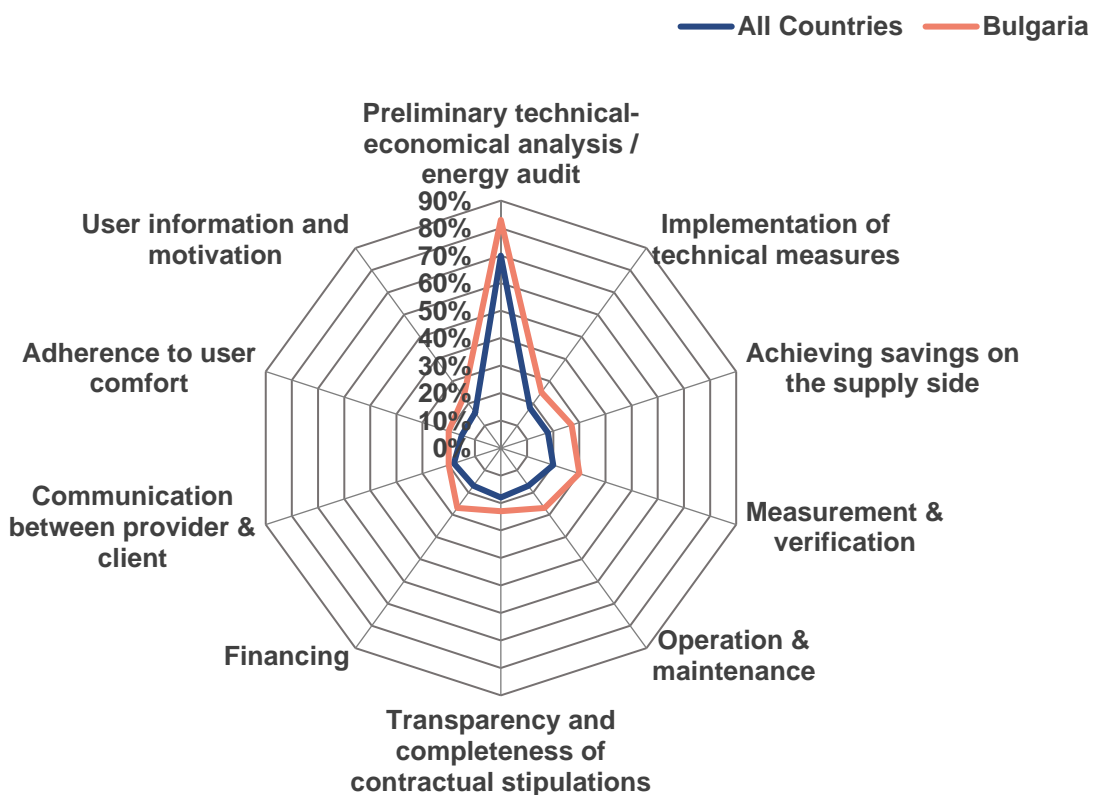
5.7 ESC quality determinants

Figure 26 In your opinion what are the most important determinants of quality in ESC projects? (Percentage share of responses by providers and facilitators Sept 2017)



According to the Bulgarian questionnaire respondents, the most important ESC quality determinants were the preliminary technical – economic analysis (or energy audit) (67%), measurement and verification (50%), and user information and motivation (50%). Other quality determinants, each mentioned by one third of the respondents were: implementation of technical measures, transparency and completeness of contracts, and communication between provider and client. In EU, overall, a higher number of quality determinants were specified by the respondents. The main ones selected by the EU respondents were the preliminary technical – economic analysis (71%), implementation of technical measures (53%), and operation and maintenance (49%).

Figure 27 In which areas are quality improvement most needed in ESC project preparation and implementation? (Indicator based on rating scale⁵ - Sept 2017)



Concerning the need for quality improvement during the ESC projects’ preparation and implementation, the responses from Bulgaria and EU were fully in line and all responses were indicated by the Bulgarian respondents more often than by the EU ones. The response specified by the majority (83% in Bulgaria and 71% in EU) is the preliminary technical – economic analysis. Other relatively common responses for Bulgaria were the measurement and verification (30%), operation and maintenance (27%), financing (27%), and achieving savings on the supply side (27%).

Similar responses were obtained from the interviews with clients and financial institutions. According to their experience, improvement was needed in the preliminary analysis. They did not specify any other need for improvement.

⁵ Respondents were asked to rank each determinant using the following options ‘not needed’, ‘needed’, ‘strongly needed’ and ‘don’t know’. An indicator was created by assigning a weighting of 0%, 50% & 100% to ‘not needed’, ‘needed’ & ‘strongly needed’ respectively and dividing by the number of responses. Where ‘don’t know’ was selected this was excluded from the calculation of the indicator.

