



D5.4 Proposal for the Roadmap for the further revision and convergence process

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Accelerating Deep Energy Renovation”

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Table 3: Document History



ABBREVIATIONS

DHW: Domestic hot water

DRNP: Deep Renovation Network Platform

EBPD: Energy performance of buildings directive

EPC: Energy performance certificate

HVAC: Heating, ventilation, and air conditioning

MS: Member State

nZEB: nearly zero energy building

RES: Renewable energy sources

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



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PUBLISHABLE SUMMARY

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.

The WP5 “Roadmap to convergence and action towards deep renovation” focuses on adapting the enhanced EPC assessment and certification schemes and tools as well as Deep Renovation Network Platforms to country needs. These tools and policy proposals were developed during the implementation of WP3 “Development of enhanced EPC schemes” and tested in WP4 “Testing the applicability through pilot cases”. Moreover, the implementation of the adapted policy proposals and concepts at national level to the extent possible and the organization of dialogue on further convergence, and a potential roadmap towards it, at national and EU level, are also objectives of the WP5.

For each of the countries represented in the project, nationally adapted proposals and tools have been presented thoroughly in the report *“D5.3 Guidebook for improved EPCs presenting the project’s proposal for an enhanced and converging EPC assessment and certification scheme- Consolidated results.”*

Building upon the results of the stakeholder dialogue both on national and EU level, this report aims at outlining the needs (changes in legislation & regulation, funding, etc.) for implementing the project’s proposals adapted to participating countries context and define the:

- Policy conclusions on what may be feasible to be implemented during the project’s duration as well as in the future,
- Enabling convergence between EPC schemes in different EU MS, and enabling action towards deep renovation will be of priority.

Feedback from the following specific target groups has been sought for the *D5.4 Proposal for a roadmap for the further revision and convergence process*:

1. National Experts fora.
2. Other stakeholders relevant for the development and implementation of a national enhanced EPC scheme (i.e. national and/or regional energy agencies).
3. Fora and networks at EU level.



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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.

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Building upon the results of the stakeholder dialogue both on national and EU level, this report aims at outlining the needs (changes in legislation & regulation, funding, etc.) for implementing the project’s proposals adapted to participating countries context and define the:

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Feedback from the following specific target groups has been sought for the *D5.4 Proposal for a roadmap for the further revision and convergence process*:

1. National Experts fora.
2. Other stakeholders relevant for the development and implementation of a national enhanced EPC scheme (i.e. national and/or regional energy agencies).
3. Fora and networks at EU level.

Chapter 2 includes information on the methodological approach followed by the QualDeEPC project partners in order to build consensus on the project’s policy proposals at national level.

In chapter 3 the project partners from participating countries present the status and further steps of the implementation process of QualDeEPC’s tools at country level, as well as the mapping of needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework.

The chapter 4 presents the assessment of the policy processes required for official application of enhanced EPC and other policy proposals at EU Level.

Finally, chapter 5 presents the final conclusions.



2 METHODOLOGICAL APPROACH

The third phase of the implementation of the QualDeEPC project is performed in the frame of WP 5 “Roadmap to convergence and action towards deep renovation”. WP 5 focuses on adapting the enhanced EPC assessment and certification schemes and tools as well as Deep Renovation Network Platforms to participating country needs and implementing consensus elements as far as feasible. The scope of this chapter is to present the steps followed by QualDeEPC project partners in order to build consensus on the project’s policy proposals by extensive stakeholder consultations at national and EU level. These have continued during the fourth phase of the project in WP 7 “Sustainability strategy and policy dialogue”.

Based on the outcomes of the previous phases of the project (analysis of the needs for development, proposals development, proposals testing), the project team undertook a set of activities which consist of:

- I. Adapting the enhanced EPC assessment and certification schemes and tools as well as Deep Renovation Network Platforms to country needs, implementing feasible consensus elements.
- II. Organizing the stakeholder and policy dialogue to discuss the proposals (first round of consultation).
- III. Spur consensus on what is needed to be implemented in each country (first round of consultation).
- IV. Recognizing the necessary changes and possibilities for revisions in the existing laws, regulations and standards for incorporating proposals developed by QualDeEPC
- V. Mapping –of the competent bodies for realization of the proposed changes
- VI. Estimating the human and material resources needed for an enhanced and converging EPC scheme
- VII. Recognizing further consultation needs and processes at national and EU level

The consolidated results of the first activity are presented in the [D5.3 Guidebook for improved EPCs presenting the project’s proposal for an enhanced and converging EPC assessment and certification scheme - Consolidated results](#), while the outcomes of the activities II to VII are described in chapter 3 of this report.

The following figure illustrates the steps to be followed for all actors involved in the application of the proposed enhanced EPC scheme in the countries represented in the project and beyond.



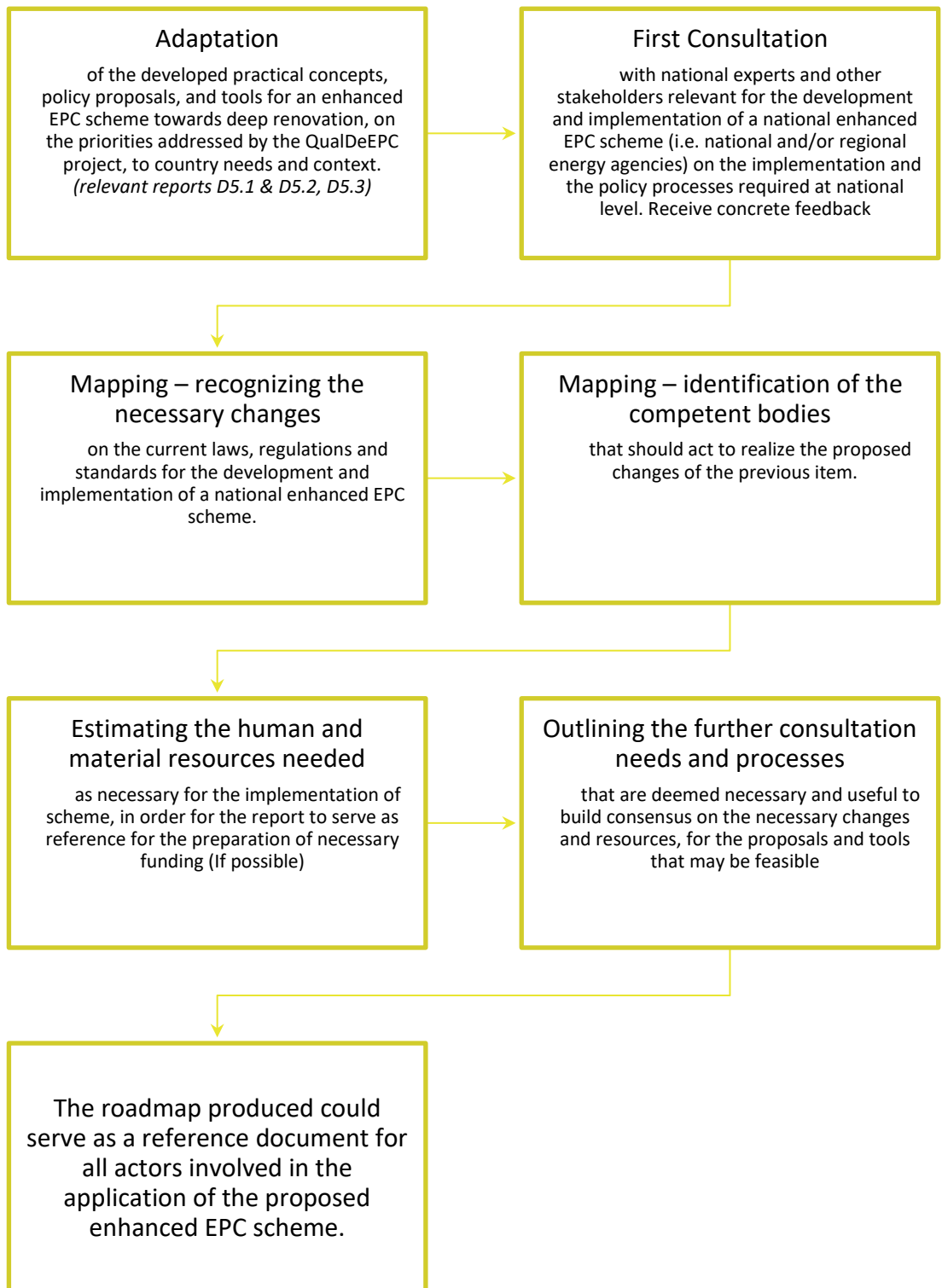


Figure 1: Process for the application of the proposed enhanced EPC scheme



3 ASSESSMENT OF THE IMPLEMENTATION AND POLICY PROCESSES REQUIRED AT THE NATIONAL LEVEL

This chapter focuses on the assessment of the implementation and policy processes required at the national level for the following 8 items, related to the development and implementation priorities adopted by QualDeEPC.

Item	QualDeEPC priority	QualDeEPC outcome
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach.	Policy proposal
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation;	Policy proposal
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator;	Policy proposal
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry;	Policy proposal
B)	Online tool for comparing EPC recommendations to deep energy renovation recommendations	Tool developed and implemented to the extent possible
C)	Creating Deep Renovation Network Platforms (DRNPs)	Tool developed and implemented to the extent possible, and Policy proposal
F)	Voluntary/mandatory advertising guidelines for EPCs	Policy proposal
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement.	Policy proposal

Table 4: QualDeEPCs project priorities for development and implementation

The following sections illustrate the outcomes of the assessment of each item in the seven countries represented in the project.



3.1 Bulgaria

For Bulgaria as well, practical concepts, proposals and tools for an enhanced EPC scheme towards the deep renovation were developed and included. Among these concepts is the proposal for introduction of the definition of “deep energy renovation” in the national legislation. Another practical concept is the suggestions for deep energy recommendations adapted to the Bulgarian context, which are presented as specific values for the building envelope components and the technical systems. The next component of the developed tools is the online tool for comparing the EPC recommendations to the deep energy renovation recommendations. The tool is included as part of the Deep Renovation Network Platform which is a dedicated tool developed for the specific needs of Bulgaria described in D5.2 Report on the 7 nationally adapted Deep Renovation Network Platform concepts. In addition to the definitions and tools, QualDeEPC proposals on Regular mandatory EPC assessors training and Voluntary/mandatory advertising guidelines for EPCs & improving compliance with the mandatory use of EPCs in real estate advertisements were also adapted to Bulgaria's needs. The enhanced EPC form developed within the QualDeEPC project was also adapted to the Bulgarian context.

3.1.1 First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Bulgaria

The scope of the 3rd national workshop was to provide the stakeholders with the latest achievements of QualDeEPC and to organise discussions between them on important topics related to the Bulgarian EPC scheme. The feedback on the suggestions of the project presented at the workshop was very positive. The stakeholders agreed on the necessity of introduction of the definition of the “Deep Energy Renovation” in the local legislation. The approach adopted by the project for the deep energy renovation recommendations adapted to the Bulgarian context and the list of the recommendations were also considered as a good achievement and right step for the further introduction in the Bulgarian legislation. Regarding the adapted enhanced EPC form and the introduction of the “Energy rating” indication the opinions were divided. The indicator is estimated as a good new component of the certificate, but the missing information on some technical parameters of the heating system and graphics of the baseline and energy consumption is not considered as an improvement of the document. The proposal for regular mandatory training and/or exams of the EPC assessors was also partially accepted by the stakeholders. The opinions were very polarised. The DRNP and the online tool were considered as very good and the stakeholders were pleased to discover the possibility to find useful information in one place. The advertisement guidelines and compliance approach were considered as a good improvement of the existing requirements.

The objective of the 4th national workshop was to present and discuss the project’s proposal for further revision and convergence process with national stakeholders and experts on

1. the nationally adapted policy proposals and tools (updated since the 3rd workshop);
2. how to further improve the developed tools and how to ensure their sustainability;
3. possibilities to join events to present the policy recommendations and share information with related projects;
4. the EU-level policy recommendations drafted by the project.



Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Bulgaria	Bulgarian Spatial Development Act already introduces the definition of "deep renovation" which is more oriented to the construction renovation, rather than energy efficiency. Therefore, the proposed definition for "Deep Energy Renovation" is very useful for the Bulgarian context and provides opportunity to distinguish both definitions. The definition could be introduced via an amendment in the same Spatial Development Act.	No particular challenges were identified. It is a matter of introduction of the definition to the local regulations.	There are two possible ways to introduce the "Deep Energy Renovation" definition: -as definition in the Spatial Development Act -if the definition is adopted in the EPBD recast, the definition will be automatically transposed to the Bulgarian legislation	-	-
A)	A) Deep energy renovation recommendations by QualDeEPC adapted to Bulgaria's context	The participants agree with the approach adopted for the deep energy renovation recommendations for the Bulgarian context, as they are in line with the national needs and requirements. Ordinance ПД-02-20-03/10.01.2023 for Energy Efficiency of Buildings should be amended and these recommendations should be included, once the definition of "Deep Energy Renovation" is adopted.	-	The list of recommendations to be adopted to the local legislation should be discussed at expert groups meetings and if needed adjusted in order to build consensus before the Ordinance is submitted for amendment.	-	



Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
E)	E) Adapted enhanced EPC form and introduction of “Energy rating” indicator-definition for the Bulgaria’s case for building envelope components and technical systems	<p>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, but still it was stated that important information from the existing EPC is missing.</p> <p>The “energy rating indicator” was accepted very well, but still needs to be discussed.</p> <p>To adopt the suggested “Energy rating” indicator, the definition of the “Energy rating” should be included in the Energy Efficiency Law, and Ordinance № E-РД-04-2/16.12.2022 should be amended.</p>	<p>Objections from some professionals, related to the missing information from existing EPC in the adapted enhanced EPC.</p>	-	<p>The final decision for adoption of the enhanced EPC and the suggested “Energy rating” indicator with the respective values, still has to be discussed among the stakeholders.</p> <p>Some professionals miss some information from the existing EPC document, but there is room to discuss that the omission’s purpose is to make the document more user-friendly.</p> <p>Alternatively, further information according to national needs and requirements can be presented on p.5 or further pages/Annexes.</p>	
D)	D) Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content	<p>The majority of the participants agree that regular mandatory trainings for EPC assessors will help to maintain the quality of the EPCs.</p> <p>On the other hand, the suggestion to have an exam after the completion of each regular training was not very well accepted.</p> <p>Regular mandatory training with or without exam could be included in the local legislation via recast of the Energy Efficiency Act which defined the duties and qualification of the energy assessors.</p>	<p>Not all of the EPC assessors agree to have exams after the regular mandatory trainings.</p>	<p>There should be further discussions with all the EPC assessors’ associations and freelancer EPC assessors, the Chamber of Engineers in Industrial Design, SEDA experts in order to agree on the most acceptable form of regular mandatory trainings obligation for the assessors and the control body (SEDA).</p>	-	



Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
B)	B) Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations	The tool is accepted very well and it was stated that integrating it as part of the DRNP is a very good idea. The participants said they have not used such tool as homeowners, but it would be very useful initial step before a deep energy renovation is undertaken.	–	–	–	There is no need to integrate it as part of the regulations or the legislation. It is useful “free of charge” tool, for the convenience of the homeowners mainly.
C)	C) Deep Energy Renovation Network Platform	The feedback on the overview of the DRNP for Bulgaria was very positive. Participants were pleased to discover that it offers the possibility to find information not only on the technologies, EPCs and Renovation passport, but also on specialists, other platforms, events and trainings, financial programs and that they can also share useful information on the platform.	–	–	There should be further discussions about the next step- creating a physical hub for information and coordination and its definition under the local legislation. The OSS concept realisation is still not very clear in Bulgaria.	
F)	Advertisement guidelines and compliance: 1a. Nationally adapted proposal for voluntary advertising guidelines and their use (F) 1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so 2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)	The majority of the participants were not familiar with the already existing national requirements, but they consolidated their opinion that the guidelines should be mandatory, as the obligation to include energy performance data from the EPC can be very useful. Participants stated that the control of the compliance with the requirements should be improved and that sanctions for noncompliance should be introduced. These will require a recast of the Energy Efficiency Act and all the related legislative documents.	There might be some objections from the real estate sector.	The suggestions should be discussed in the expert groups and in interdepartmental expert groups from all type of organisations and associations in order to build a consensus.	–	

Table 5: Summary of the feedback received from the 3rd and 4th national stakeholder workshops in Bulgaria

The EU-level policy recommendations were presented. The participants were asked to participate in a poll and rate each of the policy recommendations as per the table below (“support”, “disagreement”, no clear opinion” “not discussed in detail”). Afterwards, there was a discussion of the results and on each of the topics

1	QualDeEPC’s policy recommendations at EU-Level	(+ = support; - = disagreement; 0 = no clear opinion; nd = not discussed in detail)	
	<p>1. EPC template</p> <p>Now Art. 16: Require that the renovation recommendations be consistent with deep energy renovation in their selection and energy efficiency levels, and that possibilities for a stepwise implementation are indicated</p> <p>Annex V: indicators and other content</p> <ul style="list-style-type: none"> · Display of improved classifications and energy performance after implementing a recommended combination of renovation actions (‘main option’) on p. 1 · Potential energy savings (in kWh/yr) after implementing the ‘main option’ on p.1 · Details on building envelope and building HVAC system, using a traffic light system · Detailed renovation recommendations by component, consistent with deep energy renovation (QualdeEPC priority A), using the traffic light system too · Useful combination of renovations and stepwise implementation – as a first step towards a Building Renovation Passport · Link to a Deep Renovation Network Platform (QualdeEPC priority C) 	<p></p> <p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p>	<p></p> <p>100% of the participants support this recommendation</p> <p>100% of the participants support this recommendation</p> <p>86% of the participants support this recommendation and 14% have no clear opinion</p> <p>86% of the participants support this recommendation and 14% do not support it</p> <p>86% of the participants support this recommendation and 14% do not support it</p>

	<p>2. Renovation recommendations</p> <p>Require Member States to adapt the definition for ‘deep renovation’ and specify the renovation recommendations that must be provided on EPCs in the following way:</p> <ol style="list-style-type: none"> 1. Specify the energy efficiency levels to be recommended for different types of actions, so that these are consistent with deep renovation leading to nZEB or ZEB standards for existing buildings, even when implemented step by step according to a Renovation Passport, e.g. using the proposal for enhanced renovation recommendations (priority A) and traffic light system (priority E) provided by QualDeE 2. 3. PC 4. Clarify that in the EPC itself, the EPC assessor should include all potential recommendations needed to achieve nZEB or ZEB standards for existing buildings (i.e., deep renovation according to the proposal for the EPBD recast), but clarify whether they are cost-effective only with financial incentives existing at the time of issuance of the EPC, or in connection to renovation works that are scheduled anyway (i.e., based on <i>energy-related</i> costs only, as it is already specified in the EPBD). 5. Develop a set of methods and data to include co-benefits of building renovation into the cost-effectiveness calculation or presentation (if not possible to monetise) and require their use in assessment and on the EPC. <p>3. Staged deep renovation: adapt definition in Art 2 (20) with second part independent from renovation passport</p> <p>4. EPCs or Renovation Passports for all inefficient buildings</p>	<p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p>	<p>86% of the participants support this recommendation and 14% have no clear opinion</p> <p>100% of the participants support this recommendation</p> <p>83% of the participants support this recommendation and 17% have no clear opinion</p> <p>100% of the participants support this recommendation</p>
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<ul style="list-style-type: none"> ● <i>New Art. 10 (4)</i>: Require Member States to ensure that all buildings, which were built before a national building energy code came into force that required at least low-energy buildings, and which are not renovated to close to an nZEB level have an EPC based on an energy audit or a Building Renovation Passport the latest by 2028, whatever is more appropriate in a Member State. ● <i>Add to Art. 16 (4, 5)</i>: Member States shall ensure that the renovation recommendations on the EPCs are presented in a way consistent with a full Building Renovation Passport. 	+	67% of the participants support this recommendation and 33% have no clear opinion
<p>5. Analyse if splitting energy performance and climate performance indicators and classes would be better</p>	+	64% of the participants support this recommendation and 36% disagree
<p>6. Online tool: Recommend to Member States to provide a high-quality energy calculation and recommendations tool for self-use, and to ensure that it is kept updated and that the renovation recommendations provided are consistent with deep energy renovation.</p>	+	64% of the participants support this recommendation and 36% disagree
<p>7. Deep renovation network platforms: These technical assistance facilities, including one-stop-shops, shall be established in the forms of both an online platform at the national level and a network of local or regional physical hubs, and be endowed with sufficient resources to actively reach out to at least 5 % of building owners each year</p>	0	Participants have no clear opinion on this topic
<p>8. Regular mandatory EPC assessor training: Oblige the Member States to require <i>either</i> an initial and regular training <i>or</i> an initial</p>	+	100% of the participants support this recommendation

	<p>and regular examination of EPC assessors as the precondition to be certified or accredited and registered as an EPC assessor.</p> <p>Renovation recommendations consistent with deep energy renovation (QualDeEPC priority A) should be a special focus</p> <p>9. Advertisement Guidelines: Require the Member States to create easy-to-use advertising guidelines, communicate the existence and usefulness of the guidelines widely and actively, and to consider making the use mandatory</p> <p>10. Improving Compliance with advertising EPC energy data: Require Member States to</p> <ul style="list-style-type: none"> · Appoint a nodal authority with sufficient resources and the mandate to perform the random checking and the following measure: · Raising awareness of the duty to display EPC energy data/class in real estate advertisement, and of the advertisement guidelines (priority F) · Define staged penalties for non-compliance. 	<p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p>	<p>100% of the participants support this recommendation</p> <p>92% of the participants support this recommendation and 8% have no clear opinion</p> <p>67% of the participants support this recommendation, 25% have no clear opinion, 8% do not support the recommendation</p> <p>67% of the participants support this recommendation, 25% have no clear opinion, 8% do not support the recommendation</p>
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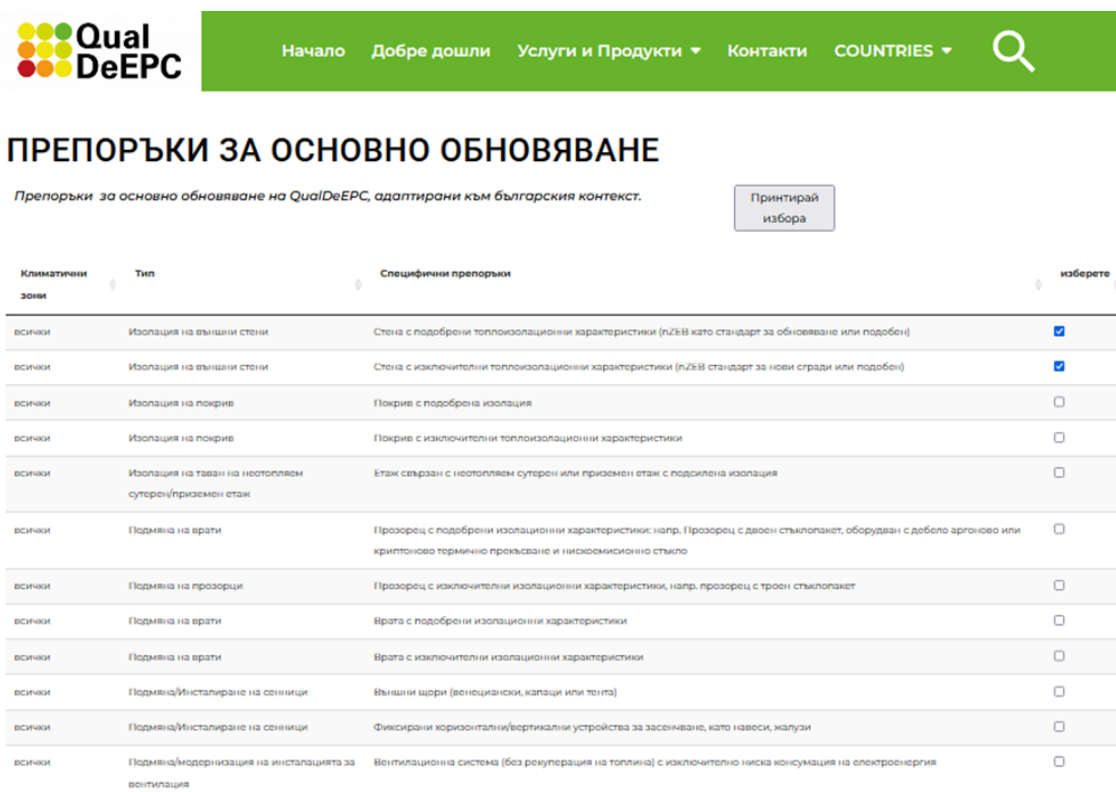
The proposal for key stakeholders and their role at national level for the integration of the policy proposal were presented to the participants. The discussion on this topic revealed the agreement of the participants of the definition of these stakeholders and their mission in this action. There were no additional suggestions to add or remove stakeholders from the list. In addition, the specified proposed roles at national level for each category of stakeholders was stated as correct and thus they will be able to work on the policy proposal of QualDeEPC to become effective at national level.

