guarantEE

Building Energy Services in Europe

Energy Performance Contracting Policy Recommendations Report

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Codema

Dublin's Energy Agency

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TABLE OF CONTENTS

Executive Summary	3
Introduction	4
The guarantEE Partnership	5
Methodology	6
Policy Recommendations	7
National Policy Recommendations	19
List of Figures	23
Abbreviations	23

EPC POLICY RECOMMENDATIONS

Communications

EPC is energy services with guaranteed energy savings

SIMPLIFY THE MESSAGE

DISPEL THE **MYTHS**

EPC can be used for many different projects

Project Facilitators

Official recognition of the role of the Project Facilitator

PROJECT **FACILITATORS**

FACILITATOR **TRAINING**

Development of training for Project Facilitators

Guaranteed Energy Savings

All energy efficiency projects to include Performance Guarantees

GUARANTEED SAVINGS

LIBRARY OF CONTRACTS

A library of standard performance contracts and contract clauses

EXECUTIVE SUMMARY

The guarantEE project fosters the use of Energy Performance Contracting in the public and private sector across Europe. It is funded by the European Union's Horizon 2020 research and innovation programme and involves 13 partners from across Europe. This report outlines a series of policy recommendations that the partnership feels, if implemented, would help to significantly boost the EPC market in Europe and thus help us reach our climate targets with greater efficiency and speed.

The **first recommendation** addresses the **communication of EPC and dispels the myths** often associated with it. The most common misconception of EPC is that it should only be considered if you need external finance for a project. Another misconception is that EPC is only suitable for large, multi-million Euro projects. A third is that EPC projects are significantly more difficult and costly to implement than "traditional" projects. While it is possible to use EPC to source external finance in order to implement very large projects that are complex to both procure and deliver, the results of the guarantEE project show that this is not representative of the current EPC market across Europe. The aggregation of buildings allows for smaller facilities to also be included in EPC projects. The 35 pilot projects of guarantEE show that these misconceptions do not represent the current EPC market across Europe.

For the **second recommendation**, the guarantEE project proposes that there should be **official recognition of the role of the Project Facilitator** and the ***development of training for Project Facilitators at national level, followed by a certification and quality assurance scheme once the market has developed***. Project Facilitators are the main initiators of EPC projects and they critically help clients in overcoming their lack of trust in the EPC model and the energy services industry. However, the role of the Project Facilitator is not widely recognised and supported across Europe. This is particularly true for developing markets where the role is sometimes perceived as an additional cost and burden on the project. However, the guarantEE project demonstrates that the role of the Project Facilitator is critical to the overall development and success of the EPC market in Europe. The more mature EPC markets fully recognise this role as an important aspect of the EPC market. This is true for Austria, Germany, Belgium, Czech Republic, Slovakia and Slovenia, where the role is recognised at a national level. These are some of the most developed and active EPC markets in Europe.

The **third recommendation** proposes that all energy efficiency projects (public and private) should be mandated to include **performance guarantees that are measurable and verifiable**. It also includes the development of a library of standard energy performance contracts and contract clauses at a national level. Challenges such as project finance, public procurement, lack of technical know-how and over-reliance on advice from suppliers very often lead to the implementation of small, single-technology projects. As no one is incentivised (technically or financially) to measure the actual energy performance of these projects, achieved energy savings are based entirely on the manufacturers' and suppliers' promises. However, if the performance of a measure or group of measures is measured and verified, then the resulting energy cost savings provide a cashflow for the project. These projects can also be grouped together or aggregated to form much larger projects, as the guarantEE project has demonstrated. The need for aggregation has the effect of accelerating the energy efficiency market, thus increasing the number of measures implemented and helping us reach our climate targets more quickly.

INTRODUCTION

The European climate and energy efficiency targets can only be achieved if private capital is mobilised for the implementation of sustainable energy projects. Energy service contracts, such as Energy Performance Contracting (EPC), could be instrumental in bridging the gap between the energy efficiency and financial markets. Energy services such as EPC help building owners in the modernisation of their facilities while also guaranteeing energy and carbon dioxide savings.

The guarantEE project continues to foster the use of Energy Performance Contracting in the public and private sector across Europe by developing innovative EPC solutions for rented facilities and by making EPC more flexible to better serve private sector clients. GuarantEE supports the delivery of EPC projects, along with the promotion and development of the role of the Project Facilitator. To date, guarantEE has supported the delivery of 35 EPC projects across the partnership.

The main concept of guarantEE was to address two of the most prevalent barriers to EPC in order to significantly enlarge the potential for new projects and boost the EPC demand side:

1. **The split incentives dilemma:** The split incentives dilemma typically occurs in rented facilities where the main beneficiary of energy saving measures is the user/tenant, while the responsibility for energy efficiency related investments is with the owner. To encourage the building owner to invest (or let an Energy Services Company (ESCo) invest) in energy efficiency measures, (part-)financing of the measures through the beneficiary (the user/tenant) can be key to make the investments happen. This in turn creates a triple-win situation, in which the tenant enjoys lower energy costs while the owner or the ESCo gains access to a share of the savings achieved to allow for the necessary investments.

2. **Limited flexibility:** The limited flexibility of the EPC contract models can restrain market growth especially among private building owners. The critical issues are: project duration (preference for short term contracts, e.g. five years), termination for convenience, simplified Monitoring and Verification (M&V) and using synergies with energy management requirements (for SMEs). Furthermore, specific aspects such as load management in EPC and EPC with multiple building owners (quarters, business parks) are addressed to make EPC fit for the energy challenges of the future.

In addressing these barriers, the guarantEE project has developed a number of solutions tested by the pilot projects delivered during the course of this project and these can be found in the knowledge portal on the project website[1].

The following report outlines a series of policy recommendations that the partnership feels, if implemented, would help to significantly boost the EPC market in Europe and thus help us reach our climate targets with greater efficiency and speed.

1 https://guarantee-project.eu/knowledgebase/

THE guarantEE PARTNERSHIP

The guarantEE project is funded by the European Union's Horizon 2020 research and innovation programme and involves 13 partners from across Europe.