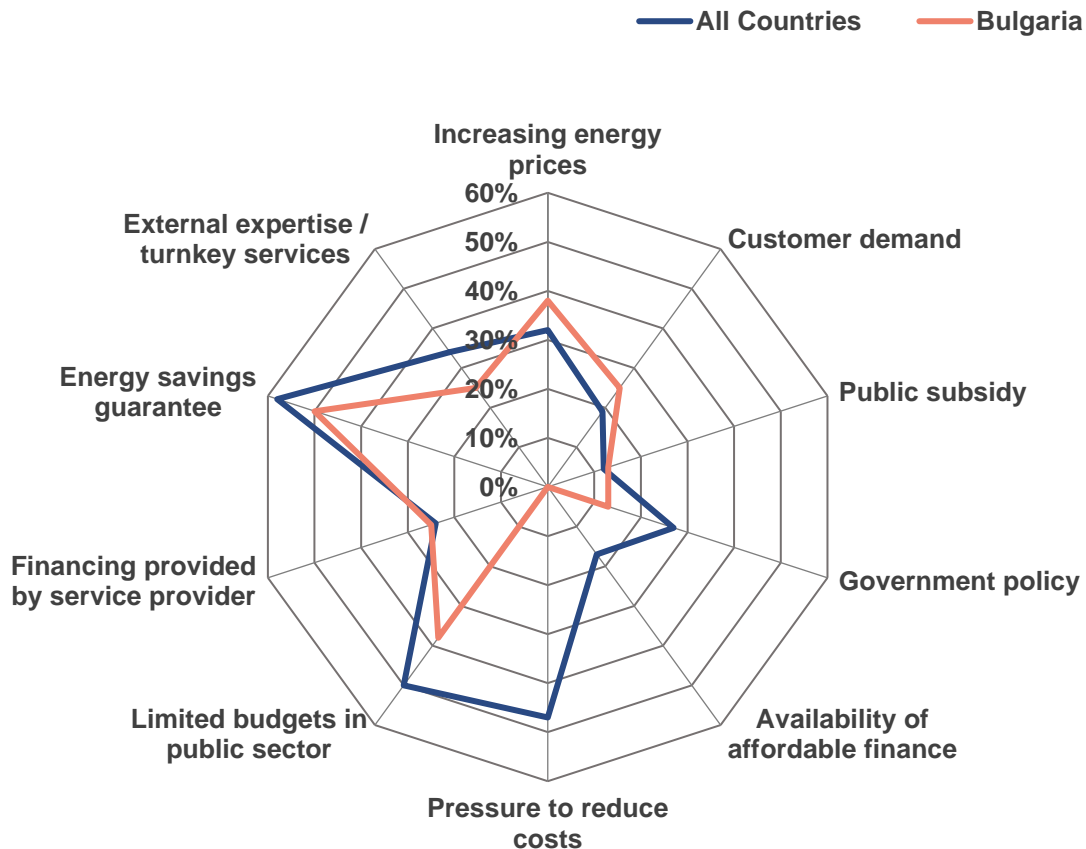
6 OTHER ENERGY EFFICIENCY SERVICES

Based on the individual discussions with Bulgarian EES providers, they offer a wide variety of EES to both public and private clients and are ready to adapt the EES to the customer's preferences. However, so far none of them has signed a contract other than EPC or ESC. Exceptions are only a couple of demonstration projects, where utilities combined EPC and ESC, but these were not carried out on a commercial basis (the utilities pursued non-financial objectives and they did not reimburse their investments).

Given that there is no systemized information about the EES projects in the country, it is possible that there are also other types of EES contracted.

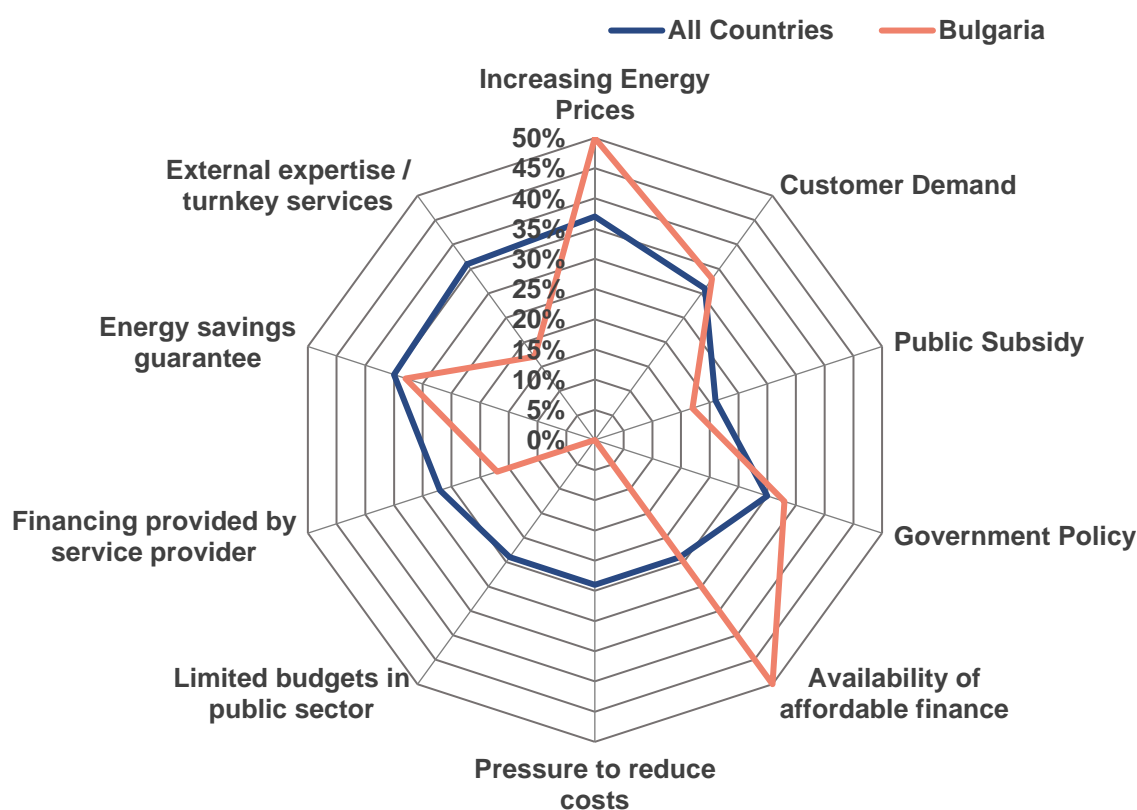
7 RECOMMENDATIONS TO SUPPORT MARKET DEVELOPMENTS

Figure 28 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)



A half of the Bulgarian respondents believed that the main driver of EPC market was the inherent feature of this type of contracts – the energy savings guarantee. Other frequent responses included the limited budget in the public sector and the increasing energy prices. The EU respondents indicated higher number of drivers on average. The major difference between the national and EU responses was that the pressure to reduce costs was one of the key drivers in the EU, while it was not mentioned by any of the Bulgarian respondents. Considering the limited budgets of many public and private organizations in Bulgaria, it is difficult to explain this result.

Figure 29 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)



Concerning the drivers of ESC business in Bulgaria, the most common ones during the last 12 months were the increasing energy prices (50%) and the availability of affordable finance (50%), followed by the customer demand, energy saving guarantee, and government policy. The responses from all other countries were much more balanced and all drivers, except for subsidies, had approximately equal role.