3.1.2 Status and further steps of the implementation process of QualDeEPC's tools in Bulgaria

3.1.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

The online tool for comparing EPC recommendations to deep energy recommendations for Bulgaria is developed as a simplified tool, embedded in the Deep Renovation Network Platform, which is called Qualrenovate.

The user is given the possibility to choose among a list of recommendations for Deep Renovation, specific recommendations and to make a selection. The list contains recommendations for the building envelope (walls insulation, roof and floor insulation, doors and windows replacement, etc.) and systems improvements (ventilation, heating and cooling, domestic hot water systems, lighting, etc.).



ПРЕПОРЪКИ ЗА ОСНОВНО ОБНОВЯВАНЕ

Препоръки за основно обновяване на QualDeEPC, адаптирани към българския контекст.

Принтирайте избора

Климатични зони	Тип	Специфични препоръки	Изберете
всички	Изолация на външни стени	Стена с подобрени топлоизолационни характеристики (nZEB като стандарт за обновяване или подобен)	<input checked="" type="checkbox"/>
всички	Изолация на външни стени	Стена с изключителни топлоизолационни характеристики (nZEB стандарт за нови сгради или подобен)	<input checked="" type="checkbox"/>
всички	Изолация на покрив	Покрив с подобрена изолация	<input type="checkbox"/>
всички	Изолация на покрив	Покрив с изключителни топлоизолационни характеристики	<input type="checkbox"/>
всички	Изолация на таван на неотапливаем сутерен/приземен етаж	Етаж свързан с неотапливаем сутерен или приземен етаж с подсилена изолация	<input type="checkbox"/>
всички	Подмяна на врати	Прозорец с подобрени изолационни характеристики: напр. Прозорец с двоен стъклопакет, оборудван с дебело аргоново или криптонно термично провъсване и нискоемисионно стъкло	<input type="checkbox"/>
всички	Подмяна на прозорци	Прозорец с изключителни изолационни характеристики, напр. прозорец с троен стъклопакет	<input type="checkbox"/>
всички	Подмяна на врати	Врата с подобрени изолационни характеристики	<input type="checkbox"/>
всички	Подмяна на врати	Врата с изключителни изолационни характеристики	<input type="checkbox"/>
всички	Подмяна/инсталиране на сенници	Външни щори (венециански, капаци или тента)	<input type="checkbox"/>
всички	Подмяна/инсталиране на сенници	Фиксирани хоризонтални/вертикални устройства за засенчване, като навеси, жалузи	<input type="checkbox"/>
всички	Подмяна/модернизация на инсталацията за вентилация	Вентилационна система (без рекуперация на топлина) с изключително ниска консумация на електроенергия	<input type="checkbox"/>

Figure 2: Screenshot of the online tool for comparing EPC recommendations included in the DRNP

At a later stage, when an update of the market research will be done, the information on the energy savings (%) will also be added.

3.1.2.2 C) Creating Deep Renovation Network Platforms (DRNPs)

The Bulgarian Deep Renovation Network Platform was created together with partners based on a joint concept. The platform is a platform for information providing information on a national level. Its purpose is to help building owners to take the steps needed for renovation after or based on the EPC.

A Spanish software company developed the online based software, including all the relevant topics concerning the deep renovation concept and the seven priorities of QualDeEPC project, and the Bulgarian partner will operate the platform. The tool is designed as a user-friendly platform containing

all the necessary and relevant information concerning the deep renovation process, taking in consideration the national requirements. The platform is in Bulgarian language, which makes it accessible to all kinds of users.

It includes information on several services such as information on the deep energy renovation, the EPC, the available and recommended building professionals and system suppliers, as well as information on the possible financing and subsidiary programmes.

During the lifespan of the project, the platform will be hosted by the task leader (ESCAN) and after the end of the project on EAP server.

The link to the Bulgarian DRNP is: <https://qualrenovate.eu/bg/>

The main page of the platform presents all the menus relative to the main information which contains the DRNP.

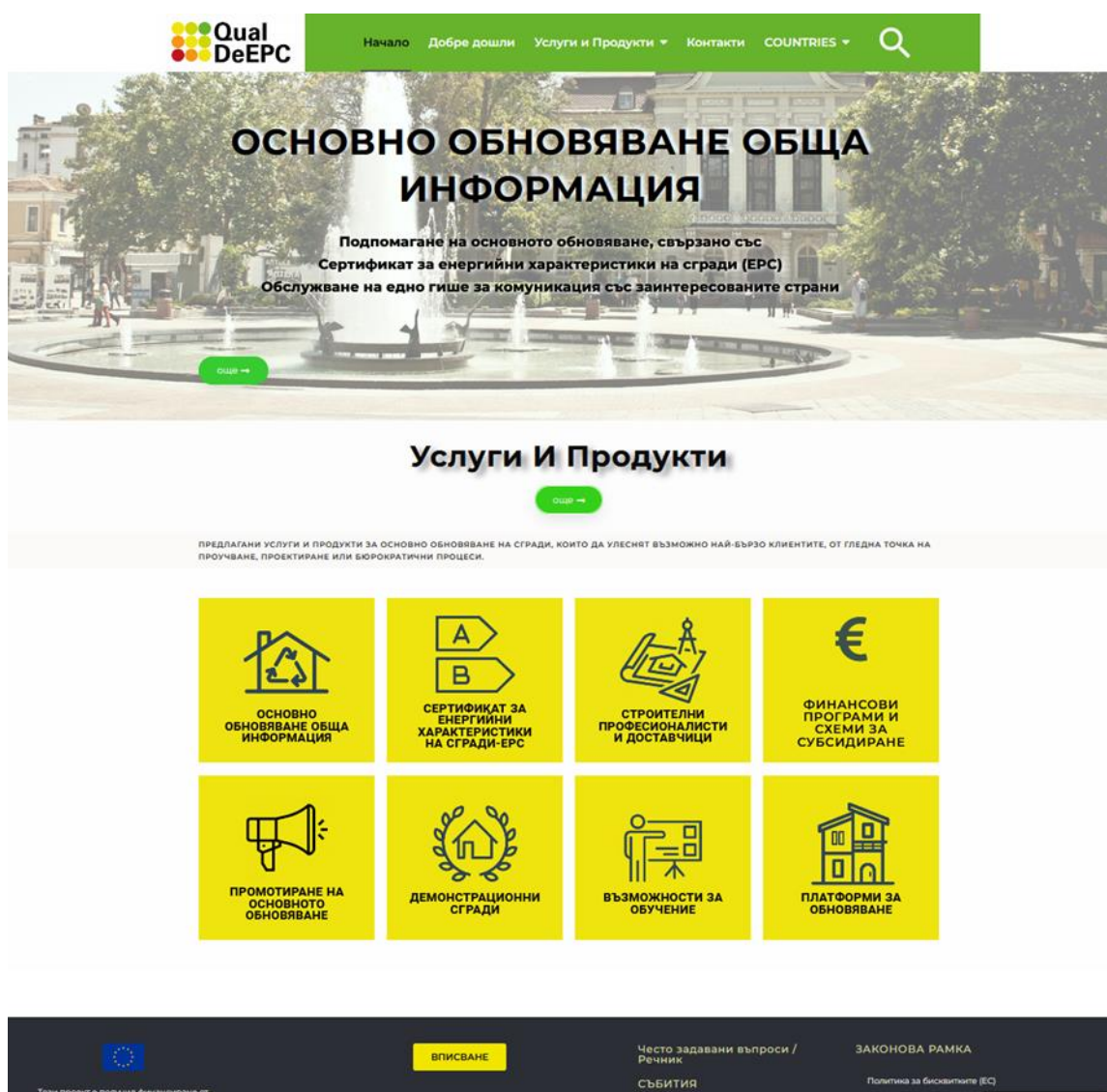


Figure 3: Screenshot of the main page of the Bulgarian platform



In the “Deep Renovation general info” menu, the user can find submenus containing information on Building energy efficiency, Building envelope, heating systems, DHW systems, cooling systems, ventilation systems, renewable energies, lighting, deep renovation recommendations including the online tool for comparing EPC recommendations to deep energy renovation recommendations and links to accessible specific renovation tools and calculators.



Figure 4: Example for heating systems

The “Energy performance certificates – EPC” contains submenus with information on EPCs and Roadmap & Renovation passport.





Figure 5: Screenshot of Energy performance certificates – EPC menu

The third menu is dedicated to the “Building professionals and system suppliers”. Its three submenus give the user access to data related to these professionals and links to websites of some professional organisations and chambers, as well as guidelines on how to find and recognize reputable and well-qualified companies.

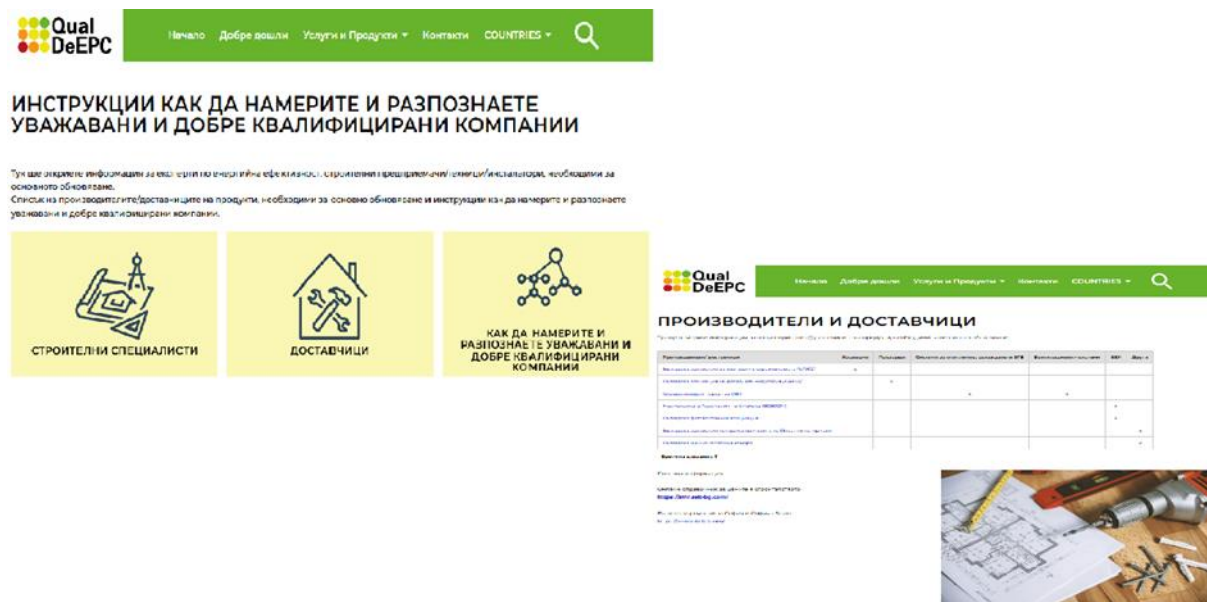


Figure 6: Screenshot of Building professionals and system suppliers menu

In the “Financing/Subsidy programs” menu, the user can find a list of possible financing/subsidy programs with a short description and link to the program. The user can also enrich the platform by



adding such information, which is sent to the administrator of the platform for validation before publication on the platform.

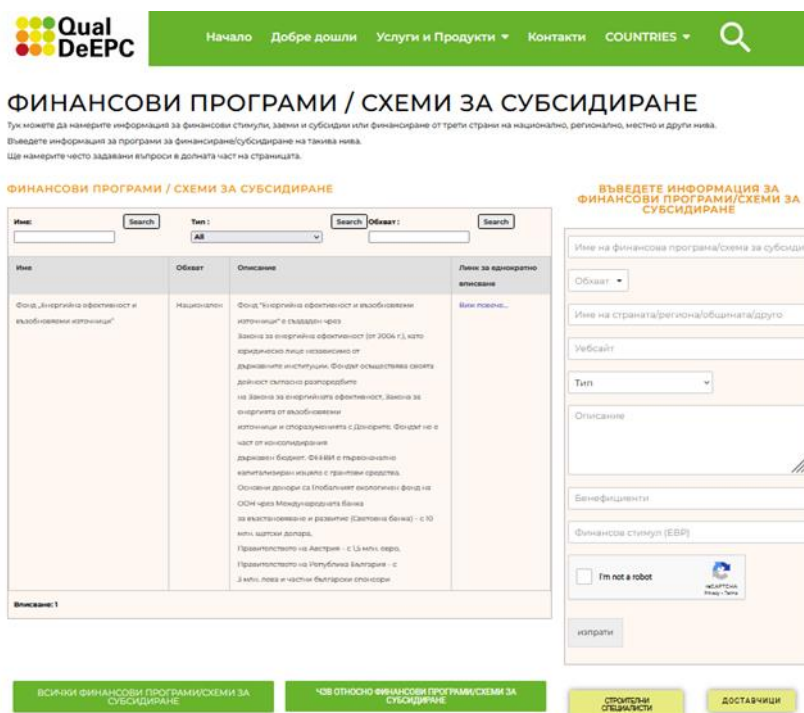


Figure 6: Screenshot of Financing/Subsidy programs menu

Another menu is the “Deep Renovation Promotion”, which is built under the same concept as the “Financing/subsidy programs” menu - the user is provided with information on actual events or media publication on the Deep Renovation and can access the event by clicking on a link. The user is as well allowed to enrich the platform with media information on such kinds of events. After the approval of the administrator of the platform the information is published on the platform.

The sixth menu is dedicated to the “Demonstration buildings”. Information on some demonstration buildings, which were deeply renovated, is provided and a picture can be uploaded. The information on the building consists of the name of the building, its location, year of construction and year of renovation, energy efficiency measures and energy consumption parameters such as energy and cost savings.

Next menu is “Training opportunities”. The concept is the same as for the three previously described menus. A list of available events (trainings, workshops, courses, seminars) with the respective link and description. The user is again given the opportunity to add some information in order to share and/or promote an event.

The last menu “Renovation platforms” provides links to other renovation platforms again as a list with description and links and could be enriched by the user.

For Bulgaria’s case EAP plans to update the platform by means of EAP’s ambition to develop a physical hub of type OSS. In case that this possibility will not be realised the only barrier for use of the platform will be the not up to date information. From a technical point of view there were no identified challenges as EAP will host and maintain the technical part of the platform.

The same possibilities and challenges are valid for the online tool. The main challenge is related to the fact that this tool contains financial information related to the estimated costs and this information is



very variable and needs regular updates in order to be accurate. In case the OSS will be realised the online tool will also be regularly updated.

3.1.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

Several acts and ordinances would need amendment in order to implement the policy proposals.

Spatial Development Act	
Related to QualDeEPC priority item(s): 1	
Responsible legislator / decision maker	National Assembly of Republic of Bulgaria
Date of Last modification	07.06.2022
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The policy proposal of the amendment is reviewed by the respective committee of the National Assembly which for this document is the Committee on Regional Policy, Public Works and Local Self-Government. Then the proposal goes in plenary session for debating and first vote, then goes back to the committee after that to the Assembly for second vote, and then after its publication in the state gazette, comes into force.
Possibilities, arguments to convince the decision maker(s)	The definition is needed for the further achievements of the energy efficiency strategy of Bulgaria and in order to avoid any misunderstandings as it happens with the missing definition of “Energy poverty”
Relevant stakeholders who may support the convincing process	The members of the committee on Regional Policy, Public Works and Local Self-Government
Does the definition of “deep energy renovation” exist in the local legislation and if not will it be adopted?	The definition does not exist in the local legislation and should be adopted
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months



Ordinance № РД-02-20-3 for Energy Efficiency of Buildings	
Related to QualDeEPC priority item(s): A	
Responsible legislator / decision maker	Ministry of Regional Development and Public Works
Date of Last modification	10.01.2023
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The stakeholders of the Ministry of Regional Development and Public Works prepare the document and after its publication in the national gazette it comes into force.
Possibilities, arguments to convince the decision maker(s)	
Relevant stakeholders who may support the convincing process	Stakeholders in the Ministry of Regional Development and Public Works; the participants of the expert groups on the relevant topics to each ministry
Does the Ordinance include some of the values for the Deep energy renovation recommendations?	The document already includes some of the parameters, but they might be modified with the more ambitious ones, as per QualDeEPC proposal
Other barriers which can complicate or hinder the changes	No particular challenge on this topic.
Possible timeline for modification	up to 18 months

Ordinance E-РД-04-02/16.12.2022	
Related to QualDeEPC priority item(s): E	
Responsible legislator / decision maker	Ministry of Energy, Ministry of Regional Development and Public Works
Date of Last modification	16.12.2022
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The stakeholders of the Ministry of Energy and Ministry of Regional Development and Public Works prepare the document and after its publication in the national gazette it comes into force.



Possibilities, arguments to convince the decision maker(s)	The major argument is that the enhanced EPC is more oriented to non-professionals and is easier to use by the homeowners
Relevant stakeholders who may support the convincing process	Stakeholders in the Ministry of Energy and Ministry of Regional Development and Public Works; the participants of the expert groups on the relevant topics to each ministry
Has the enhanced EPC such elements that need major changes compared to the current state? Which are they?	The enhanced EPC is very similar to the current one. The “energy rating indicator” is missing and has to be introduced.
what is needed for these changes	Introduction of the “Energy rating indicator”
Other barriers which can complicate or hinder the changes	The update of the document is not a priority of the Ministry, as the document was relatively recently updated
Possible timeline for modification	up to 18 months

Energy Efficiency Act

Related to QualDeEPC priority item(s): E, D, F

Responsible legislator / decision maker	National Assembly of Republic of Bulgaria
Date of Last modification	12.03.2021
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The policy proposal of the amended is reviewed by the respective committee of the National Assembly which for this document is the Committee on Energy. Then the proposal goes in plenary session for debating and first vote, then goes back to the committee after that to the Assembly for second vote, and then after its publication in the state gazette, comes into force.
Possibilities, arguments to convince the decision maker(s)	<p>The need of the introduction of the definition of the “Energy rating indicator” which makes the EPC document more user-friendly to the non-professionals;</p> <p>The regular mandatory EPC assessors’ trainings and exams will improve the quality of the EPC process;</p> <p>The introduction of the advertisement guidelines and compliance control will also improve the EPC process;</p>



Relevant stakeholders who may support the convincing process	The members of the committee on Energy
Other barriers which can complicate or hinder the changes	Objections from the EPC assessors' associations and chambers; Objections from the real estate sector;
Possible timeline for modification	Up to 18 months



3.1.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the Bulgarian framework

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Timeline (in months)	Human and material resources needed	Competent body (ies)
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	Introduction of the definition in the Spatial Development Act		6-12	Experts from the professional organisations and governmental committees	National Assembly of Republic of Bulgaria
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)		Amendment of Ordinance № РД-02-20-3 for Energy Efficiency of Buildings	18	Experts from the professional organisations	Ministry of Regional Development and Public Works
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	Introduction of the “Energy rating indicator” in the Energy efficiency Act	Amendment of Ordinance Е-РД-04-02/16.12.2022	18	Experts from the professional organisations and from SEDA	National Assembly of Republic of Bulgaria Ministry of Energy Ministry of Regional Development and Public Works
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	Amendment of the Energy Efficiency Act		18	Experts from the professional organisations and governmental committees	National Assembly of Republic of Bulgaria
B)	Online tool for comparing EPC recommendations to deep energy renovation recommendations (Tool developed)				Technical experts	
C)	Creating Deep Renovation Network Platforms (DRNPs) (Tool developed & Policy proposal)				Technical experts	

F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	Amendment of the Energy Efficiency Act		18		National Assembly of Republic of Bulgaria
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	Amendment of the Energy Efficiency Act		18	Experts from the professional organisations and governmental committees. Representatives of the real estate sector and facility management organisations	National Assembly of Republic of Bulgaria



3.1.5 Outlining the further consultation needs and processes

All the above-mentioned policy proposals and legislation and regulation amendments suggestions need to be discussed at expert level in the professional organisations and then in the different committees of the National Assembly, before the policy proposal is integrated in a proposal for amendment of the Acts that need to be amended. Then the amendment proposal will go back to the National Assembly committees for discussion before submission for vote in the National Assembly. When the Amendment of the Act is voted, it should be published in the state gazette and then it comes into force.

The Ordinance modifications and amendments are done at Ministry level, so the process is easier, but could be longer as they are deeply discussed at expert level and all the technical values need to be verified and checked for compliance with other regulations and standards. Before coming into force, the document should again be published in the state gazette.



3.2 Germany

3.2.1 *First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Germany*

The main objective of the 3rd national workshop was to inform the participants about the progress of the project and to discuss the developed cross-national policy proposals and tools as described in the "White Paper on Good Practice in EPC Assessment, Certification and Use" and now adapted to the specific German needs.

One objective of the workshop was therefore to obtain feedback from national stakeholders and experts on.

1. The nationally adapted policy proposals and tools
2. How the tools could be further improved/implemented
3. The EU-level policy recommendations developed in the project.

Only a few stakeholders found time to participate in the third national workshop. However, the participants represented energy consultants, the financial sector and the national consumer protection agency. Generally, they were in agreement with the policy proposals and German adaptation, but also issued some remarks on the practical implementation of the project's suggestions (see Table below) in context of current developments in Germany regarding the advancement of the German Energy Performance Act for Buildings. One recurring issue were the currently very high building and renovation costs and high energy prices and the uncertainty in predicting any financial payback time or rate or return.

The fourth national workshop was held on 7 November 2022 as part of work package 7 on policy dialogue and the transfer of policy recommendations and good practices. The objective of the workshop was to present and discuss the project's proposal for further revision and convergence process with national stakeholders and experts on:

1. the nationally adapted policy proposals and tools (updated since the 3rd workshop);
2. how to further improve the developed tools and how to ensure their sustainability
3. Possibilities to join events to present the policy recommendations and share information with related projects
4. The EU-level policy recommendations drafted by the project.

