



Country report on the energy efficiency services market and quality

Slovenia

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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

Term	Definition
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.

Chapter 3 outlines the political, legal and regulatory framework for energy efficiency and energy services in Slovenia for which the Ministry of Infrastructure, Energy Directorate is the key Government body. The Energy Efficiency Directive Article 18 (relating to Energy Services) is fully transposed into Slovene law. A stimulating support environment for the development of Energy Performance Contracting and energy efficiency services is established in the framework of the National Energy Efficiency Action Plan, published in 2017 and Long-term Strategy for Mobilising Investments in the Energy Renovation of Building Stock, published in 2015. Model contracts for energy performance contracting in the public sector are provided and updated in line with the latest Eurostat Guidelines. All relevant EPC and ESC providers and facilitators signed the European Code of Conduct for Energy Performance Contracting which defines key quality benchmarks and provides valuable information for clients. The research also identifies that the Slovenia has a rich tapestry of funding schemes while the key technical assistance programme in term of Energy Performance Contracting is performed through the European Local Energy Assistance.

Chapter 4 outlines the state of play in relation to the Slovene Energy Performance Contracting market, using a strong survey dataset covering out all active service providers currently operating in the market, as well as key project facilitators. This research finds that Slovenia market is experiencing continuous growth since 2012 and major expansion in 2016. This growth is attributed to strong uptake in the public sector, which has been driven by the success of public buildings deep energy renovation framework that offers standardised Energy Performance Contracting project development processes, procurement requirements and contracts, as well as up to 40% grant financing. Typical Energy Performance Contracting projects are found to have a capital outlay of EUR 1-5 million, a contract length of 11-15 years due to prevailing buildings deep energy renovation, use a guaranteed savings model






and are paid for using the provider's internal funds or debt arrangements and grant. Mainly automated measurement and verification processes are used for reconciling performance, and there is small but highly professional market for independent measurement and verification services. Lack of trust in the ESCO industry, complex book-keeping rules and administrative barriers in public sector are the top barriers for business in the sector. This indicates that growing market is becoming increasingly sceptical about the quality of services offered by very limited number of Slovene service providers for considerable number of projects, and that model implementing transactions costs are still high and additional information is needed. Raising viable finance was found to be still difficult although the range of finance options was found to be comprehensive and their availability till year 2020 to be good. When asked about EPC quality, Slovene respondents particularly emphasised the importance of technical-economic analysis (energy audit), whilst also highly ranking measurement and verification. Slovene respondents again highlighted technical-economic analysis as the main area for quality improvement, alongside measurement and verification. There is no association representing Energy Performance Contracting providers and facilitators in Slovenia and no initiatives to convene supply side stakeholders aiming to bring a focus to the sector and co-ordinate communication with policymakers.

Chapter 5 examines the current situation of the Slovene Energy Supply Contracting market which is well-established since the first project was implemented in 2002. During the period 2009-2013 a significant increase in the market activity and the number of ESC providers has been seen due to favourable ESC framework introduced by the renewable energy sources and combined heat and power electricity feed-in tariffs scheme and energy savings obligation scheme. This market is still experiencing growth, however this growth can't be compared to the growth of Energy Performance Contracting market. It is estimated that Energy Supply Contracting market in Slovenia was worth between EUR 10 million and EUR 50 million in 2016. Typical Energy Supply Contracting projects are found to have a capital outlay of EUR 1-5 million, a contract length up to 10 years, use a guaranteed savings model and are most often paid for using the provider's internal funds or debt arrangements. Complexity of the concept and low energy prices are the top barriers for business in the sector. This indicates that energy supply providers are aware of huge energy savings potential on supply side and are therefore looking for still existing low hanging fruits. Projects were found to be focussed in the private sector and use supplier arranged finance options or project financing. Sourcing viable finance for energy supply contracting was seen to be difficult and finance affordability is the issue. In terms of Energy Supply Contracting quality, Slovene respondents particularly emphasised the importance of technical-economic analysis (energy audit), similarly to energy performance contracting, and financing. Technical-economic analysis was again highlighted by Slovene respondents as the main area for quality improvement.

Chapter 6 reaffirms the value of promoting energy efficiency services as a key delivery model for energy efficiency. Survey respondents highlighted the attractiveness of financing provided by service provider, the opportunity to reduce costs of limited budgets in public sector and guaranteed energy savings. The promise of access to substantial third party finance is also a key benefit to energy services and offers the opportunity to open up vital energy efficiency actions that do not fall within payback thresholds required for limited internal capital funds

or debt arrangements. In this respect many clients are looking for the opportunity to take energy services contracts off their balance sheet however, changing finance regulations and guidance is leading to hesitation in accessing this desired benefit.

Considering these drivers alongside the identified barriers, a set of recommendations to support energy efficiency services market development are outlined as follows:

-  **Action 1:** Development of financial instruments for mobilising investments in the deep energy renovation of buildings
-  **Action 2:** EES Quality Assurance Scheme
-  **Action 3:** EE Public Procurement Scheme
-  **Action 4:** EE Projects Facilitators Scheme
-  **Action 5:** The financing plan for energy-saving building renovations in the public and private sectors in period 2020-2030

As action 2 (relating to the development of a quality assurance scheme for energy efficiency services) is a focus of the QualitEE project, [Chapter 7](#) provides further detail in this respect. It identifies key quality assurance accreditation and certification bodies.

Whilst these roles fall into a specified national framework for Slovenian (SI), European (EN) and International (ISO) standards, these quality assurance roles are found to fall into several other bespoke frameworks led by the Government. The research briefly touches on existing quality assurance schemes in the energy sector; looking at ISO50001, the Quality Label in Construction (ZKG), the Inspection of Air-conditioning Systems Scheme, the Inspection of Heating Systems Scheme and the Building Renovation Quality Management Scheme. Existing national schemes for energy efficiency projects and services do not include quality criteria and there is no international certification or quality assurance scheme being developed or in place.

The survey of Slovene results offer compelling evidence that a quality assurance scheme would lead to increased customer trust and quality of projects, which is expected in turn to lead to higher savings and reduce transaction costs and time. It is recognised that respondents don't see fees for external quality assurance per EPC/ESC project in the range of 2-5% of the project value to be detrimental to the investment case. That is in line with respondents' fee payment allocation equally to provider and client. The survey also strongly identifies that the Government / public institutions should play key role in the quality assurance scheme to ensure credibility.

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 (EE) 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).

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

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

- ✔ Energy Performance Contracting (EPC)
- ✔ Energy Supply Contracting (ESC)

The EPC and ESC are not the only types of energy efficiency services applied in Slovenia. Other types of EES, such as Comprehensive EPC are described shortly in the Chapter 2.2.4.

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 (Code)² 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 Staničić D., Szomolányiová J., Valentová M., Sochor V., Maroušek J. 2014. European Code of Conduct for Energy Performance Contracting. Intelligent Energy Europe Transparence Project

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

Other types of energy efficiency services in Slovenia cover mostly:

- ✔ Comprehensive EPC means extension of the energy efficiency service to comprehensive structural measures on the building shell like insulation or window replacement. These services are usually not part of the classical EPC because of too long pay-back periods. The contractual arrangement within Comprehensive EPC therefore contains special regulation on financing. Usually the customer has to pay a share of the investment through a grant or by combination of EPC with subsidy programmes. The Comprehensive EPC plus model is furthermore extended with specific technical requirements on the building measures together with special regulations on interfaces and warranties.
- ✔ 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.
- ✔ EPC Light means energy savings are mainly achieved through organisational measures with low or no investments in technical equipment. The energy efficiency service company (EESC) acts as external energy manager taking over the responsibility to operate and optimise the energy related installations (for example heat boilers, building automation, lighting control, etc.). Since pay-back of high investments on hardware is not necessary in EPC light, the contract duration is short (2-3 years). The main feature of EPC to guarantee savings and relate savings with the remuneration of the EESC is included in the EPC light contract.
- ✔ Green EPC means EPC model with special focus on reduction of greenhouse gas (GHG) emissions.

However, the IEC, EPC Light and Green EPC market volume is small, and is not in a focus of the study.

2.2.5 Market actors

The main actors operating on the EES markets are the EES providers, clients, market facilitators 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 services³ 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 two main sources:

- ✔ the results of a nationwide EES survey of the country's main actors within the EES market; and
- ✔ a literature review (publications and studies, national policy and legislative documents, official statistics and databases) and the EES market knowledge of the authors (Staničić D., 2012, 2013, 2014, 2015, 2016), based on more than 30 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;

³ According to the Energy Efficiency Directive: "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."

- ✔ personal semi-structured interviews have been conducted with financial institutions and client organisations 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. The answers were then analysed and the results are presented in this report in aggregated form.

There were 12 respondents to the online survey in Slovenia, among which key EPC market actors:

- ✔ 3 representatives of ESCOs, where all of them operate on both the EPC and ESC market with more than 90% share of the Slovenian EPC and ESC market;
- ✔ 5 representatives of EES facilitators, all of them operating on the EPC and ESC market.

Throughout this study the results from the online survey in Slovenia 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 4 respondents to the personal interviews:

- ✔ 2 representatives of financing institutions, which are mostly the main sources of financing for the EPC and EES projects in Slovenia;
- ✔ 2 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 30 years of implementing EES projects and supporting the EES market.

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

- ✔ In-house data bases and information. The Jožef Stefan Institute, Energy Efficiency Centre (JSI EEC) is the key EPC and ESC market facilitator in Slovenia, in terms of designing national EES policy in the framework of National Energy Efficiency Action Plan – NEEAP (Ministry of Infrastructure, 2017) and Long-Term Strategy for Mobilising Investments in the Energy Renovation of Buildings – LSERB (Ministry of Infrastructure, 2016).
- ✔ Ministry of Industry, the Public Buildings Energy Renovation Projects Implementation Unit (PBER PIU).

The report also builds on the data and information gathered primarily by the Transparens project and other previous European projects (EESI, CombinES) and projects run in parallel (EPC+, GarantEE). In addition, it used data from the Joint Research Centre (JRC) reports.

3 LEGAL AND REGULATORY FRAMEWORKS

3.1 Key governmental institutions

The Ministry of Infrastructure, Energy Directorate performs tasks relating to the EES and to the provision of renewable sources of energy, energy supply, sources of energy and mining. Its key activities, in terms of EES, include:

- ✔ preparation and implementation of national energy policy;
- ✔ drawing up legislative and other acts for the energy sector;
- ✔ implementing measures to achieve energy and climate objectives, in particular through encouraging the use of renewable energy sources and measures for higher energy efficiency;
- ✔ cooperation within bilateral and multilateral regional energy frameworks aimed at providing a stimulating environment for cooperation at national, regional and entrepreneurial levels; and
- ✔ management of the energy sector database information system and elaboration of economic analyses for the energy sector.

3.2 Implementation of the EU Energy Efficiency Directive

Directive 2012/27/EU on energy efficiency (EED, 2014) 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. In Slovenia, the following obligations have been or are being transposed so far by:

- ✔ disseminating clear and easily accessible information on available energy service contracts and clauses that should be included in such contracts to guarantee energy savings and final customers' rights and on financial instruments, incentives, grants and loans to support energy efficiency service projects, and supporting the public sector in taking up EES offers, in particular for building renovation, by providing model contracts for EPC⁴;
- ✔ development of the national EPC quality scheme by the BPER PIU and in cooperation with the QualitEE project;
- ✔ providing information on best practices for EPC, including implementation of the EPC pilot projects;

⁴ See <http://www.energetika-portal.si/podrocja/energetika/energetska-prenova-javnih-stavb/projektna-pisarna/>

- ✔ providing a qualitative yearly review in the framework of the NEEAP regarding the current and future development of the energy services market;
- ✔ A dedicated web portal⁵ was set up by the electricity market operator Borzen⁶ in 2014. It is the main vehicle through which various EES information is available to the final customers. A special section on EPC/ESC⁷ is available, containing model documents, relevant legislation, project templates and best practices. The information is prepared in cooperation with the Ministry of Infrastructure, local energy agencies - facilitators, ESCOs and EPC market facilitator JSI EEC.

3.3 National strategy documents

Two key documents for the medium and long-term EES market development in Slovenia are the National Energy Efficiency Action Plan and Long-term Strategy for Mobilising Investments in the Energy Renovation of Building Stock.

3.3.1 National Energy Efficiency Action Plan

The most important EES policy document transposing the relevant Article 18 (Energy Services) and Article 19 (Other measures to promote energy efficiency) of the Directive 2012/27/EU (EED) is the National Energy Efficiency Action Plan – NEEAP (Ministry of Infrastructure, 2014, 2017). The key measures for achieving the objectives by 2020 include those aimed at encouraging the implementation of EPC projects. A stimulating support environment for the development of EPC and EES is established in the framework of the NEEAP, including:

- ✔ directly related measures
 - H.1 Energy performance contracting
 - G.2 and G.3 Financial incentives for implementation of EE and renewable energy sources (RES) measures in residential buildings
 - G.7. Instruments for financing renovation in buildings with multiple owners
 - G.8 Distribution of incentives among owners and tenants in multi-apartment buildings
 - G.9 Establishment of a guarantee scheme
 - J.2 Financial incentives for the deep renovation of buildings in the public sector
 - J.3 Introducing an energy management system in the public sector
 - J.5 Public buildings energy renovation projects implementation unit

⁵ www.trajnostnaenergija.si

⁶ The Borzen carries out the programmes pertaining to Article 351 of the Energy Law, related to the transposition of the EED Article 18.

⁷ <http://trajnostnaenergija.si/Trajnostna-energija/Energetsko-pogodbništvo/Modeli-energetskega-pogodbništva/Pogodbeno-zagotavljanje-energije>

indirectly related measures





- H.3 Information, awareness-raising and training schemes for targeted public
- H.4 Education and training
- J.6 Support scheme for the renovation of built cultural heritage and other special building groups
- J.7 Preparation of sustainability criteria for public buildings renovation

3.3.2 Long-term Strategy for Mobilising Investments in the Energy Renovation of Building Stock



The existing building stock is the sector providing the greatest potential for achieving energy savings, as buildings account for just over one third of all energy consumed. Buildings are also key to achieving the target of an 80–95% reduction in greenhouse gas emissions by 2050. The strategic objective of the LSERB is to achieve carbon-neutral energy use in buildings by 2050. This will be achieved by making considerable improvements in energy performance and by increasing the use of renewable energy sources in buildings. Some 70% of the total floor area of residential buildings and 60% of the total floor area of non-residential buildings was constructed prior to 1985. This presents a very considerable potential for renovation.

The Strategy's basic scenario envisages a rate of complete energy renovation of residential buildings of 2% (up to 2030 approx. 1.75% of single family houses and 2.5% of multi-apartment buildings) and for buildings in the public sector 3%.

The intermediate targets set out in the LSERB are as follows:

-  to reduce end-use energy consumption in buildings by 15% by 2020 and 30% by 2030 relative to 2005;
-  to have at least two-thirds of energy in buildings produced from renewable energy sources;
-  to reduce greenhouse gas emissions in buildings by 60% by 2020 and at least 70% by 2030 relative to 2005;
-  to carry out energy renovation on at least 26 million m² of building floor area, or 1.3–1.7 million m² annually, with just over one third of this total renovated to nearly zero-energy building standard.

The Strategy's operational targets up to 2020 or 2030 are as follows:

-  the renovation of 3% of public buildings owned or occupied by central government each year (between 15,000 and 25,000 m²);
-  the renovation of 1.8 million m² of the floor area of buildings in the wider public sector between 2014 and 2023 (the target set in the Operational Programme for the Implementation of the EU Cohesion Policy 2014-2020 – OP ECP);

- ✔ an improvement in the ratio between public funds invested and investment incentives in the public sector to 1:3 (Operational Programme for Reducing GHG – OP GHG);
- ✔ the implementation of five energy renovation demonstration projects for different building types (OP ECP).

Investments in building renovation of approx. EUR 6.7 billion will be required to achieve these targets in the period leading up to 2030: three-quarters in the housing sector, 10% in the public sector and 15% in the private service sector. This means annual investments of between EUR 350 and 450 million: approx. EUR 300 million in the housing sector and EUR 100 million in the service sector (EUR 40 million in the public sector and EUR 60 million in the private sector).

Investments in the energy renovation of public sector buildings will average approx. EUR 40 million per year and will be implemented primarily using EPC model, i.e. by including the private capital of ESCOs that provide EES. In order to meet the obligations that follow from the receipt of cohesion funds allocated for the renovation of 1.8 million m² by 2023, the public sector will also have to provide a portion of the funds for financing of the investments, on top of the grants.

