



# D3.4 Report on feedback from Task 3.4 Workshops

QualDeEPC H2020 project

MAIN AUTHORS: Stephanie Veselá (dena), Peter Pannier (dena)

DATE: 11/05/2021

PUBLIC Report

---

Project **QualDeEPC**

“High-quality Energy Performance Assessment and Certification in Europe  
Accelerating Deep Energy Renovation”

Grant Agreement no. 847100

H2020-LC-SC3-EE-2018



Document Factsheet	
<b>Project duration</b>	From September 2019 to August 2022
<b>Project website</b>	<a href="http://www.qualdeepc.eu">www.qualdeepc.eu</a>
<b>Document</b>	D3.4: Report on feedback from Task 3.4 Workshops
<b>Work Package</b>	WP 3 Development of enhanced EPC schemes
<b>Task</b>	Task 3.4 Dialogue on the Green paper and Concepts
<b>Version</b>	1
<b>Version date</b>	11/05/2021
<b>Main Author</b>	Stephanie Veselá (dena) Co-authors: Dr. Stefan Thomas (WI), Peter Pannier (dena)
<b>Contributors</b>	QualDeEPC project partners: BME, CRES, dena, EAP, EKODOMA, ENERGIACLUB, ESCAN, CIT ENERGY MANAGEMENT AB
<b>Reviewers</b>	Project coordinator: Dr. Stefan Thomas; all project partners
<b>Type of deliverable</b>	Report
<b>Dissemination level</b>	PU

Table 1: Document Factsheet

Document status	
<b>Review status</b>	<input type="checkbox"/> Draft <input type="checkbox"/> WP leader accepted <input checked="" type="checkbox"/> Coordinator accepted
<b>Action requested</b>	<input type="checkbox"/> To be revised by partners <input type="checkbox"/> For approval by the WP leader <input type="checkbox"/> For approval by the Project Coordinator <input checked="" type="checkbox"/> To be delivered to the Commission

Document History			
Version	Date	Main modification	Entity
Draft 1	23/04/2021	-	-
Draft 2 – Consolidated	10/05/2021	- Addition of few partner comments	-
Final	11/05/2021	final review by coordinator	WI



## ABBREVIATIONS

**EPC:** Energy performance certificate

**GHG:** Greenhouse gas

**nZEB:** nearly zero energy building

## PROJECT PARTNERS

**WI:** Wuppertal Institut für KLIMA, UMWELT, ENERGIE gGMBH

**CRES:** Centre for Renewable Energy Sources and Saving

**DENA:** Deutsche Energie-Agentur GmbH (dena)

**EAP:** Energy agency of Plovdiv Association

**EKODOMA**

**ENERGIACLUB:** Energiaklub Szakpolitikai Intezet Modszertani Kozpont Egyesulet

**E-P-C:** EPC Project Corporation Climate. Sustainability. Communications. mbH

**FEDARENE:** Federation europeenne des agences et des regions pour l'energie et l'environnement

**ESCAN:** Escan SL

**CIT ENERGY MANAGEMENT AB**

**BME:** Budapest University of Technology and Economics



## DISCLAIMER OF WARRANTIES

*“This project has received funding from the European Union’s Horizon 2020, research and innovation programme, under Grant Agreement No 847100”*

This document has been prepared by QualDeEPC project partners as an account of work carried out within the framework of the EC-GA contract no 847100.

Neither Project Coordinator, nor any signatory party of QualDeEPC Project Consortium Agreement, nor any person acting on behalf of any of them:

- (a) makes any warranty or representation whatsoever, express or implied,
  - (i). concerning the use of any information, apparatus, method, process, or similar item disclosed in this document, including merchantability and fitness for a particular purpose, or
  - (ii). that such use does not infringe on or interfere with privately owned rights, including any party's intellectual property, or
  - (iii). that this document is suitable to any particular user's circumstance; or
- (b) assumes responsibility for any damages or other liability whatsoever (including any consequential damages, even if Project Coordinator or any representative of a signatory party of the QualDeEPC Project Consortium Agreement, has been advised of the possibility of such damages) resulting from your selection or use of this document or any information, apparatus, method, process, or similar item disclosed in this document.



## PUBLISHABLE SUMMARY

This report presents the feedback from Task 3.4 ‘Dialogue on the Green paper and Concepts’. It provides a summary on each national workshop collecting the Stakeholder feedback for the proposed policies, tools and concepts of the Green paper on good practice in EPC assessment, certification, and use, as well as the feedback of the EU workshop. The proposed policies and concepts are:

- A text-based list of deep energy renovation recommendations,
- The concept for an online tool development,
- The concept for a Deep Renovation Network Platform,
- A universal, enhanced user-friendly EPC form template and background on the proposed content
- A general policy proposal for regular mandatory EPC assessor training, and
- A general policy proposal for advertisement guidelines and for actions to improve the compliance with the mandatory use of EPCs in real estate advertisements.

The stakeholder feedback, the national workshops, and the EU workshop were then summarized with regard to common suggestions for improving the proposed policies, tools and concepts. The most important suggestions were:

- The list of renovation recommendations needs to be checked on conveying its intended purpose, e.g. by clarifying that it is not a strict check list, not ranked and that EPC issuers may also use similar energy-efficient options for deep energy renovation.
- Statements regarding the accuracy and the intended usage should accompany the information given in the online tool.
- The concept of the deep renovation network platform may be extended by including links and description for including manufacturer and supplier associations’ information and background information on further benefits of building renovation.
- For the mandatory regular training of EPC issuers, the alternative of mandatory exams that may replace mandatory training should be added to its description.
- The EPC form template may be slightly redesigned to include, for example, CO<sub>2</sub> emissions and savings, an up-to-date picture, a nZEB check mark for existing buildings, and a statement on the period of validity of the EPC.
- For the advertising guidelines, a consideration of the availability of space in printed media should be more explicitly added.
- The description of improving the compliance with advertising guidelines should be made more explicit regarding the penalty system, with more emphasis on controls but lower fees for first offenses.

Together with the findings of the testing in around 100 pilot buildings (WP 4), the improved proposals and concepts will then be published in the *White paper on good practice in EPC assessment, certification, and use*, deliverable D3.2 of this project.



## TABLE OF CONTENTS

<b>1 INTRODUCTION .....</b>	<b>8</b>
<b>2 reports from the 2<sup>nd</sup> national Workshops and the EU Workshop .....</b>	<b>10</b>
2.1 Bulgaria	10
2.2 Germany	13
2.3 Greece	17
2.4 Hungary	20
2.5 Latvia	24
2.6 Spain	27
2.7 Sweden	31
2.8 EU-level Workshop	36
<b>3 Summary and Informed decision for white paper .....</b>	<b>38</b>
3.1 General acceptance of policy proposals	38
3.2 Informed suggestion for the White Paper	45
<b>4 CONCLUSIONS .....</b>	<b>48</b>
<b>5 REFERENCES .....</b>	<b>49</b>
<b>6 ANNEXES .....</b>	<b>50</b>
Annex A: Stakeholder questionnaire (English version)	50



## LIST OF TABLES

Table 1: Document Factsheet .....	2
Table 2: Summary of the general acceptance of the policy proposals by QualDeEPC per country.....	38
Table 3: Suggested improvements on recommendations for deep energy renovations .....	39
Table 4: Suggested improvements on the online tool .....	40
Table 5: Suggested improvements for the Concept of Creating a Deep Renovation Network Platform .....	41
Table 6: Suggested improvements for regular mandatory training of EPC issuers .....	42
Table 7: Suggested improvements for the EPC form template for high user-friendliness of the EPC..	43
Table 8: Suggested improvements on advertising guidelines for EPCs .....	44
Table 9: Suggested improvements for the compliance with the mandatory use of EPCs in real estate advertisements.....	45
Table 10: Summary of suggestions per priority and suggestions for the next steps .....	45



## 1 INTRODUCTION

The QualDeEPC project is aiming to both improve quality and cross-EU convergence of Energy Performance Certificate schemes, and the link between EPCs and deep renovation: High-quality Energy Performance Assessment and Certification in Europe Accelerating Deep Energy Renovation. The objective of the project is to improve the practical implementation of the assessment, issuance, design, and use of EPCs as well as their renovation recommendations, in the participating countries and beyond.

Work package 3 of the QualDeEPC project aims to develop practical concepts, proposals, and tools for an enhanced EPC scheme linked to deep renovation based on the selected priorities of the Development Strategy Plan (D2.4). The seven priorities selected in D2.4 are:

- A) Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation
- B) Online tool for comparing EPC recommendations to deep energy renovation recommendations
- C) Creating Deep Renovation Network Platforms
- D) Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry
- E) High user-friendliness of the EPC
- F) Voluntary/mandatory advertising guidelines for EPCs
- G) Improving compliance with the mandatory use of EPCs in real estate advertisements

In the Green paper on good practice in EPC assessment, certification, and use (deliverable D3.1), the situation in the partner countries with regard to whether and how these policies or tools may already have been implemented were evaluated, best practice examples were described, and concepts for policies and tools that would implement these seven priorities and would be applicable in any country were suggested. The major outcomes at this stage are:

- A) A text-based list of deep energy renovation recommendations,
- B) The concept for the online tool development,
- C) The basic and extended concepts for a Deep Renovation Network Platform (DRNP),
- D) A general policy proposal for regular mandatory EPC assessor training
- E) A universal, enhanced user-friendly EPC form template and background on the proposed content, and
- F), G) A general policy proposal for advertisement guidelines and for actions to improve compliance with the mandatory use of EPCs in real estate advertisements.

These policy proposals were the basis for the 2<sup>nd</sup> national workshops. Due to ongoing Covid-19 restrictions, all partners held the workshops online across one or two sessions in January and February 2021. The workshops were aimed at the stakeholders of the National Expert Fora, which were established in connection to the 1<sup>st</sup> national workshops in February 2020. During the 2<sup>nd</sup> national workshops, the policy proposals and concepts for tools related to each priority were introduced by the project partners, followed by a discussion, in which the stakeholders could give feedback. Additionally, all stakeholders of the Expert Fora had the chance to give feedback using a questionnaire. The combined stakeholder feedback from the workshops and the questionnaires provides the basis for this report.

Chapter 2 of this report contains the national stakeholder feedback on the policy proposals for each priority summarized by the project partners for each of the seven countries.

In chapter 3, all feedback is summarized and evaluated focusing on the suggested improvements on the general policy proposals and concepts.



The results of this report will contribute to the improvement of the policy proposals and concepts. The improved proposals and concepts will then be published in the *White paper on good practice in EPC assessment, certification, and use*, deliverable D3.2 of this project.



## 2 REPORTS FROM THE 2<sup>ND</sup> NATIONAL WORKSHOPS AND THE EU WORKSHOP

### 2.1 Bulgaria

The Bulgarian 2<sup>nd</sup> National workshop was held on 4<sup>th</sup> of February 2021 through a platform for online events. The event was disseminated beforehand on the EAP's website, QualDeEPC website and LinkedIN. A synergy between QualDeEPC and our sister project U-cert was raised, as we invited our colleagues from EnEffect to present their project. All of the elements for improvement were presented by Daniela Kostova (EAP).

There were about 20 participants from the following organisations:

- National EPC Body:
  - Sustainable Energy Development Agency
- NGOs:
  - EnEffect
  - Sofia Energy Center
  - Black Sea Energy Research Center
  - Sofian Energy Agency
- Energy Consultants and experts
- Citizens
- Municipality of Plovdiv
- Training Institutions: Technical Faculty of University of Food Technologies – Plovdiv
- Citizens

The event with a duration of 5 hours started with a presentation of the project and its objectives, discussion on existing problems in the local scheme and good practices. Then, the proposed elements for improvement were presented followed by interactive discussions through “mentimeters”, where about 10-12 participants took part.

The general opinion about our event and the proposals was very positive. It was explained to the participants that we will send them the translated shortened Green paper and we asked them to fill the questionnaires in the following two weeks.

#### 2.1.1 *Feedback on “Improving the recommendations for renovation provided on the EPCs towards deep energy renovation”*

The general opinion about this proposal was positive. Most participants agreed that the suggested recommendations are in line with the national needs and requirements and the detailed U-values or technical systems reflect technically implementable options for existing buildings. The National EPC body representative stated that the recommendations are in line with the National long-term strategy for building renovation. Regarding the question on ordering the deep energy recommendations by efficiency, some participants stated that such prioritisation is not sensible: as each building is unique, it would not be possible to adopt the same approach for different buildings.

#### 2.1.2 *Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”*

The feedback for this proposal was positive. Most of the participants agreed that the presented user interface of the online master tool is generally understandable and that using the tool, before deciding



the implementation of a major renovation, will provide a roadmap towards deep renovation. The bigger part of the participants stated that it would be good for this tool to be integrated into the DRNP. The feedback for the presented services was very positive

A participant stated we have to supplement several output data. Most of the participants stated that they have not used such tools for homeowners. Regarding the question: “If the comparison between the current condition and the condition after the renovation of the buildings shows the effect of the selected energy saving measures in a clear way”, a participant suggested the module should have the possibility for 2 types of input: the one indicated by us with initial data (where it gives an average cost, analyses and comparisons) and the possibility to fill in already clear results, such as the initial data during the examinations (electricity, heat, gas, etc. ), where the user will get the most accurate idea of his or her individual profile (requirement for internal temperatures, hot water consumption, etc.). Averaged data are often idealistic and lead to misleading results, especially if they must be motivating.