This time, more actors were able to participate compared to the third national workshop, but the targeted number of 15-20 participants could not be reached. The reason for this is certainly the timing at the end of the year.

However, the participants represented policy makers, architects, financing providers, the financial sector and the national consumer protection agency. In general, they agreed with the policy proposals and the German adaptation, but also made some comments on the practical implementation of the project proposals and the related discussions (see table below). The discussions were closely related to the current developments in Germany with regard to the further development of the Energy Saving Act for Buildings and the funding guidelines. A recurring theme was the currently very high



construction and refurbishment costs and high energy prices, as well as the uncertainties in predicting payback periods and returns.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Germany	<ul style="list-style-type: none"> - No comments 	<ul style="list-style-type: none"> - No comments 	<ul style="list-style-type: none"> - No comments 	<ul style="list-style-type: none"> - No comments 	<ul style="list-style-type: none"> - No comments
A)	A) Deep energy renovation recommendations by QualDeEPC adapted to German context	<ul style="list-style-type: none"> - List should be included in German Energy Performance Act for Buildings (GEG) e.g. as an attachment - The highest standard should be synchronised with the financial incentives programme 	<ul style="list-style-type: none"> - High building and renovation costs ☒ future development is hard to predict ☒ uncertainty of financial information and payback times on EPC - Conflict on current informative character of the German EPC and future needs of legal certainty 	<ul style="list-style-type: none"> - Suggestion on the priority of renovation actions 	<ul style="list-style-type: none"> - Improvement for thermal bridges highly depends on the building, hence only too general suggestion is possible - U-value for windows is not up-to-date (way too high) 	<ul style="list-style-type: none"> - Highlight reference to advice on deep energy renovation, including cost-effectiveness of renovation, or renovation passport



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
E)	E) Adapted enhanced EPC form and introduction of “Energy rating” indicator-definition for the German case for building envelope components and technical systems	<ul style="list-style-type: none"> EU taxonomy uses information on EPCs, requires value of energy savings (in %) ☐ German EPCs need higher legal certainty 	<ul style="list-style-type: none"> Indication of final or primary energy usage, emissions? ☐ indicators are currently discussed in different consortia 	<ul style="list-style-type: none"> Currently underway in federal ministries 	<ul style="list-style-type: none"> Interest by policy-makers to include our suggested features in the next revision of EPC forms? How could higher legal certainty be achieved? 	<ul style="list-style-type: none"> Traffic light system was assessed positively, since it improves transparency for consumers
D)	D) Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content	<ul style="list-style-type: none"> Difference between energy consultants (for financial support programmes) and EPC issuers in Germany ☐ currently lower standards for EPC issuers, no (public) database of issuers and EPCs 	<ul style="list-style-type: none"> Higher standards for EPCs (e.g. cheap operational rating EPCs) cannot only be solved by training 	<ul style="list-style-type: none"> Database for EPC issuers Clearer regulations on who can issue Require regular training for EPC issuers too (currently only initial training, while energy consultants need regular training) 	<ul style="list-style-type: none"> Discuss adapted policy proposal with policy-makers 	<ul style="list-style-type: none"> No comments



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
B)	B) Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations	<ul style="list-style-type: none"> - Tool is not part of the regulations and is not planned to be 	<ul style="list-style-type: none"> - Responsibilities of tool - Lasting of tool after project ends - Keeping cost and savings data up to date 	<ul style="list-style-type: none"> - No need 	<ul style="list-style-type: none"> - No need 	<ul style="list-style-type: none"> - No comments
C)	C) Deep Energy Renovation Network Platform	<ul style="list-style-type: none"> - There are currently no discussions on including any kind of platform in laws, regulations and standards 	<ul style="list-style-type: none"> - Federal system rather supports regional platforms/networks - National online platforms exist(ed), but are currently under reconstruction 	<ul style="list-style-type: none"> - Continue dialogue with relevant decision-makers on improvement of existing online platforms 	<ul style="list-style-type: none"> - Discuss policy proposal on funding programme for local/regional hubs with policy-makers 	<ul style="list-style-type: none"> - No comments



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
F)	<p>Advertisement guidelines and compliance:</p> <p>1a. Nationally adapted proposal for voluntary advertising guidelines and their use (F)</p> <p>1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so</p> <p>2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)</p>	<ul style="list-style-type: none"> – Maybe include in the law: duty for media to require the EPC energy performance data or deny advertisement; duty for media to provide information on where to find these on the EPC 	<ul style="list-style-type: none"> – No comments 	<ul style="list-style-type: none"> – Guidelines should be addressed to media, because online forms dictate mandatory information 	<ul style="list-style-type: none"> – Discuss suggestion with policy makers 	<ul style="list-style-type: none"> – Consumer agency performed a test in 2020 with a positive outcome

Table 5 Summary of the feedback received from the 3rd and 4th national stakeholder workshops in Germany

The EU-level policy recommendations were presented. The participants were asked to participate to a poll and rate each of the policy recommendations as per the table below (“support”, “disagreement”, “no clear opinion” “not discussed in detail”). Afterwards, there was a discussion of the results and on each of the topics. Due to reservations of the workshop participants – they rather wanted to discuss the issues with colleagues internally before answering the questions – the poll was closed after two questions. Instead, an online survey has been implemented after the workshop and the participants had been asked to answer the questions. In total, seven persons took part in the online survey, rated the policy recommendations and commented on them.

	Agenda Item	Support or disagreement	Comments
1	<p>QualDeEPC's policy recommendations at EU-Level</p> <p>1. EPC template</p> <p>Now Art. 16: Require that the renovation recommendations be consistent with deep energy renovation in their selection and energy efficiency levels, and that possibilities for a stepwise implementation are indicated</p> <p>Annex V: indicators and other content</p>	<p>+ = support; – = disagreement; 0 = no clear opinion; nd = not discussed in detail)</p>	
	<p>1a) Display of improved classifications and energy performance after implementing a recommended combination of renovation actions ('main option') on p. 1</p>	+	Majority of experts agree. One disagreement: In Germany, the potential results of an energy renovation are recorded in the Building Renovation Roadmap (iSFP). It is not necessary to introduce additional representations.
	<p>1b) Potential energy savings (in kWh/yr) after implementing the 'main option' on p.1</p>	0	<p>No clear opinion during the Workshop, online survey 50% agreement, 25% no opinion, 25% disagreement.</p> <p>Disagreement:</p> <ul style="list-style-type: none"> - A complete balance sheet is very time-consuming and would make the certificate much more expensive. A statement of the future energy class without an exact calculation is easier to implement. - the Building Renovation Roadmap (iSFP) already solves this well (<i>comment from the German partners: the coverage of the building stock with EPCs is much higher than with iSFPs; this comment also applies to all other mentions of the iSFP as an alternative</i>) - kWh/year is rather confusing for large buildings (LWG, MFH)), better kWh/m2
	<p>1c) Details on building envelope and building HVAC system, using a traffic light system</p>	+	60% agreement in the online survey. Disagreement: Added value compared to the Building Renovation Roadmap (iSFP) not visible.
	<p>1d) Detailed renovation recommendations by component, consistent with deep energy renovation (QualDeEPC priority A), using the traffic light system too</p>	0	<p>No clear opinion in the online survey: 50% agreement, 50% disagreement.</p> <p>Comments: General recommendations useful, detailed ones rather in detailed energy advice, added value compared to the Building Renovation Roadmap (iSFP) not visible.</p>



	Agenda Item	Support or disagreement	Comments
	<p>1e) Useful combination of renovations and stepwise implementation – as a first step towards a Building Renovation Passport</p>	<p>nd</p>	
	<p>1f) Link to a Deep Renovation Network Platform (QualDeEPC priority C)</p>	<p>+</p>	<p>70% agreement in the online survey. Comment: Useful additional information, but has to be independently a) quality-checked and b) to be checked for availability.</p>
	<p>2. Renovation recommendations Require Member States to adapt the definition for ‘deep renovation’ and specify the renovation recommendations that must be provided on EPCs in the following way:</p>		
	<p>2a) Specify the energy efficiency levels to be recommended for different types of actions, so that these are consistent with deep renovation leading to nZEB or ZEB standards for existing buildings, even when implemented step by step according to a Renovation Passport, e.g. using the proposal for enhanced renovation recommendations (priority A) and traffic light system (priority E) provided by QualDeEPC</p>	<p>+</p>	<p>80% agreement in the online survey. Comment: The presentation must be easy to understand and, where applicable, consistent with the Building Renovation Roadmap (iSFP).</p>
	<p>2b) Clarify that in the EPC itself, the EPC assessor should include all potential recommendations needed to achieve nZEB or ZEB standards for existing buildings (i.e., deep renovation according to the proposal for the EPBD recast), but clarify whether they are cost-effective only with financial incentives existing at the time of issuance of the EPC, or in connection to renovation works that are scheduled anyway (i.e., based on <i>energy-related</i> costs only, as it is already specified in the EPBD).</p>	<p>0</p>	<p>25% agreement, 25% no opinion, 50% disagreement in the online survey. Comments: - that is part of the detailed energy advice; - This information is the result of an energy audit. The Building Renovation Roadmap (iSFP) already provides a good representation.</p>



	Agenda Item	Support or disagreement	Comments
	<p>2c) Develop a set of methods and data to include co-benefits of building renovation into the cost-effectiveness calculation or presentation (if not possible to monetise) and require their use in assessment and on the EPC.</p>	<p>–</p>	<p>67% disagreement, 33% no opinion in the online survey. Comments:</p> <ul style="list-style-type: none"> - Overloads the EPC, already introduced in the energy advice - If the additional benefits are not reflected in business terms, companies may not be able to carry out an economic energy renovation on this basis. Inefficient measures lead to a company's imbalance and, in the long term, to insolvency.
	<p>3) Staged deep renovation: adapt definition in Art 2 (20) with second part independent from renovation passport</p>	<p>0</p>	<p>no clear opinion in the online survey, 20% agreement, 60% no opinion, 20% disagreement. Comment: This is already done within the framework of a Building Renovation Roadmap (iSFP), i.e. the procedure is regulated in Germany. EPCs for the purpose of letting, or the associated modernisation recommendations, can only be rough information. It makes no sense to cover multi-family houses, whose refurbishment is due in 10 years according to portfolio management, with detailed energy advice simply because the building is being rented out. Energy advice only makes sense in connection with a concrete investment intention.</p>



	Agenda Item	Support or disagreement	Comments
	<p>4) EPCs or Renovation Passports for all inefficient buildings</p> <ul style="list-style-type: none"> <i>New Art. 10 (4):</i> Require Member States to ensure that all buildings, which were built before a national building energy code came into force that required at least low-energy buildings, and which are not renovated to close to an nZEB level have an EPC based on an energy audit or a Building Renovation Passport the latest by 2028, whatever is more appropriate in a Member State. <i>Add to Art. 16 (4, 5):</i> Member States shall ensure that the renovation recommendations on the EPCs are presented in a way consistent with a full Building Renovation Passport. 	0	<p>no clear opinion in the online survey, 40% agreement, 40% disagreement, 20% no opinion. Comments:</p> <ul style="list-style-type: none"> - If this were not the case, the energy advice would be wrong. Is this meant to verify the data/results from energy advice? <p>The capacities to carry out quality energy audits for an estimated 18 million buildings within 5 years are not available. The proposal seems absurd to me. About 13,000 energy advisors are listed with dena, which would be almost 1,400 energy audits per advisor and year.</p>
	<p>5) Analyse if splitting energy performance and climate performance indicators and classes would be better</p>	+	<p>Agreement in the online survey, 60% agreement, 40% no opinion. Comments:</p> <ul style="list-style-type: none"> - Due to the current ongoing consideration of the issue, no concrete statement can be made on this at present. - It makes sense to indicate the three parameters described, but not to provide information on potential savings. This is the task of the Building Renovation Roadmap (iSFP). - Indicating potential classes after implementation of measures with traffic light system makes sense, calculated energy demand after measures can be an optional information



	Agenda Item	Support or disagreement	Comments
	<p>6) Online tool: Recommend to Member States to provide a high-quality energy calculation and recommendations tool for self-use, and to ensure that it is kept updated and that the renovation recommendations provided are consistent with deep energy renovation</p>	+	<p>80% agreement in the online survey. Comments:</p> <ul style="list-style-type: none"> – Tools are increasingly in demand – However, the informative value of such tools can always be limited due to the strong simplification for laypersons. – Effort and benefit are not in any meaningful proportion, especially since the result can only be informative.
	<p>7) Deep renovation network platforms: These technical assistance facilities, including one-stop-shops, shall be established in the forms of both an online platform at the national level and a network of local or regional physical hubs, and be endowed with sufficient resources to actively reach out to at least 5 % of building owners each year</p>	+	<p>60% agreement, 40% no opinion in the online survey. Comments:</p> <ul style="list-style-type: none"> - Online platforms are feasible, physical centres with performance measurement might be difficult to implement for some MS – Very good suggestion. The Innovation City Ruhr (https://www.innovationcity-bottrop.de/index.php?id=3&L=1) can be a blueprint. – Renovation obstacles, misinformation, therefore a DRNP would be welcome. There are regional platforms that do not cover the whole country and are limited in their resources; therefore, a proposal for a federal funding programme to promote the establishment of such networks. Efforts by the Länder are there, but there is a lack of money and, above all, a lack of skilled workers; there are not enough people to implement them. But: Is it possible to provide information independently of the product?
	<p>8) Regular mandatory EPC assessor training: Oblige the Member States to require <i>either</i> an initial and regular training <i>or</i> an initial and regular examination of EPC assessors as the precondition to be certified or accredited and registered as an EPC assessor. Renovation recommendations consistent with deep energy renovation (QualDeEPC priority A) should be a special focus</p>	+	<p>60% agreement, 20% no opinion, 20% disagreement in the online survey. Comments:</p> <ul style="list-style-type: none"> - Since the regulation in Germany is different due to the counselling, I cannot make any statements about other countries. - This already exists in Germany. The initial training or qualification is regulated in the Building Energy Act (GEG). Energy advisors on the dena expert list already have to undergo regular training.



	Agenda Item	Support or disagreement	Comments
			<i>(comment from the German partners: EPC assessors do currently not have the register for the dena expert list)</i>
	9) Advertisement Guidelines: Require the Member States to create easy-to-use advertising guidelines, communicate the existence and usefulness of the guidelines widely and actively, and to consider making the use mandatory	0	40% agreement, 60% no clear opinion in the online survey
	10 Improving Compliance with advertising EPC energy data: Require Member States to - Appoint a nodal authority with sufficient resources and the mandate to perform the random checking and the following measure: - Raising awareness of the duty to display EPC energy data/class in real estate advertisement, and of the advertisement guidelines (priority F) - Define staged penalties for non-compliance.	0	25% agreement, 75% no clear opinion in the online survey. Comment: How should awareness-raising be carried out?

Further discussion questions

Regarding the further training and certification of the issuers of energy performance certificates: What should be compulsory in Germany: regular further training (as for energy consultants) or regular examinations (further training is then voluntary)?

- Regular further training received the most votes. Regular examinations are probably very difficult to implement. However, it would be conceivable to carry them out online

Regarding the revision of the EPC in the Building Energy Act (GEG): What can and must the EPC provide in the future, especially as preparation for the Building Renovation Roadmap (iSFP) or where no Building Renovation Roadmap (iSFP) exists?

- If modernisation is proposed, the costs should also be included.



- Should a forward-looking component be built into the statement, it must be ensured that the information is presented simply, clearly and in line with the logic of a Building Renovation Roadmap (iSFP).

Do you agree to integrate the following elements of the QualDeEPC proposal into the energy performance certificates in Germany?

- Renovation recommendations: Number and level of requirements consistent with "deep renovation"
 - o 67% no clear opinion, 33% disagreement
 - o Comment: Yes, for EPCs that are the result of an energy audit. Yes, for EPCs on the occasion of a sale of the building. No, for EPCs that are prepared for a rental in a multi-family building without any current investment in the building.
- Traffic light system: - 50% agreement, 50% no clear opinion
- Presentation of sensible combinations of renovation recommendations
 - o 67% agreement, 33% disagreement
 - o Comment: Keyword Building Renovation Roadmap (iSFP)

Regarding compliance with the regulations on real estate advertisements:

- How can implementation be better controlled? Reply: - Random samples
- Should the Länder be responsible for this? Reply: - Yes

Endorsement that EPCs can be a subset of the iSFP, EPC recommendations should flow seamlessly into iSFP.

In many stakeholder comments, great importance is attached to the Building Renovation Roadmap, the German "Individueller Sanierungsfahrplan iSFP". However, as stated in the table above, the coverage of the building stock with EPCs is so far much higher than with iSFPs.

3.2.2 Status and further steps of the implementation process of QualDeEPC's tools in Germany

3.2.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

For Germany, it was decided to use an existing online calculation tool and to make proposals for its further development. The project's online platform will thus provide a link to this online tool (Sanierungskonfigurator).

The tool shows which renovation steps lead to energy savings in residential buildings, which costs are incurred and which financial support can be granted by the state for the user's energy renovation. This provides an initial overview of the correct implementation and financing of refurbishment measures.

The German project partners have agreed on potential improvements that could be implemented with the funding available in QualDeEPC. The partner dena has obtained permission from the Federal Ministry for Economic Affairs and Climate Action, who operates the "Sanierungskonfigurator", to work with the company that maintains it on behalf of the ministry, to implement as many improvements as possible.



Due to restructuring at the end of 2022, there was a change in the service provider who provides technical support for the online tool. Furthermore, the BMWK commissioned the revision of the refurbishment configurator via another project, in which dena is involved.

Now the amendments for the tool made in the QUALDeEPC project can be incorporated into the revision via the newly commissioned project with much higher budget than available in the QUALDeEPC project. The subcontracting costs available in QualDeEPC are thus no longer needed for the revision of the tool.

3.2.2.2 C) Creating Deep Renovation Network Platforms (DRNPs)

In Germany, several Deep Renovation Network Platforms already exist, e.g.: www.gebäudeforum.de , www.energiewechsel.de . These platforms are similar to the Deep Renovation Network Platform and are online-based. It is most effective for the German implementation to retain these platforms for the individual target groups, since the platforms are aimed either at final consumers (Energiewechsel) or at professionals in the field of energy-efficient construction and renovation (Gebäudeforum), respectively-

The current status is a comparison of their content with the concept for Deep Renovation Network Platforms developed in the project. The further steps are to make concrete suggestions to the platform operators for additions. This additional content would fill gaps and expand the platforms towards the full content of the basic platform.

3.2.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

The following law would have to be amended to implement the policy proposals.



Name of the law	
Building Energy Act (GEG)	
Responsible legislator / decision maker	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction
Date of Last modification	1.01.2023
Planned to be modified for any other reason	Amendment of GEG comes into force 01.01.2023
Additional legislation, standard to be amended (if any)	Regulations on EPCs within the framework of the Building Energy Act
decision maker	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction
last date of modification	2023
planned to be modified for any other reason	2024
Procedure of the amendment with estimated timeline	Further amendments will follow in the next year.
Likelihood of the EPC amendment/changes in the next 3 years (at least partially)	Likely

Table 4:



3.2.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the German framework

This section is summarising and sorting the information from the mapping by the 8 items, and adding estimate of timeline as well as human and material resources needed

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Key changes of the current standards	Timeline (in months)	Human and material resources needed	Competent body (ies)
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	Introduction of the definition			estimate not possible	Yes, for developing legal text and for convincing policy-makers to include the change in the law	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)	Adjustment of the law necessary			estimate not possible	Yes, for developing legal text and for convincing policy-makers to include the change in the law	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	Adjustment of the law necessary			estimate not possible	Yes, for developing legal text and for convincing policy-makers to include the change in the law	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction



Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Key changes of the current standards	Timeline (in months)	Human and material resources needed	Competent body (ies)
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	Adjustment of the law necessary			estimate not possible	Yes, for developing legal text and for convincing policy-makers to include the change in the law	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction
B)	Online tool for comparing EPC recommendations to deep energy renovation recommendations (Tool developed)	Adjustment of the tool necessary, not in any legislations and regulations			3	Yes, for implementing changes	Federal Ministry for Economic Affairs and Climate Action,
C)	Creating Deep Renovation Network Platforms (DRNPs) (Tool developed & Policy proposal)	Not necessary			3	Yes, 1) for developing, discussing, and agreeing improvements with the operators of the existing platforms; and 2) for convincing policymakers to create a nationwide funding programme for local/regional platforms, and for elaborating programme details	1) Federal Ministry for Economic Affairs and Climate Action (Energiewechsel), dena (Gebäudeforum) 2) KfW/ Federal Office for Economic Affairs and Export Control (BAFA) If a nationwide funding programme for local/regional platforms were to be introduced

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Key changes of the current standards	Timeline (in months)	Human and material resources needed	Competent body (ies)
F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	Adjustment of the law necessary			estimate not possible	Yes, for developing legal text and for convincing policy-makers to include the change in the law	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	Adjustment of the law necessary			estimate not possible	Yes, for developing legal text and for convincing policy-makers to include the change in the law	Federal Ministry for Economic Affairs and Climate Action, Federal Ministry of Housing, Urban Development and Construction



3.2.5 Outlining the further consultation needs and processes

The following further steps are needed:

- 1) Presentation and explanation of the proposed elements to the responsible federal ministries, e.g. via other projects currently underway.
- 2) a) Maintaining contacts to the platform and tool operators as well as service providers of the tool developer and b) further developing and discussing proposals for changes.



3.3 Greece

Greece, represented by CRES in the QualDeEPC project, focused on adapting the enhanced EPC assessment and certification schemes and tools as well as Deep Renovation Network Platforms proposed by the project to country needs and context. Furthermore, CRES proceeded to the implementation of the adapted policy proposals and concepts at national level to the extent possible. In the framework of the dialogue organized by QualDeEPC at national level, the developed tools and concepts were presented and discussed with stakeholders of the national experts forum.

3.3.1 *First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Greece*

The 3rd national stakeholder workshop in Greece, held online on June 1st, 2022 served as the first round of consultation for QualDeEPC's proposals for enhanced EPC schemes supporting deep energy renovation, as adapted to Greek context. The Greek stakeholders were informed about the latest achievements of the QualDeEPC project and the policy proposals, practical concepts and tools developed and adapted to the national conditions were presented in detail. The discussion was structured by priority topic and was focused on how it can be implemented in Greece .

However, due to the extended discussion on the adapted proposals, the QualDeEPC's policy recommendations at EU-Level were not presented in detail.

The objective of the 4th national workshop was held online on November 4th, 2022 aiming at presenting and discussing the project's proposal for further revision and convergence process with national stakeholders and experts on:

1. the nationally adapted policy proposals and tools (updated since the 3rd workshop);
2. how to further improve the developed tools and how to ensure their sustainability;
3. possibilities to join events to present the policy recommendations and share information with related projects;
4. the EU-level policy recommendations drafted by the project.

Most of the participants had attended to the 3 previous workshops, therefore no additional comments or remarks related to the nationally adapted proposals were made. Additionally during the 1st session the *energyhubforall* portal as upgraded by QualDeEPC was presented in detail, while the online tool was already running and presented during the 3rd national workshop. Considering that the previous versions of both tools were developed by CRES and available since 2016, no further comments on their sustainability were expressed, except the availability of human and financial resources for CRES for their regular update.

During the second session, QualDeEPC's sustainability strategy for Greece was presented and in particular, the key findings of the assessment of the implementation and policy processes required for the Greek case in order to forward the development and implementation of the policy proposals adapted to the national context. The participants agreed that these processes are time consuming and their implementation in some cases can exceed the 24 months that CRES has indicated as an average time frame.