The activities listed in this chapter are meant to help overcoming the barriers of EES market development in Bulgaria identified in chapters 4 and 5 and summarized 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 Lack of information and complexity of the concept | EPC, ESC |
| 2 Low trust in EES providers | EPC, ESC |
| 3 Low energy prices | EPC, ESC |
| 4 Limiting municipality’s debt for EPC projects | EPC |
| 5 Low actual energy consumption prior to the project | EPC, ESC |
| 6 Poor condition of sites, requiring additional non-energy investments | EPC, ESC |

| | Market barrier | EES affected |
|----|--|------------------|
| 7 | High transaction costs | EPC (partly ESC) |
| 8 | Uncertainty of receivables and no “hard” collateral | EPC (partly ESC) |
| 9 | Regulation of electricity and heat prices in case of a large CHP | ESC |
| 10 | Ban of heat and gas trade on the territory of the respective utility | ESC |

Table 2: Overview of actions to overcome market barriers

| Barrier | Actions | Who should act | Target groups | Description | |
|---------|----------|---|--|---|--|
| 1 | 1, 2 | Seminars, conferences, roundtables | EES providers and facilitators, Association of Energy Service Providers (APES) | EPC customers, decision makers, financial institutions, experts, media | The goal is to inform about the possibilities and benefits of EPC and ESC schemes, to promote EES providers and facilitators, to promote best practices. |
| 2 | 1, 2, 7 | Development and publication of a list of EES providers and facilitators, model contracts, best practices, EES guidelines | Government authorities, APES | EPC providers, facilitators, customers, decision makers, financial institutions | The goal is to provide resources through a dedicated website. |
| 3 | 1 | Training for new EES providers and facilitators | APES, Energy Agencies | New EPC providers and facilitators | The goal is to sustain the high quality of EES projects and promote the use of the Code of Conduct for EPC, quality criteria for EES, etc. |
| 4 | 1, 2, 7 | Implementation of the European Code of Conduct for EPC | Government authorities, APES | EPC providers, facilitators, clients | The goal is to implement a set of a basic set of values and principles that are considered fundamental for the successful, professional and transparent implementation of EPC |
| 5 | 1, 2, 7 | Implementation of EES quality criteria in either model contracts, legal requirements, standards, or through certification | Government authorities, experts, APES | EPC providers, facilitators, clients | The goal is to guarantee quality EES and thus to ensure customer's trust and satisfaction. Additionally, the standardization of quality would facilitate financing and lower transaction costs. |
| 6 | 3, 9, 10 | Acceleration of the liberalization of energy markets | Government authorities (Ministry of energy, regulatory body) | All EES market actors | The goal is to ensure that the energy prices are market-based (not capped by the regulatory body) and in case of ESC –freely negotiable CHP energy prices and less restrictions to trade with heat and gas |
| 7 | 4 | Alleviate the limit of EPC projects in municipalities | Government authorities | Municipalities | The goal is to allow larger EPC projects in municipalities, e.g. by introducing a scheme that would avoid the treatment of EPC as debt. |
| 8 | 8 | Wider availability of financial instruments to support EES | Government authorities and financial institutions (EERSF) | EES providers | The goal is to ensure easier access to financing and lower risks for EES providers through wider introduction of credit guarantees, ESCO portfolio guarantees, purchase of receivables. |

7.1 Regulation and standardization

The energy market liberalization needs to be accelerated. This would result in the following:

- ✔ the energy prices would reach their market levels and this would increase the attractiveness of energy efficiency investments;
- ✔ ESC providers and clients will be able to freely negotiate the energy supply prices, when the provider offers a large CHP as energy source;
- ✔ ESC providers may be able to negotiate with local utilities the trade of heat / gas.

Additionally, the recently introduced limitation for EPC projects not to exceed 15% of the municipality's capital costs needs to be alleviated. Economy of scale is important for EPC projects, due to the high transaction costs. Additionally, a combination of several sites (buildings, lighting systems) in one EPC project is beneficial, because it reduces the risk by distributing the guarantee among all sites. Efforts need to be made to identify EPC scheme for municipalities that would not be accounted for as debt, considering the Eurostat Guidance Note about the recording of EPC in Government Accounts⁶.

Furthermore, model contracts for EES (especially important for EPC) need to be elaborated for the main EES client sectors (e.g. public buildings, public lighting, private buildings, industry, etc.).

Implementation of the European Code of Conduct for EPC and the EES quality criteria in either model contracts, legal requirements, standards, or through certification by an external body, would be an important step to increase client's (and partly financial institution's) trust in EES.

7.2 Financial instruments

The Bulgarian Energy Efficiency and Renewable Energy Fund (EERSF) has played a key role in the development of the EPC market in the country by offering relevant financial instruments, such as loans, credit guarantees, ESCO portfolio guarantees, sale of claims, and others, combined with technical assistance. The role of the Fund can be strengthened, e.g. by additional capitalization.

Similar financial instruments could be provided with the support of the European Structural and Investment Funds (ERDF and CF). This would sharply increase the leverage, compared to the current practice to provide grants, even for commercially viable projects.

⁶ <http://ec.europa.eu/eurostat/documents/1015035/7959867/Eurostat-Guidance-Note-Recording-Energy-Perform-Contracts-Gov-Accounts.pdf/>

7.3 Information dissemination, education and networking

Concrete advice, assistance, information about simple and cost-effective measuring and metering systems, and qualified facilitators can all help alleviating knowledge-related barriers (JRC, 2017).

Many countries have in place information, knowledge and advice measures to raise awareness on the benefits of the use of energy services (JRC, 2017). The information can include guidelines, list of EES providers and facilitators, best practices, and model contracts. The information can be disseminated both at events and through a dedicated website. It is recommended to complement this dissemination with training courses for new EES providers and facilitators. These activities can be carried out either on a project basis by a private entity, in a longer term by a public body (e.g. SEDA).

Networking is another activity that could support the EES market. Typically, EES projects require a wide range of activities and expertise, so small EES providers may need to establish cooperation with other companies. Resources concerning “SME Partnerships for Innovative Energy Services” could be found at <http://epcplus.org/>.

8 CERTIFICATION OF ENERGY EFFICIENCY SERVICES

8.1 General framework for certification of products and services

According to BDS EN ISO/IEC 17000, the certification is confirmation of compliance with certain requirements, carried out by an independent third party. The certification needs to be performed by an accredited body.

The Executive Agency "Bulgarian Accreditation Service" (EA BAS) is the sole national body for accreditation of product certification bodies, management systems certification bodies, persons' certification bodies, inspection bodies, and others. On the website of EA BAS there are lists of bodies that can carry out inspection, certification, and accreditation. The Agency regulates the certification bodies, monitors their activities, and could terminate their accreditation (EA BAS, 2018).

The certification bodies in Bulgaria can be accredited either by EA BAS, or by accreditation bodies of other countries. The latter are branches of foreign certification bodies and they are the majority in Bulgaria. There is no common registry of all Bulgarian certification bodies.