PROJECT PARTNERS:

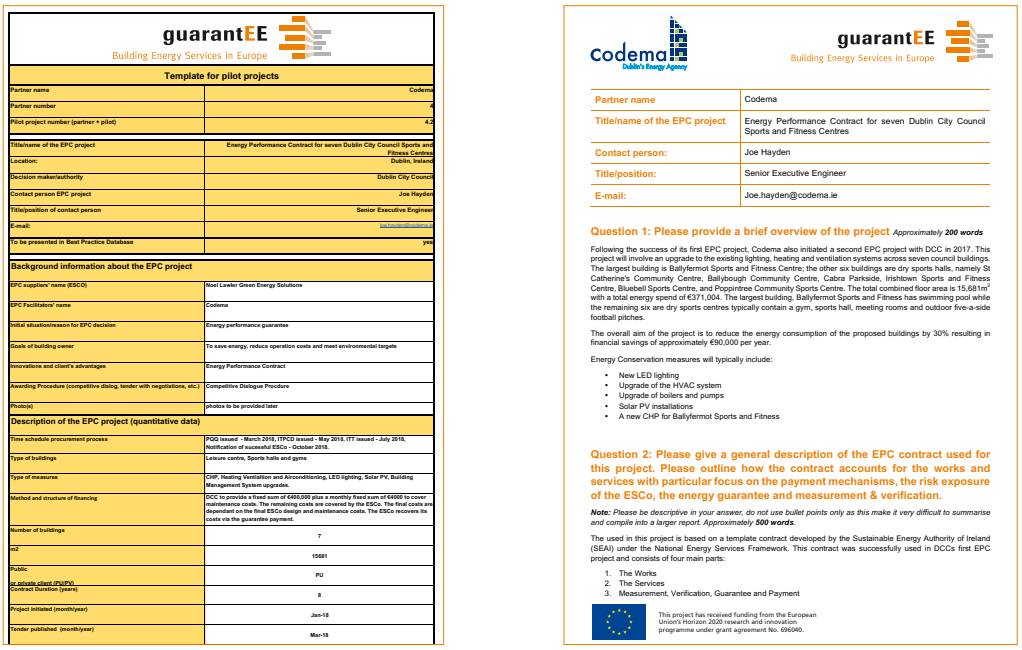
Germany	Berliner Energieagentur (lead partner)
Austria	Grazer Energieagentur
Belgium	Factor4
Czech Republic	ENVIROS
France	Île-de-France Énergies
Ireland	Codema – Dublin's Energy Agency
Italy	Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico Sostenibile
Lithuania	Public Investment Development Agency
Netherlands	Rijksdienst voor Ondernemend Nederland
Norway	*Norsk Enøk og Energi AS (partner until 05/2018*
Romania	TUD Financial Solutions SRL
Slovakia	Energy Centre Bratislava
Slovenia	Institut "Jožef Stefan"
Spain	Institut Catala d'Energia

METHODOLOGY

The information in this report was collected using three separate questionnaires. The first is an excel-based questionnaire, the *Pilot Project Diary (Figure 1)*, which captured the main structural data (client sectors, building types, etc.) and quantitative indicators (guaranteed savings, CO_2 savings, investments, etc.) of all the projects initiated as part of the guarantEE project. The second is the *Procurement and Contract Questionnaire (Figure 1)*, a word-based questionnaire which captured more detailed information on the type of contract used, contract variants, the method of procurement and details of where the triple-win solutions were employed in the pilot projects.

In total, 35 *Pilot Project Diaries* were returned by the project partners and included in this analysis. The results are presented graphically and described in detail. A breakdown is provided of the structural data and quantitative performance indicators, which gives a general overview of the scope of the various different projects. This was supported by the analysis of the accompanying *Procurement and Contract Questionnaire*, which focused on the applied procurement processes, EPC business models and new contractual variants and models. A total of 23 completed questionnaires were received and included in this analysis.

The third questionnaire focused on the role of the *Project*. Information captured included the current status of the EPC facilitation in the partner country, the impact Facilitators have on the national market, the role Facilitators play in accelerating the EPC market and the prerequisites for being a Project Facilitator. A total of 10 completed questionnaires were received and included in this analysis.



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Template for pilot projects

Partner name	Codema
Partner number	4
Pilot project number (partner + pilot)	4.2
Title/name of the EPC project	Energy Performance Contract for seven Dublin City Council Sports and Fitness Centres
Location:	Dublin, Ireland
Decision maker/authority	Dublin City Council
Contact person EPC project	Joe Hayden
Title/position of contact person	Senior Executive Engineer
E-mail:	joe.hayden@codema.ie
To be presented in Best Practice Database	yes

Background information about the EPC project

EPC suppliers' name (ESCO)	Noel Lawler Green Energy Solutions
EPC Facilitators' name	Codema
Initial situation/reason for EPC decision	Energy performance guarantee
Goals of building owner	To save energy, reduce operation costs and meet environmental targets
Innovations and client's advantages	Energy Performance Contract
Awarding Procedure (competitive dialog, tender with negotiations, etc.)	Competitive Dialogue Procdure
Photo(s)	photos to be provided later

Description of the EPC project (quantitative data)

Time schedule procurement process	PQQ issued - March 2018, ITPCD issued - May 2018, ITT issued - July 2018, Notification of sucessful ESCo - October 2018.
Type of buildings	Leisure centre, Sports halls and gyms
Type of measures	CHP, Heating Ventilation and Airconditioning, LED lighting, Solar PV, Building Management System upgrades.
Method and structure of financing	DCC to provide a fixed sum of €400,000 plus a monthly fixed sum of €4000 to cover maintenance costs. The remaining costs are covered by the ESCo. The final costs are dependant on the final ESCo design and maintenance costs. The ESCo recovers its costs via the guarantee payment.
Number of buildings	7
m2	15681
Public or private client (PU/PV)	PU
Contract Duration (years)	8
Project initiated (month/year)	Jan-18
Tender published (month/year)	Mar-18

Codema
Dublin's Energy Agency

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Partner name	Codema
Title/name of the EPC project	Energy Performance Contract for seven Dublin City Council Sports and Fitness Centres
Contact person:	Joe Hayden
Title/position:	Senior Executive Engineer
E-mail:	Joe.hayden@codema.ie

Question 1: Please provide a brief overview of the project *Approximately* ***200 words***

Following the success of its first EPC project, Codema also initiated a second EPC project with DCC in 2017. This project will involve an upgrade to the existing lighting, heating and ventilation systems across seven council buildings. The largest building is Ballyfermot Sports and Fitness Centre; the other six buildings are dry sports halls, namely St Catherine's Community Centre, Ballybough Community Centre, Cabra Parkside, Irishtown Sports and Fitness Centre, Bluebell Sports Centre, and Poppintree Community Sports Centre. The total combined floor area is 15,681m^2 with a total energy spend of €371,004. The largest building, Ballyfermot Sports and Fitness has swimming pool while the remaining six are dry sports centres typically contain a gym, sports hall, meeting rooms and outdoor five-a-side football pitches.

The overall aim of the project is to reduce the energy consumption of the proposed buildings by 30% resulting in financial savings of approximately €90,000 per year.