As regards the feedback received on project policy recommendations at EU-Level, most attendees agreed but there was a hesitation about expressing their opinion during the event. However, all presentations were shared with the participants after the workshop.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Greece	<ul style="list-style-type: none"> The definition should be enriched covering the aspect of the economic and technical feasibility. 	<ul style="list-style-type: none"> Slow pace of legislative process 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Guidelines of the definition should be developed in order for the term to be introduced in the national legislation 	<ul style="list-style-type: none"> Study on the economic and technical feasibility should be conducted
A)	Deep energy renovation recommendations by QualDeEPC adapted to Greek context	<ul style="list-style-type: none"> The participants agreed with the approach adopted for the deep energy renovation recommendations 	<ul style="list-style-type: none"> Concerns about the certainty of the financial information and payback period on EPC. A solution could be to link the costs to fuel prices (reference price) at the time of the EPC issuance 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> The proposed U-values for the Roof insulation could be more ambitious and technically feasible VS the proposed U-values for the external wall insulation The proposed U-values for the external wall insulation for the Greek case are interpreted in a 15cm width of insulation material. That means that if it is applied on the building façade constructed before 1980 may not be technically safe The proposed U-values for the Roof with exceptional thermal insulation properties should be differentiated by climate zone The proposed U-values for the Window replacement could be feasible only for PVC windows frame. 	<ul style="list-style-type: none">



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
					<ul style="list-style-type: none"> - Ventilation system with heat recovery of min. 50%. The minimum requirements for non-residential buildings could be more ambitious (68-78%) 	
E)	Adapted enhanced EPC form and introduction of “Energy rating” indicator- definition for the Greek case for building envelope components and technical systems	<ul style="list-style-type: none"> - Well received and recognized as user-friendly - The “energy rating indicator” was accepted very well - High possibility for adoption 	<ul style="list-style-type: none"> - If accompanied by official technical guides and clear minimum requirements - Concerns about the certainty of the financial information and payback period on EPC. A solution could be to link the costs to fuel prices (reference price) at the time of the EPC issuance - Availability of real energy consumption data is an issue 	-	<ul style="list-style-type: none"> - More emphasis could be given on RES systems - SRI could be included especially for non-residential buildings - The field of total investment cost of “option 1” should be mandatory - Graphs on the optional 4th page are not feasible to be included today, as the current official software does not produce such information, However, it is believed that an upgrade of the software to produce graphs would be an easy task. - Fuel(s) cost to be included - Final Energy Consumption 	<ul style="list-style-type: none"> - The proposed template provide data information that users may retrieve in a simple way.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
D)	Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content	<ul style="list-style-type: none"> The majority of the participants agree that the approach proposed, for Voluntary participation in trainings for EPC assessors and mandatory examination, will help to maintain/improve the quality of the EPCs. 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> The training cycle could be 5-6 years instead of the proposed 3-4 years 	<ul style="list-style-type: none">
B)	Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Only the official EPC software is part of the regulation and technical guides. Unlikely if this could be part of legislation or regulation 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Additional feature could be benchmarking with existing buildings 	<ul style="list-style-type: none"> A simplified version of the online tool could be useful for pupils and of high educational value
C)	Deep Energy Renovation Network Platform	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Unlikely if this could be part of legislation or regulation 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
F)	Advertisement guidelines and compliance: 1a. Nationally adapted proposal for voluntary advertising guidelines and their use 1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so 2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)	<ul style="list-style-type: none"> The provision of advertisement guidelines was well received Only the provision of warning needs to be included in the legislation. 	<ul style="list-style-type: none"> Complex existing legislation on this priority 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

Figure 7: Summary of the feedback received from the 3rd and 4th national stakeholder workshops in Greece

3.3.2 Status and further steps of the implementation process of QualDeEPC's tools in Greece

3.3.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

In the context of Task 3.3, the QualDeEPC project developed the online QualDeEPC tool that performs building energy performance calculations and provides recommendations towards deep renovation (master tool). The Mastertool version was based on the existing Greek Home Energy Check tool (HEC) enriched with the new features in terms of elements, systems and recommendations, as they are thoroughly described in the [White Paper \(D3.2\)](#) as well as in [D3.3 Collection of tools developed](#).

The Master tool developed for QualDeEPC is the general version of a broad user-friendly platform for users, who want to be informed about the energy demand, rating and CO₂ emissions of their residential building. It is easy to use, allowing homeowners to simulate their dwellings, through the input of their building's necessary characteristics (typology – selecting one of 10 building types, geographical area, floor area, characteristics of building shell and heating/ cooling systems, etc.) in only 13 steps. In addition, the user can receive recommendations for improving the energy efficiency of their home to high levels (equivalent to deep energy renovation) for the walls, roof, floor, windows, shading, heating, cooling, DHW, and RES, and see the results and the indicative cost of the potential renovation activities. These recommendations could be compared to those of an EPC, or be used to prepare a discussion with an energy consultant or EPC issuer. The tool clearly states that its results are only indicative and for accurate results the user is recommended to obtain an energy audit by an accredited energy auditor/assessor.

In the end, the results from the comparison between the current and energy-improved case are given. Additionally, the new energy class of the house is given together with the achieved energy savings (in %), the CO₂ emissions reduction (in %) and an estimation on the investment required for the measures tested.

The QualDeEPC Mastertool is available at:

https://www.buildingcert.gr/qualdeepc_tools/master_tool/ and also accessible from [energyhubforall](#) platform at <https://www.energyhubforall.eu/home-energy-check/>.



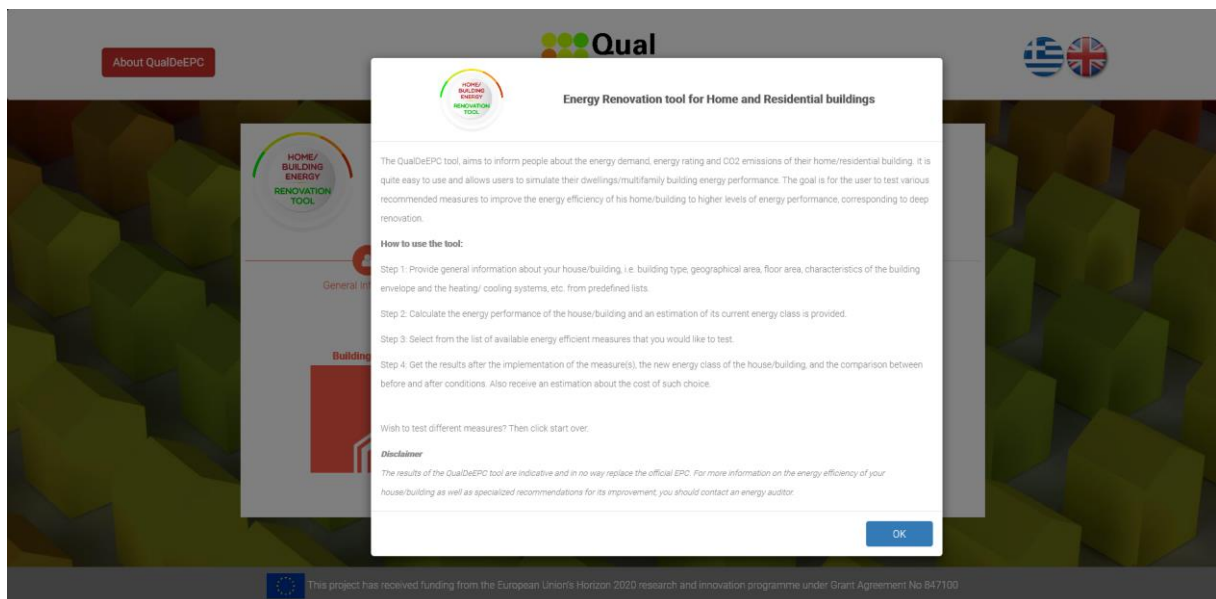


Figure 8: Screenshot of the welcome page of the QualDeEPC master tool

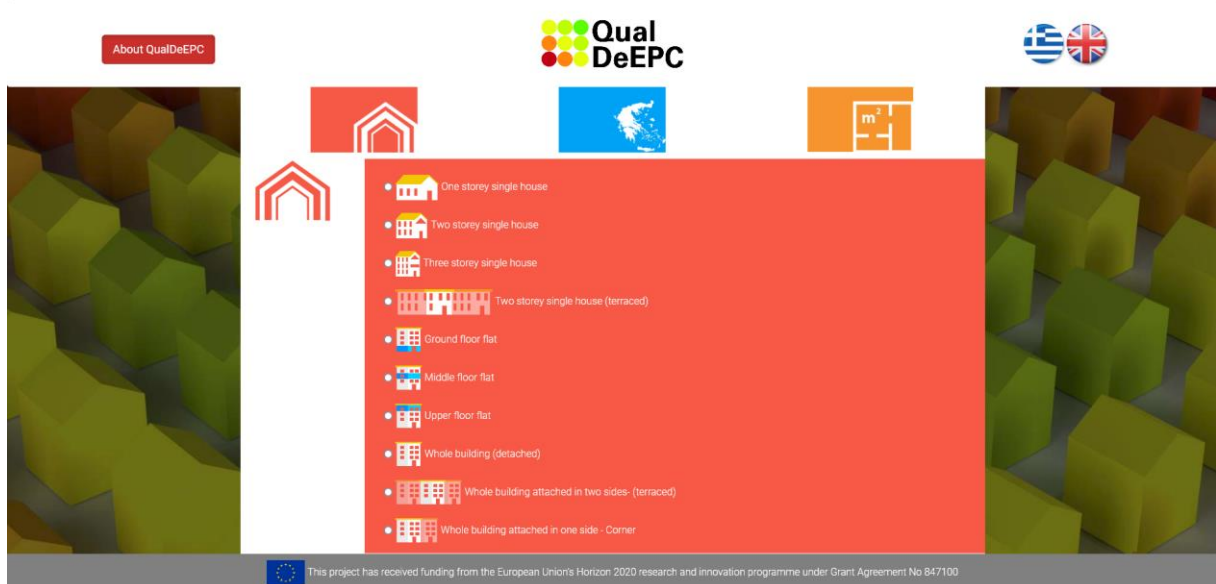


Figure 9: Screenshot of available building typologies of the mastertool

3.3.2.2 C) Creating Deep Renovation Network Platforms (DRNPs)

As regards for the adaptation and implementation of this project priority, CRES built upon an existing platform developed and operated by CRES; the platform '[EnergyHUBforALL](#)' can be classified as 1a) subtype. The upgraded platform is based on the joint concept developed by the QualDeEPC. The main content of the platform consists of:

- Improving Building's Energy Performance Principles,
- An outline of the EPC scheme in Greece (i.e. standard EPC , National EPC Registry and Nation Registry of EPC assessors),
- National and European legislation on building's energy performance and nZEB, including the proposed definition of QualDeEPC project for Deep Energy Renovation for Greece
- Energy renovation measures,
- Energy efficient products (building components & systems) providers,

- existing financing tools & funding mechanisms
- Information: on events, seminars and other platforms
- an online tool for estimating the potential improvements of residential buildings' energy performance towards deep energy renovation (QualDeEPC Master tool)

The target group addressed by this platform is mainly residential building owners and any other individuals interested in renovating or improving the energy performance of their buildings.

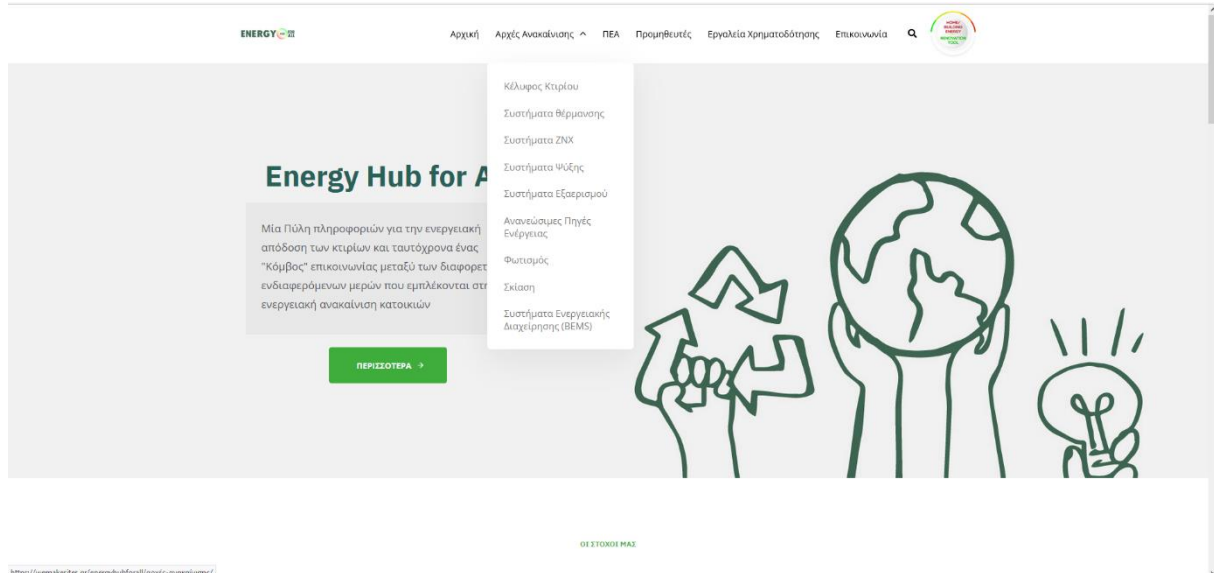


Figure 10: Screenshot of the upgraded EnergyHUBforALL platform – Home page



Figure 11: Deep Energy Renovation –proposed definition in Greek



3.3.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

“Energy Efficiency in Buildings” (Law 4685/2020) Related to QualDeEPC priority item(s): 1, A, D, F	
Responsible legislator / decision maker	Ministry of Environment and Energy
Date of Last modification	2020
Planned to be modified for any other reason	Not planned
Procedure of the amendment with estimated timeline	The stakeholders of the Ministry of Environment and Energy prepare the document and after its publication in the national gazette it comes into force.
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly improve the quality of the EPCs, energy renovation in the building sector and in particular the residential dwellings. Furthermore the proposed amendment will improve the quality of information of the EPC in real estate advertisements.
Relevant stakeholders who may support the convincing process	
Does the definition of “deep energy renovation” exist in the local legislation and if not will it be adopted?	The definition does not exist and should be adopted
Other barriers which can complicate or hinder the changes	No particular challenge on this topic.
Possible timeline for modification	>24 months

Regulation for Energy Efficiency of Buildings” (KENAK) Ministerial Decree (ΔΕΠΕΑ/οικ.178581, 12.07.2017, Official Gazette Β΄ 2367)) Related to QualDeEPC priority item(s): 1,A,E	
Responsible legislator / decision maker	Ministry of Environment and Energy Ministry of Finance
Date of Last modification	12.07.2017



Planned to be modified for any other reason	Yes, still pending
Procedure of the amendment with estimated timeline	The stakeholders of the Ministry of Environment and Energy prepare the document and after its publication in the national gazette it comes into force.
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly improve the quality of the EPCs, energy renovation in the building sector and in particular the residential dwellings.
Relevant stakeholders who may support the convincing process	Stakeholders in the Ministry of Environment and Energy; the participants of the expert groups on the relevant topics to the ministry
Does the Ordinance include some of the values for the Deep energy renovation recommendations?	No
Other barriers which can complicate or hinder the changes	No particular challenge on this topic.
Possible timeline for modification	>24 months

Technical Guides of the Technical Chamber of Greece:

- [TOTEE 1 \(ΔΕΠΕΑ/οικ. 182365/17.10.2017, Official Gazette ΦΕΚ Β' 4003\)](#)
- [TOTEE 2 \(ΔΕΠΕΑ/οικ. 182365/17.10.2017, Official Gazette ΦΕΚ Β' 4003\)](#)
- [TOTEE 3 \(οικ.2618/23.10.2014, Official Gazette ΦΕΚ Β' 2945\)](#)
- [TOTEE 4 \(ΔΕΠΕΑ/οικ. 182365/17.10.2017, Official Gazette ΦΕΚ Β' 4003\)](#)
- [TOTEE 5 \(ΔΕΠΕΑ/οικ. 182365/17.10.2017, Official Gazette ΦΕΚ Β' 4003\)](#)
- [Error Corrections TOTEE \(Official Gazette ΦΕΚ Β' 4108/2017\)](#)

Ministerial Decree by Ministry of Environment and Energy

Related to QualDeEPC priority item(s): 1 A E

Responsible legislator / decision maker	Ministry of Environment and Energy
Date of Last modification	17.10.2017
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	Ministry of Environment and Energy is responsible for establishing a technical committee for the preparation of the Technical Guides. The Technical Chamber of Greece



	<p>undertakes the task of drafting the Technical guides to be approved by the committee and the Ministry.</p> <p>The stakeholders of the Ministry of Energy and the Technical Chamber of Greece prepare the document and after its publication in the national gazette it comes into force.</p>
Possibilities, arguments to convince the decision maker(s)	<p>The proposed changes would significantly improve the quality of the EPCs, energy renovation in the building sector and in particular the residential dwellings.</p> <p>The enhanced EPC is more oriented to non-professionals and is easier to use by the homeowners and increases the awareness on the Energy Performance of Buildings.</p>
Relevant stakeholders who may support the convincing process	Stakeholders in the Ministry of Energy; the participants of the expert groups on the relevant topics
Has the enhanced EPC such elements that need major changes compared to the current state? Which are they?	<p>The enhanced EPC as adapted to the Greek context includes all the data and information of the current one.</p> <p>New elements to be introduced:</p> <ul style="list-style-type: none"> ● The energy classification based on final energy. ● Energy performance evaluation of the building envelope components and the technical systems. ● The “Energy rating” indicator (traffic light system). ● The field of the main option.
what is needed for these changes	Introduction of the “Energy rating indicator”
Other barriers which can complicate or hinder the changes	The update of the document is not a priority of the Ministry.
Possible timeline for modification	>24 months



3.3.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the Greek framework

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Timeline, (months)	Human and material resources needed	Competent body (ies) and relevant stakeholders
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	Introduction of the Deep energy renovation definition and amendment of the law in force “Energy Efficiency in Buildings” (Law 4685/2020)	Change of “Regulation for Energy Efficiency of Buildings” (KENAK) and the Technical Guides of the Technical Chamber of Greece on the minimum requirements for the energy efficiency of the building structural elements and technical systems.	>24	Experts from the professional associations, Technical Chamber of Greece and governmental committees	<ul style="list-style-type: none"> Ministry for Energy and Environment Technical Chamber of Greece Representatives from relevant professional associations and, governmental committees
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)	Introduction of the list of mandatory measures to be considered in EPCs.	Change of “Regulation for Energy Efficiency of Buildings” (KENAK) and the Technical Guides of the Technical Chamber of Greece on the minimum requirements for the energy efficiency of the building structural elements and technical systems.	>24	Experts from the professional associations, Technical Chamber of Greece and governmental committees	
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	Introduction of the enhanced EPC template developed during the project. Introduction of the “Energy rating indicator” in the “Energy Efficiency in	Amendment of the Regulation for Energy Efficiency of Buildings” (KENAK) should be implemented (Article 14) as well as an amendment of the relevant Technical Guide of the Technical	>24	Experts from the professional associations, Technical Chamber of Greece and governmental committees	

		Buildings” law (L.4685/2020)	Chamber of Greece and the respective Ministerial Decree, should be issued for defining the new form.			
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	Mandatory training. Amendment of the Presidential Decree 100/2010: Energy auditors for buildings, boilers and HVAC systems. Introduction of the deep energy renovation recommendations into the training curricula.	N.A.	>24	Experts from the professional associations, Technical Chamber of Greece and governmental committees	
F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	Introduction of the guidelines in in the “Energy Efficiency in Buildings” Law (L.4685/2020)	N.A.	>24	Experts from the professional associations, Technical Chamber of Greece and governmental committees	
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	Already included in the national legislation	N.A.	N.A.	N.A.	N.A.



3.3.5 *Outlining the further consultation needs and processes*

The policy proposals, including the proposed legislation and regulation amendments, need to be discussed at expert level in the professional organisations and then in the different ministries and committees, before the policy proposal is integrated in a proposal for amendment of the Law.

All decree modifications and amendments are done at ministry level. The processes followed are time consuming considering that amendments are discussed at expert level and all the technical values need to be verified and checked for compliance with other regulations and standards. The Law is coming into force when the document is published in the Official Gazette.



3.4 Hungary

For Hungary as well, were developed and included practical concepts, proposals and tools for an enhanced EPC scheme towards the deep renovation. Among these concepts is the proposal for introduction of the definition of “deep energy renovation” in the national legislation. Specific values for the building envelope components and the technical systems have been proposed. The next component of the developed tools (<https://renopont.hu/tudasbazis/kalkulator>) is the online tool for comparing the EPC recommendations to the deep energy renovation recommendations. The tool is included as part of the Deep Renovation Network Platform (renopont.hu) which is a dedicated tool developed for the specific needs of Hungary described in D5.2 Report on the 7 nationally adapted Deep Renovation Network Platform concepts. In addition to the definitions and tools, QualDeEPC proposals on Regular mandatory EPC assessors training and Voluntary/mandatory advertising guidelines for EPCs & improving compliance with the mandatory use of EPCs in real estate advertisements were also adapted to Hungary's needs. The enhanced EPC form developed within the QualDeEPC project was also adapted to the Hungarian context.