The certification steps typically include:

- ✔ application for certification - follows the procedure defined by the particular certification body, typically very light;
- ✔ an initial review (visit) by an auditor to identify the gaps;
- ✔ a (second) visit by an auditor to check whether the gaps are filled, an audit report is produced;
- ✔ based on the audit report the certification body takes a decision and may issue a certificate.

8.2 Certification of products and services in the energy sector

According to the Bulgarian national legislation, the following energy products and services are certified:

- ✔ Buildings – the particular requirements are set in the Energy Efficiency Act and the ordinances under it (EEA, 2017)
- ✔ Certificates of origin of electricity, produced from renewable energy sources, issued by the Energy and Water Regulatory Commission (EWRC).

- ✔ Certificates of origin of electricity, produced through highly efficient cogeneration, issued by the Energy and Water Regulatory Commission (EWRC).

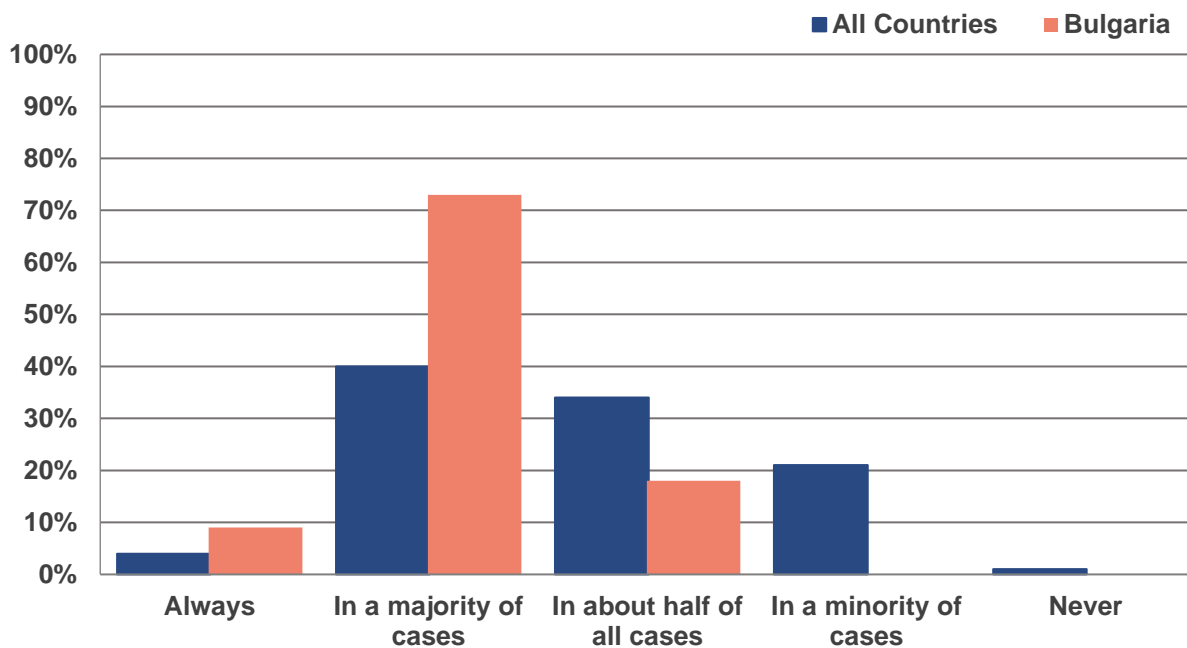
Additionally, although not required by the national legislation, international or other countries' certification schemes for products and services are applied in relation to client's desire to obtain international recognition, e.g. LEED building certification, Passive House, etc.

Finally, within Horizon 2020 project ICP (<http://europe.eepperformance.org/>), the ICP Investor Ready Energy Efficiency certification for energy efficiency retrofit projects is being promoted in Bulgaria.

8.3 Certification of energy efficiency services

In Bulgaria, no particular plans to introduce certification of EES have been identified. On the other hand the Government is interested to study the possibilities for such a certification.

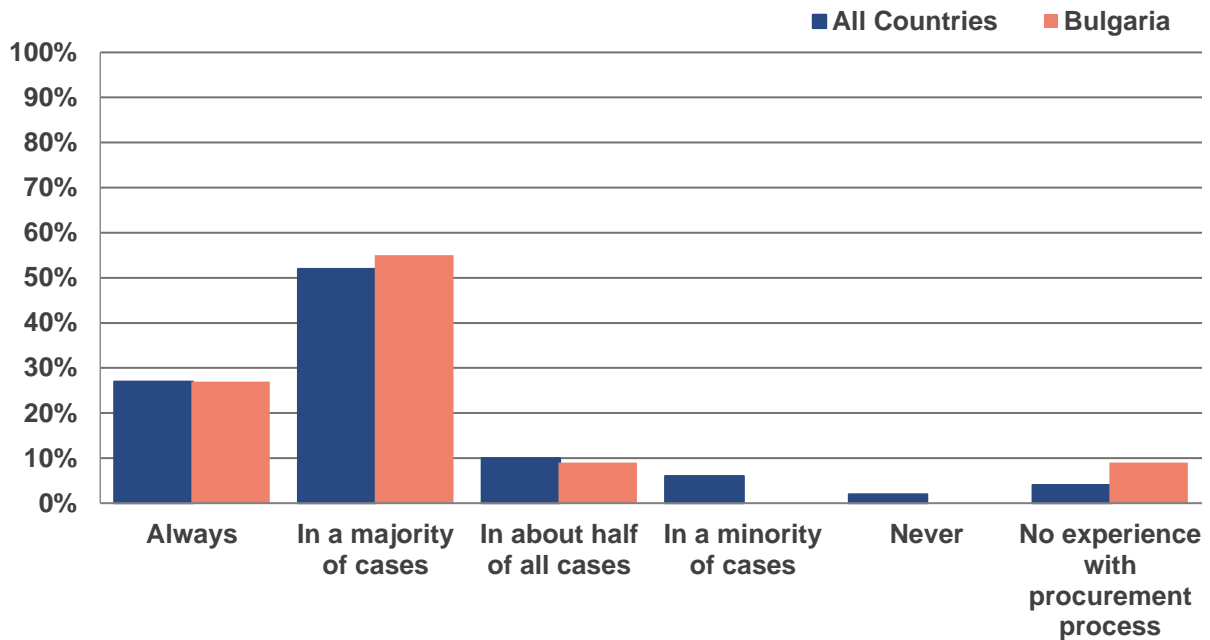
Figure 30 In your experience, is there a lack of trust in EPC/ESC service providers? (Percentage share of responses by providers and facilitators Sept 2017)



The Bulgarian EPC/ESC service providers and facilitators considered that in the majority of cases (73%) there was no trust in EES providers. Other Bulgarian responders were slightly more positive or negative, but none of them considered that there was high trust. The situation in EU was much more positive with only 40% of the respondents stating there was a lack of trust in the majority of cases. However, about one third of the respondents reported about lack of trust in about half of all cases.