Energy Conservation measures will typically include:

- New LED lighting
- Upgrade of the HVAC system
- Upgrade of boilers and pumps
- Solar PV installations
- A new CHP for Ballyfermot Sports and Fitness

Question 2: Please give a general description of the EPC contract used for this project. Please outline how the contract accounts for the works and services with particular focus on the payment mechanisms, the risk exposure of the ESCo, the energy guarantee and measurement & verification.

Note: *Please be descriptive in your answer, do not use bullet points only as this make it very difficult to summarise and compile into a larger report. Approximately* ***500 words.***

The used in this project is based on a template contract developed by the Sustainable Energy Authority of Ireland (SEAI) under the National Energy Services Framework. This contract was successfully used in DCCs first EPC project and consists of four main parts:

1. The Works
2. The Services
3. Measurement, Verification, Guarantee and Payment

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 696040.

Figure 1: Example of Pilot Project Diary and Procurement and Contract Questionnaire

POLICY RECOMMENDATIONS

The following policy recommendations are based on the experience of the guarantEE project partnership. During guarantEE, the partnership identified over 120 potential EPC projects of which 35 were initiated. These projects were used to test and develop new concepts such as the triple-win solution to help overcome the split incentive dilemma, contract variants such as early termination of contract and simplified measurement and verification to help increase the flexibility of the EPC approach. The overall aim is to increase the overall appeal of the EPC concept and to dramatically increase its use in implementing energy efficiency projects across Europe.

The status of EPC varies significantly across Europe; this is clearly captured in Figure 2. Some countries have used EPC for more than 30 years, while some are new to the concept and are in the early stages of development.

	Austria Graz	Czech Republic ENVIROS	Germany BEA	France EnPO	Slovakia ECB	Slovenia JSI	Belgium Factor4	Spain ICAEN	Nether-lands RVO	Italy ENEA	Ireland Codema	Romania TUD	Lithuania VIPA
National level support for use of EPC?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Use of EPC in Public sector supported by policy or legislation?	Yes	No	No	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No
Active EPC Market Facilitator?	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Standard/Template EPC contracts publicly available?	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No
National recognition of EPC Project Facilitator role?	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No
Role of EPC Project Facilitator defined in legislation?	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No
Funding support for Project Facilitator role?	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	No	No
Status of EPC market	Mature (but stagnating) EPC market	Mature EPC market	Mature EPC market	Mature EPC market	Active developing market	Active developing market	Active developing market	Active developing market	Small developing market	Small developing market	Small developing market	Small developing market	Small developing market

Figure 2: Overview of EPC in partner countries

Countries with mature EPC markets or markets that are actively developing such as Slovakia and Slovenia have legislation or national support measures in place to support the development of the EPC market. Active EPC market facilitation is important with measures such as the provision of publicly-available template contracts, but the key difference is with the role of the Project Facilitator. The more successful EPC markets in Europe recognise and support the role of the Project Facilitator as they are shown to be the most common initiator of EPC projects.

The following sections outline the policy recommendations of the guarantEE partnership. These focus on three key areas:

- the communication of EPC
- the role of the Project Facilitator
- the inclusion of performance criteria in all energy efficiency projects

The final section outlines some additional country specific policy recommendations.

1. USE SIMPLIFIED AND CONSISTENT MESSAGING TO SELL "ENERGY PERFORMANCE CONTRACTING"

The issue: We need to change the narrative that surrounds Energy Performance Contracting (EPC) in Europe. There are currently a number of common misconceptions about EPC that are continuously repeated when EPC is discussed at a national and European level. These misconceptions are a significant barrier to the development of the EPC market. The most common misconception of EPC is that it should only be considered if you need external finance for a project. Another is that EPC is only suitable for large multi-million Euro projects. A third is that EPC projects are significantly more difficult and costly to implement than "traditional" projects. While it is possible to use EPC to source external finance in order to implement very large projects that are complex to both procure and deliver, the results of the guarantEE project show that this is not representative of the current EPC market across Europe.

Recommendation: Change the EPC narrative with a simple and consistent message:

> ***Energy Performance Contracting is the provision of energy services with guaranteed energy savings***. *Energy saving measures are implemented by an Energy Service Company (ESCo) and the performance of these measures is contractually guaranteed. Performance is measured and verified for the duration of the contract and payments, bonuses or penalties are applied accordingly. Energy Performance Contracting is about achieving real value for money.*

Background: How the EPC concept is "sold" to the market is critical. If it is perceived as complex, only suitable for very large projects and only when external finance is required, then this is a real barrier. The recent EIB document, *EPC A Guide to the Statistical Treatment of Energy Performance Contracts*[2], highlights the broad range of interpretations and uses of the EPC concept across Europe. The guarantEE project also demonstrates a range of different contract types from simple lighting retrofit projects to large scale residential projects. The one aspect that all these various approaches have in common is the **energy performance guarantee**.

A total of 35 projects, containing almost 650 individual buildings and with a combined floor area of over 2.7 million square metres, have signed or are in the process of signing EPC contracts under the guarantEE project. These include over 16 different building types including schools, offices, swimming pools, industrial buildings, community centres and fire stations. Finance for these projects came from a range of different sources (Figure 3) with almost half of the projects **fully financed by the client** and just under 30% of the projects fully financed by the ESCo. This result firmly rebuts the viewpoint traditionally held by some property managers that EPC is nothing more than a financing mechanism for the client.

2 https://www.eib.org/attachments/pj/guide_to_statistical_treatment_of_epcs_en.pdf

The remainder of the projects split the investment costs between the ESCo and the client. In ten projects, the clients availed of subsidies towards the investment costs. The value of these subsidies varied depending on the scale of the project, from a minimum of €12,000 to a maximum of over €1.2 million. The subsidies typically represented about 30% of the total investment cost. The broad range of financial models displayed in the guarantEE project again clearly demonstrate the **flexibility of the EPC model** in accommodating client finance, ESCo finance, private finance and grant subsidies.

Figure 3: Source of Project Finance

The typical buildings included in these projects were not very large in scale. The total cost of energy (heat and electricity) or the baseline energy spend for the majority of the projects was below €500,000. A further three projects had a baseline below €1 million and only nine of the 35 projects had an energy spend greater than €1 million. If you take into consideration that these 35 projects consisted of 642 individual buildings, there are 18 buildings on average per project. The overall average energy spend for this building pool is just under €43,000 per building per year. This is not a large building energy spend, which again demonstrates the flexibility of EPC and clearly demonstrates the strength of the EPC approach when it comes to the **aggregation of buildings** to create projects of scale.