3.3.3 Model documents and project implementation guidelines

Beside national EES model documents and project implementation guidelines publicly available in the framework of several Intelligent Energy Europe and Horizon2020 projects (EESI, ChangeBest, Transparens, EPCinTrans, Streetlight-EPC, EPC+, GarantEE), the Ministry of Infrastructure, i.e. the PBER PIU, has prepared the following EPC/EES model documents and project implementation guidelines:

- ✔ Instructions and technical guidelines for energy renovation of public buildings⁸
- ✔ Instructions for operation of intermediary bodies and beneficiaries implementing public buildings energy renovation programme⁹
- ✔ Detailed guidelines for the public partners implementing public buildings energy renovation¹⁰
- ✔ Call to public-private partnership promoters¹¹
- ✔ Decision on public-private partnership¹²
- ✔ Concession act¹³






⁸ http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/ntueps_feb2018.pdf

⁹ http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/ndopeps_feb2018.pdf

¹⁰ http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/pujpeps_feb2018.pdf

¹¹ http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/01-oris_poziva_promotorjem.pdf

¹² http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/02-oris_odlocitve_o_javno-zasebnem_partnerstvu.pdf

-  Call for tenders¹⁴
-  Model contract¹⁵
-  Model agreement¹⁶
-  Reference book of eligible costs of public buildings energy renovation¹⁷
-  Guidelines for energy renovation of built cultural heritage¹⁸

3.4 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 CoC 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 Code and support its use when implementing EPC projects and continue in administering and maintaining the Code. By the end of October 2017, the Code 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 Code 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 Code undertake to conduct EPC projects in compliance with the Code. 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,

¹³http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/03-oris_koncesijskega_akta.pdf

¹⁴http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/05-oris_razpisne_dokumentacije.pdf

¹⁵http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/06-oris_vzorca_pogodbe.pdf

¹⁶http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/07-oris_sporazuma.pdf

¹⁷http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/puseps_feb2018.pdf

¹⁸http://www.energetika-portal.si/fileadmin/dokumenti/podrocja/energetika/javne_stavbe/smernice_kd_23.2.2017.pdf

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.

There are 6 Code signatories in Slovenia, among which 3 key providers and 2 facilitators. The JSI EEC is the national Code administrator during as there is no EPC Association, mainly due to only few national EPC and ESC providers.

3.5 Support schemes

- ✔ In the Operational Programme for the Implementation of the EU Cohesion Policy in the period 2014-2020, the Republic of Slovenia has adopted a decision, in line with the Directive 2012/27/EU, that by the end of the programming period, in the year 2023, 1.8 million m² of useful area in the public sector will undergo energy renovation. To fulfil the target set, yearly investment needs in the period 2016 - 2023 are at the level between EUR 51 million and EUR 53 million, resulting in the total investment of EUR 415 million (including VAT) in the period. Energy efficiency investments in deep renovation of public buildings is financed from the European Structural and Investment Funds (ESIF) – Cohesion Fund, using financial instruments and EPC, which enables adequate leverage factor to EU funds and public funding from the Republic of Slovenia. The OP ECP ensures exemplary role of public bodies' buildings and accelerates take-off of the EPC as a key mechanism by provision of EUR 147,5 million of Cohesion grants, EUR 25 million of EU funds in a loan facility (through Slovenian Investment Bank - SID bank loan fund financial engineering, adding EUR 12,5 million). In total, EUR 185 million of financial support will be available for energy renovation in the public sector, providing 40% grant financing for eligible projects. Six OP ECP calls for tenders were announced since 2016 and on top of that 4 pilot EPC projects were implemented.
- ✔ There are several public support schemes for EE and EES related measures, administered by the Eco Fund, however these funds are not available directly to EPC providers:
 - Soft loans to legal entities (municipalities and/or providers of public utility services, enterprises and other legal entities) and sole traders for investments in environmental infrastructure, environmentally sound technologies and products, energy efficiency, energy saving investments, and use of renewable energy sources;
 - Soft loans to households for fuel switch from fossil fuels to renewable energy sources, energy saving investments, investments in water consumption reduction, etc.;
 - Grants to municipalities for investments in public buildings (schools, kindergartens, libraries etc.), newly constructed as low energy and passive buildings or renovated in passive standard;

- Grants to households for investments in residential buildings (energy efficiency and use of renewable energy sources).
- ✔ The European Local ENergy Assistance (ELENA), a joint initiative by the EIB, EBRD and the European Commission under the Horizon 2020 programme, provided 4 grants to clients for technical assistance focused on the implementation of energy efficiency, distributed renewable energy and urban transport projects, amounting in total EUR 6.5 million. The following ELENA projects were supported, three of them are still on-going:
 - Energy retrofit programme of public buildings in Ljubljana (Energetska obnova Ljubljane – EOL), 2012;
 - Energy renovation of public buildings - City of Novo mesto, City of Celje and City of Kranj, 2015;
 - Preparation and Mobilisation of Financing for Sustainable Energy Investments in Primorska Region Municipalities (PM4PM), 2016;
 - Government deep energy renovation (GOVDER), 2018.

4 ENERGY PERFORMANCE CONTRACTING MARKET

4.1 EPC market actors

4.1.1 EPC Providers

There is no reliable data on EES providers in Slovenia and in-depth EES market analysis. Almost 660 companies in Slovenia are dealing with supply of electricity, gas and steam and more than 160 energy distributors or retail energy sales companies are identified as obligated parties in the framework of EED energy savings obligation scheme.

However, the EPC and ESC providers in Slovenia are easily identified due to very limited number of market players. Looking at the EPC market, 3 national EPC providers dominate the market which is therefore considered to be non-competitive. In the NEEAP there is a measure designed to underpin opening of the EPC market to new EPC providers establishing a guarantee scheme enabling SME EPC providers to get debt financing for EPC projects. The implementation of measure has not started yet.

4.1.2 Clients

The EPC and ESC clients can generally be classified according to the sector they are coming from: public or private.

Public sector

Like in the other EU countries the EPC and ESC focus in Slovenia is on public buildings (office buildings, schools, kindergartens, elderly care homes, etc.) and street lighting, mainly due to public clients lack of own capital for EE investments and public buildings energy renovation programme deploying innovative business models to attract private finance. It is estimated that 90% of the EPC/ESC projects are implemented in the private sector.

Private sector (Industry, Commercial, Residential)

Private EPC and ESC clients are mostly clients from industry implementing lighting and combined heat and power (CHP) projects. The industry sector is a black box in terms of EPC developments. Some extremely successful energy efficient lighting projects were reported beside many ESC CHP projects supported through the feed-in tariff scheme, but there is no information on other type of projects, probably subject to confidentiality agreements. It is estimated that the sector's EPC market potential lies in horizontal energy efficiency measures and renewable energy sources (Green EPC) and not in specific technological processes.

Buildings in commercial sector have lower EPC implementing potential comparing to the public sector as the commercial clients don't consider energy costs a priority yet.

In the year 2017 residential sector clients invested more than EUR 80 million in apartment buildings envelope energy renovation. Some of these EE projects comprised innovative third-party financing but are not considered to be EPC projects.

4.1.3 Facilitators

The facilitators are considered to be one of crucial conditions for the further national EPC and ESC market development, especially in the public sector. Facilitators support is particularly needed by smaller public administrations. There are five project facilitators in Slovenia, and only one of them can be considered highly experienced.

A national programme to support operation of greater number of facilitators, in order to help to generate clients demand and increase number of implemented EPC and ESC projects, is lacking. Subsidizing of some EES project preparation costs, for example cost of energy audit performed by facilitator, can speed up preparation of EPC/ESC projects pipelines in the public sector.

4.1.4 Associations

There is no EPC Association in Slovenia due to very small number of EPC providers.

4.2 EPC market developments

The development of the EPC market is driven through the public sector. The first EPC contract in Slovenia was signed in the year 2007, as a result of business model development of the first Slovenian provider pioneering the ESC implementation since 2001. During the period 2012-2013, after introduction of the energy savings obligation scheme, the EPC market activities and the number of market players significantly increased: the number of EPC projects grew from 2-3/year to more than 15 in the year 2013 and the number of EPC providers grew from 1 to 3. At that time the EPC and ESC market size together reached approximately EUR 50 million. In the period 2014-2016 the EPC and ESC market stagnated to EUR 3 million/year as the result of changed energy savings obligation scheme implementation framework and interrupted renewable and highly efficient CHP electricity feed-in scheme, both resulting in non-disposable public funds to be mixed with private funds.

The current EPC market development in the public sector is underpinned by the OP ECP support scheme throughout the period 2016 -2020 and public clients are assisted by the Public Buildings Energy Renovation Projects Implementation Unit operating within the Ministry of Infrastructure. In order to reach higher energy cost baseline as a prerequisite to improve feasibility of EPC projects subject to high transactional cost, the OP EPC support scheme stimulates pooling of smaller buildings energy renovation projects. The minimum investment range of EPC project(s) in the framework of that scheme is set to EUR 750,000.

According to the NEEAP highest economical energy saving potential till the year 2020 exists within the residential sector (2 TWh) and industry (2.5 TWh), both with no or low level of

implemented EPC projects. The saving potential for public buildings seems to be low (0.8 TWh), compared to these two sectors, indicating needed development of residential and industry sector specific EPC, ESC and EES framework and solutions.

An overview of planned public buildings floor area to be energy renovated is given in the LSREB, see Table 1 below.

Table 1: Public buildings floor area to be energy renovated in the period 2016 - 2030

Floor area [1,000 m ²]															
2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	SUM
202	202	202	202	202	209	209	209	209	209	214	214	214	214	214	3,123

According to the PBER PIU 420,000 m² were renovated in the period 2016 -2017, of which 71% using EPC model.

The residential sector is the sector with highest buildings energy savings potential according to the LSREB, Table 2, and therefore represents the biggest future market for EES, EPC and ESC.

Table 2: Residential buildings floor area to be energy renovated in the period 2016 - 2030

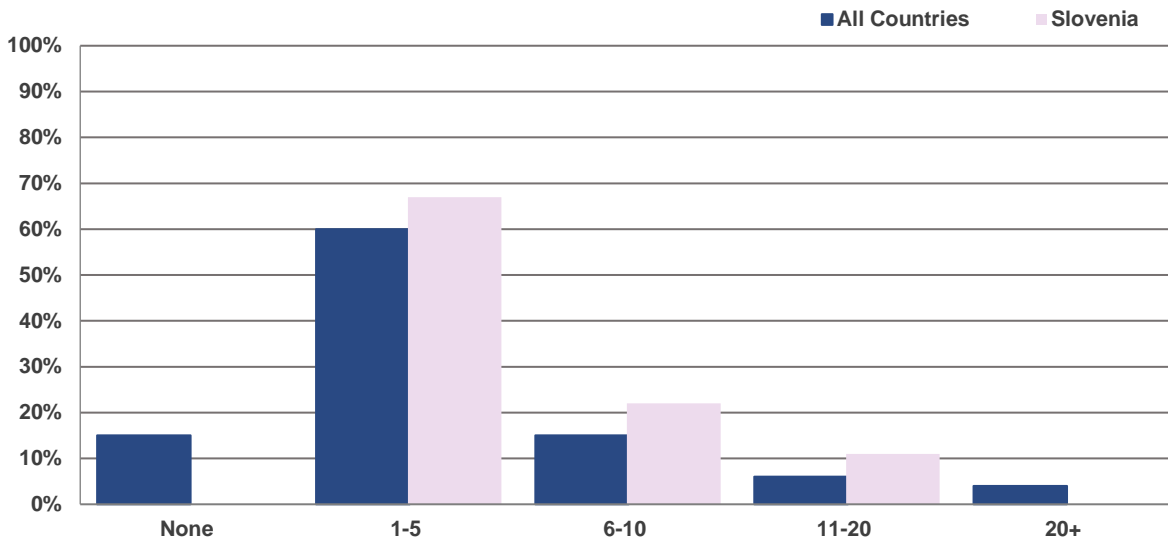
Floor area [1000 m ²]															
2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	SUM
905	994	1,070	1,137	1,188	1,186	1,210	1,241	1,057	1,094	1,118	1,150	1,170	1,191	1,211	16,923

According to the LSREB projections for the period 2016–2023, the value of needed investments in the energy renovation of buildings will amount to EUR 3,166 million: 72.7% of investments is allocated for the residential sector, only 10.7% for the public sector and 16.6% for buildings in the private service sector. The value of planned investments in the period 2024–2030 is estimated to be EUR 3,137 million, giving a total for 2016–2030 of EUR 6,304 million: 73.6% for the residential sector, 10.3% for buildings for the public sector and 16.1% for buildings in the private service sector. These investments represent a huge potential for further increase of the EPC market volume.

Majority (67%) of the questionnaire respondents – national EPC providers and facilitators - were involved in up to 5 EPC projects in the last year, which is consistent with the results across All Countries in the survey, Figure 1.

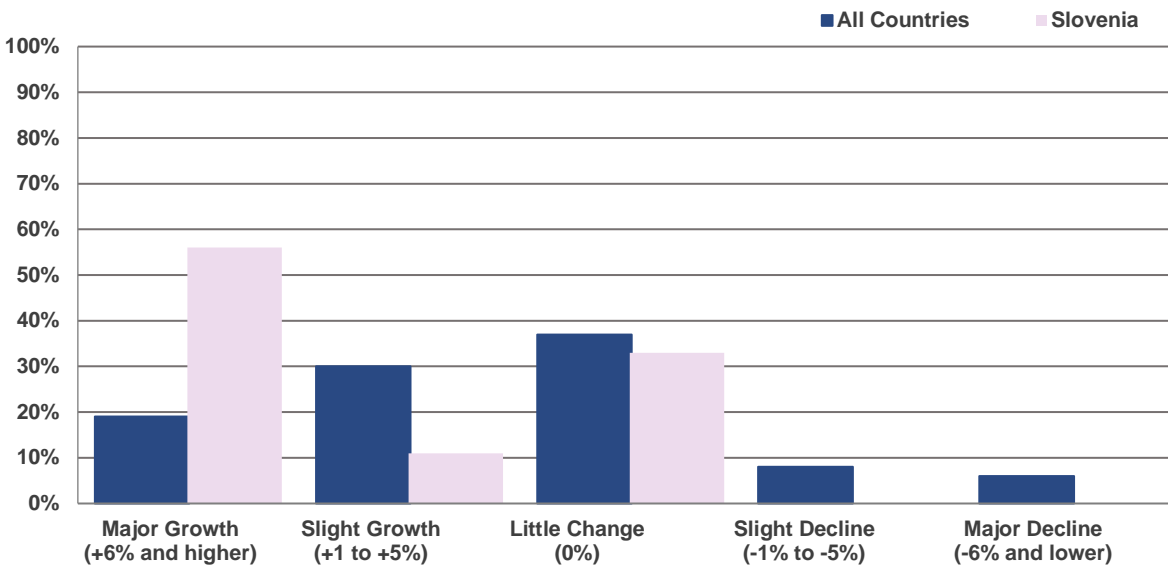
On the other hand, 11% of the Slovenian respondents participated in 11 – 20 EPC projects – which is considerably higher than reported across All Countries (6%). On top of that, there was no Slovenian respondent who did not become involved with any new projects in the last 12 months, in contrast to 15% of respondents across All Countries.

Figure 1 Number of EPC projects that have reached contract signature in the last 12 months



The Slovenian EPC market grew significantly in the last 12 months - together 67% of the national EPC providers and facilitators experienced major (56%) or slight (11%) growth of EPC orders, Figure 2. That growth is significantly higher than in All Countries (49%). There was no stagnation of orders reported, in contrast to 14% decline reported across All Countries.

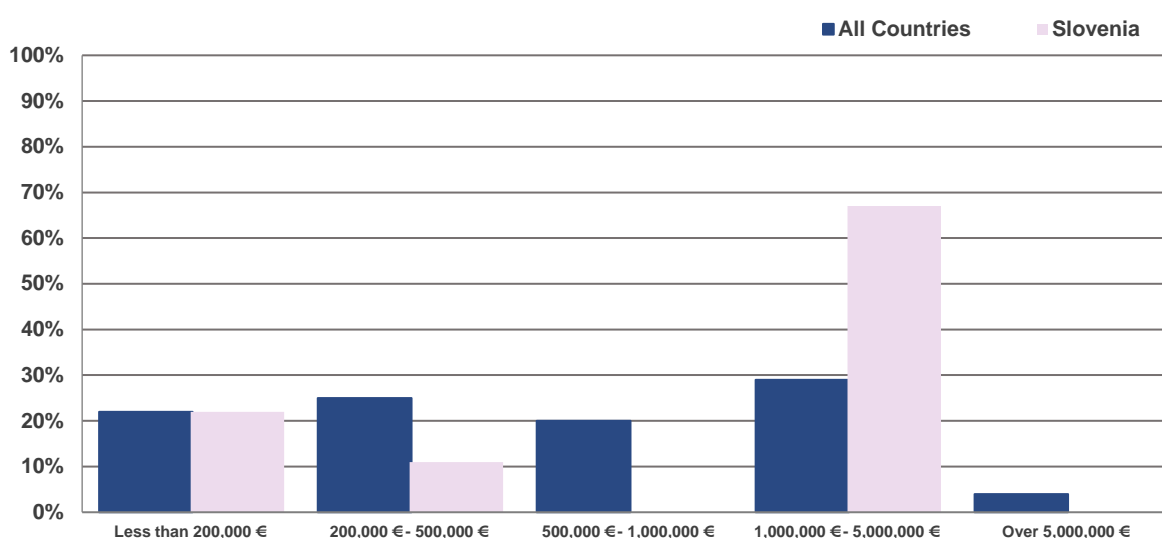
Figure 2 EPC orders in the last 12 months



Majority of EPC projects (67%) in Slovenia encompasses investments with value between EUR 1,000,000 – 5,000,000, Figure 3. The rest of projects are smaller investments (22%) up to EUR 200,000 and middle-sized projects (11%) with value of investments in the range of EUR 200,000 – 500,000. Value of project up to EUR 500,000 is more common (47% of all projects) in All Countries in the survey than in Slovenia, where only 33% of projects is below this line.

Split of projects based on investment value is quite unbalanced in Slovenia in comparison to the All Countries dataset., This is mainly due to requirements of the national programme for deep renovation of public buildings, aiming to provide funding to bigger projects, and in line with the European Local Energy Assistance going on in Slovenia, bundling projects at the municipal and regional level.