3.4.1 First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Hungary

The scope of the 3rd national workshop is to provide the stakeholders with the latest achievements of QualDeEPC and to organise discussions between them on important topics related to the Hungarian EPC scheme. The feedback on the suggestions of the project presented at the workshop was very positive. The stakeholders agreed on the necessity of introduction of the definition of the “Deep Energy Renovation” in the local legislation, however the economic return was doubted in the actual Hungarian context (in May 2022 residential gas and electricity prices were the lowest in Europe), however since the workshop the energy prices have been increased significantly for households consuming above the average. The approach adopted by the project for the deep energy renovation recommendations adapted to the Hungarian context and the list of the recommendations were also considered as a good achievement. Regarding the adapted enhanced EPC form and the introduction of the “Energy rating” indication the opinions were divided. The indicator is estimated as a good new component of the certificate, but there were concerns about the realisation due to the extra efforts and higher competence needed from the experts’ side. The proposed regular EPC assessor trainings are already obligatory in Hungary, only the contents of them could be revised based on QualDeEPC’s recommendations which had positive feedback . n. The DRNP and the online tool were considered as very good and the stakeholders were pleased to discover the possibility to find useful information in one place. The advertisement guidelines and compliance approach were considered as a good improvement of the existing requirements.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Hungary	Entry into force of the recast of 7/2006 decree is pending, no information on the possible date of proceeding. It doesn't contain a definition for deep renovation.	The legal process is slow, so more will change in the meantime. Not everything can be incorporated into the material under negotiation. Some parts have to be reconsidered because of this.	Ministers have already discussed it, but it is not known when it will be presented to the government.	Include the recovery of DHW heat in the proposals (BME forwards to QualDeEPC consortium). Heat recovery efficiency should be applied to the net demand, if any.	The economic return is also a big question. The aim of the new national regulation would be to ensure that minimum indicators can be reached by the most efficient technologies for the case.
A)	Deep energy renovation recommendations by QualDeEPC adapted to Hungary's context	Entry into force of the recast of 7/2006 decree is pending, no information on the possible date of proceeding	In Hungary, there is no requirement for heat recovery even for new buildings.	-	-	-
E)	Adapted enhanced EPC form and introduction of "Energy rating" indicator- definition for Hungary's case for building envelope components and technical systems	The relevant regulation is currently being amended. Most of the elements proposed by QualDeEPC are included in the new proposal.	It is not realistic in Hungary to report separately electricity/gas consumption for different purposes as sub meters are rarely used.	Ministers have already discussed it, but it is not known when it will be presented to the government.	- Threshold figures of the energy class are not precise (no category for eg. 40,6)	- Calculation of the indicators for co-benefits of deep renovations could be problematic (lack of data) in Hungary. It should not have different indicators per Member States. But it would also be difficult to adapt one by one what the EU proposes, so it is a difficult question.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
D)	Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content	Regular EPC assessor trainings are already obligatory in Hungary, only the contents of them could be revised based on QualDeEPC's recommendations.	–	The competent stakeholders attended the workshop, they were asked to take into consideration the recommendations.	–	
B)	Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations	–	High-level energy calculations can only be done by a professional. Users should find help, they should not have to do the calculations on their own, because they may get misleading results.		The proposed online tool needs some further improvements to offer deep renovation solutions.	The importance of renovations should be emphasised and communicated.
C)	Deep Energy Renovation Network Platform	–	–	–	<ul style="list-style-type: none"> – Participants were asked to promote the DRNP – online services will be extended in order to reach as many people as possible 	Completing certain website sections on deep renovation: for example, issues related to misconceptions.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
F)	Advertisement guidelines and compliance: 1a. Nationally adapted proposal for voluntary advertising guidelines and their use 1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so 2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)	<ul style="list-style-type: none"> - No suitable standard/regulation to include this 	<ul style="list-style-type: none"> - No interest from actors (seller who is the issuer is not motivated to advertise efficiency level unless it is highly efficient) - There is no competent/assigned authority to elaborate the guideline - Regulation on mandatory EP certifying is not suitable: it is only requested at the moment of the chaffer 	-	<ul style="list-style-type: none"> - there were no recommendations on the possible sanctions - Appoint a nodal authority with sufficient resources and the mandate to perform the random checking and the following measure: - Possible authority could be National Media and Infocommunications Authority - Raising awareness of the duty to display EPC energy data/class in real estate advertisement, and of the advertisement guidelines (priority F) - Define staged penalties for non-compliance. 	-

Table 6: Summary of the feedback received from the 3rd and 4th national stakeholder workshops in Hungary



3.4.2 Status and further steps of the implementation process of QualDeEPC's tools in Hungary

3.4.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

The online tool for comparing EPC recommendations to deep energy recommendations for Hungary is developed as a simplified tool, embedded in the Deep Renovation Network Platform which is called Renopont.

The user is given the possibility to choose among a list of recommendations for Deep Renovation, specific recommendations and to make a selection. The list contains recommendations for the building envelope (walls insulation, roof and floor insulation, doors and windows replacement, etc.) and systems improvements (ventilation, heating and cooling, domestic hot water systems, lighting, etc.).

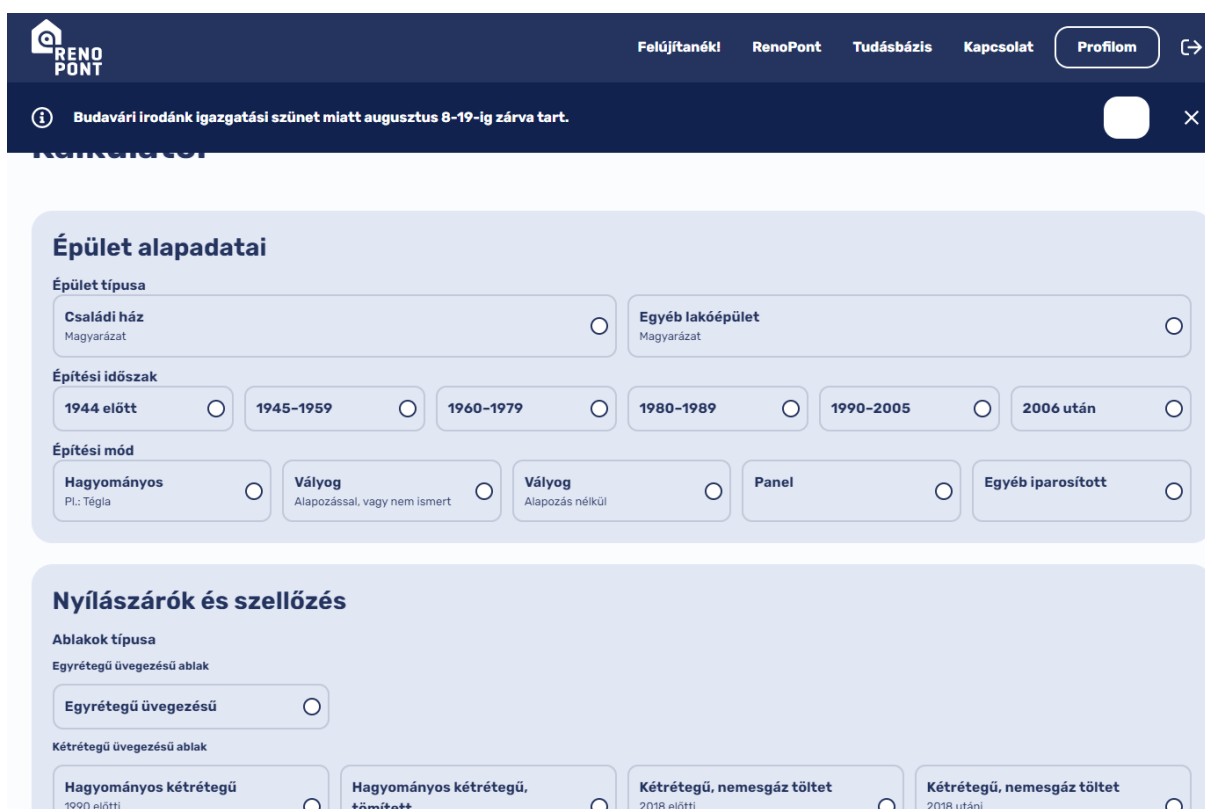


Figure 12: Screenshot of the input parameters of the Hungarian online tool

After the confirmation of the selection, the tool redirects the user to the “Results” page, where energy and CO₂ savings are indicated.

3.4.2.2 C) Creating Deep Renovation Network Platforms (DRNPs)

The Hungarian Deep Renovation Network Platform was created in cooperation with sister project RenoHub. The platform is a platform for information providing information on a national level. Its purpose is to help building owners to take the steps needed for renovation after or based on the EPC.

The demo phase Renopont platform was further developed taking into account all the relevant topics concerning the deep renovation concept and the seven priorities of QualDeEPC project. After the end

of the project MEHI Nonprofit Ltd. will operate the platform. The tool is designed as a user-friendly platform containing all the necessary and relevant information concerning the deep renovation process, taking in consideration the national requirements. The platform is in Hungarian language, which makes it accessible to all kinds of users.

It includes information on several services such as information on the deep energy renovation, the EPC, the available and recommended building professionals and system suppliers, as well as information on the possible financing and subsidiary programmes.

The link to the Hungarian DRNP is: <https://renopont.hu/>

The main page of the platform presents all the menus relative to the main information which contains the DRNP.



Figure 13: Screenshot of the main page of the Hungarian DRNP

In the “*Knowledge and skills*” menu the user can find submenus containing information on financial aspects, recommended craftsmen, useful documents, administrative support (e.g. sample contracts), technical advices (building energy efficiency, building envelope, heating systems, DHW systems, cooling systems, ventilation systems, renewable energies, lighting, deep renovation recommendations), frequently asked questions and the online tool for deep energy renovation recommendations and useful links.





Milyen hosszú dübelre van szükség?

A lehető legnagyobb rögzítési biztonság elérésének fontos feltétele a dübel hosszúságának pontos meghatározása. Ez viszonylag egyszerű feladat:

A dübel rögzítési mélysége (típustól függ, jellemzően 25-40 mm)

- + a régi vakolat vastagsága (ha van, akkor ez általában 20 mm)
- + a ragasztóréteg vastagsága, általában 10 mm
- + a szigetelőanyag vastagsága
- = **szükséges dübelhosszúság**

Ha a homlokzaton nagyobb egyenetlenségeket kell kiegyenlíteni, akkor különböző hosszúságú dübelek alkalmazása válhat szükségessé.

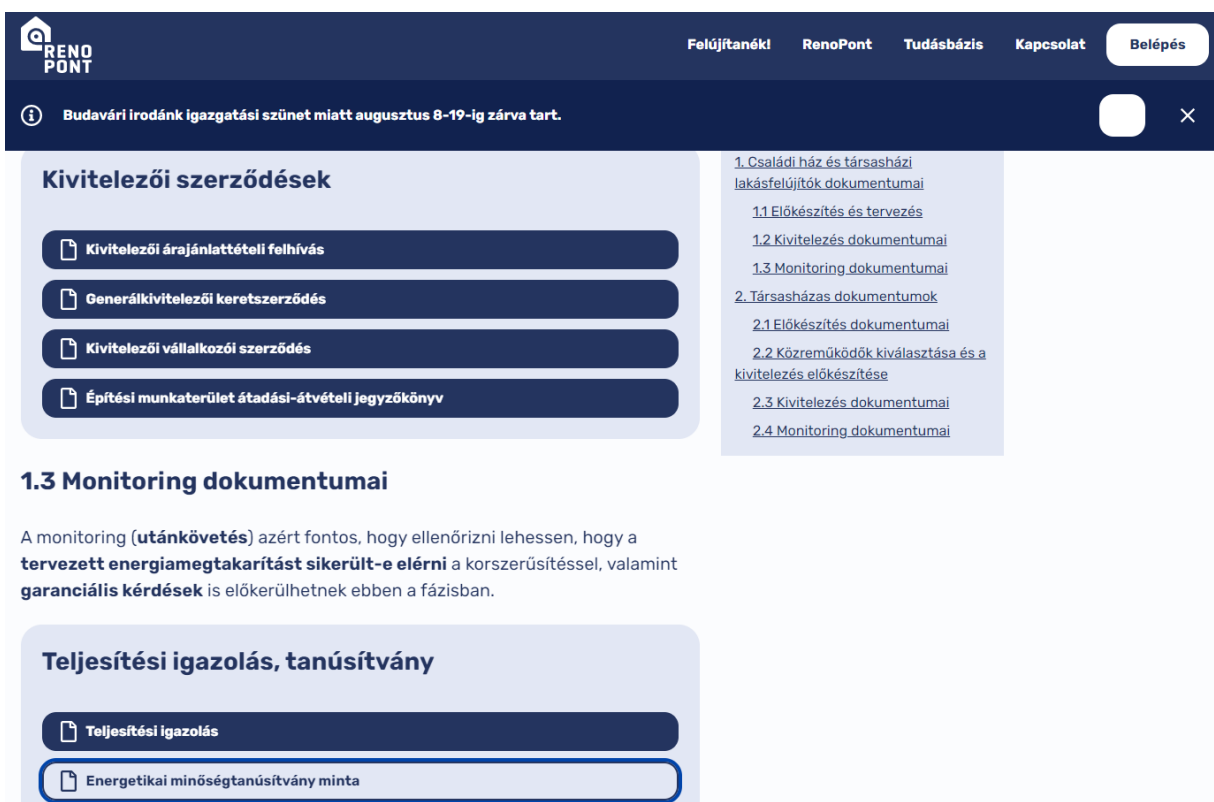
Milyen hosszú dübelre van szükség?

A fentiekén túl fontos a **dübelek száma**, amit meghatároz a hőszigetelés anyaga, az épület magassága is, melyet minden esetben gondosan kell megtervezni a szakemberek segítségével (normál családi ház esetében 6,0 db/m²). Nagyon kell figyelni az **előfűrésra** is, nem mindegy, hogy milyen alapfelületű anyag esetében, milyen fűrésszel fűrészeljük elő a dübeleket. Ezen műszaki megoldásokban is a

Általános szabályok, felmérési adatlap, tipikus hibák

1. NYÍLÁSZÁRÓ CSERE
 - 1.1 Kiválasztási szempontok
 - 1.2 Nyílászárók fajtái
 - 1.3 Egyéb (árnyékolás, szellőztetés)
2. HŐSZIGETELÉS
 - 2.1 Hőszigetelések fajtái, anyagai
 - 2.2 Kiegészítők (ragasztó, dübel)
3. FŰTÉSKORSZERŰSÍTÉS
 - 3.1 Mit jelent a „jó” fűtés?
 - 3.2 Fűtési rendszerek fajtái
 4. EGYÉB (megújuló energia, világítás)

Figure 14: Example for insulation fixing



Kivitelezői szerződések

- Kivitelezői árajánlattételi felhívás
- Generálkivitelezői keretszerződés
- Kivitelezői vállalkozói szerződés
- Építési munkaterület átadási-átvételi jegyzőkönyv

1.3 Monitoring dokumentumai

A monitoring (**utánkövetés**) azért fontos, hogy ellenőrizni lehessen, hogy a **tervezett energiamegtakarítást sikerült-e elérni** a korszerűsítéssel, valamint **garanciális kérdések** is előkerülhetnek ebben a fázisban.

Teljesítési igazolás, tanúsítvány

- Teljesítési igazolás
- Energetikai minőség tanúsítvány minta

1. Családi ház és társasházi lakásfelújítók dokumentumai

- 1.1 Előkészítés és tervezés
- 1.2 Kivitelezés dokumentumai
- 1.3 Monitoring dokumentumai

2. Társasház dokumentumok

- 2.1 Előkészítés dokumentumai
- 2.2 Közreműködők kiválasztása és a kivitelezés előkészítése
- 2.3 Kivitelezés dokumentumai
- 2.4 Monitoring dokumentumai

Figure 15: screenshot of "Knowledge and skills" menu

Page “Useful documents and contract samples”. The menu is dedicated to the “Financial possibilities”. It is a comprehensive collection of national and municipal funds and loans with detailed description of eligible measures and clients, main requirements and useful links.



Tartalom

- [Otthonfelújítási támogatás](#)
- [Falusi CSOK támogatás](#)
- [Napelemes pályázat](#)
- [Lakástakarék](#)
- [Babaváró hitel](#)
- [Társasházi felújítási hitelek](#)
- [Önkormányzati támogatások](#)
 - [Belvárosi karbantartási támogatás](#)
 - [Józsefvárosi bérlakás támogatás](#)
 - [Budavári támogatások](#)
- [Vállalkozói támogatások](#)
- [CSOK - felújításra nem lehívható](#)
- [MNB Zöld Otthon - felújításra nem lehívható](#)
- [MFB hitel - felfüggesztve](#)

Falusi CSOK támogatás

A falusi CSOK támogatás csak korszerűsítésre is igényelhető olyan ingatlanra, amely már az kérelmező tulajdonában van. Tehát nem kell feltétlen új ingatlant venni, hanem a meglévőt kell a megadott feltételeknek megfelelően felújítani. Ez a rekonstrukció jellemzően energetikai felújítást is jelent, hiszen a korszerűsített épületbe nagy hiba lenne elavult, energiapazarló technológiákat újabb évtizedekre – a következő felújításig – bebetonozni.

A támogatásra jogosultak köre: A Családi Otthonteremtési Kedvezményt (CSOK) már 1 vállalt vagy meglévő gyermek után igényelheti. A tanyán, birtokközponton, preferált kistérségben lévő lakáshoz/lakóházhoz igényelt Családi Otthonteremtési Kedvezményt (Falusi CSOK) felhasználhatja bővítésére és/vagy korszerűsítésére, akár ezzel egyidejűleg a használt ingatlan megvásárlására is. Falusi CSOK 2486 településen igényelhető.

Az igényelhető támogatás összege: A gyermekek számától függően a minimális hasznos alapterület és a használt lakás vásárlására és/vagy bővítésére, energetikai felújítására igényelhető támogatás összegét az alábbi táblázat mutatja be:

	1 gyermek esetén	2 gyermek esetén	3 gyermek esetén	4 vagy több gyermek esetén
Hasznos alapterület - használt				

Figure 16: Screenshot of the page “Useful documents and contract samples”

The menu “Recommended craftsmen and experts” is available only after first personal consultation in the physical hub, when the specific needs of the user are clarified.



RenoPont > Tudásbázis > Hatóságok, engedélyek

Hatóságok, engedélyek



1. Mi engedélyköteles, mi nem?

- Bármilyen **műemléki védettség** alatt álló épület esetében minden beavatkozáshoz a helyi építéshatóság és a műemlékvédelmi hatóság engedélye szükséges.
- Az utólagos **hőszigeteléshez** alapesetben nem szükséges hatósági engedély.
- A **nyílászárók** cseréjénél csak akkor kell engedély a helyi építéshatóságtól, ha az **eredeti méreten** és **formán** változtatni akarunk.
- A fűtési rendszer korszerűsítésekor több hatósággal is dolgunk lehet: gázfűtés esetén a **helyi gázszolgáltatótól**, valamint a **kéményseprő-ipari szolgáltatótól** is engedélyt kell szereznünk, és az **üzembe helyezést** is ők hagyják majd jóvá.
- A hőleadó rendszert (radiátorok, padlófűtés stb.) nem kötelező tervezni és

Tartalom

- [1. Mi engedélyköteles, mi nem?](#)
- [2. Általános építésügyi hatóság](#)
- [3. Kéményseprőipari-szolgáltató](#)
- [4. Műemlékvédelmi Hatóság](#)
- [5. Energetikai követelmények felújítás és bővítés esetén](#)
- [6. Vonatkozó jogszabályok](#)

Figure 17: Screenshot of the menu "Recommended craftsmen and experts"

Another menu is the "Authorities and permissions" which gives the user an overview on what permissions are needed and which authorities should be contacted including building permission, chimney permission, Monumental Protection Authority, permissions related to gas network and electricity.



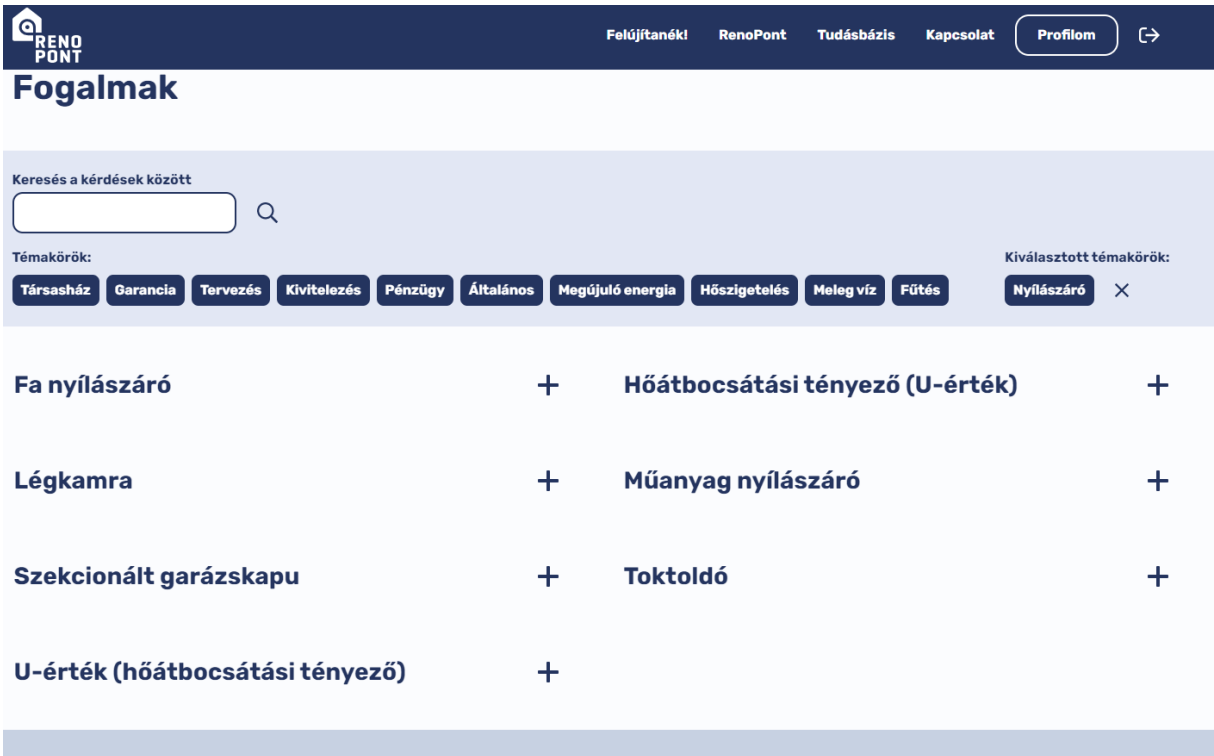


Figure 18: Glossary

The menu “Glossary” is organised in sub-chapters, such as “MF buildings”, “Warranty”, “Planning and design”, “Construction”, “Financing”, “General”, Renewables”, “Thermal insulation”, “Hot water”, Heating”, Windows”, etc. It includes the explanation of more than 70 terms.

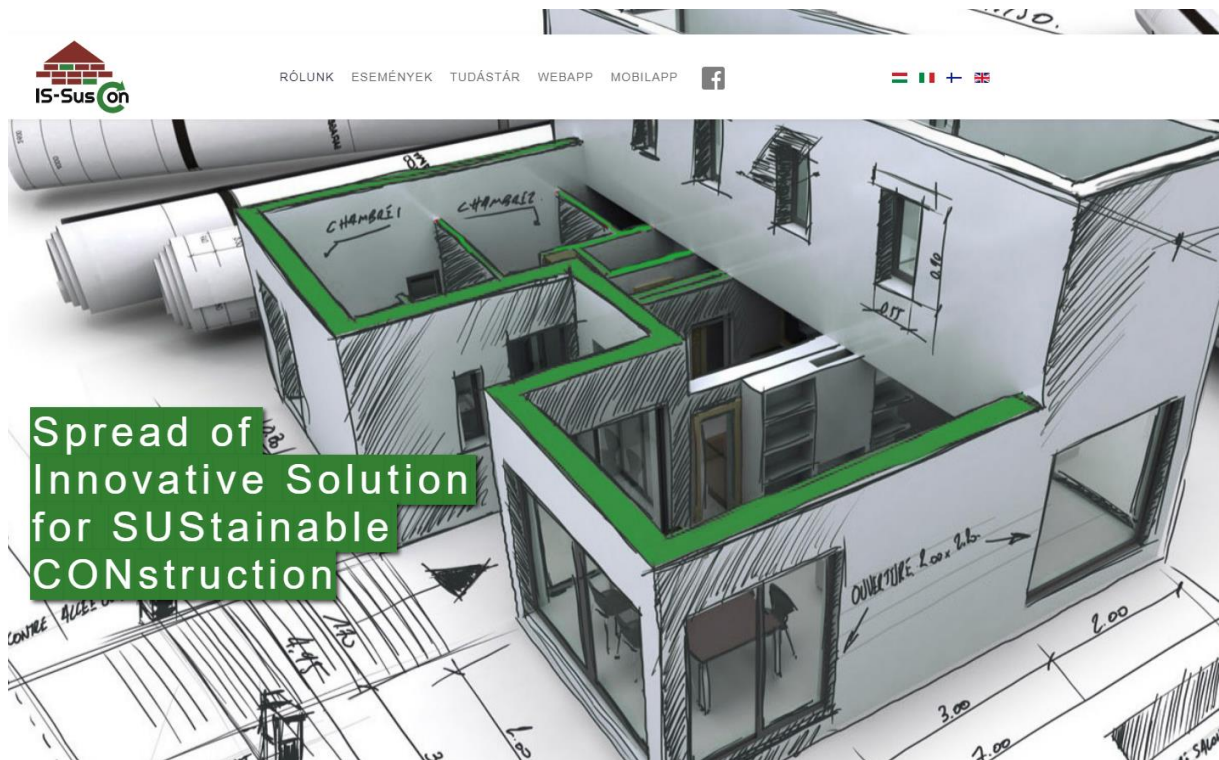


Figure 19: An example from the collection “Useful materials and links”



Last menu is “Useful materials and links”. It includes a collection of other websites providing useful information for the users developed within other projects or by other associations. As example we can mention “How to build green” such as “Facts and misbeliefs about insulating” or “Retrofit guide for windows”.