Another common measure of project size is the overall capital investment (Figure 4). The range of capital investments made as part of the guarantEE EPC projects varied quite significantly from a cost of zero for the takeover of the operational management of a residential building, to over €139 million for the deep retrofit of a number of residential complexes. However, the majority of projects investments were between €1m and €5m, with nine projects between €250,000 and €1m. It should also be noted that there were five projects with an investment of less than €250,000; this would normally be considered too low to justify the transaction costs for EPC. During the course of the guarantEE project, innovative model contract clauses and simplified measurement and verification methods were developed and tested thus helping to reduce these transaction costs. These projects again clearly demonstrate the versatility of the EPC approach.

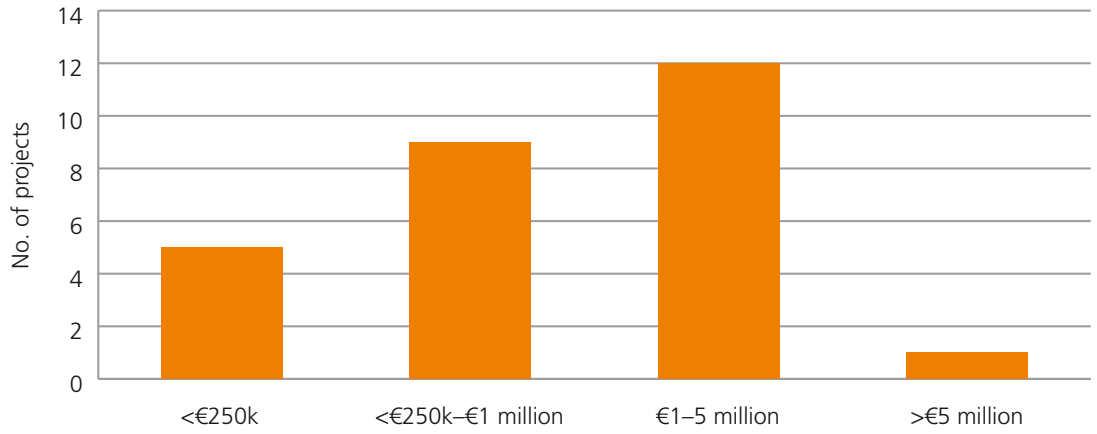

Figure 4: Total Investment Costs

One of the most prevailing barriers to EPC is the notion that it is a complex, resource hungry, time consuming and risky (to the reputation of the client) method of implementing an energy efficiency project when compared with the "traditional" approach. The "traditional" approach typically involves a single stage open procurement procedure, which must be advertised to the market for approximately 30 days, depending on local circumstances. The open procedure, by its nature, tends to be an input driven procurement procedure in that a clear specification for the works must be provided, including a detailed design. This is necessary in order for the contractor to accurately cost the required works. Preparation of this detailed specification requires expertise which is usually provided by one or more consultants depending on the complexity of the work and takes time to prepare. This also means that the client accepts all the technical risk as they designed the system.

EPC, on the other hand, is typically a two-stage restricted process. However, the results of the guarantEE project show that this is not always the case, with 28% of the pilot projects using the open procedure; the majority of these projects were in Norway or were simple lighting only projects in Ireland and Slovakia.

The restricted procedure involves two 30-day stages, so from this perspective, will take longer than the open procedure. However, the EPC typically involves the use of either competitive dialogue or the negotiated procedure. This is a very important difference as it changes the process to one focused on **outputs as opposed to inputs**. The client specifies the outputs that they require from the works, i.e. energy savings, improved comfort, etc. The competing ESCos then make an offer based on these required outputs and the outcome of the dialogue meetings or negotiations. This process completely changes the nature of the preparation work required of the client. They do not need to employ consultants to design the various systems and accept the associated risk. Instead, they engage a Project Facilitator to guide them through the EPC process and to assess the most suitable approach for implementing the project, which may or may not be EPC. Critically, the decisions that the client will be required to make during this process will be more suited to non-technical business managers, such as what results they require from the measures, administration and management of the contract and project finance options. The technical decisions and associated risk will be taken by the ESCo. In addition, EPCs tend to be multi-annual contracts; the average contract period of the guarantEE EPC projects is nine years.

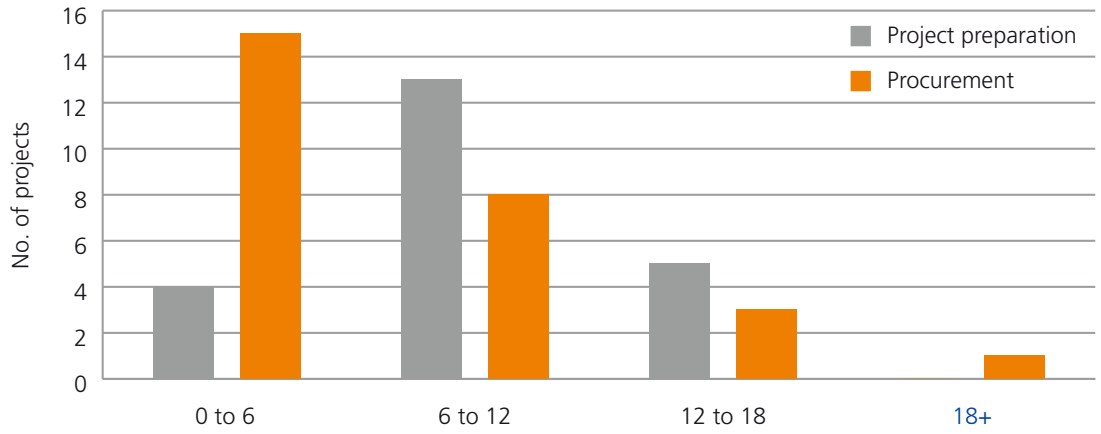

Figure 5: Project Development Timelines

Project development timelines varied for the 35 guarantEE projects, which is to be expected (Figure 5). The project preparation phase, which includes all the task from project identification to the preparation of procurement documentation typically took over six months which is comparable to the "traditional" approach for a project of a similar scale. Once the procurement phase started, this was typically completed in under six months with only four projects taking more than one year.

The results from the projects implemented as part of guarantEE clearly refutes the perception that EPC should only be considered if external finance is required, that EPC is only suitable for large multi-million Euro projects or that it is significantly more difficult and costly to procure and implement than "traditional" projects. This needs to be reflected in how we talk about EPC at a national and European level.

2. OFFICIAL SUPPORT AND RECOGNITION FOR THE ROLE OF THE PROJECT FACILITATOR

The issue: The role of the EPC Project Facilitator is not widely recognised and supported across Europe. This is particularly true for developing markets where the role is sometimes perceived as an additional cost and burden on the project. However, the guarantEE project demonstrates that the role of the Project Facilitator is critical to the overall development of the EPC market in Europe. The more mature EPC markets fully recognise this role as an important aspect of the EPC market. This is true for Austria, Germany, Belgium, Czech Republic, Slovakia and Slovenia, where the role is recognised at a national level. These are some of the most developed and active EPC markets in Europe.