Figure 3 The most common overall investment value of the EPC projects



Almost 80% of the Slovenian EPC providers and facilitators (78% to be precise) believe that EPC market in Slovenia in 2016 was worth between EUR 10,000,000 – 50,000,000 while 22% of them estimated the EPC market value to be less than EUR 10,000,000, Figure 4. That is fully in line with previous EPC market analyses performed in Slovenia (Staničič, 2016). Slightly over half of respondents across All Countries also consider their respective EPC markets not to be bigger than EUR 50,000,000.

Based on the opinion of 68% of national EPC providers and facilitators, the EPC market in Slovenia is experiencing major growth, Figure 5. On the other hand, only 14% of the EPC providers and facilitators across All Countries believe their national market is growing rapidly. All Slovenian respondents think the EPC market is growing which is almost double of the respondents across All Countries (53%). Again, this is probably the result of huge national programme of buildings deep renovation going on in the public sector.

Figure 4 The EPC market revenue generated in 2016

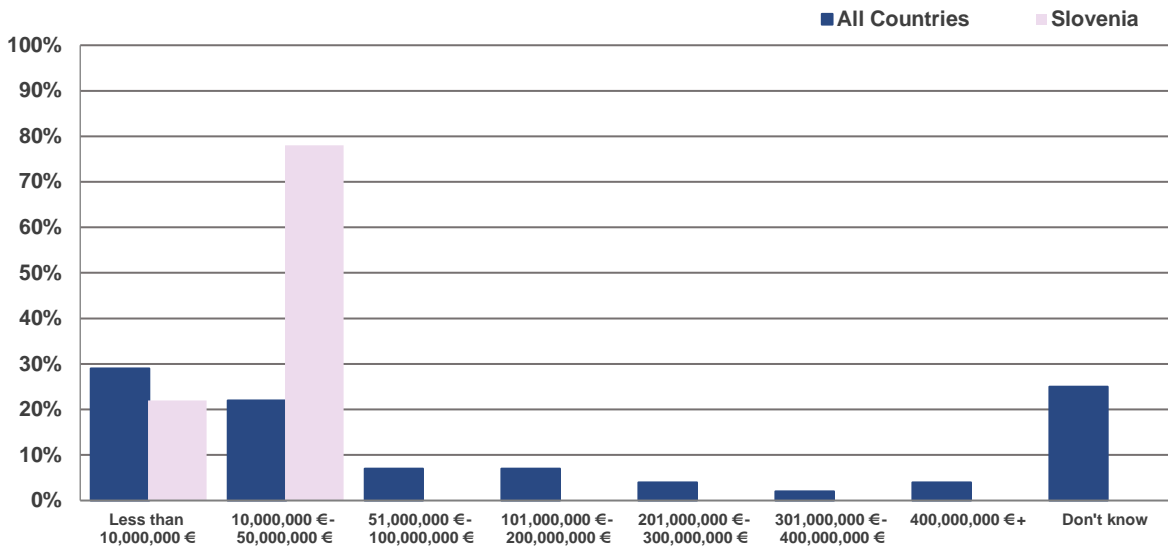
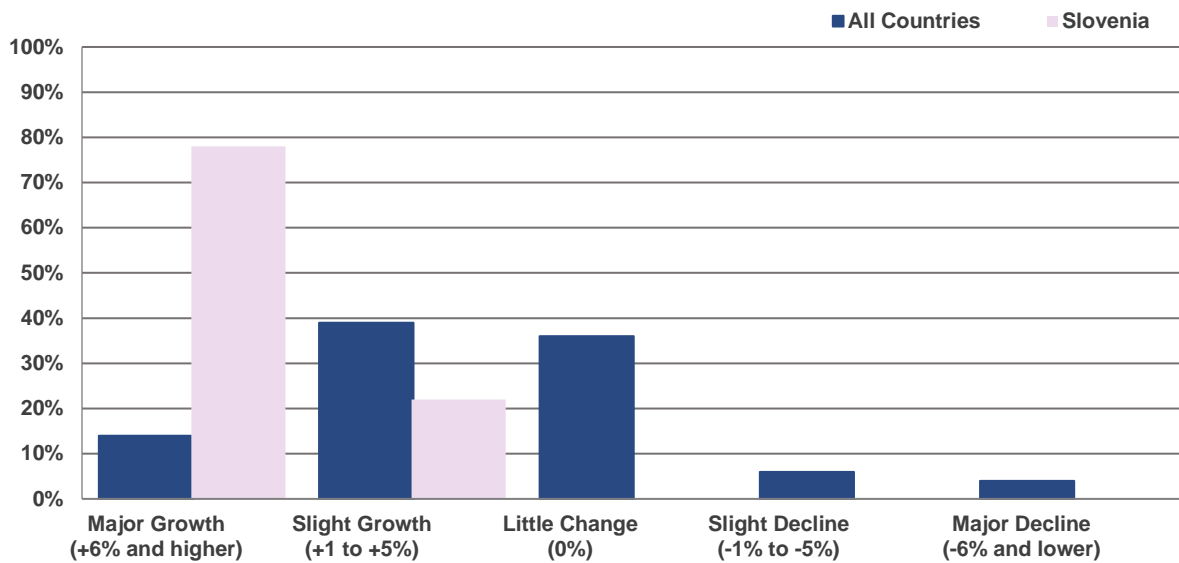


Figure 5 The EPC market developments over the last 12 months

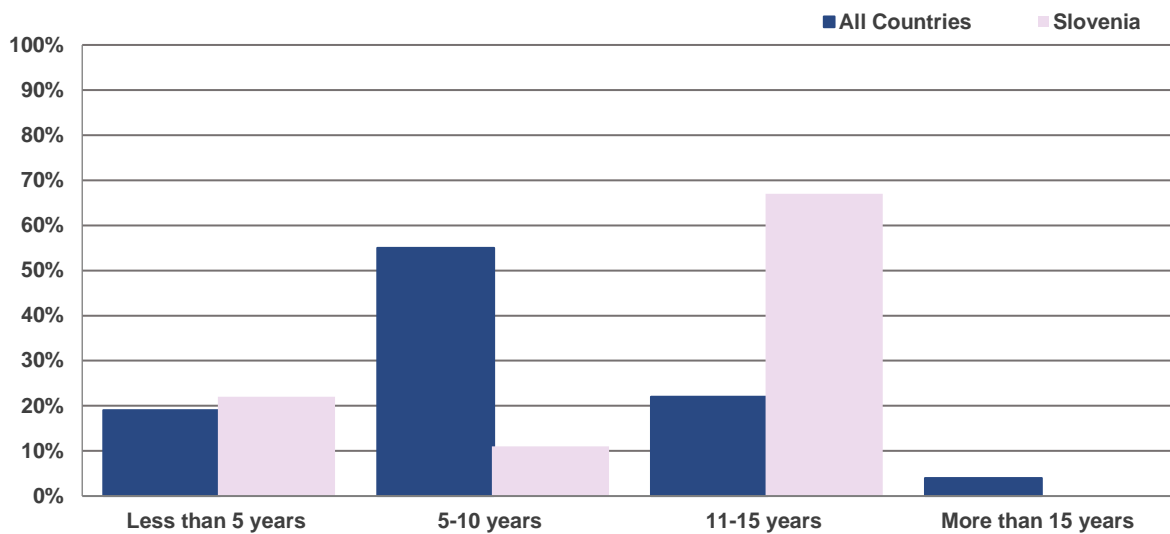


4.3 EPC business models

In Slovenia the most common duration of EPC project is by far between 11 and 15 years (67% of all projects), Figure 6.

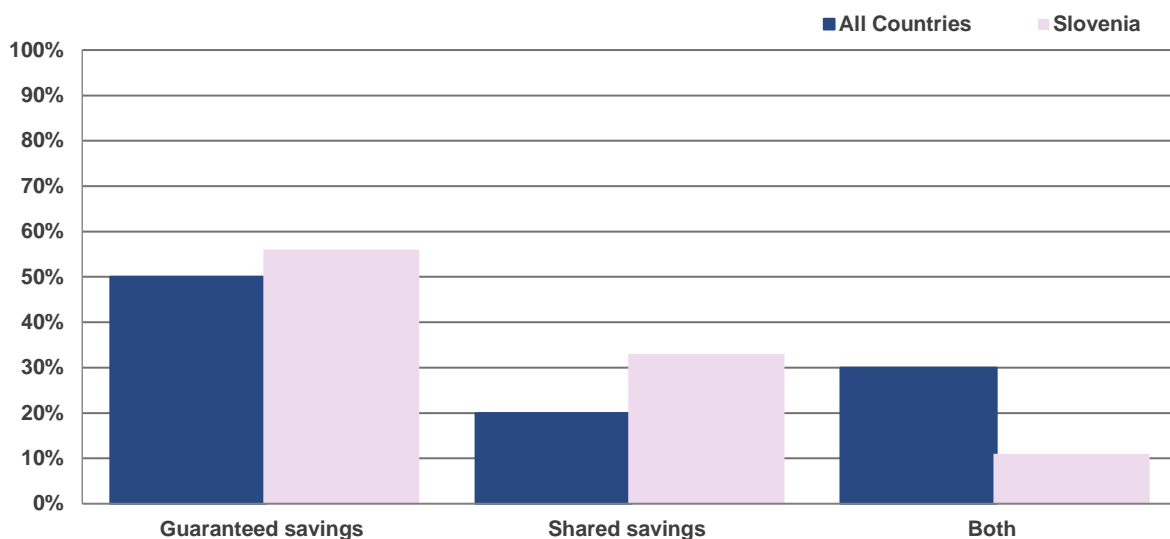
Additional 11% share of projects can be classified as long term but not exceeding 10 years of contract duration. Prevailing long term EPC contracts (78%) are outcome of the public buildings deep renovation supported through the Cohesion fund grants. There are no very long EPC projects above 15 years. The share of projects shorter than 5 years is 22%, similar to All Countries, which have almost 20% of such projects.

Figure 6 Duration of EPC contracts



Answers from respondents state that guaranteed savings are the most frequently offered energy savings model in Slovenian EPC projects with 56% of EPC providers and facilitators indicating guaranteed savings as primary model, Figure 7. Shared savings¹⁹ are present in the Slovenian EPC market with the 33% share, while they represent just 20% of EPC projects in All Countries. Only 11% of Slovenian respondents reported use of both models in the projects they are involved in. This is considerably lower than across All Countries (30%). However, the model type analysis is always a subject to model definitions and their understanding.

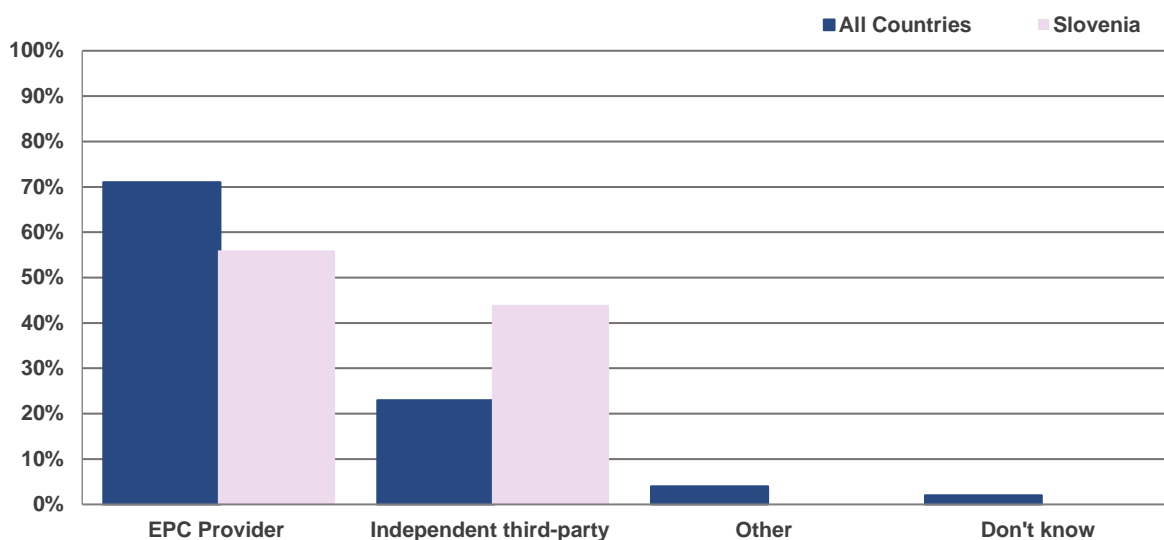
Figure 7 Type of energy savings model offered in the EPC projects



¹⁹ Note: In a shared savings model, the client pays the Energy Service Company (ESCO) a pre-determined percentage of its achieved cost savings from the project.

Energy savings performance analysis is for 44% of cases delivered by independent third party in Slovenia which goes against trend across All Countries in the survey, where 71% of respondents reported delivery by EPC provider as primary option, Figure 8.

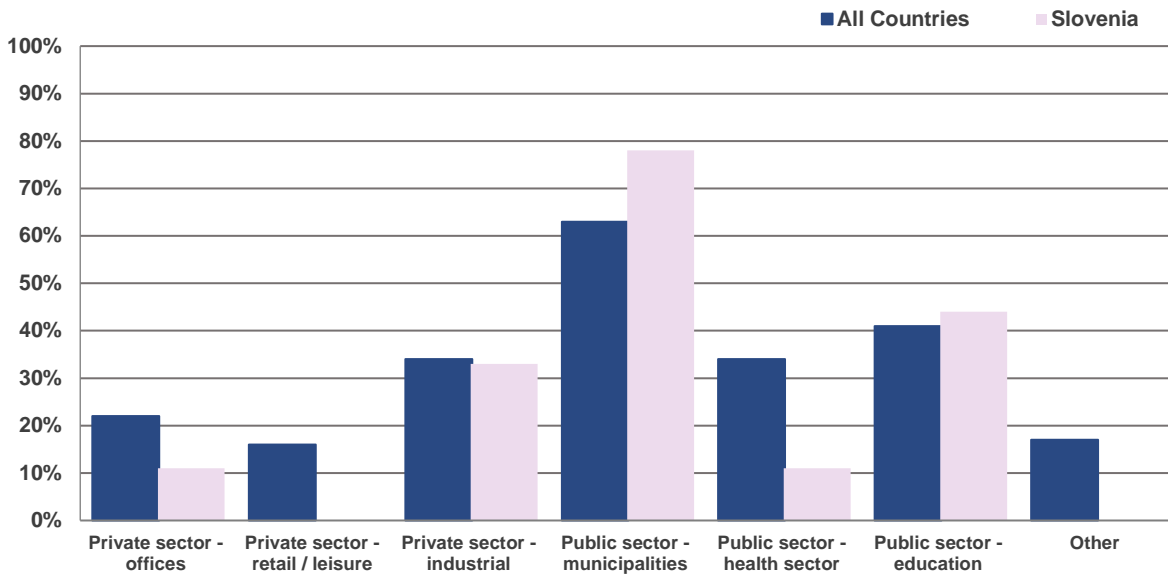
Figure 8 Preparation of the EPC projects energy savings analysis



4.4 EPC market sectors

For almost 80% of EPC providers and facilitators in Slovenia most frequently clients come from public sector and municipality. In contrast to the picture across All Countries, the dependence on municipal clients is higher in Slovenia. Also, education-related public sector clients are vital in Slovenia because they are main clients for 44% of respondents, while in health-related sector the EPC clients are scarce due to comprehensive energy renovation programme focused on that sector and closed in 2015. That programme provided significant grant financing out of Cohesion fund resulting in deep energy renovation of huge number of hospitals. In case of private industrial companies, both Slovenian and All Countries markets are similar. Generally, involvement of private clients is greater in All Countries than in Slovenia, Figure 9.

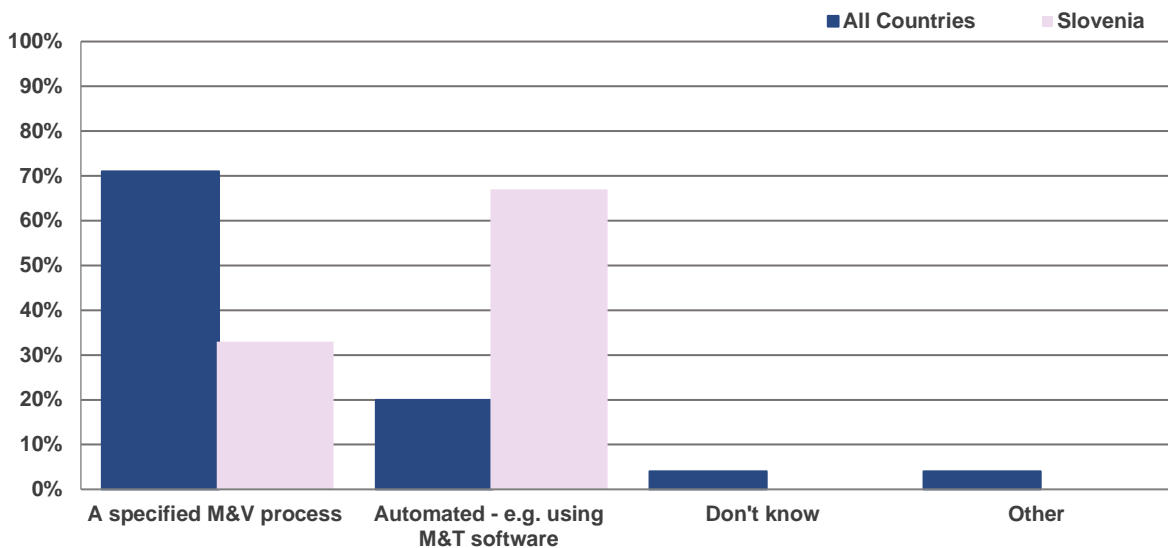
Figure 9 EPC clients market sectors



4.5 EPC measurement & verification

In terms of measurement and verification (M&V) of EPC project related energy savings, automated monitoring and targeting M&T is the main tool in Slovenia where almost 70% of EPC providers and facilitators stated this tool being the one they use. Differences in use of a specified M&V process are quite considerable: 71% for All Countries compared to 33% in Slovenia, Figure 10.