### *2.1.3 Feedback on “Creating Deep Renovation Network Platforms”*

Most of the participants stated that they are not aware of such deep renovation network platforms but agreed that the creating of such deep renovation network platforms will be very useful for the citizens in the process of deep renovation. The larger part of the participants stated that the suggested services and products in the concept cover the most important elements for a basic DRNP.

More than half of the participants think that an Online platform for information and implementation is most suitable for realisation in Bulgaria, a smaller part thinks that a physical center (hub) for information and coordination is most suitable.

Regarding the question “Who has to operate such a platform?”, more than the half of the participants stated that regional energy agencies should operate a DRNP. Representative from the municipality of Plovdiv stated that the local authorities will be directing and supporting consumers (citizens) to a DRNP.

### *2.1.4 Feedback on “Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry”*

Most of the people agreed that it will be good to include regular mandatory training. Most participants stated that regular mandatory training for EPC assessors will help to maintain a high quality of issued EPCs in general. Regarding the training content, a bigger part of the participants agreed that mandatory regular training should not repeat the educational framework of the first training.

More of the participants stated that the period for mandatory regular training should be 2-3 years and after completion of the training program, exams should ensure the knowledge gained.

The participants ordered the training topics by importance, as follows:

1. Information on changes to national or European Building Performance Acts
2. Common mistakes and how to avoid them
3. Information on innovative technologies and measures for deep renovation and their assessment
4. Effective customer (building owner/ representatives) information and interaction

### *2.1.5 Feedback on “High user-friendliness of the EPC”*

The general opinion about the proposed new EPC template was very positive, but some comments and suggestions were discussed for improvement.



Participant's suggestion about NZEB mark – to be on the first page as it is in the existing template.

Regarding the energy rating on p.2 - most of the participants stated that the proposed “energy rating” is suitable for defining the energy efficiency of the building components and systems. A participant stated that the energy rating will be useful for the non-professionals but will complicate the work of the energy auditor and, as it is a new element, not existing in the national legislation it will require many resources for defining the different criteria.

Proposal for the traffic light visualization was to be used for indicating the SRI of the building.

An expert stated that the National EPC body considered the user-friendliness of the EPC and that they already reach the balance of user-friendliness and technical acceptance by professionals and that the existing certificate is already balanced in terms of user-friendliness for both parties – citizens and professionals (including National EPC body).

It was discussed that an important table for the end user containing the energy consumption distribution by end uses (heating, cooling, ventilation, lighting, DHW, etc.) is missing in the proposed EPC template. A participant opened the topic about the missing graphic for visualisation of the energy consumption of the building in the current state, in the modelled case and after implemented energy measures.

Still, most of the participants absolutely agree that it would be advantageous to have a universal EPC form across the EU to enable the comparison of the energy efficiency of the same building type in different countries.

### *2.1.6 Feedback on “Voluntary/mandatory advertising guidelines for EPCs” and Feedback on “Improving compliance with the mandatory use of EPCs in real estate advertisements”*

From the discussion, it became clear that almost none of the participants are familiar with the national requirements for a mandatory indication of energy performance indicators in the advertisements. The participants also agreed that this requirement is not known for the actors of the real estate market and such advertising guidelines will be useful to ensure that the obligation to include energy performance data from the EPC in real-estate advertisements can and will be fulfilled, and in high quality.

Most of the participants stated that these guidelines should be mandatory, but an expert, who stated that this requirement is not applicable for residential buildings and individual apartments, also presented the opposite opinion.

The majority of the participants agreed that it would be good, if the control of the compliance with this requirement is improved, while a participant stated that the National EPC body is not responsible for the real estate market and has no control in the advertisements – it will require huge time and resources and this is not applicable.

Another opinion is that it should be at its own discretion whether to indicate EPC in the advertisements and it would be a natural process of the real estate market and the “engine” of this element would be the competitive principle of the market.

The participants ordered the information that should be included in the advertisement, as follows:

1. Energy label (class)
2. Annual energy demand, kWh
3. Specific annual primary energy consumption (national requirement), kWh/m<sup>2</sup>
4. If the building meets NZEB standard



## 5. CO2 emissions

Most of the participants agreed that sanctions for non-compliance should be introduced.

### 2.2 Germany

The 2<sup>nd</sup> workshop with the partners of the National Expert Forum was held in two parts on 28<sup>th</sup> and 29<sup>th</sup> January 2021. Due to the prevailing pandemic situation, the workshop was held in an online format. Representatives from energy advisor associations, consumer protection organisations, development banks and representatives from the real estate industry took part in two two-hour workshops. A total of 13 people were present at the workshop.

The two parts of the workshop started with an introduction to the QualDeEPC project and the aim of the workshop. This session was followed by an overview presentation of the developed measures, especially the ones to improve the energy performance certificates. Afterwards, the individual proposals by the project were discussed in more detail in order to obtain opinions and experiences from different perspectives. The results of the discussions are presented below.

#### 2.2.1 *Feedback on “Improving the recommendations for renovation provided on the EPCs towards deep energy renovation”*

The lead questions for this part were:

- How would you define deep energy renovation (our translation to German literally translates back to “comprehensive energy-efficient modernisation”), and
- Should we follow the EU definition with a 60% improvement in efficiency?
- Which U-values or technology standards would be appropriate?

It was discussed that interactions between recommended modernisation actions should be considered, as also the cost-effectiveness of the measures and requirements for the building envelope and the system technology play an important role. It is difficult to set a fixed % savings or universal energy performance target for modernisation recommendations in the energy performance certificate, as the building stock is very diverse and heterogeneous. Several participants argued for more ambitious U-values and technology standards (more in line with requirements in funding programmes than with the legal minimum standards). German EPCs do not require a full energy audit, so the recommendations cannot be very complex. Therefore, guidance on which actions and standards to recommend based on the status of the building and its components would be useful to guide on which measures to combine. One participant pointed to the EU taxonomy for green investments, which only requires savings of at least 30% in renovation investments. The question was raised, if this discrepancy might contradict the deep energy renovation goals of the Renovation Wave.

#### 2.2.2 *Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”*

The lead questions for this part included:

- Would such a tool make sense and where can it be used or linked to?
- Where do you see a benefit?



Note: In Germany, at least three such tools already exist. Hence, the German QualDeEPC partners will seek cooperation with one of these to support its improvement.

The general opinion by the stakeholders attending the workshop was that such a tool would be a benefit to reduce barriers for building owners. Docking the tool with existing funding search tools would be good, as the funding landscape is very complex. The tool could be used to explain issues related to renovation costs. However, it is difficult to show general costs, because the regional differences are relatively large.

It was also clarified that an online tool is not intended to replace professional energy advice and is rather intended as a helpful assessment for building owners.

### 2.2.3 Feedback on “Creating Deep Renovation Network Platforms”

The lead question for this part was:

- What benefits do you see in a Deep Renovation Network Platform to make different networks visible to consumers?

The stakeholders responded that the idea is good. A One-Stop Shop on funding programmes would be the most important aspect for providing guidance to consumers (building or flat owners) in the ‘funding jungle’, since in Germany, several programmes of the federal government are published (, which however will be streamlined in 2021). The platform then can also include programs by the federal states, local authorities and some energy companies. Energy advisors should be able to register free of charge. It was considered to be the right approach and that it would be a powerful tool if used and operated responsibly. Long-term financing for such a platform should be ensured.

### 2.2.4 Feedback on “Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry”

The lead question for this part was:

- Which content requirements can be placed on the training of energy certificate issuers or would be useful and important for their work?

It was remarked that in Germany, regular further training is already virtually compulsory, since most energy consultants who issue energy performance certificates are also approved for the state subsidy programmes and must regularly provide evidence of teaching units or projects in order to maintain their approval. However, by far not all energy advisors can be found in the list, and those people, who are not listed, would benefit from introducing such training requirements for them, too.

Different opinions were discussed regarding online seminars and e-learning formats or face-to-face seminars. As with online seminars, measurable activity time should be controlled. No feedback was received on the most appropriate frequency of such training. However, it was generally agreed that the current format and content of the existing programs for state subsidy programs would be a solid basis for a regular mandatory EPC assessor training.

### 2.2.5 Feedback on “High user-friendliness of the EPC”

The lead questions on this topic were:

- Would an EPC form that has a similar design across the EU be advantageous?



- Which components of the "improved" energy certificate do you find suitable, which less suitable, and which information is missing?
- Is the traffic light system for evaluating the building components advantageous for the building representatives?
- How do you rate the display of the "improved" energy class and energy-saving potential?

The stakeholders agreed that a uniform appearance of the EPC in the EU would be a unique opportunity to raise the acceptance of the EPCs. In addition, it was remarked that it should be the same or almost the same for new and existing buildings.

The draft certificate received good feedback from the stakeholders considering the consumer's point of view, especially the traffic light system. However, the consumer does not usually know about primary energy, so in addition to final energy, a CO<sub>2</sub> traffic light rather than primary energy would be great here. The EU taxonomy also puts Greenhouse gas (GHG) emissions in focus. For residential buildings, a clear indication that the energy data relates to space and water heating only would be good.

Moreover, a potential conflict of interest in the energy certificate has been raised: does the EPC serve the residents/owners of the house for information or the bank as it finances the renovations? Banks need reliable energy and cost data on the EPCs.

### 2.2.6 *Feedback on "Voluntary/mandatory advertising guidelines for EPCs"*

The lead question was: What guidance or guidelines are needed and which form is the more appropriate, voluntary or mandatory?

It was mentioned that in Germany, there is a regulatory obligation according to the Building Energy Act (GEG). This law regulates which information is obligatory and provides information on violations and fines. Consumer protection agencies, therefore, would be in favour of action, including guidelines, to improve compliance. However, since there is a cost to advertisements, this is another disincentive to providing more information. Online platforms for real estate sales and rentals require the input of EPC energy performance data, but allow circumventing it by a button "EPC will be issued later".

### 2.2.7 *Feedback on "Improving compliance with the mandatory use of EPCs in real estate advertisements"*

The lead questions here were: How do you assess the status quo of compliance with the law and how can the implementation be better controlled? Who should be responsible?

Stakeholders pointed out that the enforcement of the GEG and thus, the responsibility for the energy performance certificate, is regulated differently in the individual federal states. Violations in connection with commercial real estate advertisements count as an administrative offence and can be punished with a fine of up to 15,000 Euros.

Still, repeatedly, incorrect or missing information is found in real estate advertisements. There are no official controls, but the consumer centres take action against these offences with warnings. It would be better to have regular spot checks by competent authorities. In most federal states, there is a lack of enforcement of the law, both on quality control of EPCs and control of their use in advertisements. Hence, the participants see an increased need for action here. While no building or dwelling can be sold without an EPC, rentals are often made without, since potential tenants do not dare to ask for the EPC. Therefore, ensuring the presentation of EPC energy data in advertisements would be important.



Quality assurance for energy performance certificates must be transparent. The possibility of using sanctions is very important and would have to be carried out centrally and nationwide. A central database of energy performance certificates and energy performance certificate issuers would be very useful to consolidate quality assurance into one place.

### *2.2.8 (Optional) Pressing issues related to EPC schemes outside the priorities of QualDeEPC*

On several occasions during the workshop, stakeholders mentioned the benefits from centralized databases of both EPC assessors and issued EPCs.



## 2.3 Greece

The 2<sup>nd</sup> QualDeEPC National Workshop in Greece was organized on February 23<sup>rd</sup> 2021 via Zoom and attended by 12 participants. The key types of stakeholders participating were representatives from the National policymaking body for Energy Efficiency (Ministry for Environment and Energy), the Hellenic Energy Inspectorate responsible for the EPC system in Greece, the Technical Chamber, the Pan-Hellenic Association of Certified Energy Inspectors, representatives from consultancy services firms as well as the coordinators of the iBroad H2020 project.

The project's Green Paper and its shortened version as well as the dedicated questionnaire were distributed to the invited list of participants prior to the event. The questionnaire was available in google form and word format.

The workshop and the 7 topics were presented by the CRES QualDeEPC team, Lena Lampropoulou and Effie Korma. Each topic was presented thoroughly and the related questions of the stakeholder questionnaire (Annex A: Stakeholder questionnaire (English version)) were explained in details in order to facilitate participants to fill in the questionnaire during the workshop.

The participants stated that they come across EPCs very often and only a few of them encounter EPCs from other countries.

### 2.3.1 *Feedback on "Improving the recommendations for renovation provided on the EPCs towards deep energy renovation"*

CRES presented this topic and gave emphasis to the related 8 statements included in the stakeholders' questionnaire.