Recommendation: The guarantEE project proposes two policy changes in relation to the Project Facilitator:

1. ***Official recognition of the role of the Project Facilitator at both EU and national levels. The engagement of Project Facilitators to be considered for all public sector EPC projects in the EU***

2. ***Development of training for Project Facilitators at the national level, followed by a certification and quality assurance scheme once the market has developed***

Background: Over the course of the guarantEE project, Project Facilitators have helped initiate 35 EPC projects in 14 countries comprising of 642 individual buildings with a total floor area of 2.7 million metres squared. The guaranteed savings of these projects are also very significant (Figure 6), with 20 of them achieving energy savings greater than 20% and 11 of these greater than 40%. These are contractually guaranteed savings that will be measured and verified for the duration of the contract. This is the key difference of performance guarantees when compared to any other approach. Performance guarantees provide for the long-term sustainability of buildings by introducing monitoring and control in combination with measurement and verification.

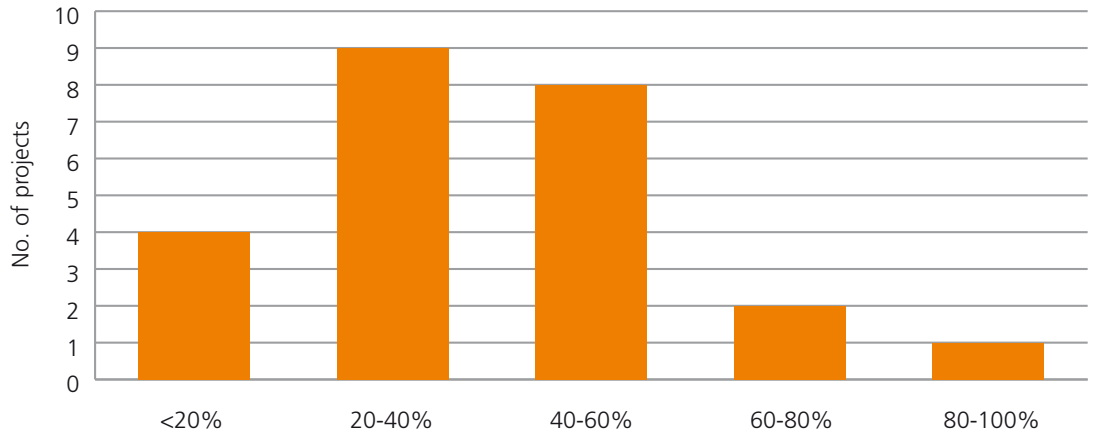

Figure 6: Guaranteed Savings

One of the key success factors in EPC projects is involving a well-trained, experienced Project Facilitator, who supports the preparation and implementation of the project on behalf of the client, the building owner. While the scope of this report covers the role of the Project Facilitator, we must also recognise the important role of the EPC Market Facilitator. As outlined in the Facilitation Guidelines for Energy Performance Contracting[3] the EPC Market Facilitator aims at improving the frameworks for Energy Performance Contracting. Their activities involve the offering of capacity-building (training) for ESCos and clients, publishing online or printed information (guidelines, model contracts), elaborating best practice information, or lobbying on the political level for better framework conditions. The EPC Project Facilitator, however, is working on behalf of a client for the realisation of specific EPC projects.

The Project Facilitator is often an initiator of the EPC project. Project Facilitators are considered by many to be one of the crucial conditions for further market development, especially in the public sector. Project Facilitators' support is particularly needed by smaller public administrations. The role of the Facilitator is crucial in the initial preparatory stage of a project. The Facilitator acts as a mediator explaining all aspects of EPC projects and their functionalities and mechanisms to the public sector representatives to overcome usual mistrust.

The implementation of an EPC project may require a broad and interdisciplinary range of skills. The Project Facilitator requires know-how such as project development and communication skills, preparation of investment grade audits and feasibility studies, life-cycle cost analyses, "make or buy" decisions, structuring of projects financing, Public Private Partnership (PPP) processes and procurement specifications, legal advice and upgrading of standardised model contracts, introduction of energy management systems, measurement and verification of project savings and quality assurance. It is the role of the EPC Facilitator to provide the necessary know-how and experience to support the client in all the necessary steps to develop and implement an EPC project successfully.

In addition, the EPC Project Facilitator acts as a mediator between client and ESCo to build up a sustainable relationship and to create trust between the future contract partners. Thereby they understand the viability of the project from the ESCo perspective and ensure that what is being asked for is feasible. This is a critical role for the long-term development of the market. It is unlikely that a single person will have this diverse set of skills. Project Facilitators tend to be consultant companies or energy agencies.

The role of the Project Facilitator is currently recognised and valued by some of the partner countries in the guarantEE project. Austria, Germany, Belgium, Czech Republic, The Netherlands, Slovakia and Slovenia all recognise the role at a national level. In Austria and Germany, Project Facilitators have a big impact on the market, where they are recognised as among the key actors in the overall market development. In Germany the role is currently well supported with a well-developed pool of Facilitators (mainly local energy agencies). In Austria some funding is provided at a regional level, but this is not always consistent, and this can act as a barrier to project development.

3 https://guarantee-project.eu/wp-content/uploads/2017/10/EESI2020_EPC_Facilitators_Guideline.pdf

The Project Facilitator is also recognised as a key actor in the Czech Republic. Here the most active and experienced Facilitators are members of the Association of Energy Service Providers (APES). Through APES, the Project Facilitators, ESCos and the Ministry of Industry and Trade all work in close cooperation to promote EPC in the country. In addition, the concept of EPC is legally supported by the Czech Act on Energy Management in the Public Sector. The involvement of Project Facilitators in public sector projects is standard practice.

Similar legal support structures can be seen in Slovakia, which is a developing EPC market. In recent years, the most active EPC Facilitators in association with the Slovak Association of Energy Services Providers (APES) are continuously working to foster the impact of project facilitation on market development in Slovakia. As the EPC model is still not widely known in Slovakia, EPC Project Facilitators' major impact is in educating potential clients about the process and benefits of Energy Performance Contracting and thus paving the way for the implementation of successful energy efficiency projects. Through the APES association, two model contracts were created, which are now widely used for EPC projects in Slovakia. In Slovakia **EPC Facilitators serve as the main initiators of Energy Performance Contracts** in the public sector. As stated in the "Strategy for wider development of Energy Performance Contracting in public sector" to be a project Facilitator in Slovakia you must first demonstrate the technical and professional capacity to deliver the required service. This certification is achieved by obtaining a professional qualification for the role as defined in the Energy Efficiency Act 321/2014 Coll[4], or by providing evidence of equivalent professional competence in another EU Member State.