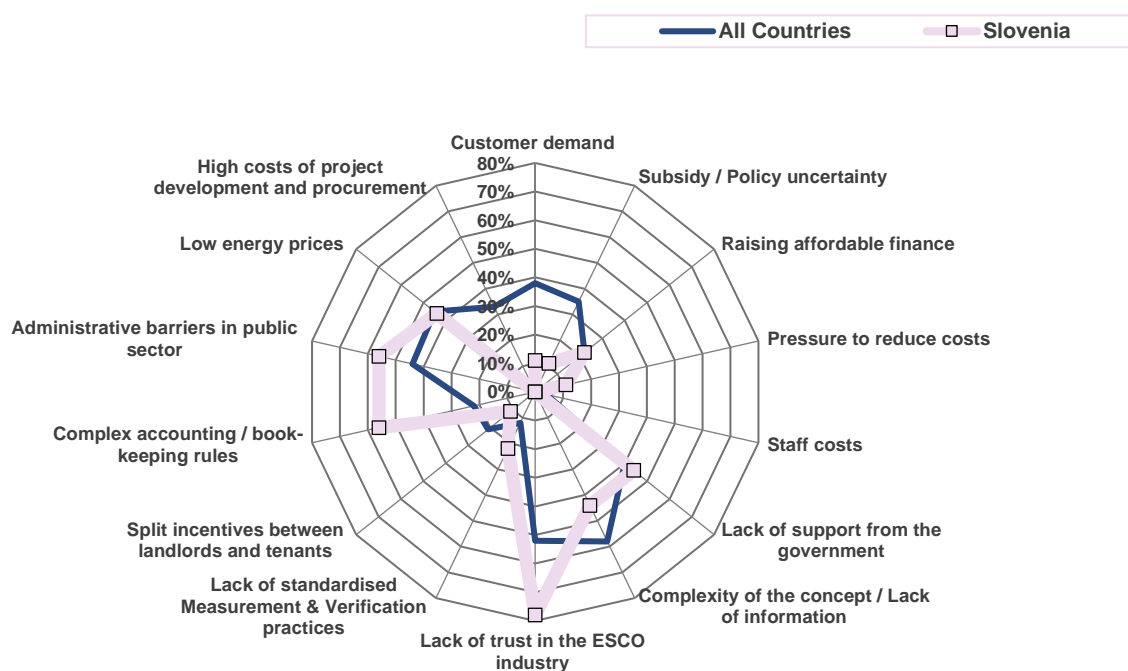
Figure 10 Measurement and quantification of the EPC project energy savings



4.6 EPC market barriers

Slovenian EPC providers and facilitators identified barriers to EPC business, which differ from the barriers selected by their counterparts across All Countries, Figure 11. The reason for that lies in ongoing programme for financing public buildings energy renovation via EPC, availability of ELENA projects development support and few EPC providers. The Slovenian respondents didn't identified any problems in high costs of project development and procurement and staff cost as EPC projects development assistance is provided in the framework of several ELENAs. Even customer demand and subsidies are considered minor barriers due to national EPC support programme. Where the Slovenia differs significantly is the strong emphasis on lack of trust in the ESCO industry, complex book-keeping rules and administrative barriers in public sector, being three main obstacles in EPC business. It is encouraging that the complexity of the concept is not recognised by the Slovenian respondents as the main EPC business barrier like in All Countries.

Figure 11 The main barriers to EPC business over the last 12 months



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

4.6.1 Regulatory and administrative barriers

No regulatory barriers are present. Administrative barriers are not at system level but rather a question of practicalities. These barriers are partially removed by activities of the Public Buildings Energy Renovation Projects Implementation Unit.

4.6.2 Structural barriers

The EPC market development in residential sector and industry is not demand side driven yet. The information and knowledge shortfall is especially problematic in the residential sector, considered to be a key trigger for the next successful EPC and ESC market development. Energy end-users in residential sector still have limited information and no technical, economic, financial and legal knowledge on EPC, as well ESC.

The split incentive (“landlord–tenant dilemma”) is not considered a problem in Slovenia due to extremely high percentage of owned housing units. In the case of energy renovations condominium owners are formally supported by house administrators in charge of daily management of the building but the range and quality of this support is generally poor. The ultimate decision and financial responsibility for the large investment in complex energy renovation lies with the owners facing legal, organisational and financing collective decision problems related to multiowner housing such as rules of majority in decision making.





4.6.3 Financial barriers

The predominantly small national ESCOs with limited own equity financing sources and operating in the Slovene EPC market face financing problems as assets and liabilities placed on ESCOs balance sheets significantly limit their creditworthiness and range of their activities. The instrument of forfeiting was successfully used for ESC projects in the framework of RES and CHP feed-in tariffs scheme but not for EPC projects, and still has to be recognised by financing institutions as trustworthy instrument (Staničić, 2016).

Clients financing of EPC projects is used in a very limited range due to public sector budgetary and debt restrictions.

4.7 EPC financing

The following EPC financing options are mainly used in Slovenia:

-  EPC provider on-balance sheet debt financing
-  EPC provider own financing
-  EPC client grant
-  EPC client own financing

By far the most recognized tool for financing EPC projects in Slovenia are grants and subsidies (67%) followed by loan taken by service provider (44%) and its internal funds (11%), all in line with the ongoing financing model established for the public sector. In case of All Countries, debt borrowed by client represents one of top two tools while grants and subsidies are standing as third option which is sharp contrast with prevailing Slovenian EPC financing model. There is no sale of claims and finance lease on the Slovenian EPC market too, Figure 12.

In contrast to All Countries, sale of claims in Slovenia is not widely accepted – 44% of respondents confirmed, that only in a minority of their project is such arrangement accepted, and 11% of respondents stated that the sale is not accepted at all, Figure 13. More than 44% of Slovenian respondents also didn't know how to evaluate that acceptability, which clearly indicates that they do not use such solution as the collateral. On the other hand, 52% of EPC providers and facilitators across All Countries indicated major or minor share of sale of claims in their EPC contracts, and even additional 4% of them are always using the sale of receivables as the main collateral for EPC projects.

Figure 12 The EPC projects financing

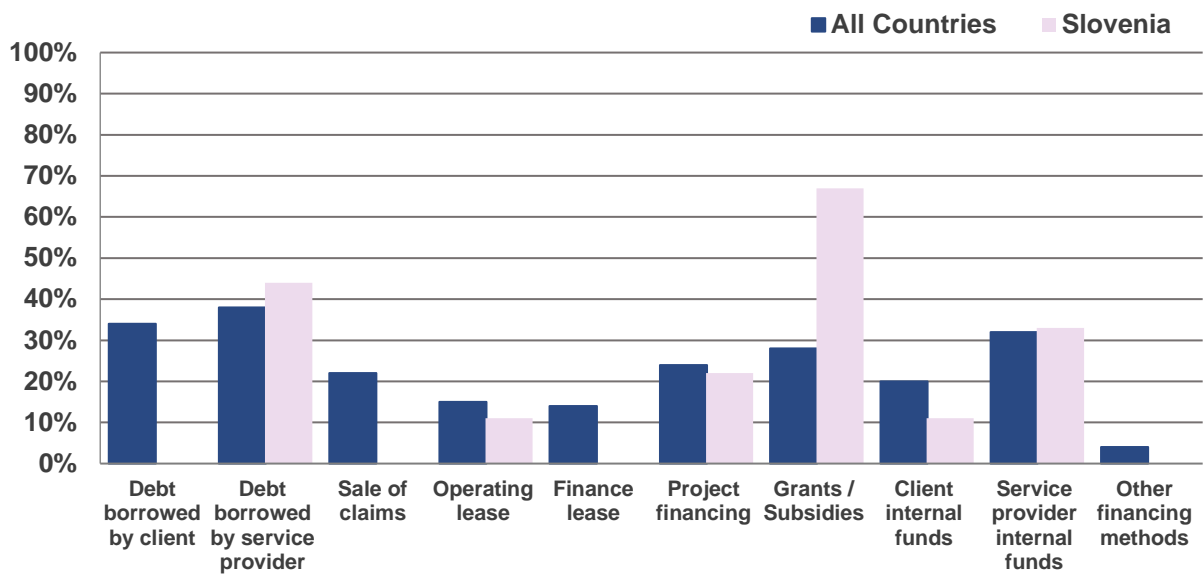
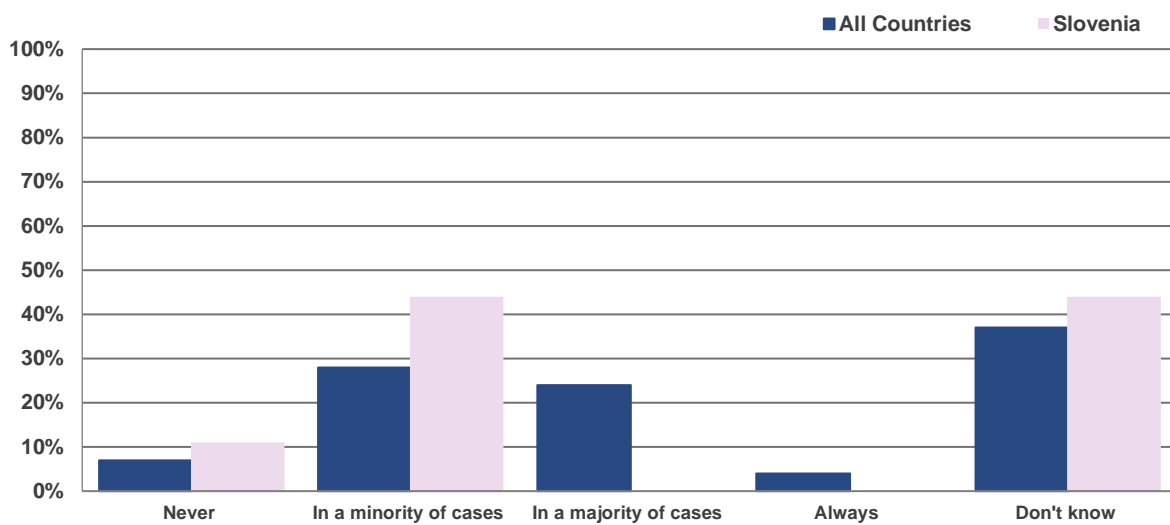
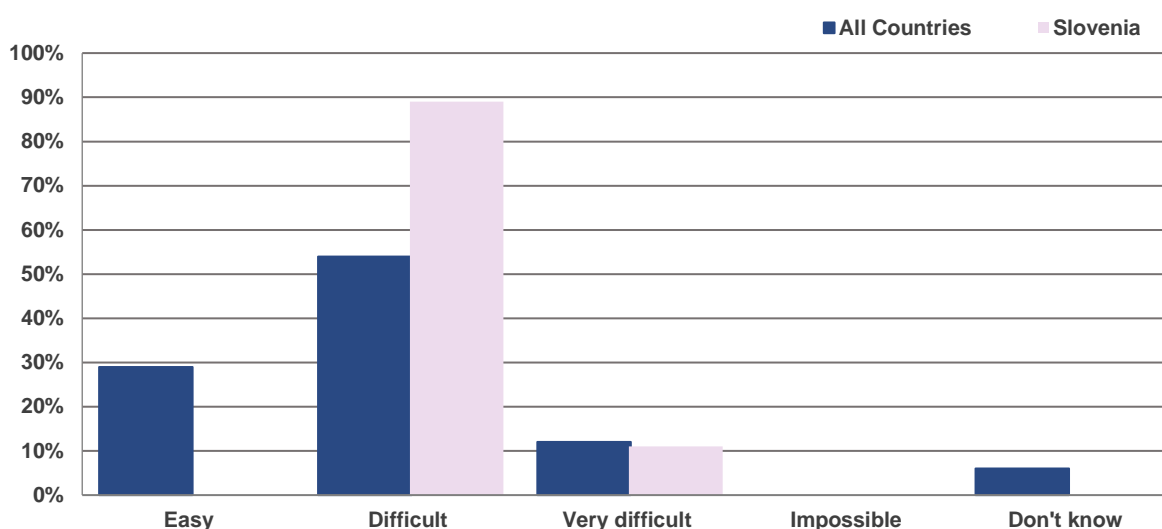


Figure 13 Acceptability of the sale of claims (receivables) as the main collateral for EPC projects



Responses of Slovenian EPC providers and facilitators show that obtaining financing for EPC project is still difficult or very difficult as nobody of them finds the process of obtaining viable finance for an EPC project to be easy, Figure 14. This is generally in line to the statements made by respondents across All Countries – over 50% of them consider obtaining viable finance for an EPC project difficult and 12% of them even very difficult.

Figure 14 Process of obtaining viable finance for an EPC project



4.7.1 ESCO financing

- ✔ **Debt arranged by the service provider** – is the most widely used funding method in the Slovenian EPC market. This presents issues for small and medium EPC providers having modest credit rating.
- ✔ Whilst respondents to the survey indicated that the **Sale of Claims** was accepted as the main collateral in an EPC, it is very rarely used.
- ✔ Only 15% of respondents to the survey indicated that **EPC providers' own internal funds** were used in projects, suggesting limited use of this type of financing.

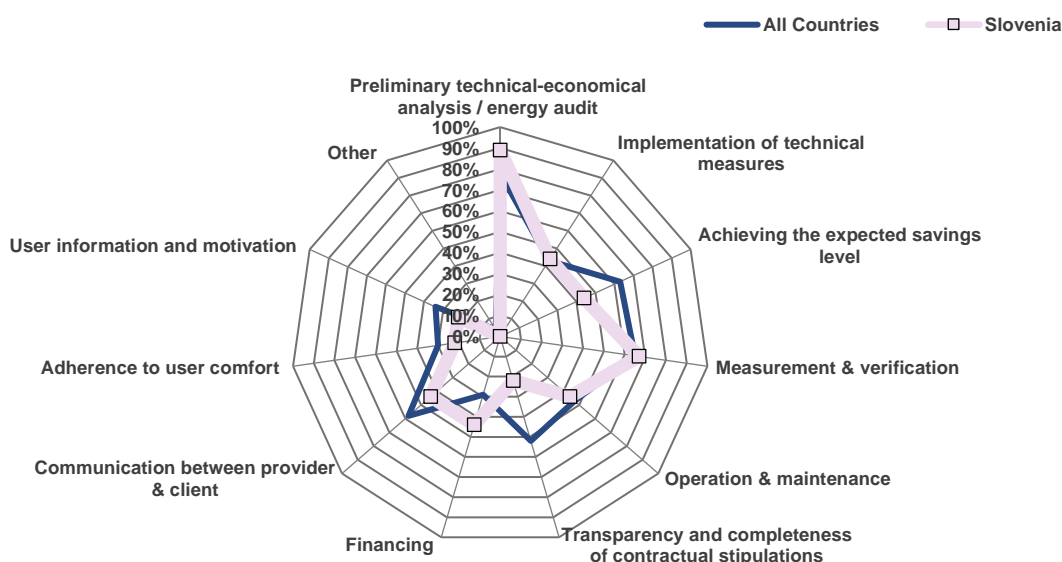
4.7.2 Client financing

- ✔ Finance affordability has been raised as a material barrier and **debt arranged by the service provider** is generally not a choice. Eurostat recently clarified in its guidance note (Eurostat, 2017) that the EPC provider can be considered the economic owner for non-removable assets where they are subject to performance guarantees, taking the EPC project off the client's balance sheet.

4.8 EPC quality determinants

In the report (Staničič D., Bevk P., 2014) relevance of EPC core values and related principles is shown, based on the EU-wide survey. The EU Code of Conduct for Energy Performance Contracting encompasses that values and principles as basic EPC quality label and professional statement. In identification of major determinants of EPC projects quality in the framework of the QualitEE survey, respondents from the Slovenia and All Countries are overall in agreement with each other, Figure 15. Only in case of financing, the Slovene EPC providers identify greater importance, unlike their counterparts across All Countries. On the other hand, transparency and completeness of contractual stipulations itself are deemed less important as project quality determinants by Slovenian respondents, probably due to contractual stipulations already clearly defined by the public sector.