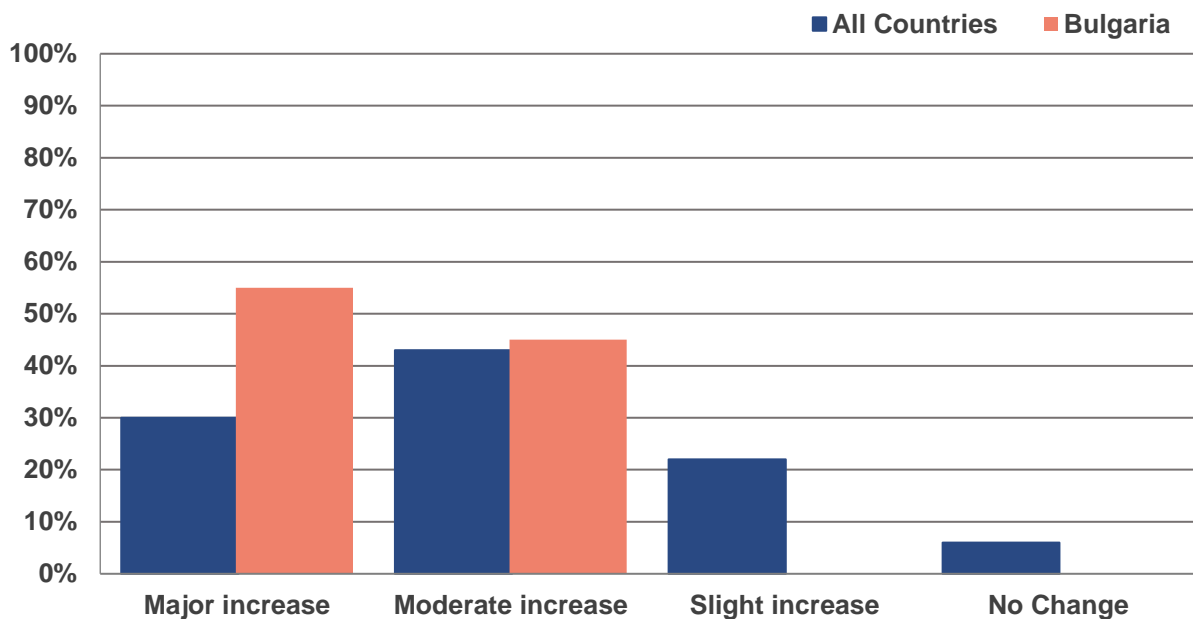
According to the interviews with Bulgarian EPC/ESC clients, the lack of trust in EES providers was the major barrier in EES market.

Figure 31 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)



The Bulgarian respondents clearly supported the idea that well-defined procurement specifications increase EES quality, either always (27%) or in the majority of cases (55%). The EU respondents provided very similar answers.

Figure 32 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)

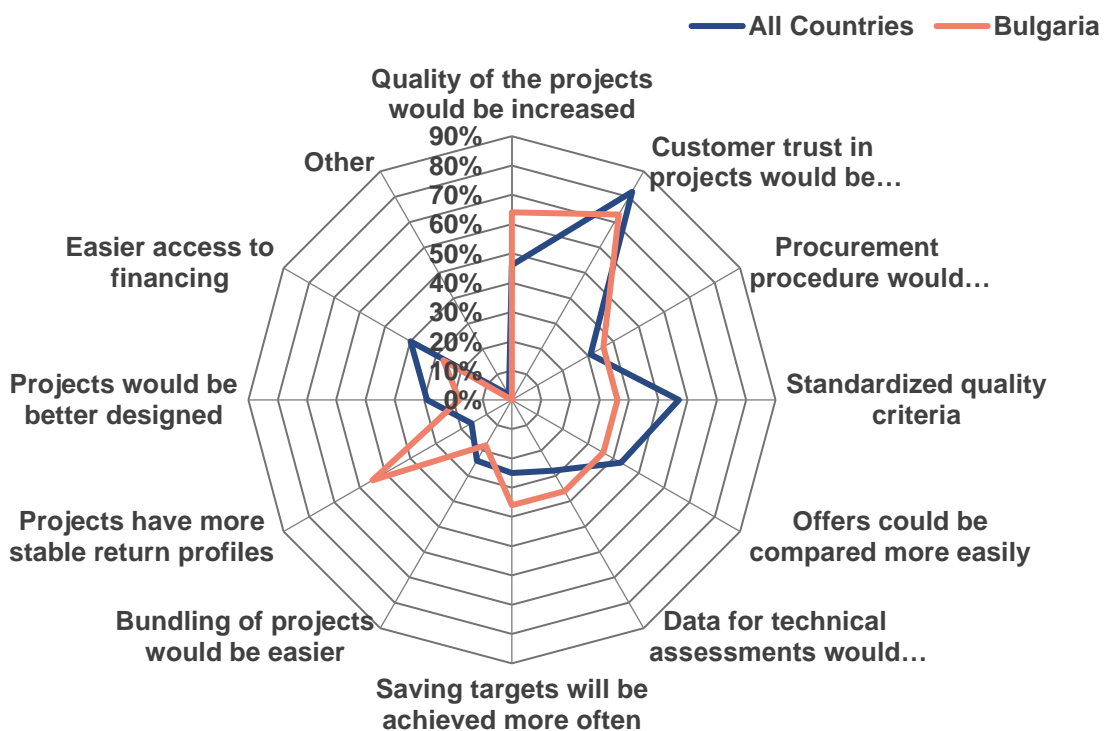


All Bulgarian EES providers and facilitators considered that a quality assurance (QA) scheme could increase client’s trust in the services. According to 55%, the increase would be major, while according to 45% - moderate. These two responses were also the most popular ones in all countries, but generally the attitude towards QA scheme was less positive.