3.4.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

7/2006 (24 May 2006) ministerial decree on the energy performance of buildings	
Related to QualDeEPC priority item(s): 1, E	
Responsible legislator / decision maker	Ministry for Industry and Investments
Date of Last modification	10.03.2021
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The decree is issued by the Ministry for Industry and Investments. The policy proposal of the amendment is published on the Ministry’s website and reviewed by the respective committee of the related Ministries and authorities, professional and civil associations. The preparer of the legislation assesses the likely consequences of the legislation by carrying out an ex ante impact assessment in a level of detail appropriate to the anticipated effects of the legislation. The impact assessment shall examine (a) all the effects of the proposed act which are considered to be significant, in particular (aa) its social, economic and budgetary effects, (ab) its environmental and health consequences, (ac) its impact on administrative burdens; and (b) the need for the legislation, the likely consequences of not legislating; and (c) the human, organisational, material and financial conditions necessary for the application of the legislation. After its publication in the state gazette, comes into force.
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly decrease the country’s dependency from Russian gas, to achieve the sustainability goals and decrease energy poverty.
Relevant stakeholders who may support the convincing process	MEHI, MEKH, MMK, MÉK, HuGBC, MÉASZ, Lechner Tudásközpont, Ministry for Technology and Industry



Does the definition of “deep energy renovation” exist in the local legislation and if not will it be adopted?	The definition does not exist in the local legislation and should be adopted
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months
176/2008. (VI. 30.) governmental decree on energy performance certificates	
Related to QualDeEPC priority item(s): A,E,F,G	
Responsible legislator / decision maker	Government of Hungary
Date of Last modification	30.12.2020
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The decree is issued by the Government. The policy proposal of the amendment is published on the Government’s website and reviewed by the respective committee of the related Ministries and authorities, professional and civil associations. The preparer of the legislation assesses the likely consequences of the legislation by carrying out an ex ante impact assessment in a level of detail appropriate to the anticipated effects of the legislation. The impact assessment shall examine (a) all the effects of the proposed act which are considered to be significant, in particular (aa) its social, economic and budgetary effects, (ab) its environmental and health consequences, (ac) its impact on administrative burdens; and (b) the need for the legislation, the likely consequences of not legislating; and (c) the human, organisational, material and financial conditions necessary for the application of the legislation. After the review the Government has still the right for veto. After its publication in the state gazette, comes into force.
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly improve the public acceptance and usefulness of the EPCs, decrease the country’s dependency from Russian gas, to achieve the sustainability goals and decrease energy poverty.
Relevant stakeholders who may support the convincing process	MEHI, MEKH, MMK, MÉK, HuGBC, MÉASZ, Lechner Tudásközpont, Ministry for Technology and Industry
Other barriers which can complicate or hinder the changes	No specific barriers



Possible timeline for modification	6 to 12 months
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266/2013. (VII. 11.) governmental decree on professional activities in the field of construction

Related to QualDeEPC priority item(s): D

Responsible legislator / decision maker	Government of Hungary
Date of Last modification	8.11.2021
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The decree is issued by the Government. The policy proposal of the amendment is published on the Government's website, reviewed by the respective committee of the related Ministries and authorities, professional and civil associations. The preparer of the legislation assesses the likely consequences of the legislation by carrying out an ex ante impact assessment in a level of detail appropriate to the anticipated effects of the legislation. The impact assessment shall examine (a) all the effects of the proposed act which are considered to be significant, in particular (aa) its social, economic and budgetary effects, (ab) its environmental and health consequences, (ac) its impact on administrative burdens; and (b) the need for the legislation, the likely consequences of not legislating; and (c) the human, organisational, material and financial conditions necessary for the application of the legislation. After the review the Government still has the right to veto. After its publication in the state gazette, comes into force.
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly improve the quality of the EPCs, energy retrofits in the building sector.
Relevant stakeholders who may support the convincing process	MMK, MÉK
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months



3.4.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the Hungarian framework

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Timeline (in months)	Human and material resources needed	Competent body (ies)
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	Introduction of the definition in 7/2006 decree on the energy performance of buildings	Amendment of the 7/2006 decree on the energy performance of buildings	6-12	trainings campaign is needed about the changes to be implemented by Hungarian Chamber of Engineers and Hungarian Chamber of Architects	Ministry for Construction and Investments and Ministry for Industry and Technology
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)	Introduction of the definition in 176/2008 governmental decree on the energy performance certificates	Amendment of 176/2008 governmental decree on the energy performance certificates	6-12	calculation softwares and the online national registry platform of the EPCs should be updated trainings campaign is needed about the changes to be implemented by Hungarian Chamber of Engineers and Hungarian Chamber of Architects	Ministry for Construction and Investments and Ministry for Industry and Technology
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	Introduction of the enhanced EPC template	Amendment of 176/2008 governmental decree on the energy performance certificates	18	calculation softwares and the online national registry platform of the EPCs should be updated trainings campaign is needed about the changes to be implemented by Hungarian Chamber of Engineers and Hungarian Chamber of Architects	Ministry for Construction and Investments and Ministry for Industry and Technology

D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	Introduction of the deep energy renovation recommendations into the training curricula	Amendment of 266/2013. (VII. 11.) governmental decree on professional activities in the field of construction	18	trainings to be implemented by Hungarian Chamber of Engineers and Hungarian Chamber of Architects	Ministry for Construction and Investments and Ministry for Industry and Technology
F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	responsible body for the guidelines should be nominated	Amendment of 176/2008 governmental decree on the energy performance certificates	18	Suitable human, technical and financial resources are needed to be ensured at the responsible authority. Support for the development of the advertising guidelines Proposals for restrictions to be built in/develop in case of non-compliance	Ministry for Construction and Investments and Ministry for Industry and Technology
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	responsible body for control should be nominated	Amendment of 176/2008 governmental decree on the energy performance certificates	18	Suitable human, technical and financial resources are needed to be ensured at the responsible authority.	Ministry for Construction and Investments and Ministry for Industry and Technology



3.4.5 Outlining the further consultation needs and processes

All the above-mentioned policy proposals and legislation and regulation amendments suggestions need to be discussed at expert level in the professional organisations and then in the different ministries and committees, before the policy proposal is integrated in a proposal for amendment of the Acts that need to be amended.

All decree modifications and amendments are done at ministry level, so the process is relatively easy, but could be longer as they are deeply discussed at expert level and all the technical values need to be verified and checked for compliance with other regulations and standards. Before coming into force, the document should again be published in the state gazette.



3.5 Latvia

For Latvia practical concepts, proposals and tools for an enhanced EPC scheme towards the deep renovation were developed. Among these concepts is the proposal for introduction of the definition of “deep energy renovation” in the national legislation. Another practical concept is the suggestions for deep energy recommendations adapted to the Latvian context which are presented as specific values for the building envelope components and the technical systems. The next component of the developed tools is the online tool for calculating the deep energy renovation recommendations. The tool is included as part of the Deep Renovation Network Platform, which is a dedicated tool developed for the specific needs of Latvia described in D5.2 Report on the 7 nationally adapted Deep Renovation Network Platform concepts. In addition to the definitions and tools, QualDeEPC proposals on Regular mandatory EPC assessors training and Voluntary/mandatory advertising guidelines for EPCs & improving compliance with the mandatory use of EPCs in real estate advertisements were also adapted to Latvia’s needs. The enhanced EPC form developed within the QualDeEPC project was also adapted to the Latvian context.

3.5.1 First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Latvia

The scope of the 3rd national workshop was to provide the stakeholders with the latest achievements of QualDeEPC and to organise discussions between them on important topics related to the Latvian EPC scheme. The feedback on the suggestions of the project presented at the workshop were positive. The stakeholders agreed on the necessity of introduction of the definition of the “Deep Energy Renovation” in the local legislation. The approach adopted by the project for the deep energy renovation recommendations adapted to the Latvian context and the list of the recommendations were also considered as a good achievement and right step for the further introduction in the Latvian legislation. Regarding the adapted enhanced EPC form, not everybody agreed that another new EPC template should be introduced only shortly after the national EPC form has been changed. The proposal for regular mandatory training and/or exams of the EPC assessors was accepted since there already is this system in place. The DRNP and the online tool were considered as very good and the stakeholders were pleased to discover the possibility to find useful information in one place. Only some concerns were raised regarding the user type and whether this tool will not be replacing energy audits and giving wrong information for deciding to renovate the building. The advertisement guidelines and compliance approach were considered as a good improvement of the existing practice in Latvia where basically no EPCs are made and advertised for the purpose of selling or renting of buildings.

During the 4th national stakeholder workshop the developed recommendations from QualDeEPC project were further discussed. There were no major additions compared to the 3rd national stakeholder workshop. During the 4th national workshop more emphasis on the recast of the Energy Performance of Buildings Directive was given.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Latvia	Definition on deep energy renovation should be introduced in national legislation and it could also be a mandatory requirement in case of receiving subsidies for building renovation	Not everybody agrees that for all types of buildings one single definition will be enough.	There are two possible ways to introduce the "Deep Energy Renovation" definition: -as definition Cabinet regulations on Minimal energy efficiency requirements and in Cabinet regulations on Thermotechnics of Building Envelopes -if the definition is adopted in the EPBD recast, the definition will be automatically transposed to the Latvian legislation	Separate research should be done in order to fine-tune the deep energy renovation definition for all types of buildings.	
A)	Deep energy renovation recommendations by QualDeEPC adapted to Latvia's context	Deep energy renovation recommendations could be defined and included in definition Cabinet regulations on Minimal energy efficiency requirements and in Cabinet regulations on Thermotechnics of Building Envelopes	Deep energy renovation recommendations should be tied with the economical feasibility of these measures.	-	Deep energy renovation recommendations should be viewed together with payback time, IRR and NPV of these measures.	
E)	Adapted enhanced EPC form and introduction of "Energy rating" indicator- definition for the Latvia's case for building envelope components and technical systems	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. The Cabinet regulation on building energy efficiency calculation methods and buildings energy certification should be changed and the enhanced EPC template should replace the existing EPC template	The Enhanced EPC would be another change in EPC template. We are not still adapted to the last change of EPC template. Also, the recast of the energy performance of buildings directive most likely will mean another mandatory change in the EPC template.	-	EPC template should be still improved in order to make it more understandable to non-energy experts. For a non-energy expert there is too much information.	

Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
D)	Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content	There already are mandatory EPC assessor trainings in place; only the system has started working recently and therefore it is not still widely taken up and used as it should be	-	-		-
B)	Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations	The tool is accepted very well but some concerns were raised regarding the case that such tool would replace energy audits. It also was not clear who is the main user type of this tool.	All precautions should be made in order to ensure that this tool is no misunderstood and is not used as a replacement to an energy audit in the building	-		-
C)	Deep Energy Renovation Network Platform	The feedback on the overview of the DRNP for Latvia was positive.	Who would be updating the deep renovation platform after the project has ended and who would be responsible for keeping the information correct and not out of date?	-	The platform should be expanded in order to tailor it to different types of stakeholders (for instance energy assessors should see different information than regular inhabitants of buildings).	
F)	Advertisement guidelines and compliance: 1a. Nationally adapted proposal for voluntary advertising guidelines and their use 1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so 2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)	The majority of the participants were not familiar with the already existing national requirements. Participants stated that the control of the compliance with the requirements should be improved and that sanctions for non-compliance should be introduced. In theory the existing legislation already foresees all the necessary things for advertisements.	There might be some objections from the real estate sector. There could be an increase of costs for people who want to sell the buildings (since at the moment no one is spending money to make EPCs for this aim).	-		

Table 7: Summary of the feedback received from the 3rd and 4th national stakeholder workshops in Latvia

3.5.2 Status and further steps of the implementation process of QualDeEPC's tools in Latvia

3.5.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

The online tool for comparing EPC recommendations to deep energy recommendations for Latvia is developed as a simplified tool, embedded in the Deep Renovation Network Platform which is called Qualrenovate.

This tool is meant to be used for typical soviet time apartment building inhabitants. The tool gives an overview of the approximate existing energy consumption in the building as well as the possible energy consumption after the building has been renovated according to deep energy renovation recommendations.



Figure 20: Screenshot of the main results page of the Latvian tool

3.5.2.2 C) Creating Deep Renovation Network Platforms (DRNPs)

The Latvian Deep Renovation Network Platform was created together with partners based on a joint concept. The platform is a platform for information providing information on a national level. Its purpose is to help building owners to take the steps needed for renovation after or based on the EPC.

A Spanish software company developed the online based software, including all the relevant topics concerning the deep renovation concept and the seven priorities of QualDeEPC project, and the Latvian partner will operate the platform. The tool is designed as a user-friendly platform containing all the necessary and relevant information concerning the deep renovation process, taking in consideration the national requirements. The platform is in Latvian language, which makes it accessible to all kinds of users.

It includes information on several services such as information on the deep energy renovation, the EPC, the available and recommended building professionals and system suppliers, as well as information on the possible financing and subsidiary programmes.

During the lifespan of the project, the platform will be hosted by the task leader (ESCAN) and after the end of the project on Ekodoma server. Additional option of hosting the DRNP by Latvian Energy auditors' association after the end of QualDeEPC project is considered. This would ensure that the DRNP developed during the QualDeEPC project will live on and will get additional information included in the DRNP.

The link to the LatvianDRNP is: <https://qualrenovate.eu/lv/>

The main page of the platform presents all the menus relative to the main information which contains the DRNP.





Pakalpojumi Un Produkti

uzzināt vairāk →

PAKALPOJUMI UN PRODUKTI ĒKU VISAPTVEROŠAI ATJAUNOŠANAI, PĒC IESPĒJAS ĀTRĀK ATVIEGLO KLIENTUS NO IZPĒTES, PROJEKTĒŠANAS VAI BIROKRĀTISKĀ PROCESA



Figure 21: Screenshot of the main page of the Latvian platform

In the “Deep Renovation general info” menu, the user can find submenus containing information on Building energy efficiency, Building envelope, heating systems, DHW systems, cooling systems, ventilation systems, renewable energies, lighting, deep renovation recommendations including the online tool for comparing EPC recommendations to deep energy renovation recommendations and links to accessible specific renovation tools and calculators.





ĒKAS NOROBEŽOJOŠĀS KONSTRUKCIJAS

Parasti ēkās tiek izdalītas sekojošās norobežojošās konstrukcijas:

1. Jumts vai bēniņu grīda
2. Ārsienas
3. Pirmais stāvs vai grīda uz neapsildāmu pagrabu
4. Saskaņā ar neapsildāmu zonu (garāžu)
5. Logi
6. Durvis/Vārti



Būves elementa un lineārā termiskā tilta siltuma caurlaidības koeficientu U_{RM} $W/(m^2 \times K)$ un ψ_{RM} $W/(m \times K)$ maksimāli pieļaujamās vērtības

Nr. p. k.	Konstrukcija	Dzīvojamās ēkas, pansionāti, slimnīcas un bērnu dārzi	Nedzīvojamās ēkas	Ražošanas ēkas
		U_{RM} vērtība, $W/(m^2K)$	U_{RM} vērtība, $W/(m^2K)$	U_{RM} vērtība, $W/(m^2K)$
1.	Grīda ¹ :			
1.1.	grīdas un sienas saskarē ar grunti	0,2	0,25	0,35
1.2.	grīda uz neapkurināmu pagrabstāvu vai grīda ar ventīlējamo pagrīdi	0,3	0,35	0,40
2.	Ārsienas:			
2.1.	ārsienas	0,23	0,25	0,30
2.2.	sienas tradicionālajās guļbūvēs bez siltumizolācijas slāņa iebūvēšanas sienā	0,65	0,65	0,65
3.	Jumti un pārsegumi, kas saskaras ar āra gaisu	0,20	0,23	0,25
4.	Ārdurvis un vārti	1,80	2,00	2,20
5.	Logi un balkona durvis ²	1,10	1,10	1,30
6.	Termiskie tilti, ψ_{RM}	0,20	0,20	0,35

Ēku norobežojošo konstrukciju siltināšanai tiek izmantoti dažāda veida siltumizolācijas materiāli, kuru siltumvadītspēja ir ļoti zema. Visbiežāk tiek izmantoti tādi materiāli kā akmens vate putu polistirols, putu poliuretāns un putu polizocianurāts.

Logu nomaiņai parasti tiek izmantoti trisstiklu pakešu logi, kuru siltuma caurlaidības koeficients U ir robežās no 0,8 līdz 1,1 W/m^2K . Oriģinālajiem logiem, kurus uzstādīja padomju laikos celtās ēkās, siltuma caurlaidības koeficients ir robežās no 2,4 līdz 2,8 W/m^2K . Vienkārta stiklojuma U vērtība ir 5,7 W/m^2K . Jo lielāka ir U vērtība, jo vairāk siltumenerģijas caur šo konstrukciju tiek zaudēts.

Latvijā ēku norobežojošo konstrukciju normatīvās siltuma caurlaidības koeficientu vērtības ir noteiktas 2019.gada 25.jūnija Ministru kabineta noteikumos Nr. 280 "Noteikumi par Latvijas

Figure 22: Example for building envelope

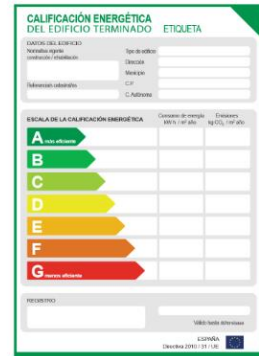
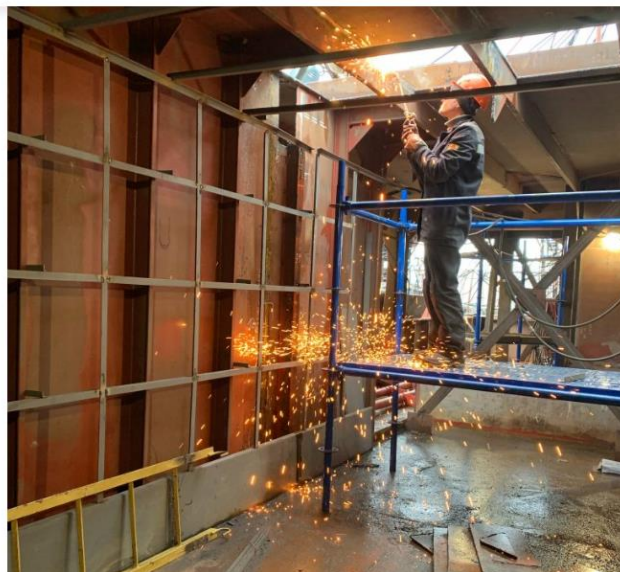
The "Energy performance certificates – EPC" contains submenus with information on EPCs and Roadmap & Renovation passport.



ENERGOSERTIFIKĀTS

Jūs Atradisiet Informāciju Par:

- Energoserfifikātiem kopumā un mērķi/lietošana/pienākumi
- Energoserfifikātu novērtēšanas procedūra
- Energoserfifikātu formas un veidi
- Atjaunošanas ieteikumi
- Eenergoserfifikātu izsniegšana un kur tas tiek reglamentēts



ENERGOSERTI

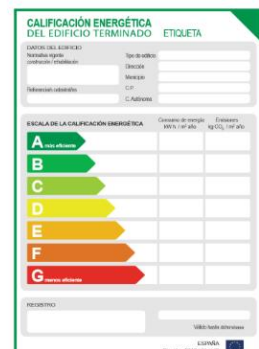


Figure 23: Screenshot of Energy performance certificates – EPC menu

It is foreseen that the Deep renovation platform over time will have additional information and will be kept up to date also after the end of QualDeEPC project.

3.5.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

Cabinet regulations on Thermotechnics of Building Envelopes Related to QualDeEPC priority item(s): 1, A	
Responsible legislator / decision maker	National Parliament of Republic of Latvia
Date of Last modification	25.06.2019.
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The proposal has to be discussed in ministries and Parliament committees. Then the National Parliament can vote on the suggested changes and then they can be issued by Cabinet of ministries.



Possibilities, arguments to convince the decision maker(s)	The definition is needed for the further achievements of the energy efficiency strategy of Latvia and in order to avoid any misunderstandings
Relevant stakeholders who may support the convincing process	The members of energy efficiency associations, energy auditors, financial institution Altum.
Does the definition of “deep energy renovation” exist in the local legislation and if not will it be adopted?	The definition does not exist in the local legislation and should be adopted
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months

Cabinet regulation on building energy efficiency calculation methods and buildings energy certification

Related to QualDeEPC priority item(s): E

Responsible legislator / decision maker	National Parliament of Republic of Latvia
Date of Last modification	08.04.2021.
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The proposal has to be discussed in ministries and Parliament committees. Then the National Parliament can vote on the suggested changes and then they can be issued by Cabinet of ministries.
Possibilities, arguments to convince the decision maker(s)	New unified EPC template will facilitate uptake of building renovation rates and achieving national energy saving goals
Relevant stakeholders who may support the convincing process	The members of energy efficiency associations, energy auditors, financial institution Altum.
Other barriers which can complicate or hinder the changes	Recast of the Building energy performance directive will have different approach to EPCs
Possible timeline for modification	12 to 18 months

Cabinet Regulations Regarding Assessment of the Competence of Independent Experts and Monitoring of Professional Activity Thereof in the Field of Energy Performance of Buildings

Related to QualDeEPC priority item(s): D

Responsible legislator / decision maker	National Parliament of Republic of Latvia
Date of Last modification	21.08.2018.



Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The proposal has to be discussed in ministries and Parliament committees. Then National Parliament can vote on the suggested changes and then they can be issued by Cabinet of ministries.
Possibilities, arguments to convince the decision maker(s)	Clearly state the amount of mandatory trainings and the content of these trainings
Relevant stakeholders who may support the convincing process	The members of energy efficiency associations, energy auditors
Other barriers which can complicate or hinder the changes	-
Possible timeline for modification	12 months

Law on Energy Performance of Buildings

Related to QualDeEPC priority item(s): F, G

Responsible legislator / decision maker	National Parliament of Republic of Latvia
Date of Last modification	19.10.2020.
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	The proposal has to be discussed in ministries and Parliament committees. Then National Parliament can vote on the suggested changes and then they can be issued by Cabinet of ministries.
Possibilities, arguments to convince the decision maker(s)	Clearly stated responsibilities and list of information to be included in advertising.
Relevant stakeholders who may support the convincing process	The members of energy efficiency associations, energy auditors, financial institution Altum, members of real estate association.
Other barriers which can complicate or hinder the changes	-
Possible timeline for modification	6 to 12 months



3.5.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the Latvian framework

Item	QualDeEPC priority	Key changes	Legislation/regulation to be changed	Timeline, milestones	Human and material resources needed	Actions planned to support the changes
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	Introduce Deep energy renovation definition	Change of Cabinet regulations on Minimal energy efficiency requirements and in Cabinet regulations on Thermotechnics of Building Envelopes Law on the Energy Performance of Buildings	12	Experts from the professional organisations and governmental bodies	Organise meetings with stakeholders Prepare proposals of the key changes Follow-up of the actions
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)	Introduce the list of mandatory measures to be considered in EPCs	Change of Cabinet regulations on Minimal energy efficiency requirements and in Cabinet regulations on Thermotechnics of Building Envelopes	6-12	Experts from the professional organisations and governmental bodies	Organise meetings with stakeholders Prepare proposals of the key changes Follow-up of the actions
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	Introduce the EPC template developed during the project	Cabinet regulation on building energy efficiency calculation methods and buildings energy certification	12-18	Experts from the professional organisations and governmental bodies	Organise meetings with stakeholders Prepare proposals of the key changes Follow-up of the actions
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	Clearly state the amount of mandatory trainings and the content of these trainings	Cabinet Regulations Regarding Assessment of the Competence of Independent Experts and Monitoring of Professional Activity Thereof in the Field of Energy Performance of Buildings	12	Experts from the professional organisations and governmental bodies	Organise meetings with stakeholders Prepare proposals of the key changes Follow-up of the actions

F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	Define a list of information to be included in advertising	Law on Energy Performance of Buildings	6-12	Experts from the professional organisations and governmental bodies	Organise meetings with stakeholders Prepare proposals of the key changes Follow-up of the actions
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	Clearly state that EPC advertising is mandatory and what are the consequences if this is not done	Law on Energy Performance of Buildings	6-12	Experts from the professional organisations and governmental bodies	Organise meetings with stakeholders Prepare proposals of the key changes Follow-up of the actions



3.5.5 Outlining the further consultation needs and processes

All the above-mentioned policy proposals and legislation and regulation amendments suggestions need to be discussed at expert level in the professional organisations and then in the different committees of the National Parliament, before the policy proposal is integrated in a proposal for amendment of the Acts that need to be amended. Then the amendment proposal will go back to the National Parliament committees for discussion before submission for vote in the National Parliament. When the Amendment of the Act is voted, it should be published in the state gazette and then it comes into force.

The Ordinance modifications and amendments are done at Ministry level, so the process is easier, but could be longer as they are deeply discussed at expert level and all the technical values need to be verified and checked for compliance with other regulations and standards. Before coming into force, the document should again be published in the state gazette.

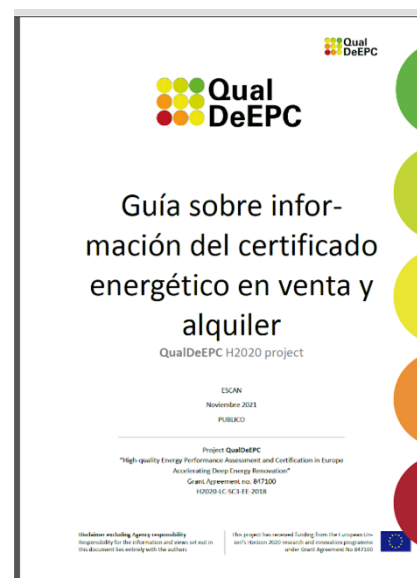


3.6 Spain

For Spain, were developed and included practical concepts, proposals and tools for an enhanced EPC scheme towards the deep renovation. The proposal for introduction of the definition of “deep energy renovation” in the national legislation is welcomed by the national stakeholders. +Specific values for the building envelope components and the technical systems have been proposed for Spain. The enhanced EPC form has been adapted to Spanish context including the rates (U values, costs, payback) of the values for envelope and systems before and after the certification of the building.

The development of an easy handle tool is the online tool for comparing the EPC recommendations to the deep energy renovation recommendations. The tool is included as part of the Deep Renovation Network Platform, DRNP.

National DRNPs are developed in different online forms with the same minimum contents, qualrenovate is created in this project and includes information of three countries, Spain, Bulgaria and Latvia; Escan and the software subcontractor developed the mock up for the specific needs of described in D5.2 Report on the 7 nationally adapted Deep Renovation Network Platform concepts. In addition to the definitions and tools, QualDeEPC proposals on Regular mandatory EPC assessors training and Voluntary/mandatory advertising guidelines for EPCs & improving compliance with the mandatory use of EPCs in real estate advertisements were also adapted to needs. Development of Advertisement guidelines as leaflet with recommendations of the information to be included in the renting and sales of households about EPCs.



3.6.1 First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Spain

The consultation has been carried out as a workshop with 20 participants of regional governments, National Energy Agency, EPC issuers, associations of insulation manufacturers of heating and cooling; this 3rd national workshop was to provide with the latest achievements of QualDeEPC and to debate on important topics related to the several improvements identified and developed in the project and adapted to national situation. The feedback on those suggestions presented at the workshop was very positive although not easy to be implemented. The approach adopted by the project for the deep energy renovation recommendations adapted to the context and the list of the recommendations were also considered as a good achievement. Regarding the adapted enhanced EPC form and the “Energy rating” the opinions were also welcomed although some legislation should be incorporated for some parameters. The indicator is estimated as a good new component of the certificate, but there were concerns about the updating of the values that will be necessary in the future after some years. The proposed regular EPC assessor trainings are already obligatory, only the contents of them could be revised based on QualDeEPC’s recommendations which had a positive feedback. The DRNP and the online tool were considered as very good and the stakeholders were pleased to discover the possibility to find useful information in one place. The advertisement guidelines and compliance approach, with an elaborated document that was had out were considered as a good improvement of the existing requirements.

The recommendations and tools of the QualDeEPC have been accepted in the workshop. The possibilities of official document revisions with changes are very low.

The EPC is carried out according to the climatic zones and the recommendations for the EPC proposed in QualDeEPC could be also by climatic zones, although most participants like one U value. Adapted enhanced EPC form is considered easier to understand than the official one, the energy rating is welcome but some parameters are not included in Spanish legislation for residential building; if energy rating is used all the legislation should be in place.



Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Spain	<ul style="list-style-type: none"> - In Spain it is not foreseen to create a new definition; at present only definition for NZEBs - If new EPDB include a definition of deep energy renovation then will elaborate it for the national legislation 	<ul style="list-style-type: none"> - Now 3 National legislative documents CTE, RITE and RD 390/2021 to be amended for the new EPDB or create a new national RD - Deep renovation for non- residential buildings present high difficulties to become NZEB, mainly for specific climatic zones that are severe in winter. 	<ul style="list-style-type: none"> - A new proposed law that integrates the new EPDB with also the definition 	<ul style="list-style-type: none"> - Know the milestones to convert an existing building by climatic zone and type into an nZEB building. It is not clear what can be achieved or how. 	<ul style="list-style-type: none"> - The market changes according to the legislation and the financing subsidies - Integration EPDB in a single normative (in Spain this will clarify CTE and legislation of EPC)
A)	Deep energy renovation recommendations by QualDeEPC adapted to Spanish context	<ul style="list-style-type: none"> - The recommendations are a free text for the EPC issuer; the deep energy recommendations of two types: the ones that are now included and new ones of comfort-use - Difficult to include the recommendations in the legislation - There are new financial incentives for building renovation for more than 30% and 60% primary energy savings 	<ul style="list-style-type: none"> - Few normative is missing for some parameters in residential buildings - Agree by all the agents when it is a deep intervention >30%; > 60% depends on the potential of each building and there is not a single value and in what indicators. 	<ul style="list-style-type: none"> - Updating normative including mandatory minimum efficient indicators or energy labelling for lighting and other parameters or components sensors control, etc. - Define through renovations carried out by climatic zone how far can be reached according to the reference building and the intervention carried out 	<ul style="list-style-type: none"> - Mandatory lighting parameters for residential buildings -example LED, sensors for some rooms, - Access to databases of comprehensive renovations to know the potential and real impact on energy savings and efficiency. 	- -
E)	Adapted enhanced EPC form and introduction of "Energy rating" indicator- definition for the Spanish case for building envelope	<ul style="list-style-type: none"> - The EPC could be modulated with some parts for technician and some for citizens, these are the owners and the tenants; the enhanced EPC is OK for 	<ul style="list-style-type: none"> - Few normative is missing for some parameters in residential buildings for the energy rating 	<ul style="list-style-type: none"> - Improvement the actual official EPC with the recommendations better structures and explained being mandatory to include 	<ul style="list-style-type: none"> - The individual qualification for enclosures or installations should be referenced to the DB HE and RITE 	

Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
	components and technical systems	<p>the second group and may be the recommendations' part to be included</p> <ul style="list-style-type: none"> - Energy rating indicator is OK, although for all parameters should be legislation, i.e. lighting is not regulated for residential sector - Adding comfort data (see previous row) - U for technician, professionals and colours indicator for user (owner) 	<ul style="list-style-type: none"> - It is not easy the energy rating system because there are many different systems 	<p>data as costs or/and pay back and energy rating indicator; also including a part for citizens more friendly</p> <ul style="list-style-type: none"> - The component rating is not as developed in the envelope and only the installations have an energy rating due to manufacturing and application regulations. 	<p>regulations, which seems somewhat complex and difficult to simplify.</p>	
D)	Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content	<ul style="list-style-type: none"> - According to RD 390/2021 "técnico certificador" is accredited by University degree. There is no accreditation system or periodic evaluation in similar fields, only in industrial safety regulatory inspection - At this moment several meetings of involved ministries, IDAE, universities and other stakeholders because the legislation will change - Proposal of this project is OK but difficult because of the mandatory training for updating. 	<ul style="list-style-type: none"> - Many energy performance building certificates are done and during next months will have to be done; because the financing subsidies are based on EPC before and after the renovation. - If mandatory courses, budget is required and this is a challenge 	<ul style="list-style-type: none"> - It is necessary to allocate public financing for training of EPC issuers on deep renovation 	<ul style="list-style-type: none"> - Now it is mandatory university degree in Architecture or specific Engineering or specific module. Probably mandatory courses to be done with proposed content to updated knowledge - The courses should be free of charge for the EPC issuers - Evaluate needs and availabilities of trainers 	<ul style="list-style-type: none"> - It is difficult to propose more mandatory actions that satisfy all professionals who are in the sector of certifications and deep energy renovation.

Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
B)	Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations	<ul style="list-style-type: none"> - There are several tools (no online); one of them CE3X is improving and financing will be included. They do not include comparison of recommendations. - At this moment in Spain the recommendations are in qualrenovate, the user can choose 1 or several and information of U, estimated energy savings and range of costs. The participants liked it. - Difficult to include this as official but the recommendations are welcomed by the participants 	<ul style="list-style-type: none"> - Official Spanish tools are used and improved according to new technologies; these tools are complex (with many calculations) but not include recommendations for deep energy renovation and not online 	<ul style="list-style-type: none"> - High variety of cases in different climatic zones makes comparison difficult 	-	<ul style="list-style-type: none"> - Not foreseen new online tools, there is one of Valencia Region
C)	Deep Energy Renovation Network Platform	<ul style="list-style-type: none"> - Qualrenovate includes information about certification and deep energy renovation - This is a national platform that should be managed (after the project finalisation) at institutional level by MITECO or MITMA or the, National Energy Agency or other national institutions - The Spanish Strategy includes that one stop shop for information on 	<ul style="list-style-type: none"> - Updated information: technical data of systems and services for deep energy renovation, trainings, financing incentives, 	<ul style="list-style-type: none"> - New legislation could include this as mandatory information platform at national level for deep energy renovation using also EPC; - The legislation will also indicate the institution who will manage the platform 	<ul style="list-style-type: none"> - After the legislation 	-

Item	Agenda Item	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
		renovation should be created				
F)	<p>Advertisement guidelines and compliance:</p> <p>1a. Nationally adapted proposal for voluntary advertising guidelines and their use</p> <p>1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so</p> <p>2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)</p>	<p>1a. The legislation is done, may be specifications for different type of advertisements could be included; Documento de "Calificación de eficiencia energética in MITMA website page 7</p> <p>The compliance is not fully in all agencies online advertisements, etc nevertheless as the consumers are asking about EPCS more and many energy agencies or the national institutions who manages the financing subsidies require EPC before and after the energy renovation the advertisements are getting better</p> <p>Escan elaborated a proposed leaflet for online and paper information in windows of agencies; during the presentation has been handily circulated; the participants liked it</p>	<ul style="list-style-type: none"> - There are so many types of different advertisements: <ul style="list-style-type: none"> • Big publicity billboards • Advertisement by words - Online in long paragraphs or small...etc 	-	-	- One of the participants did comment about that the energy agency did distribute information to the advertising agencies several years ago; unfortunately only few of them follow the legislation

Table 8: Summary of the feedback received from the 3rd and 4th national stakeholder workshops in Spain



3.6.2 Status and further steps of the implementation process of QualDeEPC's tools in Spain

3.6.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

ESCAN, in cooperation with experts, analysed and updated an excel file, which is currently not official, to include calculations (indicative values) for the performance of EPCs. The Excel file proposes different building types, efficient technologies, efficiency parameters etc. This aimed at providing information to improve the EnergyHub4All-CRES tool.

ESCAN designed and developed a simple tool embedded in the QualDeEPC Deep Renovation Network Platform (DRNP, D5.2), in sub-section 2.1.2. Deep renovation. Recommendations. The tool allows (1) to search for Recommendations for Deep renovation, (2) to search for Specific recommendations, (3) to select some specific recommendations (click in the recommendation) and view "Country-specific values" for such recommendation from the table-Priority A: Improving the recommendations for renovation provided on the EPCs towards deep energy renovation.

As an example:

Recommendations for Deep renovation	Specific recommendation	click here your priorities
External wall insulation	Wall with enhanced thermal insulation properties (nZEB for renovation standard or similar)	X

Specific recommendation	Country-specific values		
	Value	Indicative unit cost	Indicative savings
Wall with enhanced thermal insulation properties (nZEB for renovation standard or similar)	maximum 0.8 W/m ² K	85-100 €/m ²	80% heating savings; insulation thermal system ETICS with mineral wool 5 cm and extruded polystyrene (XPS).

In Spain, ESCAN implements the Deep Renovation Network Platform (DRNP, see D5.2) itself and embed the calculation tool

This QualDeEPC DRNP tool, as it is embedded in the national QualDeEPC DRNPs, will be developed and used not only for Spain but also for all partner countries that use this version of the DRNP: Bulgaria, Latvia, thus increasing its impact.

This tool can be used by owners, retailers and EPC assessors, even anyone who would like to know differences between recommendations to improve his home. It is already in Spanish and Bulgarian DRNPs.



3.6.2.2 Creating Deep Renovation Network Platforms (DRNPs)

In Spain after analyzing the situation and context of available information at online and physical: all the information about building renovation is not included in one single place, neither platform. In general there is few available information for deep renovation, some legislation in the websites of several Ministries, at regional level some financing subsidies and incentive, training courses in several different websites etc.. Therefore, the Spanish partners created a platform DRNP at national level that included all the information (technical with systems, envelope materials, financing incentives, training courses, identified in the QualDeEPC). The Qualrenovate platform is available in Spain at <https://qualrenovate.eu/es/>.

The analysis and searching of online web platforms that provide information of deep renovation concluded that the platforms found are commercially based websites that provide information on products to sell; much information is available on the websites but we did not find a unique online website with all contents we did require.

So Escan decided to elaborate a totally new DRNP and some other country partners; the preliminary result is a web-based tool with the contents of deep renovation that have been identified and agreed between all partners; other partners decided to enhance an actual website and include the common contents in the partner language.

The contents are structured in several pages with information on welcome, Services and products contact, countries, video and searching; the technical contents are included in the page of Services and products *Servicios y productos*.



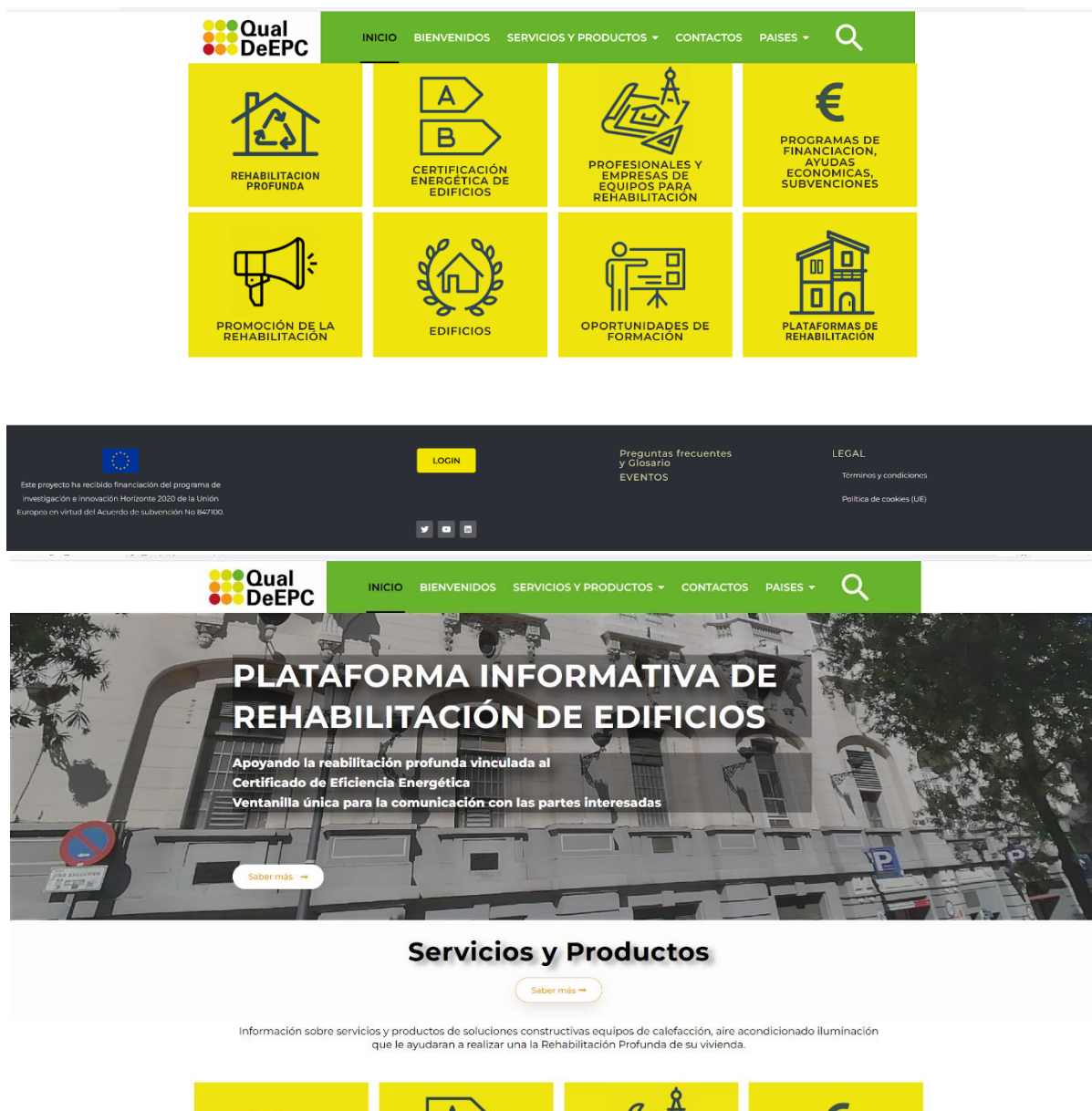


Figure 24: Screenshots of the main page of the Qualrenovate platform in Spain

In the “Services and products” menu, you can find information about:

Information on Deep energy renovation, Energy Performance Certification, Professionals and companies, financing programmes and economic incentives, promotion of renovation, examples of renovate buildings, trainings and other platforms.



PRINCIPIOS DE LA ENVOLVENTE DEL EDIFICIO

Es importante conocer el modo en que se produce la transferencia de calor en los edificios para entender los principios de un buen aislamiento térmico. Los modos de transmisión del calor: El calor puede transferirse por conducción, por convección o por radiación, o por una combinación de los tres modos. El calor siempre se mueve de las zonas más calientes a las más frías, busca el equilibrio; es lo que se conoce como principio cero de la termodinámica. Cuanto mayor es la diferencia de temperatura, más rápidamente fluye el calor hacia la zona más fría.

En la figura se indica la cantidad de las pérdidas por el suelo, la fachada (muros), el tejado, ventanas y huecos alrededor de estas y de las puertas. En un edificio es necesario aislar para evitar estas pérdidas. El acondicionamiento térmico de los edificios se basa en la radiación y en la convección. El modo de transmisión más significativo es por conducción a través de la envolvente opaca de un edificio.

¿Qué es un aislante térmico para un edificio?

Un aislante térmico es un material caracterizado por su alta resistencia térmica. Establece una barrera al paso de calor entre dos medios que naturalmente tenderían a igualarse en temperatura. En general, todos los materiales ofrecen resistencia al paso de calor, pero según la normativa internacional se considera material aislante térmico cuando su

- 1) Coeficiente de conductividad térmica (λ) menor de 0,6 W (m.K).
- 2) Una resistencia térmica (R) superior a 0,5 m² K/W.

En las siguientes tablas se muestran algunos valores de la conductividad para para distintos materiales aislantes de los aislantes inorgánicos y orgánicos de origen animal o vegetal, a menor λ mejor propiedad aislante.

PÉRDIDAS ENERGÉTICAS EN EL EDIFICIO

Elemento	Pérdida (%)
Tejados	30%
Huecos y alrededor de puertas y ventanas	20%
Ventanas	13%
Muros	25%
Puente térmico	5%
Suelos	7%

AISLANTES INORGÁNICOS

• Lana Mineral	0,032
• Lana de Vidrio	0,034
• Lana de Roca	0,034
• CS Vidrio celular	0,040
• Acacia expandida	0,040
• Vermiculita	0,050
• Perlite	0,060

Figure 25: Example of one page about building envelope

Other examples:

Page of PROMOTION “PROMOVER LA REHABILITACION” with articles and notes

PROMOVER LA REHABILITACION

En esta página encontrará información sobre algunos artículos y eventos que promueven la rehabilitación energética de los Edificios y han sido elaborados u organizados por los participantes del Proyecto QualDeEPC en España. También podrá incluir usted información de algún evento en el que se considere la rehabilitación de edificios.