Even though all respondents admit that the proposed recommendations are in line with the Greek context and the majority of them agree or somewhat agree that they cover the most important elements towards deep renovation, the stakeholders from the policy making body disagree or somewhat disagree on the latter.

The collected responses presented a consensus as regards the statements related to the detailed U-values for building envelope components and technical systems and their implementation for existing buildings.

The necessity for supporting funding schemes was highlighted when exceptionally efficient deep renovation options are selected due to the high cost and too long payback period, especially when the requested outcome is the implementation of deep renovation according to the nZEB standard. As far as it concerns the cost-effectiveness of deep renovation options when combined with a planned renovation, the respondents highlighted that this is not the current practice in Greece (planning a renovation) and commented that the stepwise approach could facilitate the owners to obtain step by step funding.

Concerning the order of deep renovation recommendations, the respondents agree or somewhat agree with the proposed order. It was highlighted that the order differs according to the building type (tertiary or residential sector) and in any case, the combination of proposed measures should be taken into account to avoid the lock-in effect, as well as the end of life of the components.



### 2.3.2 Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”

CRES presented the scope, structure, input and results of the “master tool” which is based on an existing tool.

According to the responses to all related statements, the respondents agree or somewhat agree that the tool is generally understandable, could contribute to the awareness raising of the homeowners and that in any case it cannot substitute an official calculation tool.

As regards the proposal that the usage of such a tool will provide a roadmap towards deep renovation, the majority of the respondents agree or somewhat agree, but mentioned that the specific order of energy interventions and the technical requirements for a step-by-step implementation of each one of them is necessary to specify when a renovation roadmap is provided.

### 2.3.3 Feedback on “Creating Deep Renovation Network Platforms”

The stakeholders mostly agreed with the proposed services and products of the DRNP basic version as well as the extended version. A respondent proposed some examples of additional services and products that could be included such as “benchmarking with similar buildings”, “link to building ID” and “preparation and submission of requests for funding”.

40% of the respondents are familiar with similar platforms and provided some examples such as: Portugal-Casa+ (<https://portalcasamais.pt/>), France-Passeport Efficacité Énergétique (<https://www.experience-p2e.org/>), Germany – Individueller Sanierungsfahrplan (<https://um.baden-wuerttemberg.de/index.php?id=8110>), BetterHome (<https://www.betterhome.today/>); the majority of the respondents were positive in taking part in such a platform.

### 2.3.4 Feedback on “Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry”

The policy proposals presented on this priority initiated a fruitful discussion between the participants, and the different approaches were illustrated in the responses of the related section of the questionnaire.

All participants agreed or somewhat agreed that mandatory EPC assessor training helps to maintain a high quality of issued EPCs and renovation recommendations in general. The majority of respondents considered regular training every 3-5 years acceptable.

All respondents also agreed on the content of the training on new national and EU policy/legislation, on new developments in the field of energy technologies as well as on common mistakes occurring in the energy certification process and on interaction issues with the client.

The majority of attendees responded positively to the verification via exams of knowledge gained. The EPC assessors’ representatives commented that an examination process for maintaining certification and registration as an EPC assessor after a validity period is necessary regardless of their attendance of a training course, thus mandatory training should be substituted by a successfully passing the exam.

One respondent showcased the ASHRAE certification process (American Society of Heating, Refrigerating and Air-Conditioning Engineers- <https://www.ashrae.org/professional-development/ashrae-certification>).



### *2.3.5 Feedback on “High user-friendliness of the EPC”*

The participants mostly agreed that would be advantageous to have a universal EPC form across the EU. One respondent commented that even though a universal form would contribute to a common understanding of the EPC form, however, the comparison of the EPC between member states entails an extended adaptation process on the methodologies and calculation tools.

The respondents mostly agreed that the provided EPC form is designed in a user-friendly way and could be used on a national level with minor adjustments. A participant commented that most of the proposed content already exists in the current Greek EPC form.

They all mostly-agreed that all necessary information is included in the proposed form. One of the respondents commented on the need for an indicative cost of measures as well as on emphasizing the need for an on-site audit to be performed by a registered assessor.

### *2.3.6 Feedback on “Voluntary/mandatory advertising guidelines for EPCs”*

During the presentation of the policy proposal of this priority, it was mentioned that the legal obligation for the EPC classification to be presented in the real estate advertisements was recently activated in Greece (01/01/2021) but no mandatory guidelines are introduced yet. This topic proved to be a very topical issue for the Greek case. Various proposals on which of the proposed guidelines should be adapted were discussed as well as the potential holdbacks. The participants agreed or somewhat agreed with the four statements of this section of the questionnaire.

### *2.3.7 Feedback on “Improving compliance with the mandatory use of EPCs in real estate advertisements”*

The participants confirmed the fact that the most important ways on how to improve compliance with the mandatory use of EPCs and their data in real estate advertisements included in the policy proposal of this priority. A useful comment by a respondent was that the necessary/mandatory information of the EPC in an advertisement should be retrieved by the national EPC database automatically.



## 2.4 Hungary

The 2<sup>nd</sup> QualDeEPC National Workshop has been organised in MS Teams on January 15<sup>th</sup> 2021. Before the workshop, 41 people registered and eventually, 27 participants attended during the live event.

The workshop has reached a wide professional audience since participants came from the Ministry for Innovation and Technology, the Hungarian Energy Efficiency Institute (MEHI), the BME Department of Building Services and Building Engineering, University of Pécs, and from other engineering offices, energy audit SME, EPC assessor, building constructor, HVAC planner and manufacturer of insulation materials.

The workshop and the 7 topics have been presented by Mr. Tamás Csoknyai PhD (BME University), Mr. Horváth Miklós PhD (BME University) and Mr. Csaba Csontos (Energiaklub). The moderator was Ms. Anna Hornyik (Energiaklub).

Before the workshop, the Green Paper and its shortened version have been sent to the registered participants and the questionnaire (Annex A: Stakeholder questionnaire (English version)) has been cut into 7 parts and uploaded as a google form. At the end of each topic, participants filled the questionnaire and added their valuable comments in real-time. The presenter of the topic moderated this filling process. Every question was carefully explained one by one and, where it was necessary, illustrations were attached. After the workshop, participants have had 5 more days to fill the questionnaires. More than 40% of the respondents come across EPCs weekly or even more frequently, however, typically they have no experiences with foreign EPCs.

### 2.4.1 Feedback on “Improving the recommendations for renovation provided on the EPCs towards deep energy renovation”

Within this section, 8 statements of the stakeholder questionnaire were discussed. Most of the respondents agreed or somewhat agreed with statements number 1, 2, 3, 4, 6 and 7. However, in the case of statement 5, namely ‘The exceptionally efficient deep renovation options can be achieved in a cost-effective way without funding programs.’ more than ¾ of the respondents disagreed or somewhat disagreed. The most relevant comments were:

- “Funding programs are definitely necessary for implementing deep renovations, especially in the residential sector”;
- “Depending on how we define cost-effectiveness, but in Hungary, in general, deep renovations are not cost-effective”;
- “It depends on the building, in many cases, it can't be renovated in a cost-effective way”.

Respondents’ opinions were most divided on statement number 8. A general comment was: “The order depends on the building itself.” Furthermore, some of the stakeholders recommended that the heating system should be adjusted always to the actual changes and the average absolute energy consumption of the given elements could help to form the right renovation order.

### 2.4.2 Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”

Most of the respondents agreed or somewhat agreed that the presented online tool is generally understandable, the most relevant comments suggest that a country-specific typology is needed, and real pictures and pop-up info boxes would be useful.



The results from the tool (Figure 2 on page 17 of the Green paper) are understandable for most respondents, however, there were useful comments as well:

- “It should be clearly stated that the users' behaviour is not included. It would be really practical to give hints how different usage patterns can change the results (e.g. if the average indoor temperature during winter is 25 °C, it means +X% energy consumption)”
- “I don't think most people can understand kWh/m<sup>2</sup> and decide an option's cost-effectiveness”

The comparison of the present state and the proposed renovation is clear for the majority of the respondents, however, there were some useful comments here as well:

- “Indicative renovation cost should be not an exact number but an interval.”
- “Clear and simple, good visuals. I would be careful with the costs of renovation though... Where will the input data (of prices) come from for that? “
- “When presenting the possible measures, technical order of renovation parts shall be taken in account”
- “It is pretty ugly, and the indicative renovation cost is not detailed”

Respondents agree that using a tool, such as the presented master tool, before deciding the implementation of a major renovation will provide a roadmap towards deep renovation. The main comments for this section are the following:

- “The user should be able to select the typical building structures (wall, roof, etc.), the typical heating systems (boiler, condensing boiler, and convector), DHW systems, ventilation.”
- “I suggest that the application also provide information related to green attitude formation. “
- “The tool could provide a suggested order of recommended measures (roadmap) to reach deep renovation and the cost of these steps.”
- “Besides the results, an emphasis on recommendation to involve a professional into the decision process should be stated.”
- “It should emphasize (as mentioned on the presentation rightly) that it is only an indicative result and it does not substitute on-site investigation”.

### 2.4.3 Feedback on “Creating Deep Renovation Network Platforms”

Experts mostly agreed with the element of the suggested services and products in basic and extended DRNP. The most relevant comments were:

- “Include information about the possible renovation solutions and technologies besides materials, as well as include not only the contractors but technical supervisors.”;
- “The monitoring of results is very important. The feedback on realized energy renovation projects can help decision making on the renovation for those who hesitate to start the renovation.”

A list of additional services suggestions was also gained:

- The results of the deep renovation should continue to be refocused. It would also be important to monitor improved comfort results (pre and post-assessment of buildings);
- Management tool could help for those who want to track and manage their own renovation;
- Information about the multiple benefits of deep renovation beyond financial benefits or energy savings;
- The collection of positive examples, such as references, could be drawn up

DRNP in Hungary: RenoHUB project's RenoPont platform and TripleA-reno platform are under development and the establishment of the National Energetics Network is also in progress. This initiative



and the aforementioned on-going projects have many common points. Therefore, a special cooperation would be extremely synergetic. Furthermore, most of the respondents could imagine that their organization takes part in such a platform and 3 of them have already been involved in such an initiative.

#### *2.4.4 Feedback on “Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry”*

There was a strong consensus among experts that regular mandatory training for EPC assessors helps to maintain a high quality of issued EPCs in general and helps to maintain a high quality of renovation recommendations. According to one valuable comment, the second statement will only be true if the training contains concrete building development technical information.

The listed training content was mostly accepted. Some of the experts suggested that between the mandatory training there could be optional workshops about new financial possibilities and new policies. Another one noted that the involvement of building construction experts is needed during the training content development and implementation.

It was mostly agreed that the training program must be followed by an exam. However, respondents’ opinions were divided the most on the statement that mandatory training should be able to be substituted by successfully passing an exam about the content of the regular mandatory training. 33% of the respondent disagreed or somewhat disagreed, however, 47% agreed or somewhat agreed, while another 20% stayed neutral with this statement.

#### *2.4.5 Feedback on “High user-friendliness of the EPC”*

In most of the comments linked to this section, stakeholders added many valuable suggestions. In summary, their opinion is that it makes sense and it is beneficial to have a so-called universal EPC form across the EU. However, it should be adjusted to the national conditions as much as possible. The template provided by QualDeEPC was found quite user-friendly, however, some parts could be developed further e.g. heat-camera shots would be useful, and the glossary is a good idea, however, the text and wording (explanations) should not be technical.

The provided EPC form template includes more or less all of the necessary information. Additionally, for instance, annual energy costs of energy sources (natural gas, electricity, district heating, wood, pellet etc.) would be very useful to be included in the EPC, because everybody understands it. Furthermore, the potential energy saving of the proposed measures should also be expressed in costs.

Regarding Energy classification and performance, stakeholders suggested the reference data needs to be displayed. According to their experience, the form is not useful and understandable enough for end-users. That is why other indicators are needed like the energy cost.

Respondents agreed or somewhat agreed with the assessment templates of the building envelope and technical systems. However, they have some doubts about renovation recommendations and the cost-effectiveness of renovation options. Some of the most relevant comments were:

- EPC issuers have usually not enough expertise to make such a rating for cost-effectiveness;
- It is doubtful that users will understand the "non-renewable energy-saving" expression. It is good for experts, but end users need other indicators, e.g. cost-saving, energy saving per energy sources (m<sup>3</sup> gas, kWh electricity, kg wood, etc.).



It is quite difficult to provide meaningful suggestions; labels (green, yellow, red) could provide not more than just a very rough estimate and indication on which recommendation should first be considered.

#### *2.4.6 Feedback on “Voluntary/mandatory advertising guidelines for EPCs”*

There was a total consensus among experts that advertising guidelines are generally useful to ensure that the obligation to include energy performance data from the EPC in real-estate advertisements are met. Additionally, the authorities should widely communicate the guidelines to encourage their use. Most of the respondents agreed or somewhat agreed that advertisement guidelines should be mandatory.