When 4 Bulgarian EES clients (having ongoing EES projects) were asked the same question during the interviews, 2 answered that a QA scheme would increase their trust only slightly. One of them shared that it was much more important to have positive feedback from another client about the particular EES provider. The other client shared the opinion that it depended very much on the particular scheme and on the specification of all quality requirements in the contract. QA scheme would result in moderate increase of trust for 1 respondent and in major increase – for the last one. Although clients were the most relevant respondents to this question, the limited number of interviews hinders reliable conclusions.

Two Bulgarian financial institutions experienced in EES financing were asked a similar question, but it was related to the trust of the financial institution, not of the client. According to one of them, the EES quality had very little relevance to a financial institution, while according to the other one it would very much depend on the particular QA scheme.

Figure 33 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)



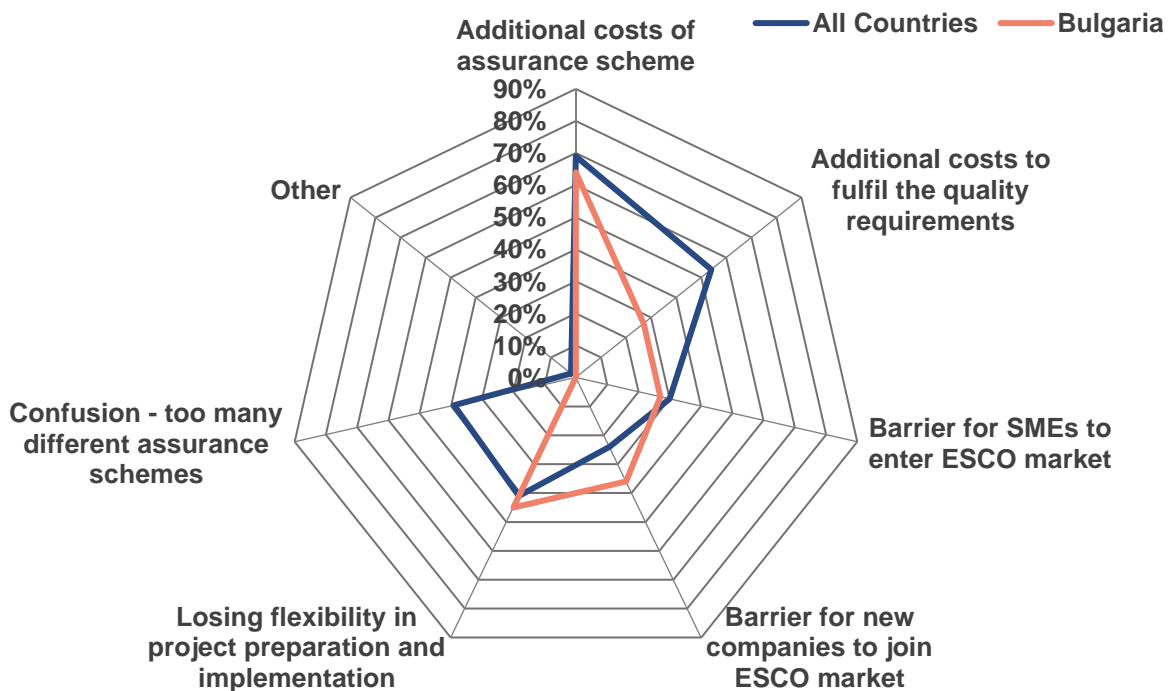
The Bulgarian EES providers and facilitators identified 3 major aspects, where QA scheme would add value: customer trust (73%), quality of projects (64%), and stable return profiles of

projects (55%). EU respondents generally considered that the biggest benefits came from the customer’s trust (82%) and the standardization of the project quality (57%).

Four interviewed Bulgarian clients were asked a similar question. All of them considered that the main benefits were related to the project quality and better project design from a technical point of view. Additional benefits were mentioned too, but none of them was shared by more than one respondent.

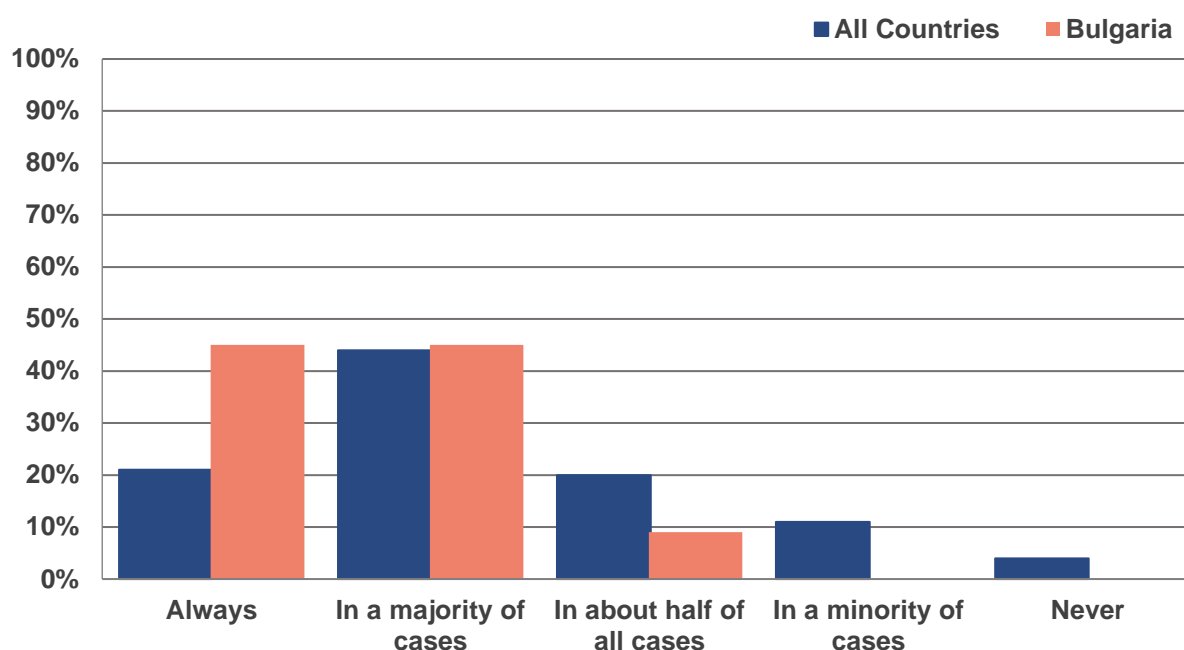
Interestingly, the two interviewed financial institutions specified the same two benefits – higher project quality and better project design from a technical point of view (BASERC, 2018b).