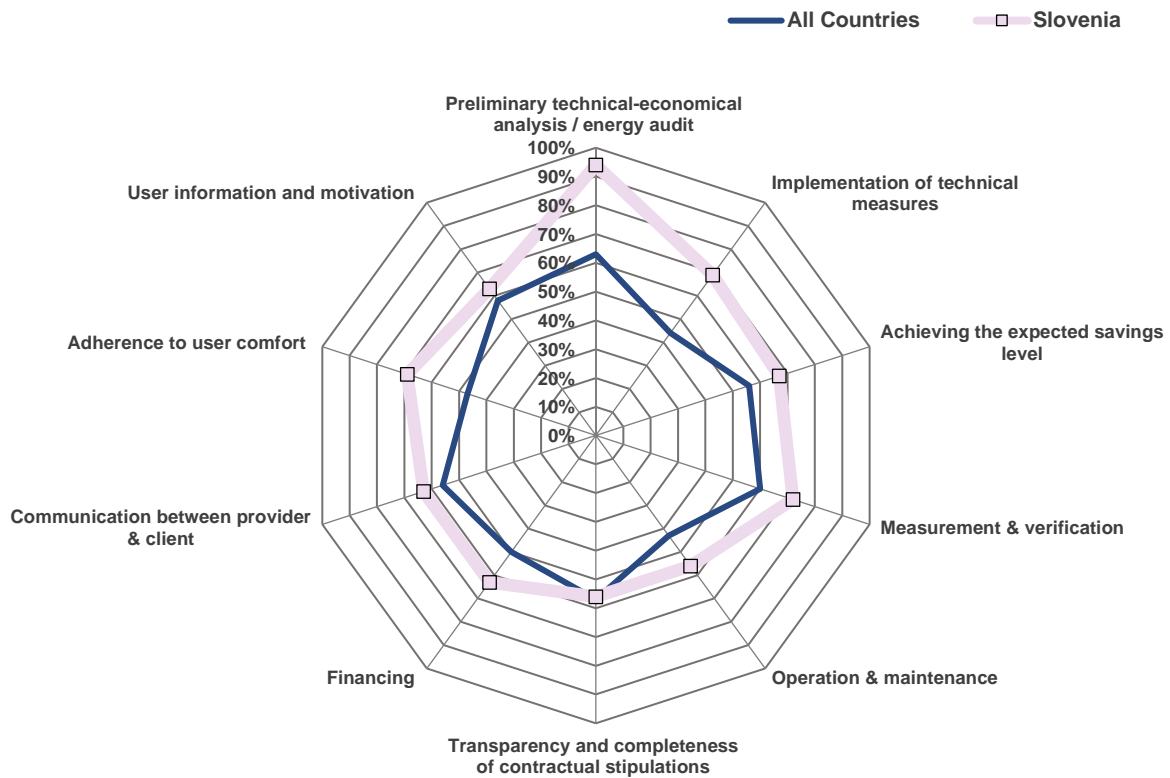
Figure 15 The most important determinants of quality in EPC projects



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

Slovenian EPC providers and facilitators see overall higher needs for improvement of EPC projects than their counterparts across All Countries, Figure 16. Biggest difference between needs identified by both groups of respondents is in preliminary technical-economic analysis /energy audit, where Slovenian EPC subjects see the most important need for quality improvement. That is consistent with results of previous question where Slovenian respondents identified technical-economic analysis as the most important determinant of EPC project’s quality. Only field where Slovenian respondents are in line with respondents across All Countries is transparency and completeness of contractual stipulations, determinant with the lowest need for improvement.

Figure 16 The most needed areas of quality improvement in EPC projects



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

5 ENERGY SUPPLY CONTRACTING MARKET

5.1 ESC market actors

5.1.1 ESC Providers

At the ESC market a similar situation comparing with the EPC market can be observed, in terms of service providers: there are only 3 ESC providers which are operating according to acknowledged ESC model. International ESC providers are not present in Slovenia yet.

5.1.2 ESC Clients and Facilitators

The ESC clients and facilitators are mainly the same market players as for the EPC market, see Chapter 4.1.

5.2 ESC market developments

The ESC market in Slovenia is in a slight stagnation at the moment, as the market is driven by the public sector with the focus on deep energy renovations of buildings. The first ESC contract in Slovenia was signed in the year 2001. Till the year 2009 the ESC market was developed only by one ESC provider playing a role of ESC project facilitator, resulting in very limited number of ESC projects implemented – in average one project per year. During the period 2009-2013 a significant increase in the market activity²⁰ and the number of ESC providers has been seen due to favourable ESC framework introduced by the RES and CHP electricity feed-in tariffs scheme and energy savings obligation scheme. However, these two schemes have been redesigned and side effect of that activity is a new financing framework less favourable for ESC projects. The ESC market is not yet competitive, considering limited number of ESCOs with ESC track record.

The QualitEE survey indicates that the split between EPC/ESC facilitators and providers who were also involved in small number of ESC projects (1 – 5) and those who were not involved in any ESC project is 38:62 in Slovenia, Figure 17. Some of respondents (12%) have been involved in more than 5 ESC projects in last 12 months. The respondents across All Countries were more active in ESC projects with about 15% of them participating even in more than 20 ESC projects. However, majority of them (46%) was also involved in 1 to 5 ESC projects.

Half of Slovenian respondents reported that they have experienced little change in their ESC orders influx in last 12 months, which corresponds also with EPC/ESC providers and facilitators across All Countries experiences, Figure 18. Other half of Slovenian respondents noticed major or slight growth of ESC orders. Where results differ significantly is 13% share of respondents across All Countries who reported major or slight decline in their orders, on the

²⁰ More than 50 ESC projects were implemented.

other hand fairly large number of Slovenian respondents (38%) indicated growth of offers being larger than 6 %. This can be explained with the fact that on-going deep energy renovation of public buildings goes hand in hand with energy renovation on the supply side.

Figure 17 Number of ESC projects that have reached contract signature in the last 12 months

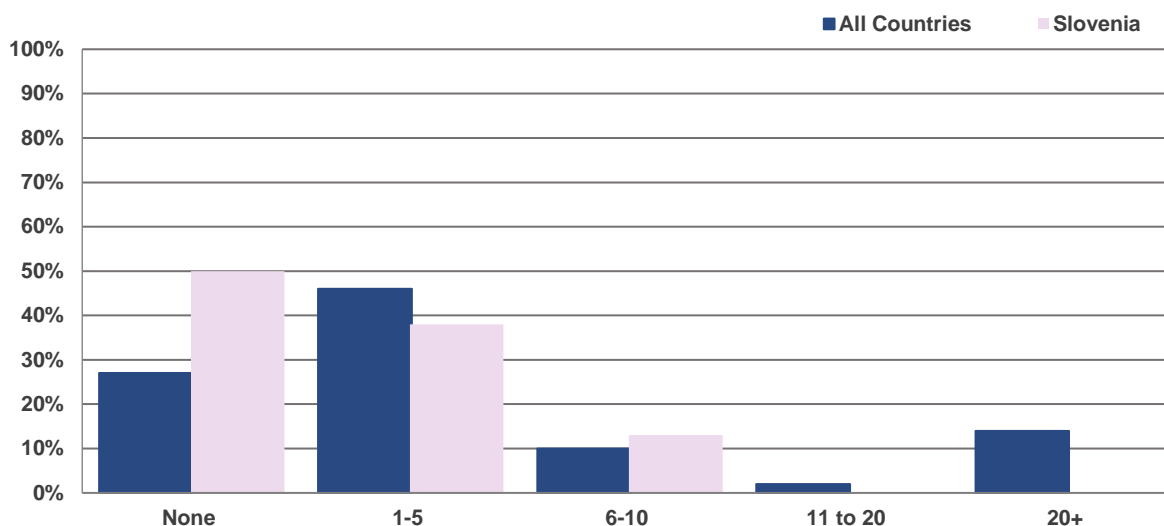
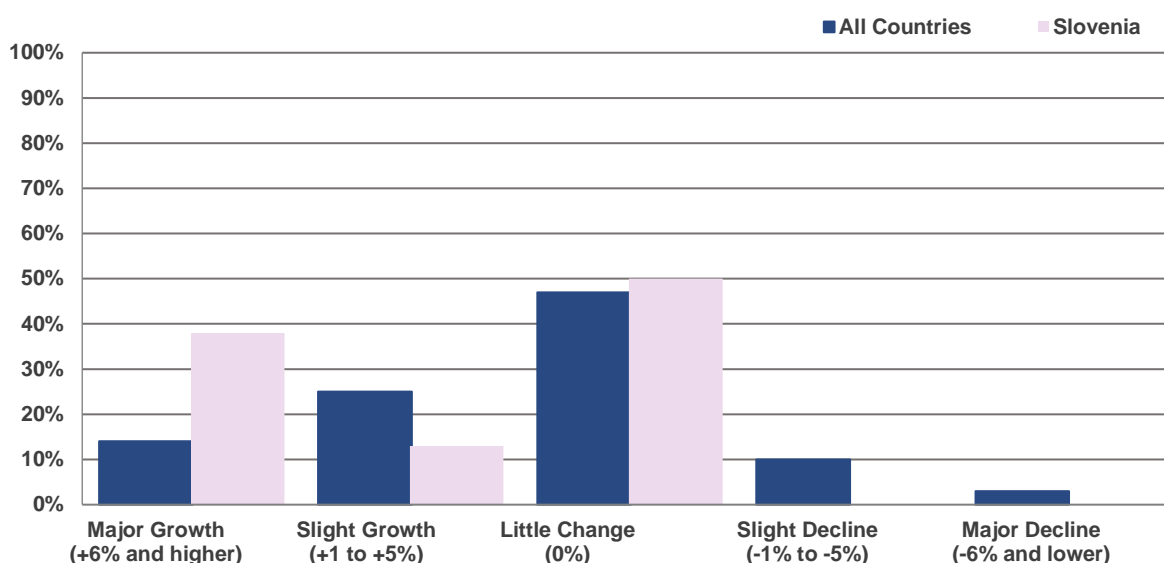


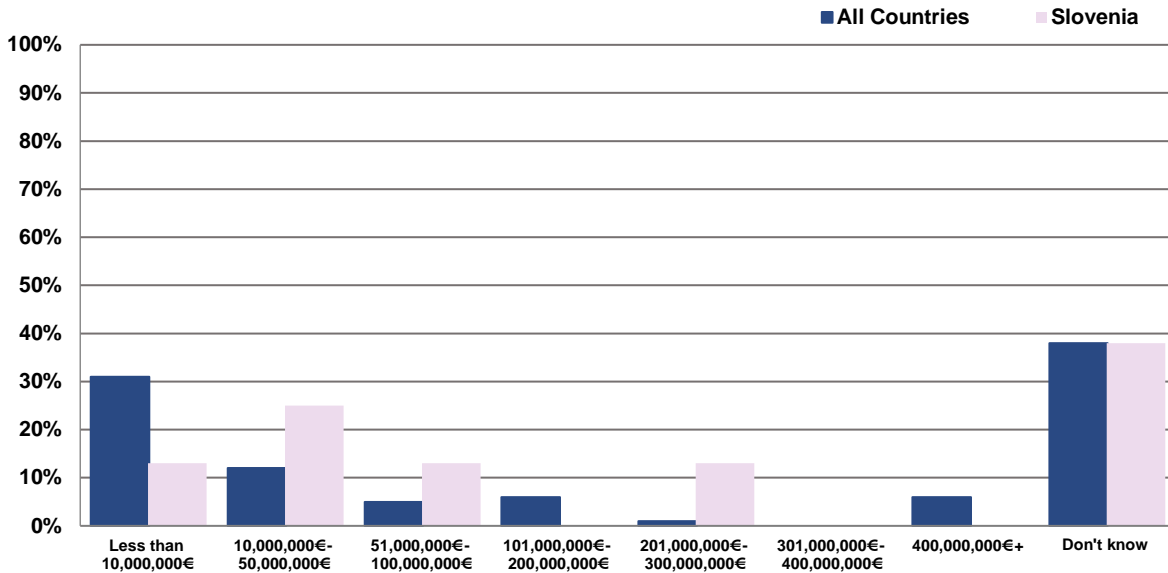
Figure 18 ESC orders in the last 12 months



Indicative, relatively high share of Slovenian EPC/ESC providers and facilitators (38%) was not able to say how much revenue, according to their opinion, was generated in ESC market in Slovenia. The same goes for respondents across All Countries, 38% of them were not sure as well, Figure 19. Those respondents from Slovenia who made an estimate most frequently (in 25% of cases) stated that ESC market in Slovenia was worth between EUR 10 million and EUR 50 million in 2016, while majority of respondents across All Countries (31%) estimated that the ESC market value was less than EUR 10 million. Remaining Slovenian respondents equally indicated three different estimations of Slovenian ESC market revenues generated in 2016:

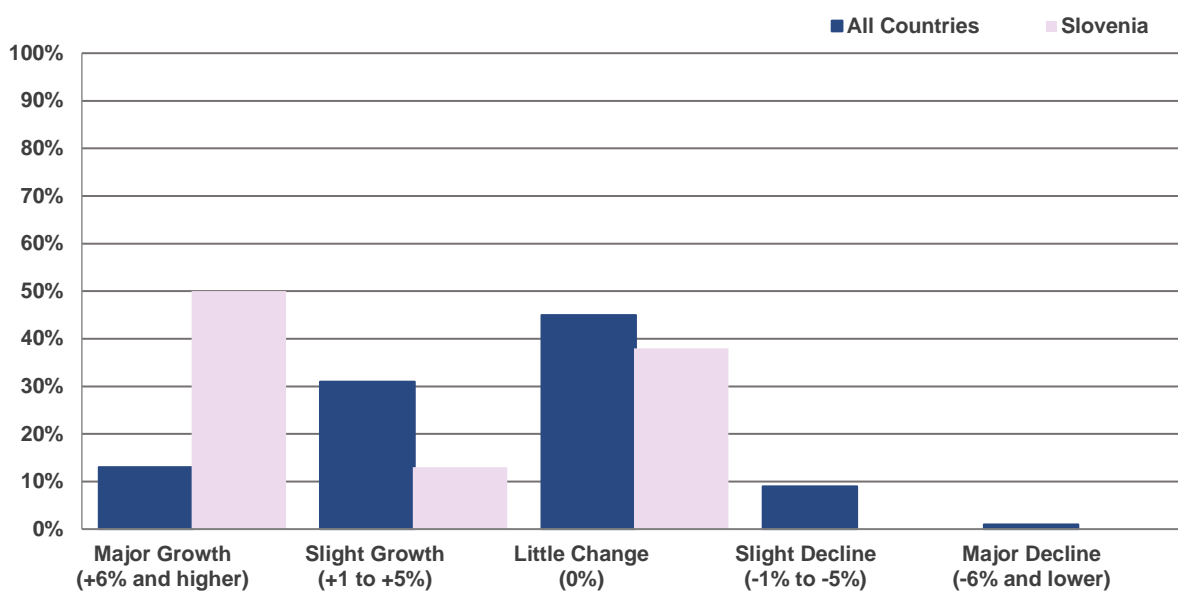
less than EUR 10 million (13%), between EUR 51 million and EUR 100 million (13%), and between EUR 201 million and EUR 300 million (13%).

Figure 19 The ESC market revenue generated in 2016



Among Slovenian respondents prevailed the opinion that ESC market had experienced major growth (exceeding 6%) in the last 12 months. Remaining half of Slovenian EPC/ESC providers and facilitators considered the Slovenian market to be static (38%) or slightly growing in examined period (12%). In contrast respondents across All Countries, 10% of them, expressed some distrust in their respective market reporting either slight or major market decline, Figure 20.

Figure 20 The ESC market developments over the last 12 months

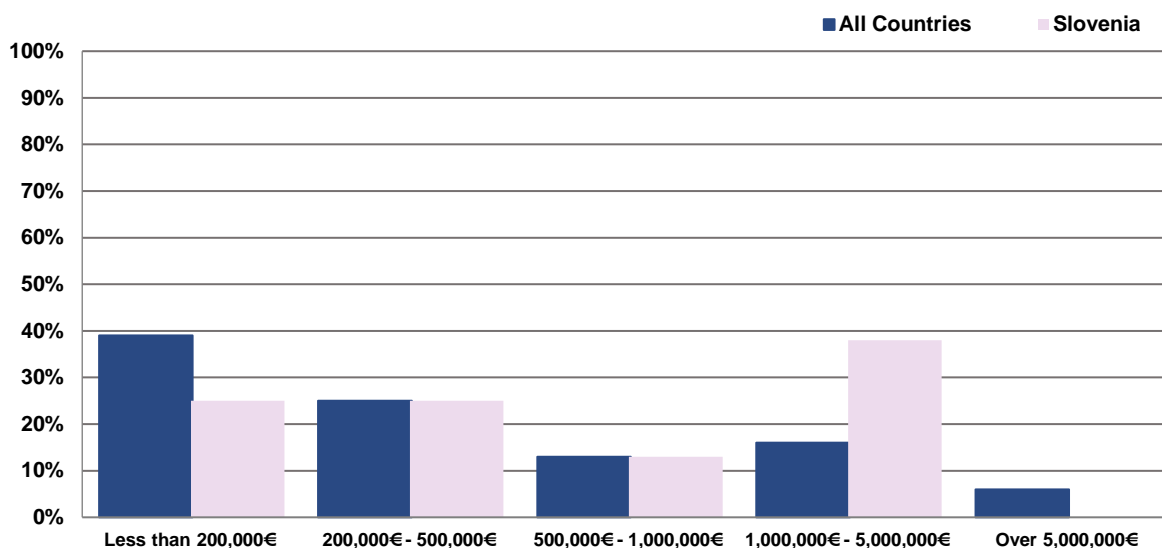


5.3 ESC business models

Standard ESC business model used in Slovenia is contractually arranged highly efficient supply of energy by EE service provider. Energy savings on the supply side are guaranteed, monitored and verified.