For the content-related guidelines, most of the important aspects are covered. However, there was one relevant comment, which includes a suggestion:

- “Online (digital) advertising can deal with the above suggestions, but not the printed media (graphical elements might not be possible here).”

#### *2.4.7 Feedback on “Improving compliance with the mandatory use of EPCs in real estate advertisements”*

Respondents have mostly agreed with the statements of this chapter. They would prefer frequent controls with lower fees. However, it was noted that a strong political will is a need in order to improve compliance with the mandatory use of EPCs in real estate advertisements.



## 2.5 Latvia

The 2<sup>nd</sup> QualDeEPC National workshop was organized as an online meeting on the GoToMeeting Platform. The workshop was divided into two parts:

1. First part – 19th January;
2. Second part – 26th January.

For these workshops, 32 people registered and around 20 people were present during the workshops.

The main participants of the workshop were certified energy auditors, representatives from the Ministry of Economics, building constructions companies, energy and environmental engineering students and people interested in the energy efficiency of buildings.

During the workshops, the Green paper and a slide presentation were presented. The main aim of the workshop was to gather feedback from participants regarding the 7 priorities laid down in the green paper.

Due to changes in legislation regarding EPC (calculation methodology, EPC template, nZEB building definitions, mandatory heat metering in each apartment, e.t.c.) another workshop was held on 25<sup>th</sup> February. This workshop was aimed mostly at certified energy auditors. The workshop was announced on 22<sup>nd</sup> February (4 days before the workshop). 102 attendees registered for this workshop. At the workshop (held on GoToMeeting platform) around 80 attendees were present. In this workshop, there were representatives from legislation makers but most attendees were certified energy auditors (we estimate that around 90% of active energy auditors in Latvia were present at this meeting). This meeting was divided into 2 parts, where the first part was regarding the QualDeEPC project and the second part was dedicated to upcoming changes in legislation (these changes that were announced on 18<sup>th</sup> February in many cases nullify the things that have been presented about the situation in Latvia in the Green paper).

### 2.5.1 *Feedback on “Improving the recommendations for renovation provided on the EPCs towards deep energy renovation”*

The main feedback from the participants regarding improving the recommendation for renovation on the EPCs toward deep energy renovation was that in Latvia, there is already a quite detailed energy efficiency measure description in each EPC. Therefore, this QualDeEPC priority is not considered the main priority to be further developed in Latvia.

Feedback from energy auditors suggested that energy efficiency measures should be viewed also from an economically feasibility standpoint. At the moment, deep energy renovation is not economically feasible.

Regarding the specific recommendations for improving energy efficiency – in Latvia, we should start to think more about indoor air quality in buildings after renovation. At the moment, in EPCs, there are no specific suggestions for ventilation energy efficiency. Therefore, it should be needed to improve the suggestions regarding heat recovery from ventilation. Also, renewables are a weak point when suggesting energy efficiency measures in buildings.



### *2.5.2 Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”*

During the workshops, it was clearly seen that there is a need for an already existing tool for which to give feedback. Discussing the idea of a tool is very hard. It was not completely clear who would be a user of such a tool and who would benefit from it. In Latvia recommendations in EPCs already are very detailed and close to recommendations for a deep energy renovation.

Participants of the workshop said that there would be a need for a study, which shows what energy consumption should be reached after building renovation. Such reference energy consumption (for instance – 50 kWh/m<sup>2</sup> per year for space heating) could instantly help to understand whether the suggested measures in EPC do reach this reference consumption or not. Other participants pointed out that there are some studies regarding this. In addition, energy auditors pointed out that for apartment buildings built in Soviet times, the space heating after deep renovation in Latvia almost does not depend on the situation in building before renovation. These apartment buildings after renovation usually reach space heating consumption between 50-60 kWh/m<sup>2</sup> per year.

Nevertheless, regarding online tool – there should be an existing tool for which feedback can be given. It was pointed out that it is very important how the tool has been made (how it looks and how it is presented to the user). In many cases, users of such tools will rely on the tool if the user interface is done in a “nice way”.

### *2.5.3 Feedback on “Creating Deep Renovation Network Platforms”*

The workshop participants agreed that such a deep renovation network platform should be implemented. There was a split opinion about who should be the owner of such platform. Some experts said that this should be a state-owned platform but others suggested that this should be a platform owned by different private companies and organizations involved in building energy efficiency processes (energy auditor association, construction company associations, heat providers, etc.).

Experts said that they would like to see quite specific things in this platform (do not concentrate on General things).

It was pointed out that to make the first version (webpage) of such a platform can be done in a couple of weeks or days but the problem then is to keep this platform updated.

### *2.5.4 Feedback on “Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry”*

Since the majority of workshop participants were energy auditors and other experts directly involved in making EPCs this was a topic with large interest. It was even better seen in the 25<sup>th</sup> February additional workshop. This can be explained by the fact that in Latvia on 18<sup>th</sup> February it was announced that the existing calculation methodology for issuing EPCs would be completely changed on 1<sup>st</sup> April 2021. This means that energy auditors now do not have the needed skills for adapting to legislation changes. Therefore, energy auditors now see that there is a severe need for regular and mandatory training.

It was agreed during the workshops that we would make additional workshops regarding these training days of EPC assessors. In these additional workshops, which are planned to be made from March until May 2021, we plan to clarify what topics should be included in the trainings /how often these training days should takes place /by whom they should be performed.



It seems that this QualDeEPC priority is the most important at the moment for Latvian energy auditors.

### *2.5.5 Feedback on “High user-friendliness of the EPC”*

The feedback of EPC user-friendliness was the most split opinion priority out of all 7 QualDeEPC priorities.

The meeting participants divided into two camps. One camp was saying that EPC should be extremely user-friendly to end-user. The other camp said that EPC is a technical document meant for technical experts and therefore the user-friendliness is not that important.

In legislation changes which were announced on 18<sup>th</sup> February 2021 (and will come into force on the 1<sup>st</sup> April 2021), the national EPC form has been radically changed. It now will contain 2 different energy classes for one building (one class for space heating and one class for non-renewable primary energy consumption). In the view of the Latvian QualDeEPC experts, the new EPC template has been made less user friendly than the existing form. The Ministry of Economics (responsible for these changes in EPC form) said that end-users need to be educated in order to understand this new form. It seems that in the near future, there will be discussions regarding the newly announced EPC template form.

### *2.5.6 Feedback on “Voluntary/mandatory advertising guidelines for EPCs”*

Experts of the workshop did not seem interested in this topic. The type of experts attending the workshop could explain it. It was agreed that such guidelines should exist but most likely in a voluntary way.

### *2.5.7 Feedback on “Improving compliance with the mandatory use of EPCs in real estate advertisements”*

The Ministry of Economics pointed out that in national legislation we have the requirement for including EPC in real estate advertisements. From the point of view of the Ministry of Economics, it means that all is ok. They did not seem concerned if in real life this requirement is not being fulfilled.

Other participants of the workshops said that we should implement the existing requirement in real life but there were no suggestions on how it can be done. It was pointed out that building owners already have many mandatory obligations and they do not want to have another mandatory thing that costs them money. Ministry of Economics pointed out that in order to make issuing EPCs cheaper, they are planning to allow to issue EPC for existing buildings based on measured energy consumption (energy auditors will not have to do full energy balance calculation of a building to issue an EPC).

### *2.5.8 (Optional) Pressing issues related to EPC schemes outside the priorities of QualDeEPC*

The energy auditors attending the workshops had complaints about how building renovation grant schemes are being prepared and carried out. To receive a grant for building renovation an EPC has to be prepared, but very often energy auditors are asked to do changes in these EPCs (in some cases you have to remake an EPC up to five times).



## 2.6 Spain

The 2<sup>nd</sup> QualDeEPC National Workshop was celebrated on January 20<sup>th</sup> and 21<sup>st</sup> 2021. Due to the COVID-19 situation, an online format was chosen. 50 people had been registered and 32 participants attended the 20<sup>th</sup> of January and 26 participants the 21<sup>st</sup> of January.

The list of participants included the Ministry of Ecology Transition, the National Energy Agency and several Regional Energy Agencies, town halls, one social housing agency, and professionals of engineering companies who perform EPCs, architects of Social housing agencies, President of owners' communities, manufacturers of insulation materials, manufacturers of heating systems, an association of windows manufacturers, distributors and installers, laboratory of the quality control centre of Vasque Government, innovation and research centres, etc.

The speakers have been Mrs. Margarita Puente, Escan; Mrs. Marta Echave, MOI Architects; Mr. Aurelio Perez, Architect; Mrs. Cristina Gallego of Spanish Technology Building Platform, PTEC, Mr. Alfredo Cardorniga, Regional Energy Agency of Castilla and León; Mrs. A. Mata, Catalanian Institute of Energy - Regional Government of Cataluña; Mr. E. Gomez de la Pena, Isover Saint-Gobain.

Mrs M. Puente explained the project's main activities and workshop goal. The moderation was done by F. Puente-Salve. The other speakers shared presenting the Green Paper priorities. Several questions were asked to participants who replied speaking and/ or using the chat.

Before the Workshop, Escan sent the *Green paper on good practice in EPC assessment, certification, and use for stakeholders - short version in Spanish language*, Presentation and Questionnaire (see Annex A: Stakeholder questionnaire (English version)) to all participants. The invitation to the event and the registration of all organisations were carried out by Escan. The support of some professionals as speakers provided a very interesting debate.

### 2.6.1 Feedback on “Improving the recommendations for renovation provided on the EPCs towards deep energy renovation”

Escan has included Spanish U-values for the presentation of the Workshop. Those values are different from the values of Germany. According to the participants, the recommendations of the Green Paper are OK. The transmittance values (U-values) depend on the materials, etc., and they are used depending on the climatic zones. In the Green paper, Spanish version, Escan has included those U-values.

### 2.6.2 Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”

As general commentaries, the participants liked the tool. They liked that the tool would provide the energy savings and costs of several options for renovations.

Nevertheless, this tool should be considered as the first step for renovation. This point is important because the tool will estimate the cost of the renovations and if the owner or a company wants to invest in deep energy renovation, they should make more accurate costs calculations.

### 2.6.3 Feedback on “Creating Deep Renovation Network Platforms”

The basic version of the platform has been very welcomed by the participants, professionals, energy agencies and owners. They prefer an online website with information, not a physical hub. Also, the level on which to perform the platform is preferred as one **National platform**.



The participant of the National Energy Agency, IDAE commented that this platform is necessary, and the elaboration of the platform should be included in several energy plans and in Spain's Long-Term Renovation Strategy, Estrategia a largo plazo del s. de Rehabilitación en España ERESEE 2020.

Maybe, the Agency IDAE will implement the basic information part. At this moment, IDAE website does not have this information; it includes information on a financing programme for renovation; the programme finances the renovations that increase the letter of the building. The programme has finished and the regional governments will manage the new one.

Five of the participants thought the platform is ambitious to implement during the time that the QualDeEPC project is running.

Most participants in the Workshop stated that the main services that should be included are:

- 1.- General information on deep energy renovation
- 2.- Link to certification data, because now it is not centralised; the information is at the regional level
- 3.- Links to financing programs for buildings renovations.

#### *2.6.4 Feedback on "Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry"*

**D1 Which framework might be acceptable and feasible in your country?**

**D2 What training content should be covered in the regular training?**

**D3 Should there be additional requirements, e.g. issuance of a X EPCs in XX years?**

Currently, in Spain, there is a draft of legislation about certification; it will include professional qualification and professional experience required for certification (EPC issuance). At his moment, only a university degree in engineering or architecture is required.

Example: in Castilla and Leon 6529 EPC assessors are performing EPCs, of which 72% Architects, 18% Industrial Engineers, 2% Civil Engineers, 2% Agricole Engineers, 1% Mines Engineers, 0.6% Topographers, 0,5% Engineers of Mountains, 0.5% Agricultural Engineers, 0,5% Telecommunication's Engineers ...

Conclusions of the Workshop:

**D1.-Framework:** The university degree or professional module. Spanish legislation today states a list of university titles that allow a person to issue EPCs. The participants' main opinion is that this is enough and not a new specific mandatory course or exam is required.

Maybe for complex buildings such as hospitals, accreditation of the professionals could be implemented with Training on Software, technologies, and new constructive elements (materials, insulations, windows, etc.).

**D2.- Training contents:** Legislation and technologies (insulation, HVAC systems, renewables systems for buildings); software for certification

For architects training focused on HVAC systems and for engineers training about construction materials (insulation, glazing, etc.); software training for both if it is not already in the university degrees.

**D3.- Should there be additional requirements, e.g. issuance of a X EPCs in XX years?**

The general opinion of Workshop participants was that no further requirements should be included.



The proposed requirement to perform “X EPCs in XX years” is not welcomed. The main reason is that they think the important issue is not the number of EPCs but their quality.

### 2.6.5 Feedback on “High user-friendliness of the EPC”

**How does the EPC template by QualDeEPC compare to the current national one?**

- Too much or missing information?
- Is it adjustable to national needs, while keeping important elements?