Slovenia has also witnessed a rapid growth in the EPC market in recent years. The first EPC contract in Slovenia was signed in 2007; this was a direct result of the positive experience of a local ESCo which has been pioneering the Energy Supply Contracting (ESC) process since 2001. The period 2012-2018 witnessed a significant increase in EPC market activity, predominantly in the public sector, where the number of EPC projects grew from 2-3 projects/year to more than 30 in the period from 2017-2018. In parallel with this, the number of ESCos providing EPC services grew from two in 2012 to five national ESCos in 2018. All of these ESCos are qualified for the delivery of EPC PPP projects and publicly listed by the ministry in charge of energy. This growth is attributed to a strong uptake of energy efficiency services in the public sector, which has been driven by the success of a public buildings deep energy renovation framework that offers standardised EPC project development processes, procurement requirements and contracts, as well as up to 40% grant financing.

In line with the EPC market growth, the number of (national) EPC Project Facilitators increased, in the same period, from two to approximately ten. The **EPC Project Facilitators noticeably underpinned the EPC market quantitative and qualitative development**, especially in terms of identification (investment grade audits) and timely implementation (procurement support) of EPC projects, as well as their successful operation (M&V support). They played a key role in **overcoming clients' lack of trust in the EPC** model and ESCo industry, complex book-keeping rules and administrative barriers. The Project Facilitators **generated pipelines of EPC projects** via three European Local Energy Assistance (ELENA) projects.

4 https://www.iea.org/policiesandmeasures/pams/slovakia/name-24299-en.php

The role of the Project Facilitator is critical for EPC market development in countries that are still new to the EPC concept. In new markets such as Ireland there is currently no formal or official recognition for the role, however there is grant funding available to help facilitate projects in both the public and private sector. In the Netherlands EPC is still in the early stages of introducing the Project Facilitator role but those projects in which Facilitators were active have shown good results. In the developing EPC market in Lithuania, stakeholders are not familiar with the term EPC Facilitator. In fact, in the early stages of ESCo pilot projects, there were no such energy sector experts qualified as EPC Facilitators. Lithuania's national promotion institution "Public Investment Development Agency" (VIPA) acts as a financial institution providing loans for financing renovation of central government buildings and guarantees for loans granted by commercial banks for street lighting modernisation projects. As a financial institution, VIPA also acts as an EPC Facilitator in terms of assisting central public buildings owners with credit application procedures as well as consulting on EPC procurement questions. Another Energy Agency mainly provides technical consultation on implementation of energy audits of buildings. Private consultants usually work both with managers of buildings and potential ESCos and provide consultation on different stages of EPC.

The guarantEE project clearly illustrates the importance of the role of the Project Facilitator, which is critical in the successful development of the EPC market. Project Facilitators are the main initiators of EPC projects, who help clients overcome their lack of trust in the EPC model and ESCo industry. The role of the Project Facilitator must be officially recognised and defined at a national level and a suitable qualification and certification system put in place.

3. ENERGY EFFICIENCY PROJECTS SHOULD BE MANDATED TO INCLUDE ENERGY PERFORMANCE GUARANTEES THAT ARE MEASURABLE AND VERIFIABLE

The issue: The need to save energy and carbon emissions is now more pressing than ever. Using energy performance guarantees in all energy efficiency projects is one method we can use to reach our European and national climate targets faster and with guaranteed results. The current energy efficiency market across Europe is broad and varied. Challenges such as project finance, public procurement, lack of technical know-how and over reliance on advice from suppliers very often lead to the implementation of small single technology projects. The actual performance of these projects is always unknown as there is no incentive (technically or financially) to measure the actual result which leads to the reliance on the manufacturers' and suppliers' promises as to the actual energy savings. Modern buildings are built on a collection or system of these individual technologies, so assessing actual performance is highly unlikely unless there is an incentive. However, if the performance of a measure or group of measures is measured and verified, then the resulting energy cost savings provide a cashflow for the project. A project with a cashflow can be used to secure finance. These projects can also be grouped together or aggregated to form much larger projects, as the guarantEE project has demonstrated. The need for aggregation has the effect of accelerating the energy efficiency market, thus increasing the number of measures implemented and helping us reach our climate targets more quickly.

Recommendation: The guarantEE project proposes two policy changes in relation to performance guarantees:

1. ***All energy efficiency projects (public and private) should be mandated to include Performance Guarantees that are measurable and verifiable***

2. ***Development of a library of standard energy performance contracts and contract clauses at a national level***

Background: As already mentioned, the 35 guarantEE pilot projects contained 642 individual buildings. Schools featured in the greatest number of projects, followed by offices, residential buildings, sports halls and healthcare facilities. This clearly demonstrates the strength of the EPC approach when it comes to the aggregation or grouping of buildings to create projects of scale. Without the inclusion of a performance guarantee and the necessary measurement and verification, it is unlikely that these projects would have been grouped together. As well as grouping buildings into larger projects, performance guarantees also lead to the grouping of individual measures at the building level. When considering an EPC, a Project Facilitator or ESCo does not look at a building as a collection of individual technologies but as a system that must work in harmony in order to achieve its most efficient operation. For example, fluorescent lighting produces more heat than LEDs so if the lighting is changed to LED, then there may be an additional heating requirement. Heating and cooling systems must also work in harmony and not try to heat and cool the building at the same time which is costly and inefficient. It is this systems approach that sets EPC apart and achieves guaranteed savings.

The range of energy efficiency measures implemented during guarantEE vary greatly between projects, from simply the takeover of operational management of facilities to deep retrofitting of the building envelope and its energy systems. A full breakdown is provided in Figure 7. Lighting upgrades were the most commonly implemented upgrades, mostly to LED fixtures. Monitoring and control was the next most frequently implemented strategy, followed by HVAC (heating, ventilation, air conditioning) upgrades and improvements to the building envelope. Building envelope measures featured in 20 projects, demonstrating the suitability of EPC for deep retrofit projects. However, renewable energy solutions only featured in a small number of projects, indicating that energy efficiency measures are still more cost effective to implement. Using the performance guarantee approach, ESCos will only implement measures that represent real value for money. Monitoring and control is one of the most important measures for an ESCo as it requires the least investment but has the biggest impact, as it is this measure that determines the efficiency of the overall system.