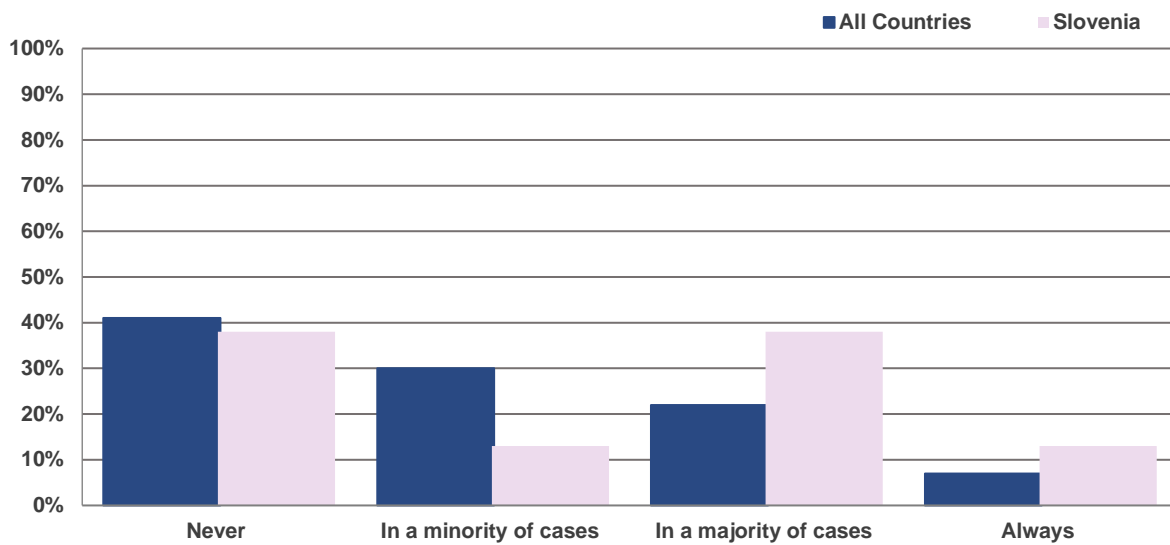
More than one third of ESC projects in Slovenia (38%) are focused in the category (measured by value of total investments) where the value of project is between EUR 1 million and EUR 5 million, Figure 21. Half of Slovenian ESC projects are in categories under EUR 500 thousand while none is exceeding the value over of EUR 5 million. In case of ESC projects across All Countries (as stated by respective EPC providers and facilitators) these are more evenly spread between all categories, some of them (6%) even crossing value of EUR 5 million. Still most of ESC projects across All Countries are of smaller scale under EUR 200 thousand.

Figure 21 The most common overall value (investment outlay) of the ESC projects



According to 50% of Slovenian respondents payments per unit of energy were in majority of cases (38%) or always (12%) delivered in combination with payments per unit of energy saved, Figure 22. This is a bit different from All Countries where, according to responses, more than 20% of respondents are in touch with mentioned arrangement in majority of cases while for small share of them (7%) this is ever-present settlement. However, half of respondents from Slovenia never (38%) or in a minority of cases (12%) combined delivery of payments per unit of energy with payments per units of energy saved.

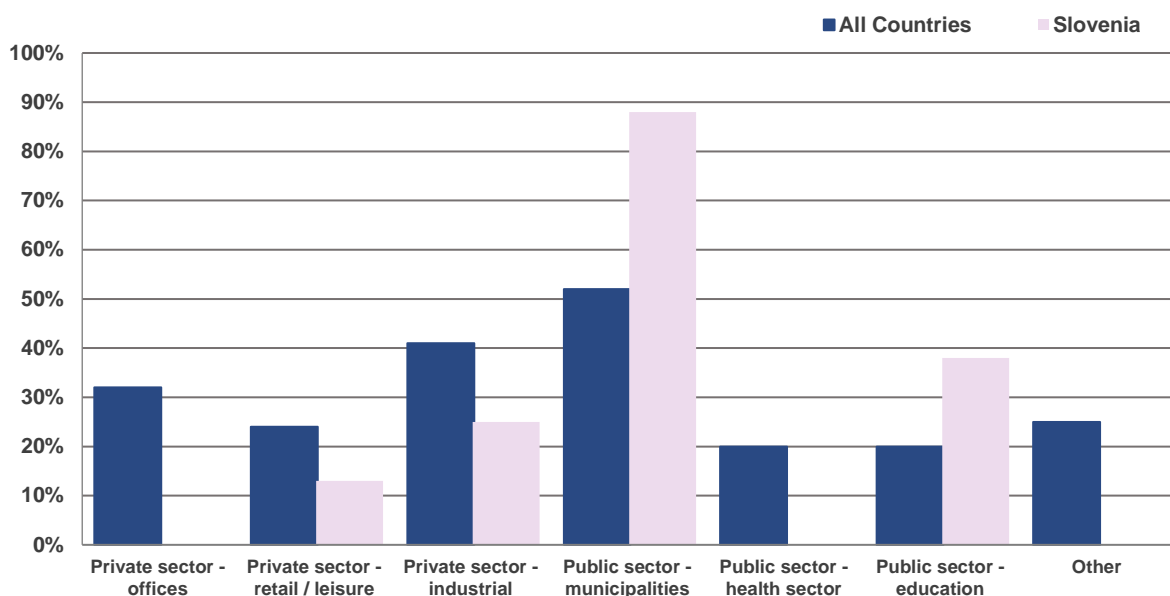
Figure 22 ESC projects payments per unit of energy delivered in combination with payments per unit of energy saved (from installed energy efficiency measures)



5.4 ESC market sectors

Main sector that provide clients for Slovenian ESC projects is public sector, especially municipalities, which are the most important clients for respondents across All Countries too, Figure 23. There are no ESC clients in the health sector due to previous grant financing out from the Cohesion Fund. Concerning Slovenian ESC clients in private sector, industry clients are prevailing, probably due to energy savings obligation scheme.

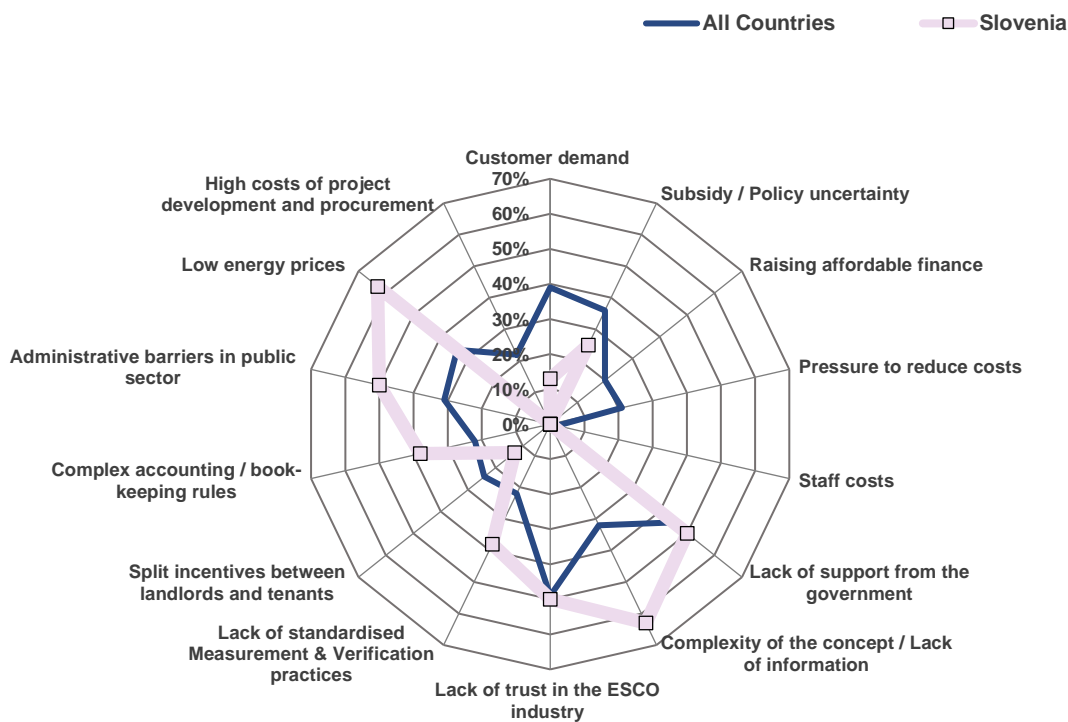
Figure 23 EPC clients market sectors



5.5 ESC market barriers

Slovenian EPC/ESC providers and facilitators identified two major barriers to the ESC business related to energy and energy efficiency service market. These were: low energy prices and complexity of the ESC concept, Figure 24. Reasons for this lie in lower profitability of ESC projects, not considered low hanging fruit any more, and investors focus on EPC projects due to the national EPC support framework. There is rather significant discrepancy between Slovenian and responses across All Countries. Respondents across All Countries are mainly concerned with lack of trust of ESCO industry itself and lower customer demand being the main barriers in ESC market.

Figure 24 The main barriers to ESC business over the last 12 months



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

The ESC regulatory, administrative, structural and financial barriers may be considered to be the same as for the EPC, see Chapters 4.6.1, 4.6.2 and 4.6.3.

5.6 ESC financing

Debt borrowed by ESC service provider or client are major sources of financing of ESC projects in Slovenia, the second one also prevail in All Countries, while finance lease is not used at all, Figure 25. Operating lease, project financing, grants, client and service provider internal funds are quite evenly used sources of financing of ESC projects in Slovenia. This indicates that ESC projects are not able to raise funding easily.

Among Slovenian EPC/ESC providers and facilitators, there is extremely strong opinion on difficulty in obtaining viable financing for ESC projects where 88% of them consider it to be very difficult while 12% deems it difficult, Figure 26. Respondents across All Countries find it mainly difficult to get ESC projects financed (in 46% of all answers) but around third of them probably did not faced greater challenges for they stated it to be easy.

Figure 25 ESC projects financing

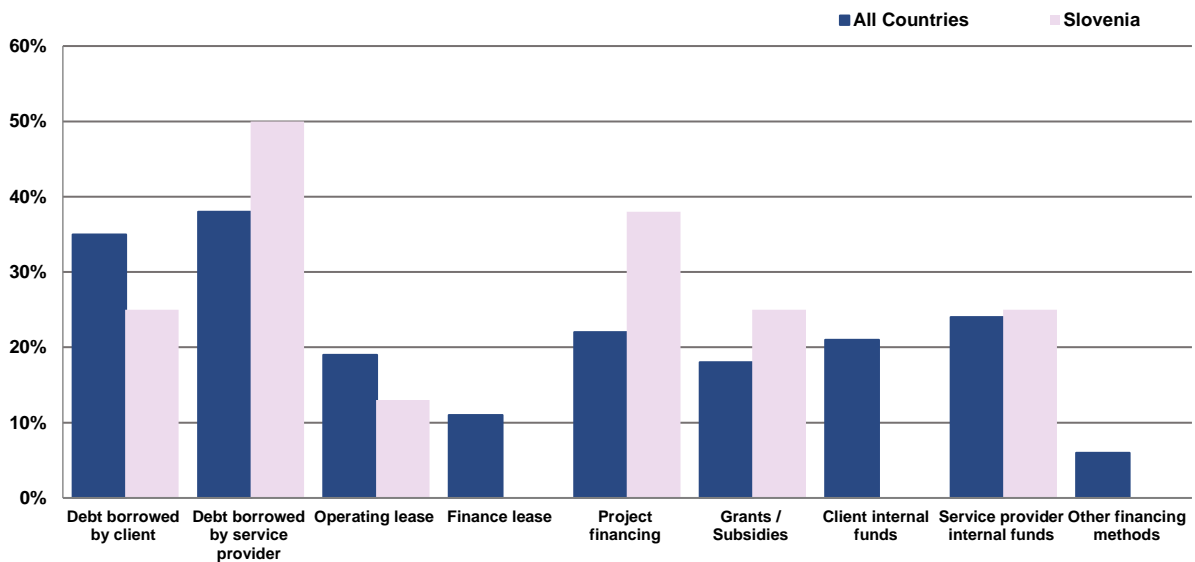
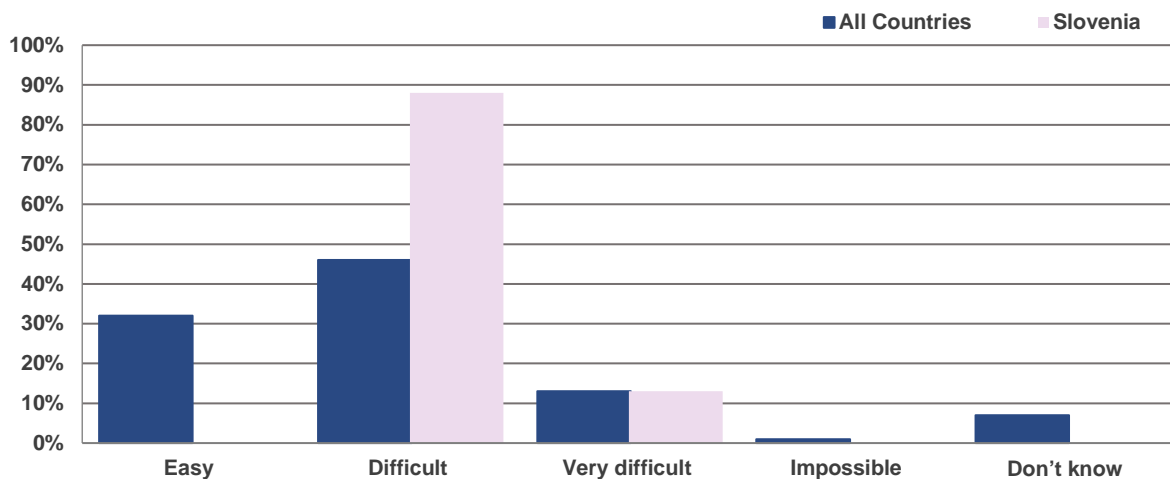


Figure 26 Process of obtaining viable finance for an ESC project



5.7 ESC quality determinants

Both Slovenian respondents and their European counterparts across All Countries in the survey believe preliminary technical and economic analysis is a major quality determinant. Slovenian EPC/ESC providers and facilitators clearly identified financing as the second most important determinant of quality while respondents across All Countries considered this indicator to be of quite lower importance. Overall Slovenian EPC/ESC providers and facilitators seemed to be focused on two factors and neglected importance of some other, like adherence to user comfort and transparency and completeness of contractual stipulations, Figure 27.

In terms of needed quality improvements during ESC projects' preparation and implementation, both respondents from the Slovenia and across All Countries are utterly aligned in emphasis put on preliminary technical and economic analysis and need of its improvement. Other areas are not of greater importance according to all respondents, Figure 28.

Figure 27 The most important determinants of quality in ESC projects

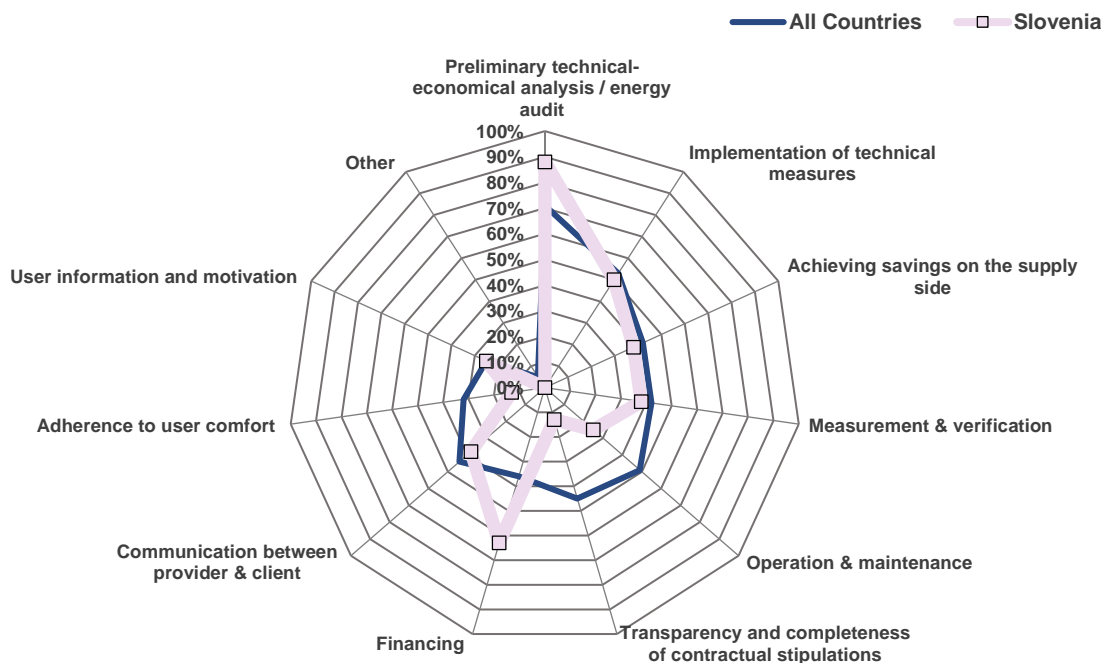
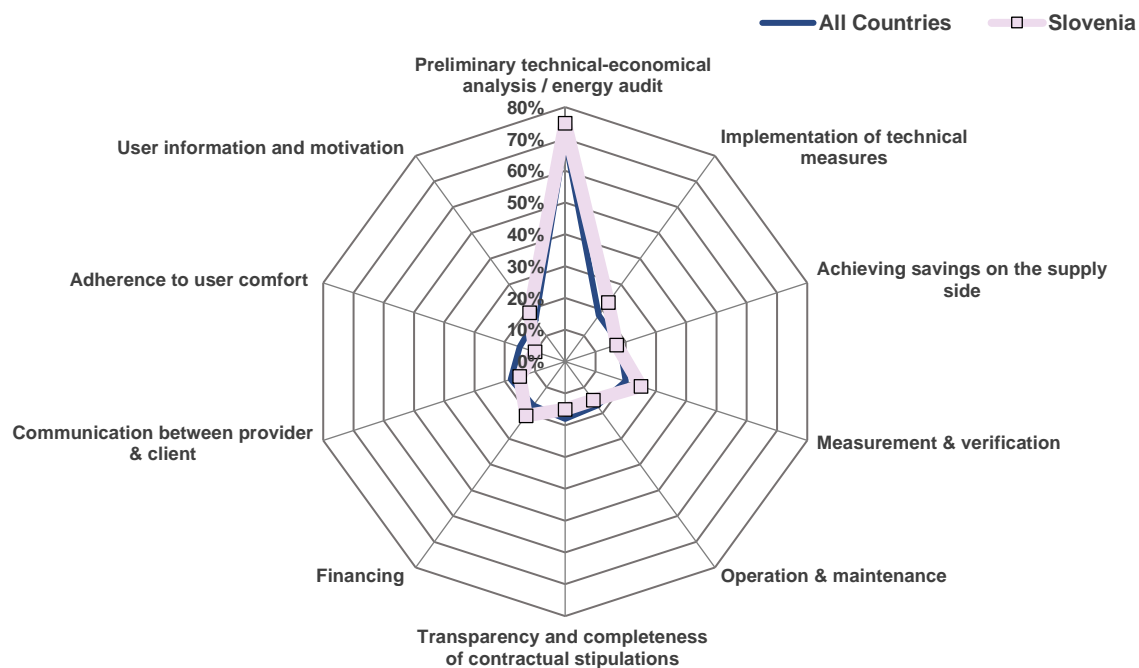