**Definition of limits for user-friendly energy rating**

**How could we achieve uniform classifications on EPCs in the EU?**

The participants commented that they liked very much the enhanced EPC of the Green paper, because it is in just four pages. Therefore, the length is perfect, because the design and colours are friendly, and the main data is included. Two participants said that a suggestion would be to create 2 models, one for professionals and another for users (owners and tenants). The model, as it is included in Green paper, is right for the professionals, and the one for the users will be without U values.

The members of the workshop agree that the starting point will be to consider Europe with European climatic zones and define the energy classification with this consideration; most participants think it is not necessary A+ or A++ of existing buildings. Better keeping A-G class.

### 2.6.6 Feedback on “Voluntary/mandatory advertising guidelines for EPCs”

**F1.- Which content should be included in real estate advertisements?**

According to the New legislation (draft status):

1 The information of the energy label should be in the publicity of any person or company that sell or rent a building or part of it.

2 The Building or part of it to be sold or rented should include Energy classification (A, B, ...) in the advertisement placed in the own building – billboard.

The participants agree that the content of the guidelines should include this information. The guidelines also should include format, colours, size, etc. as it is in the Green paper.

The participants agree to include in all publicity (paper of websites) at least the energy class (example B) and then a link to the energy label.

**F2.- Voluntary or mandatory?**

Suggestion a period of 2 years voluntary guidelines and after that, mandatory guidelines.

### 2.6.7 Feedback on “Improving compliance with the mandatory use of EPCs in real estate advertisements”

**G1. Which measures could be implemented in your country?**

**G2. Are there further ideas or good practice?**

Most of the Workshop participants agree that it is better to inform real estate agencies about the mandatory publicity of the energy label than to implement sanctions’ procedures. Because the procedure of sanctions requires a lot of budget, personnel, and time.



Therefore, it has been proposed:

- Information Campaign for real estate agencies
- Organising an Award of the Best real advertisement agencies

Hence, it is relevant to advance the Guidelines as shown in the previous priority (2.6.5).

An example, of good practice already performed: Some Regional Governments manage the checking of compliance, but very few data is published. For example in Catalonia, the last publication data is of 2015.

In Catalonia, inspections have been carried out, and a newspaper published an article about it. Conclusively, 42 real estate companies did not comply initially. Most of them did perform EPCs and published in the established period, thus few sanctions were performed.

### *2.6.8 (Optional) Pressing issues related to EPC schemes outside the priorities of QualDeEPC*

The cost of EPC is very low in Spain, for example 1 apartment 60Euro-150 Euro; 1 single-family house 200-250 Euro; EPC cost for an apartment building is about 500-700 Euro. Thus, the EPC issuers stated that many trainings and issuing many EPCs should not be required in the future, if the costs are maintained.

If the requirements to perform EPC are higher, the price should increase, and many people will not hire the professional to perform EPCs.

The balance should be reached, but it is not easy.



## 2.7 Sweden

The workshop was arranged by CIT Energy Management. It was split into two sessions, the 26th of January and the 5th of February, both via Zoom. Before the workshop, the Green paper and the EPC form template were sent to the registered participants.

In total 12 stakeholders participated in the workshop. The participants represented a broad range of stakeholders: six EPC assessors, two national certification bodies, the National Board of Housing, Building and Planning (Boverket, the national EPC authority), academia (Building Technology), a national association for energy consultants and energy advisors, and two national building owner associations.

At the end of each workshop discussion, the participants were given some time to fill in a questionnaire (see Annex A: Stakeholder questionnaire (English version)) on the specific topic, using SurveyMonkey. It was also possible to fill it in later. The questions were answered by workshop participants.

### 2.7.1 Feedback on “Improving the recommendations for renovation provided on the EPCs towards deep energy renovation”

The suggested list of recommendations was discussed both in general terms and in detail.

In general, a majority of the participated agreed or somewhat agreed that it would be a good idea to use a list of predefined recommendations towards deep energy renovation in order to improve the renovation recommendations given in EPCs.

Some participants were on the other hand sceptical to the concept. One commented that it is better that the energy expert takes individual decisions for the building. Another comment was that the list was far too detailed and ambitious, with measures aiming for “deep renovation”, and that it should rather be linked to building renovation passports than EPCs.

Several of the participants thought that the recommended values for both ‘enhanced’ and ‘exceptional’ properties, in general, had been set too ambitious and would be difficult to achieve in existing buildings. In addition, one stakeholder commented that little thought seems to have been given to what is practically feasible. Another participant thought that more account of the building owners’ perspective needs to be taken. Some of the stakeholders meant that there is a considerable risk that too strict recommendations would have the opposite effect and lead to no renovation measures being carried out at all.

Especially limits for U-values for windows and electrical power for the ventilation systems were considered far too low and difficult to reach by improvements in most existing buildings. Regarding windows, it would be necessary to differentiate between replacement and renovation of existing windows.

One of the respondents that somewhat agreed to the suggested concept added that it is important that the EPC assessor makes an own assessment for each value and not handle the presented recommendations as a checklist to follow strictly.

**Answers to the statements in Questionnaire Part 1** (from the workshop session and the filled-in questionnaire)

Regarding statement number 1, the opinions were divided. Some suggestions for recommendations to be added to the list:



- In general, more practical recommendations
- Presence/demand-controlled ventilation
- Energy-efficient fan motors
- “Optimizing the operation of systems for heating, cooling and ventilation”, as these are the most cost-effective measures.
- “What about occupants and their influence? Could that be included somehow?”

One of the questionnaire respondents commented that the list involves “too many details and administration.” Another respondent pointed out that reduction of thermal bridges is normally linked to high costs, and should therefore only be considered in connection with other renovation measures.

Regarding statement number 2, most of the respondents agreed or somewhat agreed. A couple of participants pointed out that in Sweden we only have national requirements on energy performance, expressed in primary energy use, and not on the aspects listed (e.g. U-values). Another participant commented that: “You cannot compare an old building with a new building, if you are not doing a major renovation of the building.”

Regarding statement number 3 and 4, respondents’ opinions were divided. A couple of respondents commented that it was difficult to answer on a general level and that some of the recommendations reflected technically implementable options, while others did not.

Most of the respondents disagreed or somewhat disagreed with statement 5, “The exceptionally efficient deep renovation options can be achieved in a cost-effective way without funding programs”. One comment was: “Improving the U-value may require a high cost, especially on external walls and floors.”

Most of the respondents agreed or somewhat agreed with statements number 6 and 7, that the options can be achieved in a cost-effective way with funding provided or if implemented in connection to a planned major renovation. A more general comment was: “Rent regulation, politically set primary energy factors and energy costs inhibit cost-effectiveness.”

Most of the respondents disagreed with the order of deep energy recommendations suggested in statement number 8. In general, the purpose of compiling such a list was questioned, since this would be individual for each building. Moreover, there is a considerable risk of misinterpretations of what it means and how it should be used. In the filled-in questionnaire, the suggestions given on improvements to the list were totally different between respondents.

### *2.7.2 Feedback on “Online tool for comparing EPC recommendations to deep energy renovation recommendations”*

The workshop participants did not see a need for such a tool in Sweden. On the contrary, some potential risks were pointed out.

First, a question was raised whether it might reduce the potential power of, and trust in, EPCs. The focus should rather be on improving the quality of the EPCs, so that the building owners can draw on the recommendations given by the EPC assessor. After all, these are (or should be) based on individual evaluations and calculations, while the online tool is much more general.

A risk will be that the building owner will, based on only the tool’s recommendations, take decisions to perform measures that are not suitable for the specific building. Before investment, a more detailed analysis is necessary. Furthermore, we have several other sources for giving inspiration of typical measures for typical buildings, such as several reports, case studies and demonstration buildings describing different possibilities of improving the energy performance.



What, on the other hand, is needed is a calculation tool for EPC assessors. To carry out the required adjustments of measured energy consumption to normal use and a normal year (according to the regulation BEN) is complicated and associated with uncertainties. Consequently, different EPC assessors carry out these calculations differently. In order to achieve conformity, and thereby increase the accuracy of the presented energy performance and the quality of EPCs, a tool that helps the EPC assessor to carry out these calculations is suggested. The tool could also include help with the calculation of renovation recommendations, with the purpose to increase the conformity and quality of such.

### 2.7.3 Feedback on “Creating Deep Renovation Network Platforms”

A general comment was: Today, a lot of information can be found on different platforms and webpages, but it would be good to collect the information in one platform, that has quality-assured information and that our authorities are standing behind. Although this would be desirable, an important question was then raised: Who would guarantee the quality of the information on the platform and that it would not lead to any other common damages on buildings or the users’ indoor environment?

Existing platforms in Sweden that were mentioned: EKR, EEF, EMTF, EnergiRådgivarna, ICHB and Renoveringscentrum. However, as already indicated, each of these platforms only cover parts of the services suggested in this project. One of the participants suggested a merge between ICHB and EEF.

Regarding whether the participants thought that their organization would be interested in taking part in a platform like the one presented to them, some answered *yes*, some *no*, and some *maybe*. During the workshop, primarily the need for a forum for EPC assessors was emphasized. In addition, some of the participants were positive to include a list or guide to help potential customers (building owners) find skilled energy experts, energy coordinators etc.

A couple of participants commented that it would be important to differentiate between different target groups. The content should be adjusted to meet the needs of single-family homeowners, multi-family building owners and non-residential building owners, respectively.

#### Opinions regarding the basic version:

A majority of the respondents agreed, or partly agreed, with statement 1 in the questionnaire “The suggested services and products in the concept cover the most important elements for a basic DRNP.” One of the questionnaire respondents commented that: “Suppliers are not needed. However, help with tender documents, tender evaluations and building project management are needed.”

#### Reflections on the suggested services:

*1.1-1.2 General information, costs and savings:* The participants were in general positive to the suggestions for the minimum version. Comments: It is important to make sure that content and language fits the intended target group. One of the participants pointed out the difficulty in predicting electricity prices and keeping investment costs up-to-date.

*1.3 Linking with renovation tools:* Different opinions regarding linking to a calculation tool. One comment was that the tool needs to differ between single-family and multifamily buildings.

*2.1-2.2 Linking with EPCs, linking with building deep renovation roadmap and passports:* In general, the participants think that it would be a good idea to inform about EPCs and building renovation passports in such platform and to include links to further information. However, they do not think



that there should be a link to an online tool like the one suggested in the project (see also 2.7.2 above)

3. *Building contractors/technicians and energy-efficient-experts*: In Sweden, there is already a list of certified EPC assessors at Boverket.se. Though, a list of construction project leaders, energy coordinators, etc., or a guide on how to find this competence, could be advantageous.

4. *Material or product manufacturers/ suppliers*: The platform should *not* provide a list of suppliers and manufacturers!

5. *Information on financing opportunities for deep renovation*: Yes, there should be information on existing support programs for energy-efficient buildings

6. *Active marketing of deep renovation and its benefits and costs*: Yes, this was considered to be a good idea. Active marketing and arrangement of meetings for discussions.

7. *Network (platform) for learning, exchange and cooperation*: Yes, although especially a forum for EPC assessors.

#### **Opinions regarding the extended version:**

Regarding the suggestions for an extended version, most of the participants thought that it would be good to offer:

- Capacity building and training (service no 9)
- Step-by-step guidance to gradually get through a renovation project (no 10)
- Monitoring the implementation of the renovation project (no 11)

However, although it would be nice to be able to offer these services, the participants found it difficult to see how they would be financed. In addition, it was unclear whether if it is then meant to be a commercial platform, or one run by the authorities. Again, this raises important questions concerning quality assurance.

Most of the respondents did *not* think that the extended version should offer information exchange and cooperation between countries (no 8) or carrying out renovation projects (no 13).

#### *2.7.4 Feedback on “Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry”*

The participants agree to mandatory regular *verification* in order for the EPC assessor to keep the certificate. However, the common opinion is that this verification should consist of a *compulsory exam* and that *training* prior to the exam should be *voluntary*. This is the current system in Sweden.

Most of the respondents thought that it is good with a requirement and verification of a specific number of issued EPCs since the last (initial or mandatory) training or test. Again, a comment was: “I think it is good the way we do it in Sweden.”

Almost all of the respondents accepted the listed training content in statement number 4. One comment was: “Tests should be enough for those who want to assimilate the information in another way. All parts are good for regular further training but should be voluntary.”

In a situation with a mandatory training program, after completions, exams should still ensure the knowledge gained.



### 2.7.5 Feedback on “High user-friendliness of the EPC”

The opinions were divided on whether it would be advantageous to have a universal EPC form across the EU, although a majority disagreed, partly disagreed or found it irrelevant. Reasons for disagreement:

- “Completely different energy supply systems in various countries.”
- “Today that is impossible since the different systems differ too much.”

An advantage that was pointed out was that a universal EPC could be an assurance of common taxonomy regulations and to what extent the buildings energy performance are qualified for green loans, green insurance etc.