Figure 34 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)



According to both the EU and the Bulgarian respondents, respectively 69% and 64%, the main drawbacks of a QA scheme were the additional costs of the scheme. Other relatively common drawbacks for Bulgaria were the loss of flexibility in project preparation and implementation (45%) and the increased difficulty for new companies to join the market (36%). For the EU respondents these were the costs to fulfil the requirements (54%), the confusion of too many QA schemes (39%), and the loss of flexibility in project preparation and implementation (39%). Only 1 (for Bulgaria) or 2 (for EU) drawbacks were selected by the majority and these were related to cost aspects.

Figure 35 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)

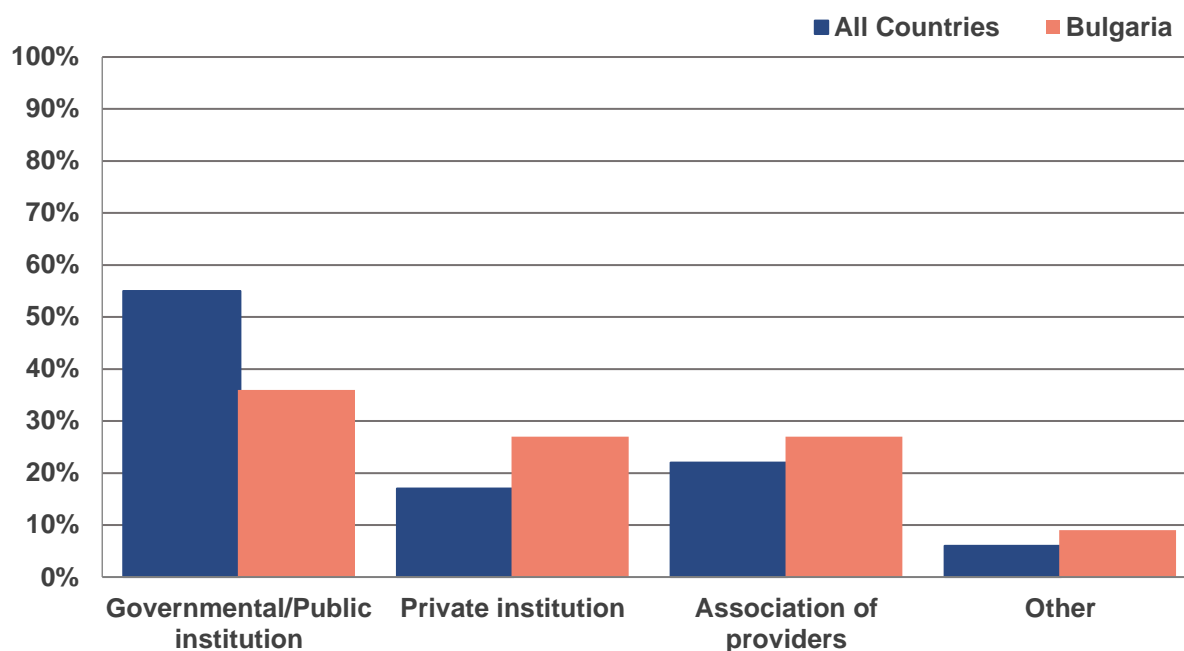


EPC providers and facilitators indicated clear support to QA schemes by stating that always (45%) or at least in majority of the cases (45%) they would prefer to implement a project that was a subject to such assurance. The EU respondents were slightly more reserved to QA schemes, but most of them would be willing to rely on QA scheme at least in the majority of the cases.

During the interviews with the two Bulgarian financial institutions experienced in EES (particularly EPC) financing, one of them indicated that it would always prefer to finance a project subject to QA, while the other one would never prefer one.

Four Bulgarian clients having ongoing EES contracts were asked a similar question.. Two of them would always prefer a project with QA, one – in the majority of the cases, and one – in about half of the cases.

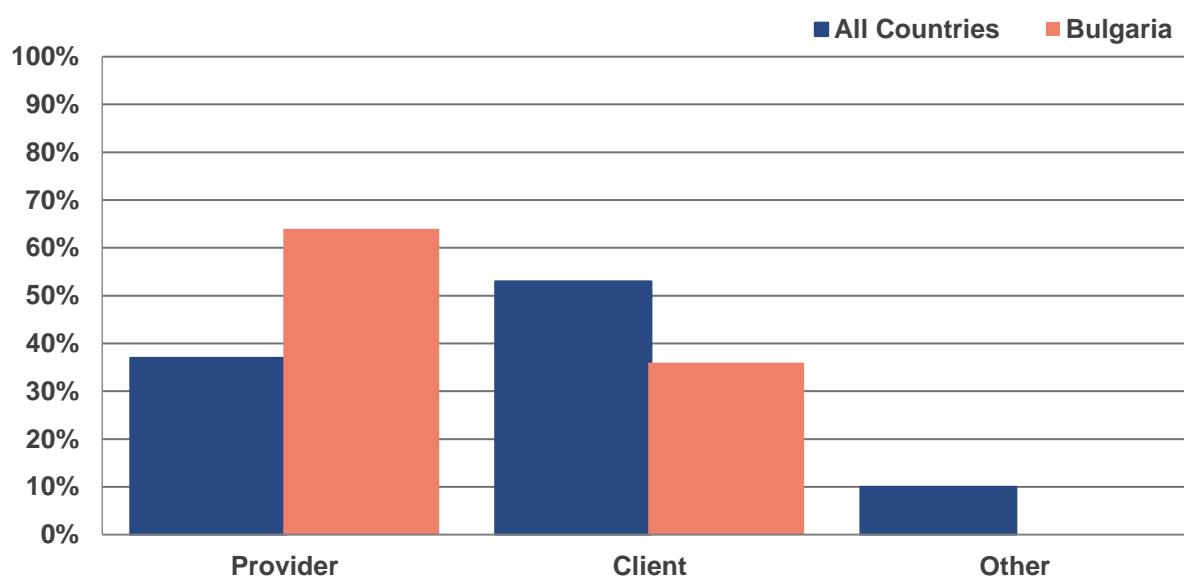
Figure 36 Which would be the most respected body to issue a quality assurance label or certification for EPC/ESC services in your country? (Percentage share of responses by providers and facilitators Sept 2017)



The Bulgarian EES providers and facilitators considered that the most respected body to issue QA certificate would be a public body (36%), an independent private entity (27%), or an association of EES providers (27%). The respondents from All Countries generally preferred a public body (55%) to provide the QA, while an association of EES providers and a private entity were much less desired (respectively by 22% and 17% of respondents).