Figure 28 The most needed areas of quality improvement in ESC projects



Respondents may have selected multiple answers. The charts show the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

6 RECOMMENDATIONS TO SUPPORT MARKET DEVELOPMENTS

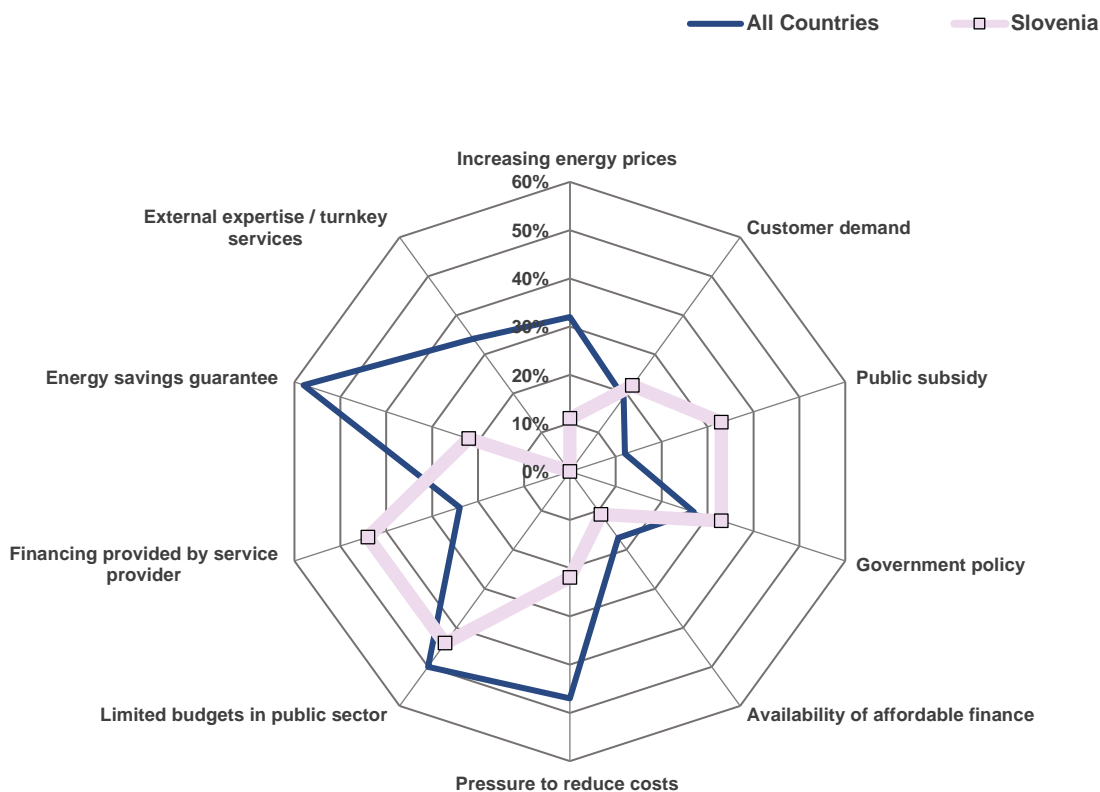
This chapter considers the main drivers and success factors for energy efficiency services in Slovenia drawing on the survey results and wider examples of practices that have assisted market development. Considering these along with what is required to overcome the barriers described earlier, a set of recommendations for actions to drive further development of the Slovene energy efficiency services market is proposed.

The survey results and literature (Staničič 2013, Staničič 2015, Staničič 2016) are consistent in highlighting following key drivers of EES to be:

- ✔ **Limited budgets in public sector** – 44% of Slovenian respondents highlighted this as a key driver for EPC, and 50% of them highlighted this as a key driver for ESC.
- ✔ **Financing provided by service provider** – 44% of Slovenian respondents highlighted this as a key driver for EPC, and 38% of them highlighted this as a key driver for ESC.
- ✔ **Public subsidy** - 44% of Slovenian respondents highlighted this as a key driver for EPC, and 38% of them highlighted this as a key driver for EPC.
- ✔ **Energy savings guarantee** - 22% of Slovenian respondents highlighted this as a key driver for EPC, and 38% of them highlighted this as a key driver for ESC.
- ✔ **Customer demand** - 22% of Slovenian respondents highlighted this as a key driver for EPC, and 38% of them highlighted this as a key driver for ESC.

Slovenian respondents indicated limited budgets in public sector and financing provided by service provider as two main drivers of EPC market, Figure 29. Beside these drivers, government policy and public subsidy are assessed to be the second level of importance. On the other hand, only one fifth of Slovenian respondents cited energy savings guarantee and pressure to reduce cost, in stark contrast to at least about half of respondents across All Countries . Thus, it can be concluded that the EPC in Slovenia is still used as the financing instrument for energy efficiency projects.

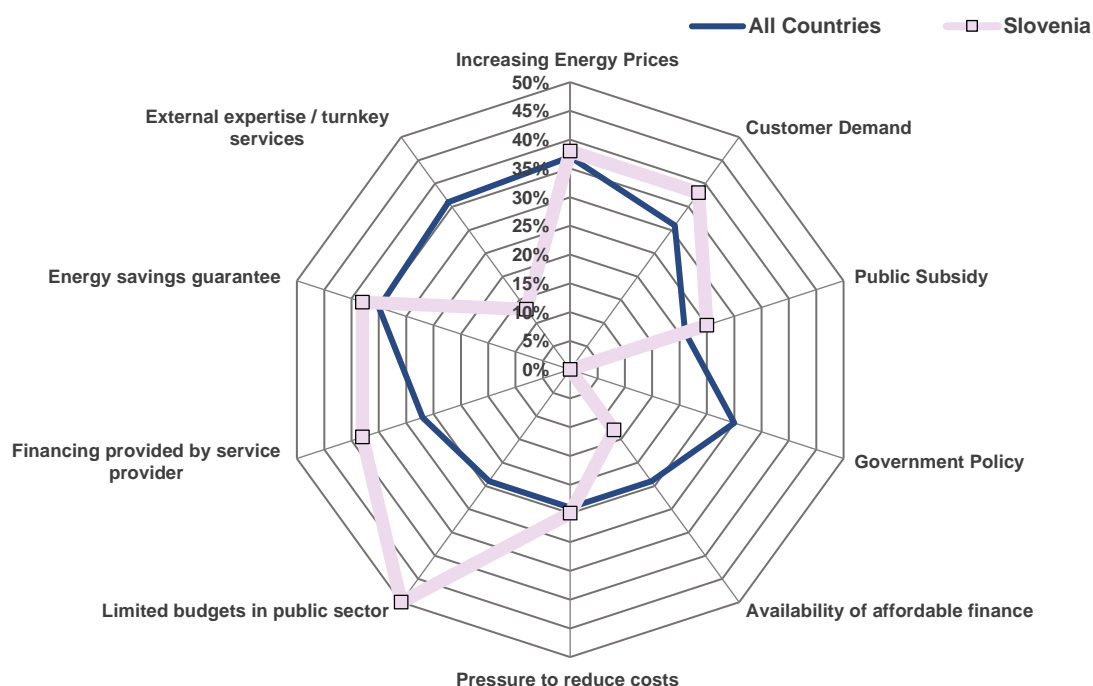
Figure 29 The main drivers of the EPC business based on the activities of the last 12 months



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

While respondents from All Countries does not express any strong opinion on significant drivers of ESC business, Slovenian providers and facilitators clearly outlined limited budgets in public sector to be the main driver, followed by variety of equally highly ranked additional factors: financing provided by service provider, energy savings guarantee, increasing energy prices and customer demand, Figure 30.

Figure 30 The main drivers of the ESC business based on the activities of the last 12 months



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

Table 3 below summarises the market barriers identified in chapters 4.6 & 5.5.

Table 3: Overview of key EES market barriers

Market barrier	EES affected
1 Lack of trust in the ESCO industry	EPC, ESC
2 Complex book-keeping rules	EPC
3 Administrative barriers in public sector	EPC, ESC
4 Complexity of the concept / Lack of information	ESC
5 Lack of support from the government	ESC, EPC

Actions proposed to overcome market barriers are listed in the Table 4 below. All these activities the Slovenian QualitEE partner presented to the Ministry in charge for EES. These activities were included in the NEEAP approved by the Government (Ministry of Infrastructure, 2017).

Table 4: Overview of actions to overcome market barriers

Response to barriers	Actions	Who should act	Target groups	Description	
1	1,5	Development of financial instruments for mobilising investments in the deep energy renovation of buildings	Government Eco Fund	EE Clients EE Providers EE Facilitators	Mixing of public and private funds, use of grants as a guarantee for buildings deep energy renovation projects by risk-sharing mechanism leveraging private capital, establishment of factoring fund and use of targeted fiscal instruments.
2	1	EES Quality Assurance Scheme	Public Bodies Government	EE Clients EE Providers EE Facilitators	Establishment of national quality certification frameworks based on technical and financial quality criteria
3	2, 3, 4	EE Public Procurement Scheme	Government	EE Clients EE Facilitators	Provision of project development support and technical assistance; standardised OJEU compliant procurement processes with a panel of pre-qualified service providers and facilitators; standard contract templates and specifications; and financing solutions, incorporation of quality criteria in service contracts, training of clients, establishment of information platform.
4	4, 1	EE Projects Facilitators Scheme	Government	EE Facilitators EE Clients	Provision of project development support and technical assistance, certification of EE projects facilitators.
5	5, 1	The financing plan for energy-saving building renovations in the public and private sectors in period 2020-2030	Government	EE Clients EE Providers EE Facilitators	Assessment of the economic potential for financing the renovation of buildings with the support of financial instruments (for all sectors), analysis of the effectiveness of the renovations in the period of 2014-2020, identification of possible EU, national and private funding sources for the renovation of public and multi-apartment buildings and their combination, preparation of technical and legal framework for the financing plan implementation.

7 CERTIFICATION OF ENERGY EFFICIENCY SERVICES

7.1.1 General framework for certification of products and services

The Slovenian framework for standardisation and certification comprises the following actor:

- ✔ **The Slovenian Institute for Standardization (SIST)** is recognized as the national standards body in the Republic of Slovenia. SIST develops, adopts and maintains Slovenian standards, and participates in the work of international (ISO, IEC, ITU-T) and European Standardisation Organisations (CEN, CENELEC, ETSI) where its experts represent national interests.
- ✔ **The Slovenian Accreditation (SA)** – is active as a public institute authorized by the State to perform as the only, independent and non-profit institution, the assignments of national accreditation service in the regulated and non-regulated sectors, and to represent the interests of the Republic of Slovenia in the international accreditation cooperations. Slovenian Accreditation is responsible for establishing, developing and maintaining a professional, independent and impartial accreditation system in Slovenia, and for performing the related assignments.
- ✔ **Certification Bodies** – organisations accredited by SA that offer auditing and certification of objects to standards such as ISO 50001 (Energy Management Systems). A list of Slovenian certification bodies for ISO 50001 is available on the SA website²¹
- ✔ **Certified Objects** – organisations, systems, products, processes and services which are the subject of certification.

7.1.2 Certification of products and services in the energy sector

The following give examples of certification of products, services and management systems in the energy sector:

- ✔ **Quality Label in Construction (ZKG)** - is a voluntary green label and a trade mark for outstanding quality. ZKG is awarded to products, equipment, technologies and services that meet high, professionally prepared and internationally comparable specifications of quality. Additionally, suppliers of products and services shall implement a quality assurance system and work towards business excellence. Environmental, social and economic aspects are also reviewed in the assessment process. The aims are to establish the label as an instrument of consumer information and protection, to improve quality of products and services, and to encourage the research and development of new products.

²¹ http://www.slo-akreditacija.si/?s=&post_type=lpacreditation&status%5B0%5D=70&page=2

- ✔ **ISO 50001 (energy management systems)** – international standard for energy management systems that promotes energy efficiency within organisations. Certification Bodies are accredited by UKAS.

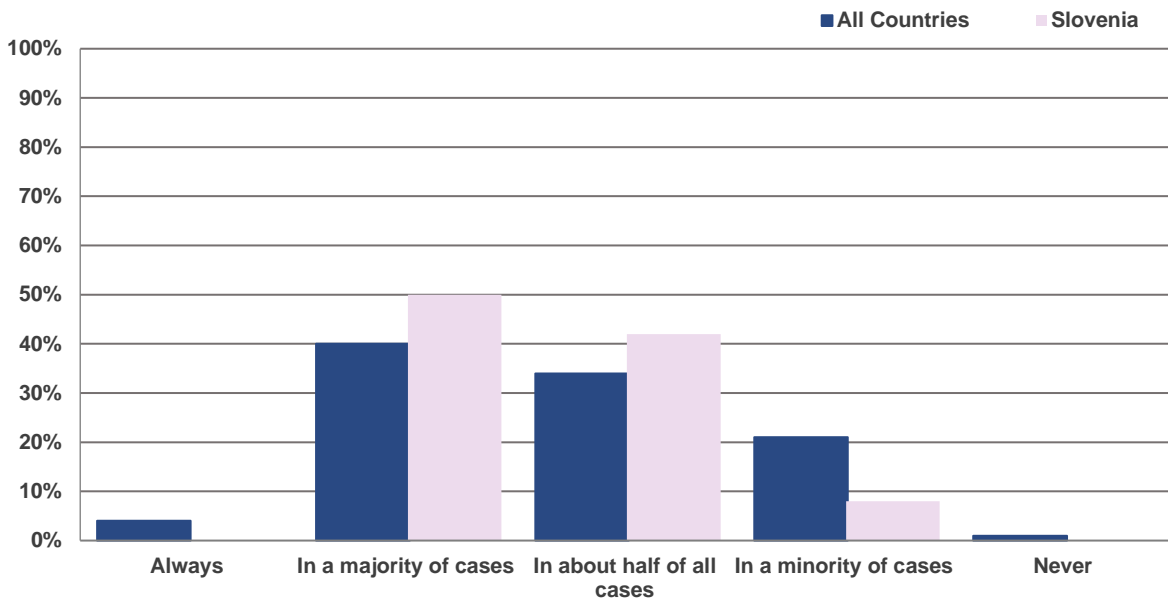
7.1.3 Certification of energy efficiency services

The following highlights initiatives relating to the certification of energy efficiency services in Slovenia.

- ✔ **Inspection of Air-conditioning Systems Scheme** – Inspections of AC systems include an inventory and review of documentation, visual and functional check of the AC system and air-conditioned rooms, preparation of proposals for improvement and alternatives, and creation of the inspection report by independent expert with state licence.
- ✔ **Inspection of Heating Systems Scheme** – A draft of Regulation of inspection of the heating systems is announced for 2018. Inspections of heating systems shall include the audit of heat generator, control system and circulation pumps by independent expert with state license. The inspections will also include an assessment of the efficiency of the heating systems and their suitability to the use of the building.
- ✔ **Building Renovation Quality Management Scheme** - in the period 2018 – 2020 the guidelines for energy renovation of buildings quality management are announced, taking into account the aspects of sustainability and building information modelling.

Responses indicate that there is overall greater mistrust in EPC/ESC service providers in Slovenia than in All Countries, probably due to non-competitive market. Half of Slovenian respondents stated that in a majority of all cases they meet with lack of trust, while in case of respondents across All Countries, 40% of them noted lack of trust in EPS/ESC services, Figure 31. The same pattern can be seen with the significant percentage of respondents who in about half of cases encountered lack of trust. There were no Slovene respondents who never or always experienced lack of trust in EPC/ESC service providers.

Figure 31 A lack of trust in EPC/ESC service providers



Half of Slovenian respondents clearly supported idea that well-defined procurement specification increases the quality level of services in majority of cases while one quarter of them stated that it is helpful always, Figure 32. Only 16% of Slovenian respondents agreed that such specifications increase level of services in at least half of all cases or in a minority cases. Even greater support was indicated by respondents across All Countries where 79% of them declared procurement specifications to be helpful in all or at least in majority of projects.

Both Slovenian and All Countries respondents are aligned in opinion on how much would a quality assurance scheme increase trust of a client in EPC/ESC services and providers, Figure 33. Biggest share of respondents (43% in case of respondents across All Countries and 42% in case of Slovenian respondents) think that the impact would be moderate enhancement of trust while comparable number of both Slovenian and All Countries respondents differ on whether the impact would be major or only slight. None from the Slovenian respondents and only 6% of those from All Countries believe that quality assurance scheme would have no impact.