The opinions regarding the user-friendliness and sufficiency of information included in the EPC template provided by QualDeEPC varied a lot. Individual comments:

- “User-friendly to whom?”
- Adjustment to climatological normal year should be done automatically by the program (in the template)
- It would also be preferred if an adjustment to normal use was done automatically (at least partly). (see also below and in section 2.7.2)
- Include information that EPCs must be renewed every 10th year.
- One respondent found it important to include CO<sub>2</sub>-savings, too.
- It would be good to show the limits for energy classes in absolute values

Several of the participants want to see potential energy savings also in specific energy consumption, not only primary energy. This demand is considered more valuable than possible improvement in energy class. Moreover, they see a potential problem in presenting the latter, since the scale for energy classes changes over time. Finally, one of the participants suggested that energy savings should be calculated based on actual energy consumption, and not values adjusted to normal use, in order to make it more useful for the building owner.

When applicable, the total economic result of the main option should be displayed along with total energy savings.

About what metric to use to present profitability of renovation measures – LCC considered as important but pay-back time could be added to LCC since it is sometimes easier for the building owners to understand.

For EPCs, some of the participants considered it to be more beneficial to include standard measures, with a rough estimation of savings, rather than detailed calculations. This was suggested since a detailed calculation will be needed prior to renovation anyhow.

### 2.7.6 Feedback on “Voluntary/mandatory advertising guidelines for EPCs”

This already exists in Sweden, and the workshop participants agreed that it is working well as it is.

### 2.7.7 Feedback on “Improving compliance with the mandatory use of EPCs in real estate advertisements”

There does not seem to be a need for improvement in Sweden.



### 2.7.8 (Optional) Pressing issues related to EPC schemes outside the priorities of QualDeEPC

- An urgent issue, with no easy solution, is to increase the legitimacy and trust in the EPC system. Today, unfortunately, many see the EPCs as a hindrance rather than a tool. And for this, the overall quality needs to be increased.
- It was pointed out that it is difficult to deliver high-quality EPCs when the prices are as low as they are in Sweden. To help improve the quality of EPCs and renovation recommendations, one suggestion is therefore to develop a guide for procurements based on quality, not only the lowest price.
- To make the required adjustments of measured energy consumption to normal use and a normal year is complicated. More examples, as well as a calculation tool for EPC assessors is therefore needed in order to increase the quality of the EPCs. The need for such a tool is also described in 2.7.2 above.
- There is a clear need for a specific forum for EPC assessors. This could be a part of a platform such as the one suggested within the project (see also 2.7.3).
- Increased motivation for building owners to carry out recommended renovation measures is needed. One improvement could be to clarify the meaning of energy classes specifically regarding existing buildings. Since the same scale is used for new buildings, it might be discouraging for a building owner not being able to reach class A or B, even with a major renovation. It should be made clear to the building owner that achieving class C for an existing building is very good, or that also improvements from lower classes, e.g. from F to E, matters.
- It is essential to adapt the language and numbers presented in the EPC so that the customer, i.e. the building owner, may easily understand them. One suggestion is to base the renovation recommendations on measured values, and to present potential savings in an actual expected decrease in energy consumption (not adjusted to normal use).

## 2.8 EU-level Workshop

On 25<sup>th</sup> of January 2021, the QualDeEPC project held its 2-hour EU-level expert workshop: Next generation Energy Performance Certificates and Deep Renovation. The aim was to discuss with EU stakeholders what is necessary to enhance and embed EPC to become a driver for the EU Renovation Wave, and in general, what could be improved from the set of proposals developed, mostly relevant at the EU level, in the D 3.1 Green paper on good practice in EPC assessment, certification, and use.

The speakers were Olav Luyckx, from EASME, Pau Garcia Audi, from DG ENER, Céline Carré, from EuroACE and Saint-Gobain, Lukas Kranzl, from TU Vienna as representative of the X-Tendo project, and the two project partners Margarita Puente, from ESCAN, and Stephanie Veselá, from dena (German Energy Agency), moderated by the project partner Clémence Pricken from FEDARENE. The variety of profiles allowed for constructive exchanges and different points of view from the private, the political, and the academic sectors. The EU workshop welcomed about 107 participants.

In the first panel discussion, the speakers agreed that the most important aspect of EPCs to be a driver for the EU Renovation Wave is public trust in the quality of EPC. Suggestions for this were: the involvement of the homeowners via more pedagogy on what EPC implies (criteria, calculation, ...), the improvement of user-friendliness of the EPC, the assurance of EPC assessors' quality and competences. The availability of services linked to renovation, like financing, professionals, etc., via physical or online One-Stop-shops, for instance, were also mentioned.

The discussion also highlighted the difficulty of having a harmonization of EPC across the EU given the important differences among the Member States. Nevertheless, an option of gradual harmonization



should not be thrown away. The question of building passports was only raised but not deeply discussed. It was suggested to add a provision about embodied energy of the whole-life carbon footprint of buildings (incl. material extraction, transport, to construction and demolition waste recycling etc.).

In the second panel discussion on QualDeEPC's proposals, the majority of the participants voted that the proposals will enhance EPC to become a driver for the EU Renovation Wave. The main comments received from the panelists about the proposals were that none of the recommendations should be stand-alone although their implementation, to be done quick to have an impact, should not be delivered all at once to ensure compliance and support from the stakeholders. Moreover, the need to tackle existing challenges like non-compliance, should not be overshadowed

This workshop, together with the national workshops organized in Bulgaria, Germany, Greece, Hungary, Latvia, Spain, and Sweden, coupled with the results of the pilot sites will be used as a basis for the publication of the White Paper on good practice in EPC assessment, certification, and use.

The recording and the presentations are available on the QualDeEPC website: <https://qualdeepc.eu/takeaways-from-eu-workshop-on-next-generation-epcs-and-deep-renovation>



### 3 SUMMARY AND INFORMED DECISION FOR WHITE PAPER

This chapter summarizes and evaluates the feedback for all national workshops. The focus is hereby to find and select improvements and additions to the cross-country policy proposals as suggested in the Green paper. The national adaptations are part of WP5.

#### 3.1 General acceptance of policy proposals

Table 2 summarizes the general acceptance of the policy proposals by the national stakeholders of the QualDeEPC partner countries. Most policy proposals are marked as mostly accepted or minor improvements were suggested. In a few cases, the stakeholders of one or two countries mostly disagreed with the policy proposals.

Table 2: Summary of the general acceptance of the policy proposals by QualDeEPC per country

		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
A)	Improving the recommendations for renovation provided on the EPCs towards deep energy renovation	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow
B)	Online tool for comparing EPC recommendations to deep energy renovation recommendations	Green	Green	Green	Yellow	Orange	Green	Orange
C)	Concept for Creating Deep Renovation Network Platforms	Green	Green	Green	Green	Green	Green	Green
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry	Green	Green	Green	Green	Green	Yellow	Orange
E)	High user-friendliness of the EPC	Yellow	Yellow	Green	Yellow	Yellow	Green	Yellow
F)	Voluntary/mandatory advertising guidelines for EPCs	Yellow	Green	Yellow	Green	Orange	Green	Green
G)	Improving compliance with the mandatory use of EPCs in real estate advertisements	Yellow	Green	Green	Yellow	Yellow	Green	Yellow
Legend								
Mostly accepted		Some suggestions for improvement		Disagreement on most parts				

#### 3.1.1 Improving the recommendations for renovation provided on the EPCs towards deep energy renovation

##### Summary

The feedback on the general, text-based description of the deep energy renovation recommendations was mostly positive. However, for detailed U-values, which have to be defined nationally, the feedback was diverse. For example, in Sweden, some of the recommendations were received as very ambitious for existing buildings, whereas in Germany most stakeholders agreed that they could be more ambitious. Moreover, the answers in the questionnaire (ANNEX A), Part 1, question 5 and 6, showed that the “exceptionally efficient” renovation options can mostly not be implemented in a cost-effective way without funding programs.



## Suggested improvements for the White paper

As shown in Table 3, some changes to the Green paper were suggested. The specific U-values suggested for all countries could be included, but their final values are to be determined in WP 5 of the project. In addition to the list of deep energy renovation options, a policy proposal or guiding statement on the cost-effectiveness of “exceptionally efficient” renovation measures should be included in this chapter for the White paper. This statement may include that “exceptionally efficient” measures might not be the most cost-effective measure, but might be combined with other measures or subsidised by funding. In addition, the project team will reconsider the wording “enhanced” and “exceptional”. Better words may be needed for a standard meeting the current legal nZEB standard or similar, and another standard exceeding nZEB requirements, which may usually only be cost-effective with financial support. Furthermore, where appropriate, it should be stated that the recommended U-values or equipment standards are usually applicable when a renovation (e.g. roofs, walls) or replacement (e.g. windows, heating systems) is needed or implemented, and that the EPC issuer should make that clear, unless it would be cost-effective to renovate or replace the component right away.

Table 3: Suggested improvements on recommendations for deep energy renovations

Nr.		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
1	National U-values of renovation recommendations should be more ambitious	Orange	Green	Orange	White	Orange	Green	Orange
2	National U-values of ‘exceptional’ renovation recommendations should be less ambitious	Orange	Orange	Yellow	White	Orange	Orange	Yellow
3	Include statement on cost-effectiveness of “exceptionally efficient” renovation options in the White paper and the possible need for funding programs	Green	Yellow	Yellow	White	Green	White	White
4	Include a statement that the proposed recommendation are not in any ranking order, but a list of possible options that would be in line with “deep energy renovation”.	Green	Light Green	Green	Green	White	Yellow	Green
5	It is important to emphasize that this is not merely a checklist. It should be made clear that the EPC assessor is expected to also add other relevant measures. (E.g. by empty rows.)	Light Green	Light Green	Light Green	Green	White	White	Green
6	Add a recommendation related to building automation and control (including for example demand controlled ventilation)	Light Green	Light Green	Light Green	Green	White	Orange	Green
7	The deep energy renovations should be in line with the National building renovation strategy (if available)	Green	Yellow	Light Orange	White	White	Light Orange	Yellow
Legend								
Yes	Maybe	No			Not applicable/ No comments by stakeholders			
Yes, but it was not directly discussed	Maybe, but it was not directly discussed	No, but it was not directly discussed						



### 3.1.2 Online tool for comparing EPC recommendations to deep energy renovation recommendations

#### Summary

In general, the design and content of the tool in principle was mostly accepted in the partner countries. However, in most countries, stakeholders emphasized that this tool should be regarded as a first step for building renovation, and that this fact should be pointed out to the users. In Latvia, the stakeholders would have wished to test a finished tool to give feedback that is more specific. Moreover, the Swedish stakeholders pointed out certain risks and misunderstandings such a tool might have. For example, there might be discrepancies in the more general results of the tool as compared to building specific analysis by EPC issuers or energy consultants.

#### Suggested improvements for the White paper

The suggestions in Table 4 mostly aim to increase the understanding of the users about the level of accuracy the tool provides. Hence, it should be made clear that such an online tool is useful to home owners to see the potential in renovating their buildings, and then to contact a professional to provide in detail renovation suggestions and steps with a specific cost analysis. Any guidance that the project or others may develop for the enhanced EPC template on combining recommendations into a step-by-step renovation roadmap could also be implemented in the tool, if technically possible. A statement that user behaviour is not included may also be useful.

Table 4: Suggested improvements on the online tool

Nr.		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
1	Addition of information boxes	Yes						
2	Statement that user behaviour is not included	Maybe	Maybe	Yes	Yes			
3	Cost interval instead of specific number				Yes	Yes		
4	Should include a statement that the tool is not a substitution for an in-depth analysis by a professional (certified) energy consultant	Yes	Maybe	Yes	Yes	Yes	Yes	
5	In addition, or instead, there is a need to develop a calculation tool for EPC assessors to help with adjustments of measured values to normal use and to help calculate primary energy.							Yes
6	The tool could provide a suggested order of recommended measures (roadmap) to reach deep renovation and the indicative cost of these steps.			Maybe	Yes			
Legend								
Yes		Maybe		No		Not applicable/ No comments by stakeholders		
Yes, but it was not directly discussed		Maybe, but it was not directly discussed		No, but it was not directly discussed				



### 3.1.3 Creating Deep Renovation Network Platforms

#### Summary

The concept of a Deep Renovation Network Platform received very positive feedback in all partner countries. In most countries, the stakeholders are already aware of existing platforms, which contain part of the suggested content. One repeatedly mentioned concern was the maintenance and durability of such a powerful platform. Moreover, the stakeholders had different opinions on how and if manufacturers and suppliers of building components and technologies should be included in the platform.

#### Suggested improvements for the White paper

The suggestions of the stakeholders, as shown in Table 5, include, on one hand, the provision of links to manufacturer or material distributors associations, and, on the other hand, the connection to databases for funding programs as well as databases for EPC issuers and EPCs. Also, different options for giving feedback on contractors or realized energy efficient building projects were mentioned. Additional useful information that was suggested included results of convincing demonstration projects/good practice, and the multiple benefits of deep energy renovation. However, many of these are already included in the detailed concept.