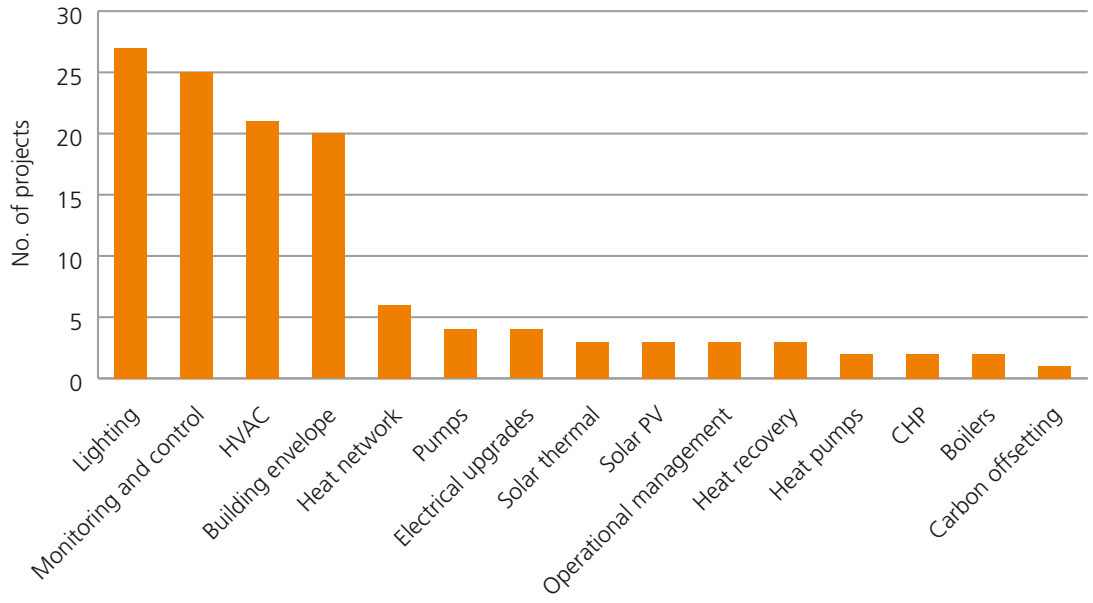

Figure 7: Range of Measures Implemented

Project grouping or aggregation is critical if Europe is to successfully meet its climate targets. It provides one of the solutions to bridging the gap between the energy efficiency and financial worlds as EPC has the potential to offer projects of scale, with measurable and verified energy savings that can be used as collateral. The guarantEE project demonstrates the range of performance guarantee contract types that can be successfully used. This variation allows the performance guarantee approach to be applied to projects of all shapes and sizes from full scale EPC with detailed measurement and verification to small lighting retrofit projects with simplified measurement and verification to operational contracts where no capital investment is required. During guarantEE, seven projects tested different versions of the triple win approach, a further five tested new project termination clauses to allow either client or ESCo to exit the contract early if necessary under certain conditions and a further five tested simplified measurement and verification clauses (Figure 8). All of these approaches were designed to increase the flexibility and reach of the performance contract approach and results show that this application has been successful.

Description	Number of projects
Triple win approach	7
Ordinary termination of contract	5
Simplified M&V	5

Figure 8: Example of Contract Variants Applied in guarantEE Projects

All types and scale of projects can use energy performance guarantees from the small scale to the very large. The performance guarantee approach, depending on the approach adopted, may demand a project of scale in order to cover the transaction costs. This is a positive in terms of reaching climate targets and accelerating the energy efficiency market across Europe, as it encourages greater ambition with larger holistic projects and less single technology projects. Greater scale means greater investment in energy efficiency and thereby helping to accelerate the market and reach climate targets.

NATIONAL POLICY RECOMMENDATIONS

The following is a list of policy recommendations specific to individual countries.

Austria: At present, several regional subsidy systems can be used for financing the work of the Project Facilitator. This enables an experienced Project Facilitator to build up a strong market position in one region, but at the same time hinders them to expand and promote their services in another new region. Therefore, a national subsidy system for the consultancy work of the Project Facilitator would improve the visibility of good project facilitation.

The main issue with the stagnating EPC market in Austria is not a missing or hampering regulatory framework for Project Facilitators, but important topics such as the value of energy efficiency, financing restrictions (EPC guidance note) and visibility of good projects. Public organisations are also reluctant to develop the new skills required for EPC projects.

Belgium: Regional governments in Belgium are promoting the EPC concept, for example, by creating organisations such as VEB (Flemish Energy Enterprise), which acts as an EPC Market Facilitator in Flanders. In Wallonia, EPC is successfully implemented by a one-stop-shop named 'RenoWatt', powered by GRE-Liège. The province of Flemish Brabant has organised an innovative EPC Coaching Trajectory to stimulate the development of EPC projects for the municipal building stock, by guiding the municipal staff towards an EPC Facilitator. However, additional support would be welcomed, e.g. by setting up a subsidy scheme for EPC Facilitators, and/or by developing EPC template contracts.

Czech Republic: The concept of Energy Performance Contracting with guaranteed results is legally supported by the Czech Act on Energy Management in the public sector. No legal barriers exist currently in the municipal and regional sector and in facilities and organisations in their ownership. No legal barriers exist in contributory organisations of the government, as involvement of Facilitators for this type of client is standard practice. The cooperation among the Association of Energy Service Providers (APES) and the Ministry of Industry has helped to set reasonable conditions for EPC market development. The Ministry of Environment, through the Operational Programme "Environment", has partly supported public buildings in developing EPC projects. A subsidy scheme called EFEKT, which provides subsidies from the state budget, has been financing the processing of initial feasibility studies and assessing the suitability of EPC methodology for private sector energy efficiency projects. State organisations and ministries are very reluctant though in developing new skills and learning about EPC projects, although there still exists potential for energy savings in the state property. The formal definition of the Facilitator role and related support in legislation would improve the role in facilitating energy efficiency projects in the private sector and possibly extend the use of EPC in the private sector.

Germany: In Germany, Project Facilitators are well supported by the BMWi and the German Energy Agency on its behalf.

Ireland: The Irish EPC market is still very much in its infancy. The formal recognition of the Project Facilitator role and the development of a training and certification process for Project Facilitators would greatly assist the development of the market, as EPC Facilitators tend to be the main initiators of EPC projects.

1. EPC Projects Facilitators Scheme – Introduction of national EPC Project Facilitators qualification or certification scheme and provision of EPC projects development support and technical assistance
2. EPC Quality Assurance Scheme – Establishment of national EPC qualification or certification scheme based on technical and financial quality criteria

Italy: In the EPC market, the impact of EPC Facilitators could be improved through the adoption of initiatives aimed at promoting, supporting and regulating the role of the EPC Facilitator among stakeholders. The goal is to increase awareness that an EPC project has more chances of success by engaging a Facilitator. Such initiatives could be:

- training and information campaigns
- collecting and making available databases of successful practices
- definition and regulation of the role and competences of EPC Facilitators
- to let the customer be fully aware by setting up a tool for the evaluation of the professional capacity of the EPC Facilitator, for example, through feedback and evidences of the previous experiences and projects

A financial incentive could be useful to encourage and promote Facilitator involvement.