Figure 32 The quality level of EPC/ESC services increase due to well defined procurement specifications

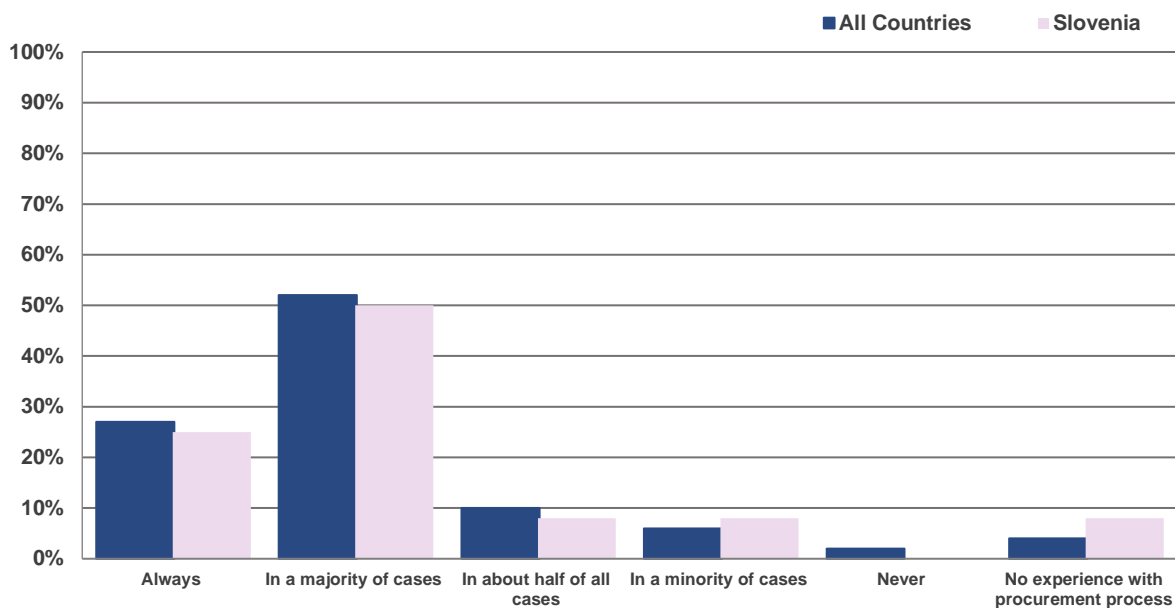
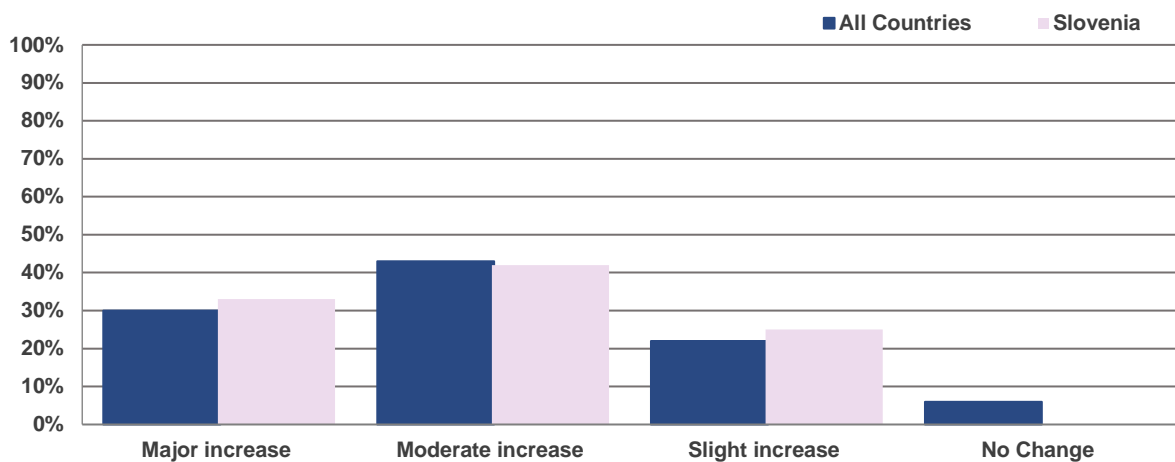


Figure 33 Client's trust increase in EPC/ESC services and providers due to a quality assurance scheme



In general Slovenian and All Countries respondents agreed upon which manner quality assurance scheme would bring added value. All agreed that it would be customer trust. EPC providers and facilitators across All Countries also considered increase in quality of projects and standardized quality criteria to be highly relevant while Slovenian respondents, beside increased quality of projects, mentioned other benefits, i.e. comparability of offers and higher rates of guaranteed achieved savings, Figure 34.

Figure 34 The added value of a quality assurance scheme

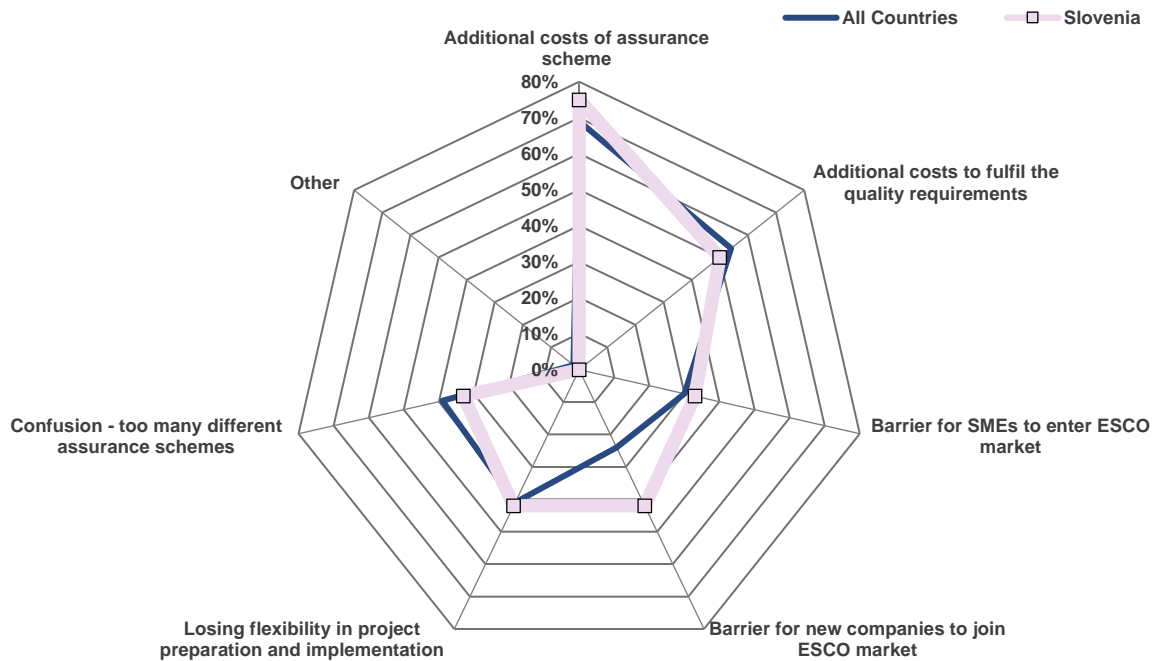


Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%. Sept 2017

Also in opinion on possible drawbacks or barriers created by a quality assurance scheme were respondents from the Slovenia and other countries practically aligned. All agreed that quality assurance scheme could add additional costs to projects. Slovene respondents especially stressed that the scheme can prevent new companies to enter ESCO market, Figure 35.

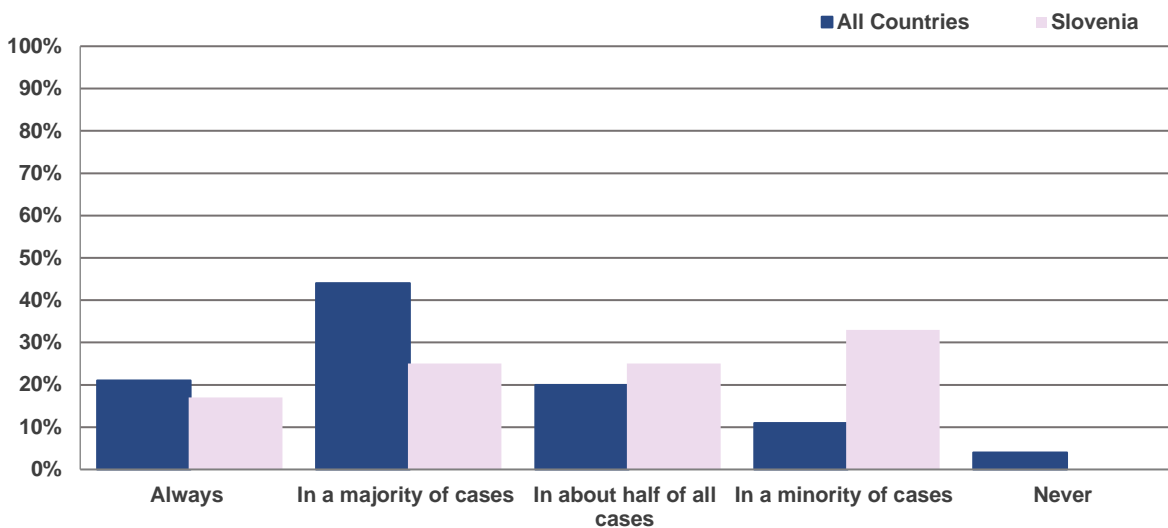
Slovenian EPC providers and facilitators, 37% of them, indicated modest support to implementation of quality assurance schemes by stating that always or at least in majority of cases they would prefer project which includes such feature, Figure 36. Among respondents prevailed ones who would prefer project with assurance in half of cases and minority of cases, 25% and 35% of them respectively. However, there are no Slovenian respondents who would never prefer project with quality assurance. Over 20% of respondents across All Countries clearly declared their fondness of quality assurance scheme which is comparable to 17% of Slovene respondents.

Figure 35 Possible drawbacks or barriers created by a quality assurance scheme



Respondents may have selected multiple answers. The chart shows the proportion of respondents selecting each answer out of overall respondents to the question. Results therefore do not sum to 100%.

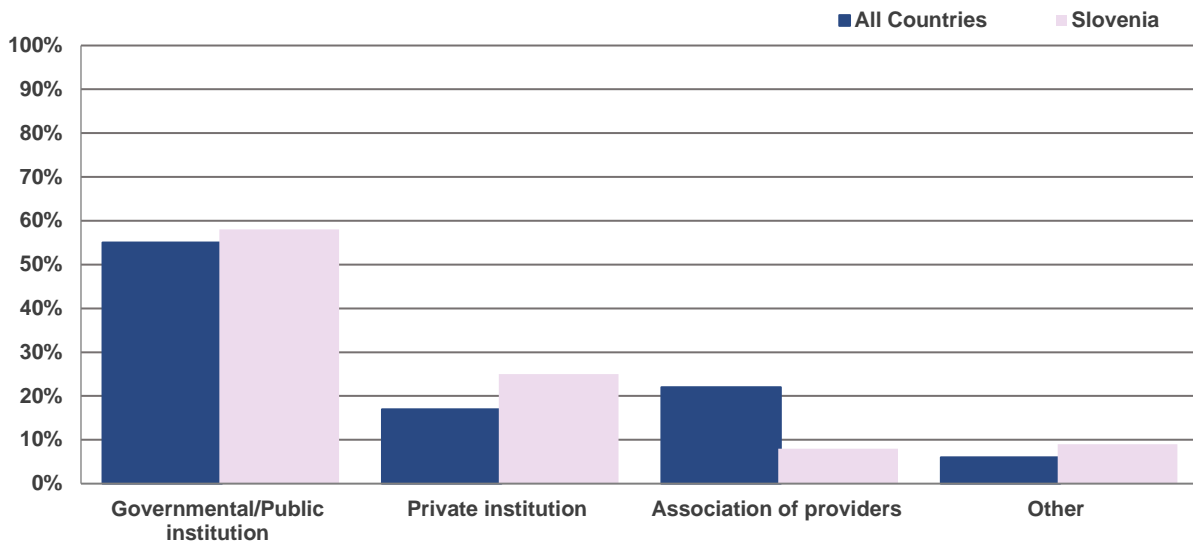
Figure 36 Preferred implementation of a project, which is subject to quality assurance over a project without quality assurance



Respondents from the Slovenia and All Countries agreed upon public institutions being the most respected body to issue quality assurance certification for EPC/ESC services, Figure 37. Trust in public institutions is marginally higher in case of the Slovenia where 58% of respondents would choose this kind of body while only 55% of respondents across All Countries would do so. There are 25% of Slovenian respondents who would indicatively

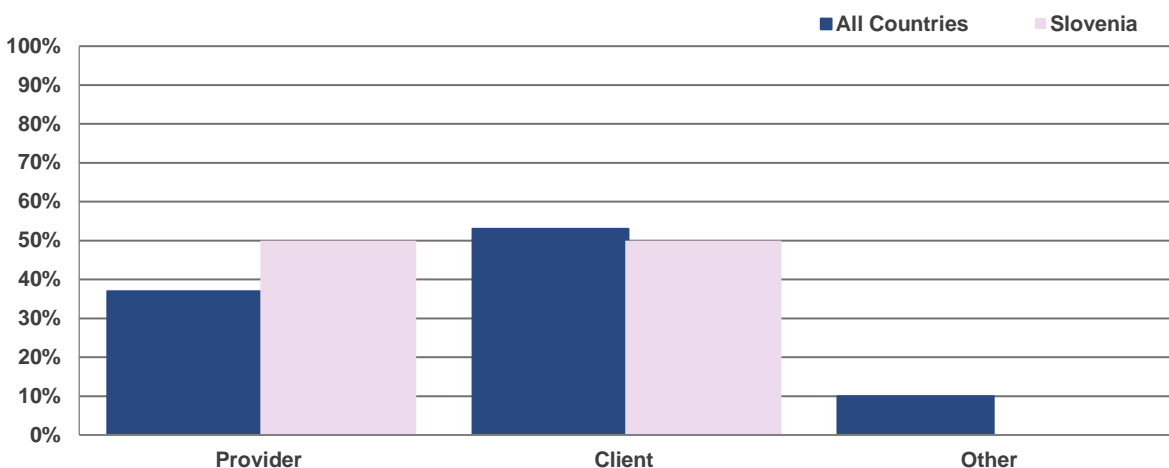
prefer private institutions. Association of providers would be the second most respected body for respondents across All Countries while low share of Slovenian respondents (8%) allocated priority respect to that body which is in line with the fact there is no such association in Slovenia.

Figure 37 The most respected body to issue a quality assurance label or certification for EPC/ESC services



Slovenian EPC providers and facilitators are equally split in opinion on who should pay for quality assurance part of projects where 50% claims it should be provider and same share of respondents prefers it to be client. Respondents across All Countries in general consider client to be more suitable to pay (in 53% of cases) but support for financial involvement of provider instead is also significant (37%), Figure 38.

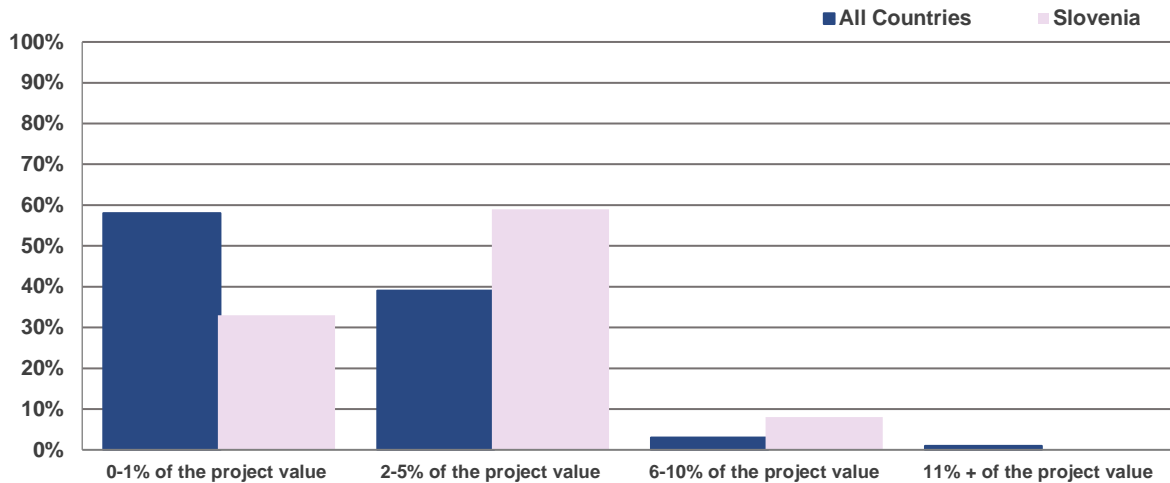
Figure 38 Payment for the quality assurance of EPC/ESC projects



Majority, nearly 60% of Slovenian respondents agreed that viable fee for quality assurance would be between 2 and 5% while around 30% of all respondents think it should be somewhat lower, up to 2% of value of particular project, Figure 39. Surprisingly, almost 10%

of respondents from Slovenia think the fee should be between 6 and 10%. There is observable difference comparing answers of Slovenian and across All Countries EPC providers and facilitators in terms of viable fee level for external quality assurance per EPC/ESC project – respondents across All Countries tend to cut these costs to minimum.

Figure 39 A viable fee level for external quality assurance per EPC/ESC project



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