Table 5: Suggested improvements for the Concept of Creating a Deep Renovation Network Platform

Nr.		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
1	The platform should include links to web of associations of manufacturers, distributors of insulations materials, for example <a href="https://aislaconpoliuretano.com/normativa/">https://aislaconpoliuretano.com/normativa/</a>	Yes	Maybe	Yes	Not applicable/ No comments by stakeholders	Yes	Yes	No
2	Issues regarding assurance of quality and financing of the platform and different services needs to be addressed.	Not applicable/ No comments by stakeholders	Yes	Maybe	Not applicable/ No comments by stakeholders	Not applicable/ No comments by stakeholders	Not applicable/ No comments by stakeholders	Yes
3	The platform should <i>not</i> provide a list of suppliers and manufacturers. This service should be removed from the basic version.	Not applicable/ No comments by stakeholders	Not applicable/ No comments by stakeholders	Maybe	Not applicable/ No comments by stakeholders	Not applicable/ No comments by stakeholders	Not applicable/ No comments by stakeholders	Yes
4	The platform should have a feedback section, where the contractors can be evaluated.	Yes	Not applicable/ No comments by stakeholders	Maybe	Yes	Not applicable/ No comments by stakeholders	Not applicable/ No comments by stakeholders	No
5	List of technical supervisors for constructions should also be added to the platform.	Yes	Not applicable/ No comments by stakeholders	Maybe	Yes	Not applicable/ No comments by stakeholders	Maybe	Yes
6	A part for feedback on realized energy renovation projects could be added, which can help decision making on the renovation for those who hesitate to start renovation.	Yes	Yes	Maybe	Yes	Not applicable/ No comments by stakeholders	Yes	Yes
7	The platform should include information about the multiple benefits of deep renovation beyond financial benefits of energy savings.	Yes	Yes	Maybe	Yes	Not applicable/ No comments by stakeholders	Yes	Yes
Legend								
Yes	Maybe	No	Not applicable/ No comments by stakeholders					
Yes, but it was not directly discussed	Maybe, but it was not directly discussed	No, but it was not directly discussed						



### 3.1.4 Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry

#### Summary

The suggested concept for regular mandatory EPC assessor training was mostly accepted in 5 out of 7 partner countries. In these five countries, minor suggestions included, for example, a check of the quality of EPCs rather than the quantity.

In Spain and Sweden, the stakeholders were more critical of the suggested policy proposals. In Spain, the stakeholders stated that the training received in the University is enough and no further mandatory training is required. In Sweden, the stakeholders are content with their current system, which uses mandatory exams, but voluntary training.

#### Suggested improvements for the White paper

The collected suggestions are listed in Table 6. The question arises, if the regular training should be mandatory or voluntary and to what extent the knowledge gained and quality of issued EPCs should be tested. This will need further discussion in the team, e.g. if the recommendation to Member States could be to combine mandatory regular exams with mandatory or voluntary training. It should be noted that the quality check of EPCs for control purposes is included in the independent control systems. With respect to training purposes, there could be a voluntary offer or a mandatory training unit to discuss previous EPCs issued by an assessor with a trainer or a peer.

Table 6: Suggested improvements for regular mandatory training of EPC issuers

Nr.		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
1	Mandatory exam and voluntary training	Orange	Orange	Green	Green	Green	Green	Green
2	(Online) exam, with time limitation and indicating the number of errors, so as not to manipulate the results.	Green	Yellow	Yellow	Grey	Grey	Orange	Grey
3	Check of quality of a random sample of EPCs per issuer (instead of X number of EPC in X years)	Yellow	Yellow	Yellow	Grey	Green	Yellow	Yellow
Yes		Maybe		No		Not applicable/ No comments by stakeholders		
Yes, but it was not directly discussed		Maybe, but it was not directly discussed		No, but it was not directly discussed				

### 3.1.5 High user-friendliness of the EPC

#### Summary

Most stakeholders of the partner countries stated that a universal EPC across the EU, which can be adjusted to national requirements, would be a positive development. However, there were several suggestions for improving the current draft for an enhanced EPC form from most countries. In addition, there is a discussion if the proposed traffic light system could be implemented in the current regulations in some partner countries. Even though this energy rating would prove helpful for the recipients of the EPCs, it might mean much more work for the EPS issuers, which would increase the cost of EPCs. Moreover, some stakeholders mentioned that not only the building owners have an interest in the



EPC, but often also financial consultants when rating the building and deciding on financial support. The information needed may differ, with a higher emphasis on reliable cost and benefit data from the financial sector.

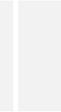
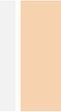
### Suggested improvements for the White paper

Table 7 shows the list of suggested improvements to the proposed EPC form. Most suggestions concern additional types of information that are missing on the form proposed in the Green paper. These options include, for example, CO<sub>2</sub> emissions and savings, check marks for NZEB-standard (in existing buildings), validity statement or date, and economic numbers, e.g. that the total economic result of the 'main option' should be displayed along with total energy savings. Additionally, some suggestions about national requirements were made, such as the clarifications on normalisation processes. Moreover, the need for forms where calculated numbers are filled in automatically was expressed.

Table 7: Suggested improvements for the EPC form template for high user-friendliness of the EPC

Nr.		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
1	For building owners, the technical values (for example transmittance U-values) are not necessary.	Orange	Yellow	Light Orange	Yellow	Yellow	Green	Yellow
2	Include CO <sub>2</sub> emissions	Green	Green	Green	Light Grey	Yellow	Orange	Orange
3	Include CO <sub>2</sub> savings	Green	Yellow	Light Yellow	Light Grey	Yellow	Orange	Yellow
4	Traffic light system for CO <sub>2</sub> emissions	Orange	Green	Light Orange	Yellow	Yellow	Orange	Orange
5	Building picture: Add "current"	Yellow	Green	Light Yellow	Yellow	Yellow	Green	Light Grey
6	NZEB check mark to be on the first page (for existing buildings after implementation of "main option")	Green	Light Yellow	Yellow	Light Grey	Green	Yellow	Light Orange
7	Traffic light for smart readiness indicator	Green	Light Orange	Light Yellow	Yellow	Yellow	Light Orange	Light Orange
8	Include a visualisation of the energy demand (real consumption), normalised consumption and the consumption after the renovation actions	Green	Light Orange	Light Orange	Yellow	Green	Light Orange	Yellow
9	Include statement that EPC must be renewed every 10 years (or as in national requirements)	Green	Light Green	Light Green	Green	Yellow	Light Orange	Green
10	Adjustment to climatological normal year should be done automatically by the program. (Still, original measured values should be displayed.)	Light Grey	Light Orange	Light Grey	Light Grey	Light Grey	Light Grey	Green
11	Total economic result of the main option should be displayed along with total energy savings.	Light Green	Yellow	Light Yellow	Light Grey	Light Grey	Light Orange	Green
12	For each value displayed in the EPC, it should be made clear if it has been adjusted to climatological normal year and/or normal use.	Light Grey	Light Grey	Light Grey	Light Grey	Light Grey	Light Orange	Green
13	If an SRI scheme is implemented in the member state: Include a check box whether an SRI certificate exists for the specific building, and if the member state has decided so, also include the official SRI symbol.	Light Green	Light Orange	Light Yellow	Light Grey	Light Grey	Light Orange	Yellow
14	The values (kWh/m <sup>2</sup> /y) in the energy scale should be filled automatically, depending on the type of building (as it is in the current Bulgarian template)	Green	Light Grey	Light Green	Light Grey	Light Grey	Light Orange	Light Grey



15	To include description of the different options with checkmark for the selected option (and not to check if the recommendation is included in the selected option)							
Legend								
Yes		Maybe		No		Not applicable/ No comments by stakeholders		
Yes, but it was not directly discussed		Maybe, but it was not directly discussed		No, but it was not directly discussed				

### 3.1.6 Voluntary/mandatory advertising guidelines for EPCs

#### Summary

In Sweden, guidelines for real estate advertisements already exist and the stakeholders do not see a need for change. In Germany, the law is clear and many advertisements follow it, but some stakeholders think that guidelines may improve compliance.

The stakeholders of the other countries agreed on the principle of the guidelines, even though the discussion on details arose. For example, the (extra) cost of including more than the legal minimum data in advertisements by private homeowners was discussed.

#### Suggested improvements for the White paper

The stakeholders provided few suggestions on needed improvements of the policy proposals. Some suggested that the guidelines may only be applied to non-residential buildings, but this is not favoured in most other countries. Also, stakeholders pointed out that the limited space for advertisements in printed media might need to be considered.

Table 8: Suggested improvements on advertising guidelines for EPCs

Nr.		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden
1	Only for non-residential buildings							
2	Potential limitations in printed media should be considered (e.g. less content requirement in printed media)							
Legend								
Yes		Maybe		No		Not applicable/ No comments by stakeholders		
Yes, but it was not directly discussed		Maybe, but it was not directly discussed		No, but it was not directly discussed				

### 3.1.7 Improving compliance with the mandatory use of EPCs in real estate advertisements

#### Summary

In most partner countries, the stakeholders agreed that compliance with the mandatory use of EPCs in real estate advertisements is important. Often it was pointed out that laws or policies already exist but the level of both control and compliance is low.



## Suggested improvements for the White paper

The suggestions by the stakeholders, see Table 9, included, for example, that existing laws or policies have to be enforced in larger numbers, more information campaigns, and the access of EPC databases by real estate agencies. The first two approaches are already recommended in the Green paper.

Table 9: Suggested improvements for the compliance with the mandatory use of EPCs in real estate advertisements

		Bulgaria	Germany	Greece	Hungary	Latvia	Spain	Sweden	
Nr.									
1	Only for non-residential buildings	Green	Orange	Orange	White	Orange	Orange	Orange	
2	More controlling, but low fees for first offence	Light Green	Yellow	Yellow	Green	Green	Green	Light Green	
3	Real estate agencies should have reading rights to EPC databases and should directly use that data to advertising	Light Green	White	Light Orange	Green	White	Yellow	White	
		Yes			Maybe			No	
		Yes, but it was not directly discussed			Maybe, but it was not directly discussed			No, but it was not directly discussed	
								Not applicable/ No comments by stakeholders	

### 3.1.8 Pressing issues

The following pressing issues were presented:

- The lowest-cost procurement of EPCs might be in contrast to detailed building analysis and renovation recommendations (Spain, Sweden).
- Data bases for EPCs and EPC issuers are missing (e.g. Germany).

### 3.2 Informed suggestion for the White Paper

The cross-country comparison of suggested changes to the policy proposals of the Green paper shows that for most topics some additions and changes should be considered for the White paper. However, not all suggestions are relevant in all countries. Hence, some topics might have to be further analysed and developed in the national adaptation and implementation strategy in WP 5 of this project.

In the following table, the top suggestions that received at least four green or yellow labels from the seven countries in the tables in chapter 3.1 are shown. In addition, the actions for the White paper are described.

Table 10: Summary of suggestions per priority and suggestions for the next steps

No.	Instructions for adaptation from Green to White paper	
Improving the recommendations for renovation provided on the EPCs towards deep energy renovation		
3	Include statement on cost-effectiveness of “exceptionally efficient” renovation options and the possible need for funding programs	- Add paragraph on the cost-effectiveness of “exceptionally efficient” renovation options in the context of funding programs.



4	Include a statement that the proposed recommendations are not in any ranking order, but a list of possible options that would be in line with “deep energy renovation”.	- Add statement that the order, in which renovation recommendations are presented, does not imply a ranking.
5	It is important to emphasize that this is not merely a checklist and that the EPC assessor is expected to also add other relevant measures.	- Add statement that these renovation recommendations should be applied if the equivalent building component is renovated or exchanged.
6	Add a recommendation related to building automation and control	- Add appropriate building automation control standard, e.g. EN 15232.