In general, it would be essential to have a clear and unambiguous regulatory framework, a typified contract model and the ability to foster the growth of internal public administration skills.

European and/or national recommendations on the use of a Facilitator for EPC contracts is considered essential to ensure the results by meeting the requirements of different stakeholders.

For public bodies (especially at local level) instruction from management is required to engage the services of a Project Facilitator. This will help roll out EPC projects and create a market for Project Facilitators.

Lithuania: The regulatory and policy frameworks are quite broad and explicit and do not restrict the Project Facilitators' services. The main obstacles are lack of experience, know-how, good practice examples and interest of stakeholders. For this, any guidance at national level (on the initial project stage, procurement procedures, etc.), whitepapers and best practice examples would be very useful, especially in the early EPC market stage.

Netherlands: At the moment, the Netherlands is making roadmaps for all public sectors towards the 2050 climate goals. It would be good if Project Facilitators were mentioned in these roadmaps and advertised in a way that individual companies and organisations would feel compelled to use them.

The role that can be played by EPC Facilitators must be highlighted in the policy framework for the energy transition in the built environment. This is not only for EPC Facilitators but also for energy performance contracting itself.

Romania: Energy Performance Contracting is officially recognised by national legislation, but the role of EPC Facilitators is not.

Although the actual interest of this market is not so high, there are no major legal barriers to the EPC in the private sector.

In the public sector, the implementation of the EPC based on the triple-win approach was challenging due to the financial legislation in force. Actually, according to the national legislation, an important quote of the performance guarantee has to be returned to the designer and/or to the builder on completion of the works. Consequently, it is impossible to preserve any financial performance guarantee during the entire guarantee period. Therefore, if after the measurement and verification campaign there are any inconsistencies regarding energy consumption that was established within the tender documentation, it is almost impossible to execute this financial performance guarantee.

Moreover, a national legislative government package could extend the time for quality guarantee return procedure in order to cover the entire guarantee period (after the end of the works until the final reception). This kind of legislative framework would also allow to recover any energy consumption damages within this period, from the time extended quality guarantee.

As the development of EPC Facilitators and the EPC market is ongoing, a national programme to encourage and sustain the Facilitators' market would be very welcome in order to increase the number of Facilitators and also to improve their role in the EPC projects.

Slovakia: Adequate implementation of the new Eurostat regulation and implementation of the "Strategy for wider development of Energy Performance Contracting in public sector" in practice should foster the role of EPC Facilitators and shift the EPC market. However, the promotion of the EPC concept and the role of EPC Facilitators in governmental and public institutions would support measures implemented by the Strategy.

Slovenia: Considering EPC market development drivers alongside the identified barriers, there are two crucial and complementary actions to support improvement of the role of EPC Project Facilitators in Slovenia:

- Action 1: EPC Project Facilitators' Scheme – Introduction of national EPC Project Facilitators qualification or certification scheme and provision of EPC project development, support and technical assistance
- Action 2: EPC Quality Assurance Scheme - Establishment of national EPC qualification or certification scheme based on technical and financial quality criteria

Operation of qualified or certified EPC project developers should be supported to speed up project preparation and enable further EPC market development in line with established EPC quality criteria. Subsidising of some EPC project facilitation costs, for example the cost of an energy audit or feasibility study, can significantly speed up the preparation of EPC/ESC project pipelines in the public sector, as well as in other sectors.

Spain/Catalonia: The EPC market is growing very slowly in Spain due to a lack of a specific regulatory framework at a global level. The general Spanish level legislation (RD Law 6/2010) only defines the concept of performance contracting and guaranteed savings.

In Catalonia, the main problem with the stagnation of EPC projects is neither the legal nor regulatory framework, since legislation for public procurement and the EUROSTAT guide have served to draft the EPC tendering model. The problem is within the cumbersome administration, which makes everything very slow and difficult to start new projects. It is also very difficult to change the contract model or the way of contracting.

The new Energy Efficiency Plan for public buildings (Generalitat 2018-2022) obliges, whenever feasible, improvements in energy efficiency to be contracted through guaranteed savings (EPC), and if it is not done in this way, a justification report is required. We believe this will give an impetus to the EPC market in the public sector. This is further supported by a number of Project Facilitators in the Generalitat of Catalonia who have been trained by ICAEN. However, the fact that the Energy Plan does not consider the important role of Facilitators will have a negative impact on the increase of EPC projects in other public sectors as municipalities.

To foster EPC projects in the private sector, it is crucial to highlight the importance to use the EPC model and EPC Facilitators for deploying energy efficiency comprehensively. This can be achieved by including this message in Climate Change Law and in other general and specific regulations. This would require a classification and certification of EPC Facilitators.

The promotion of EPC in the private sector currently occurs through sectorial events where the role and importance of Facilitators to deploy EPC projects is explained. This could be further supported by including the Facilitator role in government policy.

LIST OF FIGURES

Figure 1: Example of Pilot Project Diary and Procurement and Contract Questionnaire
Figure 2: Overview of EPC in partner countries
Figure 3: Source of Project Finance
Figure 4: Total Investment Costs
Figure 5: Project Development Timelines
Figure 6: Guaranteed Savings
Figure 7: Range of Measures Implemented
Figure 8: Example of Contract Variants Applied in guarantEE Projects

ABBREVIATIONS

APES	Association of Energy Services Providers
BMWi	Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie)
CO_2	Carbon dioxide
EASME	Executive Agency for Small and Medium Enterprises
EIB	European Investment Bank
ELENA	European Local Energy Assistance
EPC	Energy Performance Contracting
ESCo	Energy Services Company
ESC	Energy Supply Contracting
EU	European Union
HVAC	Heating, Ventilation & Air Conditioning
LED	Light Emitting Diode
M&V	Monitoring & Verification
PPP	Public Private Partnership
SME	Small & Medium Enterprises

Codema
Dublin's Energy Agency

guarantEE
Building Energy Services in Europe

Rijksdienst voor Ondernemend Nederland

Generalitat de Catalunya
Institut Català d'Energi

ENEA
Italian National Agency for New Technologies, Energy and Sustainable Economic Development

Jožef Stefan Institute, Ljubljana, Slovenia
Energy Efficiency Centre

TUD Financial Solutions

Grazer ENERGIEAgentur

BERLINER Energie AGENTUR

ileDeFrance Energies
RÉNOVATION ÉNERGÉTIQUE ET ENERGIES RENOUVELABLES

ENVIROS

energy centre BRATISLAVA

VIPA
NATIONAL PROMOTIONAL INSTITUTION

FACTOR 4
BUILDING PERFORMANCE