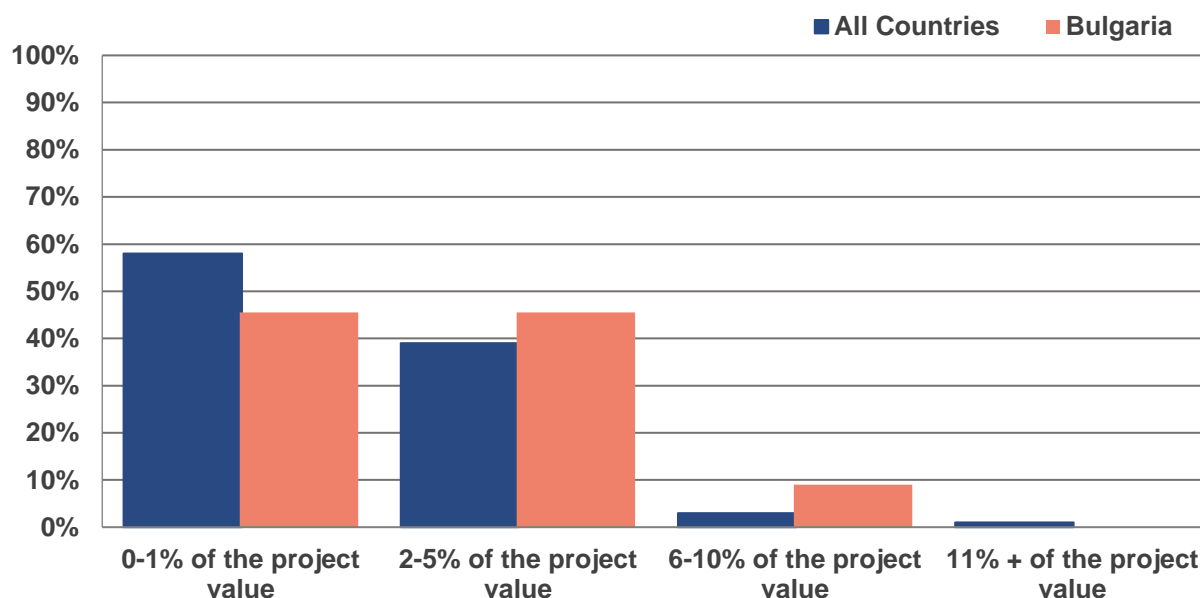
The interviewed four Bulgarian EES clients would trust most a private entity (2), an association of providers (1), or equally the three types of stakeholders (1). The two interviewed financial institutions would trust mostly an association of EES providers.

Figure 37 Who should pay for the quality assurance of EPC/ESC projects? (Percentage share of responses by providers and facilitators Sept 2017)



Most (64%) of the Bulgarian respondents considered that the provider should pay for the QA, while the rest thought that the client should do it. The EU respondents had a different opinion – the majority (53%) believed that the client needed to pay; a smaller share (36%) thought that this should be the provider’s responsibility.

Figure 38 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)



According to the Bulgarian EES providers and facilitators, the viable fee for QA would be 0-1% or 2-5% of the project value - each of these was supported by 45% of respondents. The situation in all countries was similar, but the response 0-1% was prevailing (58% of respondents). Just a minor share considered that the fee above 5% was acceptable.

9 REFERENCES

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

BSERC (2013): D2.4 Country Report on Identified Barriers and Success Factors for EPC Project Implementation: Bulgaria. IEE project Transparens. Available at <http://transparens.eu/bg/pazar-na-dgr/pazar-na-dgr-v-blgariya>

BSERC (2015): D2.5A Country Report on Recommendations for Action for Development of EPC Markets. IEE project Transparens. Available at <http://transparens.eu/bg/pazar-na-dgr/pazar-na-dgr-v-blgariya>

BSERC (2018a): EES Market and Quality Questionnaire. Completed by 11 Bulgarian respondents, September – October 2017. Horizon 2020 project QualitEE.

BSERC (2018b): EES Market and Quality Interviews. Interviews with 4 EES client and 2 financial institutions, October 2017. Horizon 2020 project QualitEE.

Codema (2016): Evaluation Report on EPC Implementation: The Energy Performance Contracting (EPC) Market in Europe, EESI 2020 project funded by IEE. Available for download at <http://eesi2020.eu/bu/wp-content/uploads/sites/8/2016/05/%D0%94%D0%BE%D0%BA%D0%BB%D0%B0%D0%B4-%D0%B7%D0%B0-%D0%B8%D0%B7%D0%BF%D0%BE%D0%BB%D0%B7%D0%B2%D0%B0%D0%BD%D0%B5-%D0%BD%D0%B0-%D0%94%D0%93%D0%A0.pdf>

EA BAS - Executive Agency "Bulgarian Accreditation Service" (2018). Available at <http://www.nab-bas.bg/en/basicinfo>

EERSF - Energy Efficiency and Renewable Sources Fund (2018): Available at <http://www.bgeef.com/>

Energy Efficiency Act - EEA (2017). Last amendment SG 103 from 28.12.2017. Available online: <https://www.lex.bg/en/laws/ldoc/2136500695> [in Bulgarian]

European Code of Conduct for Energy Performance Contracting (2014). Prepared within Transparens project. Version as of 11 July 2014. Available for 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

JRC (2017): Energy Service Companies in the EU. Available at <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC106624/kjna28716enn.pdf>

Markov M. (2016): Financial aspects of EPC – challenges and opportunities (in Bulgarian). Presentation delivered at the training of Horizon 2020 project EPC+ on 14.10.2016. Available at <http://epcplus.org/upload/bg/Module%20a%20-%20Financing%20and%20Economics.pdf>

National Energy Efficiency Action Plan - NEEAP (2017). Developed by the Ministry of Energy of Bulgaria, Sofia, May 2017. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/bg_neeap_2017_bg.zip

Regulation №16-347 of 2 April 2009 for terms and conditions for determining the amount and payment of planned funds under EPC, leading to energy savings in buildings - public and/or municipal property. http://www.seea.government.bg/documents/dox_14_04_2009_naredbi2.pdf