#### Online tool for comparing EPC recommendations to deep energy renovation recommendations

2	Statement that user behaviour is not included	- Add/ check statement(s) on user behaviour in the tool and text of the White paper
4	Should include a statement that the tool is not a substitution for an in-depth analysis by a professional (certified) energy consultant	- Add/ check statement(s) on the accuracy of the tool and reference to professional energy consultants
6	The tool could provide a suggested order of recommended measures (roadmap) to reach deep renovation and the indicative cost of these steps.	- Any guidance that the project or others may develop for the enhanced EPC template on combining recommendations into a step-by-step renovation roadmap could also be implemented in the tool, if technically possible

#### Creating Deep Renovation Network Platforms

1	The platform should include links to websites of associations of manufacturers, distributors of insulations materials, for example <a href="https://aislaconpoliuretano.com/normativa/">https://aislaconpoliuretano.com/normativa/</a>	- Add to concept of basic DRNP as an alternative to providing data on individual manufacturers and products (service #4)
5	List of technical supervisors for constructions should also be added to the platform.	- Add to concept of basic DRNP under service #3
6	A part for feedback on realized energy renovation projects could be added, which can help decision making on the renovation for those who hesitate to start renovation.	- Mention the presentation of good practice project examples under service #1.2
7	The platform should include information about the multiple benefits of deep renovation beyond financial benefits of energy savings.	- Add to concept of basic DRNP

#### Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry

1	Mandatory exam and voluntary training	- Add paragraph on the option to replace mandatory training by a mandatory exam and a voluntary training
3	Check of quality of a random sample of EPCs per issuer (instead of X number of EPS in X years)	- Add paragraph on quality versus quantity of issued EPC for evaluating sufficient EPC issuer



		training, and the need for providing opportunities to discuss previous EPCs issued by an assessor with a trainer or a peer
High user-friendliness of the EPC		
1	For building owners, the technical values (for example transmittance U-values) are not necessary.	- Add a statement/ paragraph that U-value might not be as relevant to building owners as to experts that may also utilize the EPC. Discuss with project partners, if reference to legal requirements or those of funding programmes may be made on the EPC as an alternative to U-values.
2	Include CO <sub>2</sub> emissions.	- Include box for CO <sub>2</sub> emissions on 1st page of EPC form template
3	Include CO <sub>2</sub> savings	- Add a placeholder for this information on the EPC form template.
5	Building picture: Add "current"	- Change label of the picture to „Current picture of building“
6	NZEB check mark to be on the first page (for existing buildings after implementation of "main option"))	- Add box and check mark on the first page of the EPC form template instead of page 4
7	Traffic light for smart readiness indicator	- Add paragraph on this topic to the White paper and add a cross-reference to the sister projects.
8	Include a visualisation of the energy demand (real consumption), normalised consumption and the consumption after the renovation actions	- Add an (optional) 5 <sup>th</sup> page to the EPC form to include the visualization.
9	Include statement that EPC must be renewed every 10 years (or as in national requirements)	- Add footnote to validity date
11	Total economic result of the main option should be displayed along with total energy savings.	- Discuss the possibilities to display an economic result of the main renovation option on the EPC template. Since not all EPCs are issued in the context of an energy audit/consultation (e.g., for operational rating/consumption-based EPCs), this point might be optional on the EPC form template.
Voluntary/mandatory advertising guidelines for EPCs		
2	Potential limitations in printed media should be considered (e.g. less content requirement in printed media)	- Adjust description of the advertising guidelines to make this more explicit
Improving compliance with the mandatory use of EPCs in real estate advertisements		
3	More controlling, but low fees for first offence	- Add paragraph on this approach and its reasoning



## 4 CONCLUSIONS

The *Report on feedback from Task 3.4 Workshops* collects and evaluates the feedback of the stakeholders given in the 2<sup>nd</sup> National Workshops and the EU-level expert workshop on the *Green paper on good practice in EPC assessment, certification and use* (D3.1). In general, the following conclusions can be drawn:

- The majority of stakeholders generally agree with the policy proposals and the tools as proposed, but have several suggestions for improvements.
- Stakeholders agree less with the policy proposals when the current nationally implemented policies differ from the suggestions by QualDeEPC.
- The majority of the suggestions made will be used to enhance the policy proposals and concepts for tools in the White paper on good practice in EPC assessment, certification and use.

For the specific policy proposals and tools, the following most important suggestions can be summarized:

- The list of renovation recommendations needs to be checked on conveying its intended purpose, e.g. by clarifying that it is not a strict check list, not ranked and that EPC issuers may also use similar energy-efficient options for deep energy renovation.
- Statements regarding the accuracy and the intended usage should accompany the information given in the online tool.
- The concept of the deep renovation network platform may be extended by including links and description for including manufacturer and supplier associations' information and background information on further benefits of building renovation.
- For the mandatory regular training of EPC issuers, the alternative of mandatory exams that may replace mandatory training should be added to its description.
- The EPC form template may be slightly redesigned to include, for example, CO<sub>2</sub> emissions and savings, an up-to-date picture, a NZEB check mark for existing buildings, and a statement on the period of validity of the EPC.
- For the advertising guidelines, a consideration of the availability of space in printed media should be more explicitly added.
- The description of improving the compliance with advertising guidelines should be made more explicit regarding the penalty system, with more emphasis on controls but lower fees for first offenses.

With these results and those of testing on the pilot buildings in Task 4.3, the Green paper will be advanced to deliverable D3.2, the *White paper on good practice in EPC assessment, certification, and use*. Further on, national adjustments and implementation strategies will be discussed and suggested in WP5 of the project QualDeEPC.



## 5 REFERENCES

Kostova, D.; Dr. Thomas, S.; Gokarakonda, S. (2020) D2.4 Development Strategy Plan for the development of next generation EPC schemes, QualDeEPC, [https://qualdeepc.eu/wp-content/uploads/2020/07/QualDeEPC\\_D2.4-Development-Strategy-plan\\_200630\\_final.pdf](https://qualdeepc.eu/wp-content/uploads/2020/07/QualDeEPC_D2.4-Development-Strategy-plan_200630_final.pdf)

Veselá, Stephanie; Dr. Thomas, S., Gokarakonda, S.; Pannier, P; Korma, E.; Lampropoulou, L.; Androutsopoulos, A. (2020) D3.1 Green paper on good practice in EPC assessment, certification, and use, QualDeEPC, [https://qualdeepc.eu/wp-content/uploads/2020/11/QualDeEPC\\_D3.1\\_Green-paper\\_20201105\\_final-comp.pdf](https://qualdeepc.eu/wp-content/uploads/2020/11/QualDeEPC_D3.1_Green-paper_20201105_final-comp.pdf)



## 6 ANNEXES

### Annex A: Stakeholder questionnaire (English version)



#### QUESTIONNAIRE FOR PROFESSIONALS ON THE GREEN PAPER

Dear Madam or Sir,

Thank you for participating in this questionnaire on the proposals presented in the Green Paper on good practice in EPC assessment, certification, and use (D 3.1) published by QualDeEPC.

This questionnaire is divided into seven parts representing the seven areas that the QualDeEPC project has identified as its priorities for the development of enhanced EPC schemes. Please read the supplemented shortened version of the Green paper on the policy proposals.

Note: The questionnaire is designed for various stakeholders from different countries, economic sectors and background. If you cannot answer a question, please either mark "not relevant" or specify your individual need on the topic in the comment section.

#### INFORMATION ON PROFESSIONAL<sup>1</sup>

Economic sector:

How often do you come across Energy Performance Certificates (daily, weekly, monthly, etc.)?

Do you encounter EPCs of other countries?

<sup>1</sup> The data of this questionnaire will be treated anonymously. The anonymized data will be used for further analyses in the project QualDeEPC.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



#### Part 1 – Improving the recommendations for renovation on the EPCs towards deep energy renovation (Policy proposals of the Green Paper, pages 10-13)

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	The suggested renovation recommendations cover the most important elements towards deep energy renovation.							If you disagree, what information is missing?
2	The suggested (text-based) recommendations are in line with the national requirements.							
3	The detailed U-values building envelope components reflect technically implementable options for existing buildings.							
4	The detailed technical systems reflect technically implementable options for existing buildings.							
5	The exceptionally <sup>2</sup> efficient deep renovation options can be achieved in a cost-effective way without funding programs.							

<sup>2</sup> "Exceptionally efficient" refers to the best state-of-the-art options, which are usually implemented in houses built according to nZEB standard or higher.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
6	The exceptionally efficient deep renovation options can be achieved in a cost-effective way with funding provided.							
7	The exceptionally efficient deep renovation options can be achieved in a cost-effective way, if implemented in connection to planned major renovation.							<b>If you disagree, what measure would help to implement the exceptionally efficient measures in existing buildings?</b>
8	I agree with following order of the deep energy recommendations from most energy efficient to least energy efficient. 1. walls 2. cover/roof 3. heating system replacement 4. Windows and doors 5. DHW 6. Lighting 7. Cooling 8. Ventilation 9. Renewables 10. Ceiling, ground floor 11. Air tightening 12. Reduce thermal bridges							<b>If you disagree, which in order would you place the energy recommendations:</b>

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



**Part 2 – Online tool for comparing EPC recommendations to deep energy renovation recommendations (Policy proposals of the Green Paper, pages 14-19)**

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	The presented user interface of the online master tool is generally understandable.							
2	The results (Figure 2, page 17) show the current energy status of the building in an understandable form.							
3	The comparison between the current and renovated status of the building (Figure 5, page 19) shows the improvement by the selected renovation measures in a clear manner.							
4	Using a tool, such as the presented master tool, before deciding the implementation of a major renovation will provide a roadmap towards deep renovation.							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



**Part 3 – Concept of a Deep Renovation Network Platform (DRNP) (Policy proposals of the Green Paper, pages 20-26)**

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	The suggested services & products in the concept cover the most important elements for a basic DRNP (services 1-7)							
2	The suggested services & products in the concept cover the important elements for an extended DRNP (services 1-7 + 8-15)							
3	The deep renovation network platform can be expanded with additional services, per example (please use the comment column – rightmost)							
4	Are you aware of similar existing platforms? (please use the comment column – rightmost)							
5	Can you imagine your organization taking part in such a platform or is it already part of it?							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



**Part 4 – Regular mandatory EPC assessor training (on assessment and renovation recommendations) required for certification/ accreditation and registry (Policy proposals of the Green Paper, page 27)**

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	A regular mandatory training for EPC assessors helps to maintain a high quality of issued EPCs in general.							
2	A regular mandatory training for EPC assessors helps to maintain high quality of renovation recommendations.							
3	In general, the mandatory training should:							
3a	• Not repeat the basics for issuing EPCs							
3b	• Provide a variety of seminars and workshops, from which the EPC assessor can choose							
3c	• Provide mandatory training content (i.e. topics/ session that everyone has to attend)							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



No. Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
3d • Include a verification of a specific number of issued EPCs since the last (initial or mandatory) training.							
3e • Be repeated every 3-5 years							If you disagree: after how many years should it be repeated?
4 The training content of the mandatory training should cover:							
4a • Information on changes to national or European Building Performance Acts							
4b • State-of-the-art technologies and costs (especially for deep energy renovation options)							
4c • Common mistakes and how to avoid them							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



No. Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
4d • Effective customer (building owner/representatives) information and interaction							
4e • Contract design (for contracts with building owners or representatives)							
4f • other							Please specify:
5 After completion of the training program, exams should ensure the knowledge gained.							
5a Mandatory training should be able to be substituted by successfully passing an exam about the content of the regular mandatory training (training courses might still be visited on a voluntary basis)							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



Part 5 – High user-friendliness of the EPC schemes (Policy proposals of the Green Paper, pages 28-33)

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	It would be advantageous to have a universal EPC form across the EU to enable the comparison of the energy efficiency of the same building type in different countries.							
2	Overall, the provided template by QualDeEPC is designed in a user-friendly way.							
3	The provided EPC template can be used on a national level with minor adjustments.							
4	The provided EPC form template includes all necessary information needed by building owners/ representatives (from the experience of my work with these groups).							<b>If you disagree, could you name missing or irrelevant information?</b>

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
5	The provided EPC form template includes all necessary information needed for my work using the EPCs.							<b>If you disagree, could you name missing or irrelevant information?</b>
<b>6 The displayed information of the following EPC elements is shown in an understandable way:</b>								
6a	• General data of the EPC and the building [EPC template, page 1]							
6b	• Energy classification and performance [EPC template, page 1]							
6c	• Energy consumption table [EPC template, page 2]							
6d	• Assessment of building envelope and technical systems [EPC template, page 2]							
6e	• Renovation recommendations [EPC template, page 3]							
6f	• Cost-effectiveness of renovation options							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
6g	• Description of suggested combinations of renovation recommendations [EPC template, page 4]							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



**Part 6 – Voluntary/mandatory advertising guidelines for EPCs (Policy proposals of the Green Paper, page 34)**

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	(Voluntary/ mandatory) advertising guidelines are generally useful to ensure that the obligation to include energy performance data from the EPC in real-estate advertisements can and will be fulfilled, and in high quality.							
2	The suggestions for content-related guidelines in Table 47 cover all important aspects.							If you disagree, what content is missing?
3	The suggestions for publication-related guidelines in Table 47 cover all important aspects.							If you disagree, what content is missing?
4	The authorities should widely communicate the guidelines to encourage their use							
5	Advertisement guidelines should be mandatory.							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100



**Part 7 – Improving compliance with the mandatory use of EPCs in real estate advertisements (Policy proposals of the Green Paper, pages 35-37)**

No.	Statement	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Not relevant	Comments (please comment your answers or write down other relevant information which you feel is important)
1	Table 50 covers the most important ways on how to improve the compliance with the mandatory use of EPCs and their data in real estate advertisements							If you disagree, which measures are missing?
2	All suggested ways on how to improve the compliance are possible to implement at national level.							
3	It is more important to check for a larger sample, if EPCs and their data are used in real estate advertisements and to impose some level of penalty/fine (e.g. 50% of a monthly rent or 500 Euros), than to have a very high fine but very few compliance checks.							What level of penalty or fine do you consider appropriate?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100