ENCUENTRE INFORMACIÓN SOBRE EVENTOS Y MEDIA

[Volver al listado](#)

Nombre del evento QualDeEPC impulsa la rehabilitación energética de los edificios	
Tipo Artículo	Región Nacional
Desde Fecha 20/10/2021 14:00	a Fecha 01/07/2022 17:00
Lugar España	
Texto Artículo elaborado por Escan para dar a conocer las últimas novedades de la promoción de la rehabilitación energética y los objetivos del proyecto en acorde con los objetivos del PNIEC y la Estrategia de Rehabilitación ERESEE, destacando el interés creciente de la Administración y las empresas de construcción-rehabilitación, Ingenierías e instalaciones ya que supondrá un	

INSERTE MEDIA Y EVENTOS QUE PROMUEVEN LA REHABILITACION

Nombre del evento/artículo *
Dato obligatorio

Tipo
Seleccione

Nacional/ Regional/Local/ Otros *
Dato obligatorio

Fecha a Fecha
Fecha Hora Fecha Hora

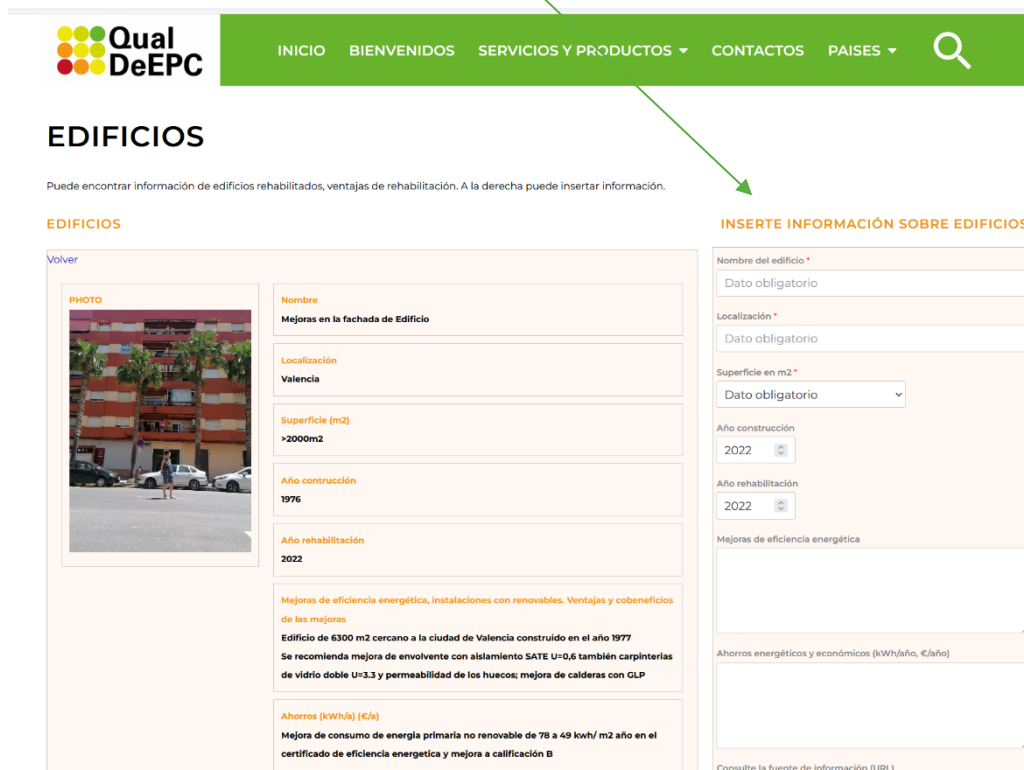
Lugar

Texto

The possibility that the user includes information and the partner will verify and publish it with easy access sites. For instance, training courses and financing programmes:

Information of Demonstrative Buildings are also included, in Spain five buildings with data of Name, place, building year, improvements and recommendations for deep renovation and energy savings; also photography.

Possibility that the user include information about one demonstrative building and the partner can see and public it or not.



The screenshot shows the QualDeEPC website interface. At the top, there is a navigation bar with the logo and menu items: INICIO, BIENVENIDOS, SERVICIOS Y PRODUCTOS, CONTACTOS, and PAISES. Below the navigation bar, the main heading is "EDIFICIOS". A sub-heading reads: "Puede encontrar información de edificios rehabilitados, ventajas de rehabilitación. A la derecha puede insertar información." Below this, there are two main sections: "EDIFICIOS" and "INSERTE INFORMACIÓN SOBRE EDIFICIOS".

The "EDIFICIOS" section displays a building card with a photo and the following details:

- Nombre:** Mejoras en la fachada de Edificio
- Localización:** Valencia
- Superficie (m2):** >2000m2
- Año construcción:** 1976
- Año rehabilitación:** 2022
- Mejoras de eficiencia energética, instalaciones con renovables, Ventajas y cobeneficios de las mejoras:** Edificio de 6300 m2 cercano a la ciudad de Valencia construido en el año 1977. Se recomienda mejora de envolvente con aislamiento SATE U=0,6 también carpinterías de vidrio doble U=3,3 y permeabilidad de los huecos; mejora de calderas con GLP.
- Ahorros (kWh/a) (€/a):** Mejora de consumo de energía primaria no renovable de 78 a 49 kWh/ m2 año en el certificado de eficiencia energética y mejora a calificación B.

The "INSERTE INFORMACIÓN SOBRE EDIFICIOS" section is a form with the following fields:

- Nombre del edificio * (Dato obligatorio)
- Localización * (Dato obligatorio)
- Superficie en m2 * (Dato obligatorio)
- Año construcción (2022)
- Año rehabilitación (2022)
- Mejoras de eficiencia energética
- Ahorros energéticos y económicos (kWh/año, €/año)
- Consulte la fuente de información (URL)

3.6.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

235/2013 (5 April 2013) ministerial decree on the energy performance certification of buildings	
Related to QualDeEPC priority item(s): 1 A, D, F, G	
Responsible legislator / decision maker	Government of Spain -Ministry for Ecology Transition
Date of Last modification	02.06.2021
Planned to be modified for any other reason	(Probably in 2023 for EPC assessor requirements)
Procedure of the amendment with estimated timeline	The decree is issued by the Ministry for and Investments. The policy proposal of the amendment is published on the Ministry's website and reviewed by the conditions necessary for the application of the legislation. The nZEB



	definition is mainly focused on new buildings (built after June 2017) and major renovations (2019), and in which the nZEB requirements for new build are not so ambitious and would be achievable through renovation Modifications in 2021 with Real Decreto 390/2021
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly decrease the country's dependency from Russian gas, to achieve the sustainability goals and decrease energy poverty.
Relevant stakeholders who may support the convincing process	Ministry for Ecology Transition. Directorate General of Energy Policy. Ministry of Transport Mobility Urban Agenda. D.G. Buildings. National Energy Agency, IDAE
Does the definition of "deep energy renovation" exist in the local legislation and if not will it be adopted?	The definition does not exist only NZEB definition in the local legislation
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months

ESTRUCTURA DB-HE 2013 - ESTRUCTURA DB-HE 2019	
HE0	Limitación del consumo energético Consumo energía primaria no renovable $C_{ep,ren}$
HE1	Limitación de la demanda energética Demanda energética de calefacción + refrigeración $D_{cal} + D_{ref}$ Limitación descompensaciones Limitación condensaciones
HE2	Rendimiento de las instalaciones térmicas Limitaciones RITE
HE3	Eficiencia energética de las instalaciones de iluminación VEEI, P_{tot} , Sistemas de control y regulación
HE4	Contribución solar mínima de ACS Producción mínima renovable
HE5	Contribución fotovoltaica mínima de energía eléctrica Potencia mínima a instalar

The technical normative of the CTE are included in several chapters of HE Document: Limit of energy consumption; Limit of energy demand (primary energy demand of non-renewable sources); Performance of the thermal installations of the buildings; Energy efficiency of lighting ; minimum solar contribution for Sanitary Water Heating and Photovoltaic contribution for electricity consumption



732/2019 decree on modifications Technical Code of Buildings	
Related to QualDeEPC priority item(s): 1 A,	
Responsible legislator / decision maker	Government of Spain
Date of Last modification	Real Decreto 450/2022, 14 th June,
Planned to be modified for any other reason	N/A
Procedure of the amendment with estimated timeline	decree is issued by the Government. CTE Code of buildings includes several documents and HE is the Energy related one to be considered; the limits of energy demand, also technical parameters for the different buildings' component, minimum solar thermal input for sanitary water heating demand for new and renovations works of buildings for households uses; the definition of deep energy renovation should be included more specifically with specific limit data in this legislative document HE Modification 14 th June about the electric vehicle. They are published in website of the Ministry
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly improve the public acceptance and usefulness of the EPCs, to achieve the sustainability goals and decrease energy poverty.
Relevant stakeholders who may support the convincing process	Ministry for Ecology Transition. Directorate General of Energy Policy. Ministry of Transport Mobility Urban Agenda. D.G. Buildings. National Energy Agency, IDAE
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months

390/2021 decree on the field of construction and certification	
Related to QualDeEPC priority item(s): 1, D F G	
Responsible legislator / decision maker	Government of Spain
Date of Last modification	8.11.2021
Planned to be modified for any other reason	N/A



Procedure of the amendment with estimated timeline	The decree is issued by the Government. The decree includes a modification of the previous legislative considerations for updating the EPCs and some calculations in order to achieve the goals of the Spanish and European energy policies and improve the buildings stock and renovations; also includes some specific paragraphs of the EPC assessors considered to be significant, in particular the requirement of university degree and more effects. Specific considerations for the agents who are selling and renting the buildings for households in order to inform and provide public data of the EPC label
Possibilities, arguments to convince the decision maker(s)	The proposed changes would significantly improve the quality of the EPCs, energy retrofits in the building sector.
Relevant stakeholders who may support the convincing process	Ministry for Ecology Transition. Directorate General of Energy Policy. Ministry of Transport Mobility Urban Agenda. D.G. Buildings. National Energy Agency, IDAE MÉK
Other barriers which can complicate or hinder the changes	No specific barriers
Possible timeline for modification	6 to 12 months



3.6.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the Spanish framework

The next table summarizes the information from the mapping by the 8 items, and adding estimate of timeline as well as human and material resources needed

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Key changes of the current standards	Timeline (in months)	Human and material resources needed	Competent body (ies)
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	Definition of NZEB for new buildings and renovations in modification of 390/2021 decree about energy performance certificates is necessary; also 732/2019 CTE <i>Documento Básico DB-HE /2006</i> Código Técnico Edificación; and RITE 176/2008 to have a definition of deep renovation			6-12	TBD	Ministry for Transport, Mobility; Ministry of Ecology Transition and National Energy Agency, IDAE;
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)	Necessary some limits in technologies as performance for lighting in households. Amendment CTE 2013. Also for other buildings , non residential, modifications in RITE			12-18	Several technical experts	Ministry for Transport, Mobility; Ministry of Ecology Transition and National Energy Agency, IDAE;

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Key changes of the current standards	Timeline (in months)	Human and material resources needed	Competent body (ies)
E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	Introduction of the enhanced EPC template Amendment of Real Decreto 235/2013, April 5			18	Personnel of the local governments	Ministry for Transport, Mobility; Ministry of Ecology Transition and National Energy Agency, IDAE;
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	Introduction of the deep energy renovation recommendations into the training curricula Amendment of 390/2021 decree		August and September 2022 is period of public audience for modification of the government about minimum requirements for EPC issuers https://energia.gob.es/es-Participacion/Paginas/DetalleParticipacionPublica.aspx?k=543	6	Some courses in the Regional Governments for EPCs; the modification includes more university degrees for EPCs issuers	MITECO, Ministry for Ecology Transition. Energy Policy
B)	Online tool for comparing EPC recommendations to deep energy renovation recommendations (Tool developed)	New or amendment of the RD 390/2021 and including in the actual tools deep renovation recommendations The official tools to elaborate EPCs are used but does not include deep energy recommendations and the reports are not friendly, easy to understand by owner.				Improving the official tools including recommendations for deep renovations in the software	

Item	QualDeEPC priority	Key changes of the current legislation	Key changes of the current regulation	Key changes of the current standards	Timeline (in months)	Human and material resources needed	Competent body (ies)
C)	Creating Deep Renovation Network Platforms (DRNPs) (Tool developed & Policy proposal)	Not available one place with information for deep energy renovation	New legislative			Some monetary budget for the updating and maintenance; national level about 5000 Euro/year	
F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	Some campaign about this are necessary; the 390/ 2021 decree already includes the information				Legislation includes general information of EPCs for the advertisement in the sales and renting; not all the real states comply	
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	Some campaign about this is necessary the 390/ 2021 decree already includes the information			Personal and budget requirement of about 10000 euro minimum	The compliance is not completely; about 50% comply with the legislation as many agent does not perform the certificate before the sale of the house	



3.6.5 Outlining the further consultation needs and processes

All the above-mentioned policy proposals and legislation and regulation amendments suggestions need to be discussed at expert level in the professional organisations and then in the different ministries and committees, before the policy proposal is integrated in a proposal for amendment of the Acts that need to be amended.

All decree modifications and amendments are done at ministry level; a group of experts participates with professional, academic and associations so the modifications take more than 12 months and could be longer as they are deeply discussed; all the technical values need to be verified and checked for compliance with other regulations and standards.

At this moment, we have included proposals for several university degrees to be included as modification of decree and most probably will be included. This is relevant because the recommendations of QualdeEPC for deep renovation will be mostly used by new engineers that are participating in the project workshops and following this project, so these results will be very satisfactory in Spain.

We are also checking the possibilities of qualrenovate to be followed by local administrations or other associations.



3.7 Sweden

3.7.1 First round of consultation: Feedback from the 3rd and 4th national stakeholder workshop in Sweden

The 3rd Swedish stakeholder workshop was divided in two parts and held online the 12th of May and the 13th of May. The first day, 6 stakeholders attended and on the second day 5 stakeholders attended. In addition, separate interviews were carried out with 4 stakeholders. The main aim of the 3rd workshop was to inform participants about the progress of the project and to discuss the developed cross-national policy proposals and tools as described in the *White paper on good practice in EPC assessment, certification, and use*, now adapted to Swedish specific needs. Therefore, the objective of the workshop was to receive feedback from national stakeholders and experts on

- 1) the nationally adapted policy proposals and tools;
- 2) how the tools could be improved further / could be implemented;
- 3) the EU-level policy recommendations drafted by the project.

The 4th Swedish stakeholder workshop took place on the 3rd of November for a discussion of the updates of the project, further revision and implementation of the policy proposals, and how to ensure the sustainability of developed tools. An additional meeting with representatives from the Swedish Energy Agency and the National Board of Housing, Building and Planning was held the 2nd of December, focusing on the sustainability of Deep Energy Renovation Platform and coordination with existing and upcoming national platforms. A total of 12 stakeholders attended the two meetings.

Feedback on nationally adapted proposals and tools from the 3rd and 4th national workshop are summarized in the table below. More general challenges regarding the current EPC system, highlighted during the workshop, have also been included.



Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
1	QualDeEPC's General proposal: a modified nZEB-based approach for defining deep energy renovation & Defining 'Deep Energy Renovation' in Sweden	A definition needs to be specified. An amendment of the Planning and Building Ordinance, PBF (2011:338) would be required.		New Building regulations are under development. The definition could be implemented directly in them. Deadline for the energy-related regulations is January 1, 2025, at the earliest.	–	–
A)	Deep energy renovation recommendations by QualDeEPC adapted to Swedish's context	<p>a. A definition, or guiding, on the requirement of cost-effective recommendations in Regulation (2006:1592) on energy performance certificates for buildings (BED). This should also include how to consider measures that are not cost effective in a short perspective.</p> <p>b. Recommended levels (enhanced and exceptional) of energy efficiency measures could be developed within Boverket's EPC-template.</p> <p>c. Suggestion of renovation package to reach deep energy renovation should be included in the EPC.</p>	<p>a. The new building regulations that are under development will not include regulations for EPC-assessment.</p> <p>b, b, c. To a large extent, enhanced levels are already included in the current Building regulations. However, new Building regulations are under development, and these will be less detailed than before. Therefore, Boverket's EPC template is likely more suitable.</p>		Continue the discussion with the authorities about the need for improvements. Support Boverket with expert advice in the process.	<p>The participants all agree that too few energy efficiency measures are proposed in energy certificates today and that this is a problem. Comments on challenges today:</p> <ul style="list-style-type: none"> – It is a problem that the price for EPCs is so low. The problem is that EPCs are considered to have no value today. – There are requirements to provide proposals for cost-effective measures, but there is no good description or definition of what to consider cost-effective. – The concept of "cost per saved kWh" is difficult to understand. <p>Possible challenge if the EPC assessor needs to include all potential recommendations needed to achieve nZEB or</p>

Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
						<p>ZEB standards for existing buildings: If done properly this will be very time-consuming. Will the building owner be willing to pay for it?</p> <p>Opinion on the EPC system in general: •</p> <ul style="list-style-type: none"> - The National Board of Housing, Building and Planning must be more active in taking care of the EPC system. Follow-up should be prioritized.
E)	<p>Adapted enhanced EPC form and introduction of “Energy rating” indicator- definition for building envelope components and technical systems</p>	<p>Revision in existing laws are not required. However, Boverket’s EPC template needs to be revised.</p> <p>Any changes to the first page of the EPC form requires an update of the template given in an appendix to the Regulation (2006:1592) on energy performance certificates for buildings (BED).</p> <p>Any additional element or other changes to the Swedish EPC require changes in the electronic EPC form designed and handled by Boverket.</p>	<p>The new building regulations that are under development will not include regulations for EPC-assessment.</p> <p>Not everyone was convinced that the energy rating would be valuable to the user.</p>	-	<p>Continue the discussion with the authorities about the need for improvements. Support Boverket with expert advice in the process.</p>	<p>Other comments regarding the suggested EPC form:</p> <p>In general, the participants found the display of improved classification: interesting but not unproblematic. It would be good to include combinations of measures and advise on the order of implementation, but would anyone want to pay for this extra work?</p> <p>Comments on challenges related to user friendliness:</p> <ul style="list-style-type: none"> - Property owners need more clarity. It is difficult to explain primary energy. And for

Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
						<p>example, that cannot take into account purchased "green electricity".</p> <ul style="list-style-type: none"> - The primary energy values are difficult to understand. - Specific energy use should be highlighted the most. It is more interesting for the property owner. (Although some property owners are also interested in the energy classes for bank loans.) <p>Also include power and power balancing in the EPCs.</p>
D)	<p>Regular mandatory EPC assessor training: nationally adapted policy proposal, framework and content</p>	<p>In Sweden, there are today mandatory tests for EPC assessors (initial and regular) and voluntary training opportunities are available. While several of the workshop participants were content with the current system, a couple of them raised other options: no exams, only courses, or both exams and compulsory courses.</p> <p>If recommendations of energy renovation packages are added to</p>	<p>The educators might not see a demand to develop the courses (training content).</p>			<p>Some of the participants highlighted that the status, as well as the quality, of EPCs need to be raised. The participants point out that there is no forum for energy experts in Sweden. There is a need for an association or industry organization, or another forum (web-site, chat) for information exchange and discussion between EPC</p>

Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
		<p>the EPCs, this must also be included in the training and knowledge requirements. Any additional knowledge (competence) requirements for EPC assessors would require a change in a change in regulation CEX.</p> <p>The same reasoning applies for other changes regarding EPC content.</p>				<p>assessors.</p> <p>Suggestion from one of the participants: Further division of authorizations (today 2 levels) based on detached houses, apartment buildings and non-residential buildings.</p>
B)	<p>Online Tool for Comparing EPC Recommendations to Deep Energy Renovation Recommendations</p>		<p>The participants are hesitant to an online calculation tool for property owners for the following reasons:</p> <ul style="list-style-type: none"> - This has been tried before in Sweden, but did not work out well. - Such tool needs to be continuously updated and developed, which is a challenge. - If the property owner has to fill in this information himself it will be difficult to ensure reasonable results. - With a simple enough tool, it is easy to be misled that the results are more accurate for the specific building than they actually are. - To encourage the property 		<p>The participants were more positive about showing calculation examples that are representative of different type of residential buildings.</p> <p>They emphasize the importance of visualization adapted to the target group and to including real savings in% (not only PE)</p>	

Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
			owner to compare results from such a general tool with an EPC performed by an energy expert for a specific building would be very problematic.			
C)	Deep Energy Renovation Network Platform		<ul style="list-style-type: none"> - Needs to be kept up to date. 		<p>This should be coordinated with initiatives from the authorities:</p> <ul style="list-style-type: none"> • Boverket has ongoing work to take forward an information platform on energy efficient buildings • The Swedish Energy Agency has existing information platforms <i>Min husguide</i>, <i>Solelportalen</i>. <p>Also, coordinate with the regional energy agencies and local energy advisors. Also, consider how to differentiate from and complement other platforms with similar information, or parts of the information: e.g., from hardware stores, manufacturers, and private initiatives.</p>	Preferably an authority-owned platform for credibility.

Item	QualDeEPC project's priorities for an enhanced EPC scheme	Needs and possibilities for revisions in the existing laws, regulations and standards	Identified challenges	Possible steps to follow/ proposed measures in order to build consensus	Identified Needs for further development and dialogue	Other / Comments
F)	Advertisement guidelines and compliance: 1a. Nationally adapted proposal for voluntary advertising guidelines and their use 1b. Nationally adapted proposal for legislation making their use mandatory if Member States wish to do so 2. Other policy proposals to improve compliance with the mandatory presentation of EPC data in advertisements (priority G)	Guidelines are already in place and a responsible body is already appointed. Extended control of compliance may be needed.			Influence extended control to improve compliance.	

Table 9: Summary of the feedback received from the 3rd and 4th national stakeholder workshop in Sweden



3.7.2 Status and further steps of the implementation process of QualDeEPC's tools in Sweden

3.7.2.1 B) Online tool for comparing EPC recommendations to deep energy renovation recommendations

The building owners and other stakeholders participating in the project's national experts forum in Sweden see little need to develop an online tool for homeowners, and also raise some concerns related to such tools. In particular, they are doubtful that a tool with limited input parameters, and simple enough to be used without prior knowledge, would still give results accurate enough to be useful to the building owner. Also, it is easy to be misled that the results are more accurate for the specific building than they actually are.

Therefore, useful examples of energy renovation measures that are considered representative for different single-family and multi-family building types with poor energy performance are presented on the online national deep renovation platform as inspirational material. Presenting examples of deep energy renovation to the building owner instead of offering a free calculation tool likely makes it clearer that the results are valid under specific circumstances and will vary with building specific parameters and local conditions.

The examples of energy renovation in different types of single-family and multi-family houses are available from: <https://www.energirenovera.se/exempel/>. For each building type the following is displayed:

- Information about the building
- Energy use for heating and domestic hot water before renovation
- Heat losses before renovation
- Energy savings and improved energy performance and energy class when carrying out a combination of renovation measures (presented in steps)
- Profitability for the renovation measures using a IRR (Internal Rate of Return)-diagram
- Input data for energy and profitability calculations

For each of the buildings, results are shown for locations representing different climate zones.

In addition to these examples, an interactive tool was developed that is primarily meant to be used by local energy advisors in discussion and advising building owners. The tool is based on energy and profitability calculations of made-up examples of common single-family buildings with poor energy performance (energy class F or G). The tool allows for the user to add or remove measures from a suggested renovation package and to make sensitivity analyses with energy prices and investment costs.

This tool is initially only made available to local energy advisors, who will be able to guide individual building owners through the possible options and how to interpret the results. However, when local energy advisors have been given the opportunity to test the tool in their daily work for a period, it should be considered whether to make the tool available for anyone to use by posting it on an open platform, e.g the Swedish QualDeEPC platform. This should be done in dialogue with local energy advisors and authorities.



3.7.2.2 C) Creating Deep Renovation Network Platforms (DRNPs)

The Swedish Deep Renovation Network Platform was created and is initially hosted by the Swedish project partner, available at <https://www.energirenovera.se/>. After the project time, there might be a possibility to include the content (or parts of it) in a national governmental platform. Either a platform operated by the National board of Housing Building and Planning directly in cooperation with the Swedish Energy Agency that is planned to be reopened in 2023, or another existing governmental platform. The project partner has an on-going dialogue with the National Board of Housing, Building and Planning, and the Swedish Energy Agency regarding this matter.

The platform *energirenovera.se* is based on the concept developed within QualDeEPC, and have the main headings:

- About the DRNP
- Energy in buildings
- Energy performance certificates
- Energy renovation
- Up-to date: Up-coming events, and current support schemes and financing opportunities



[Hem](#) Energi i byggnader ▾ Energideklaration ▾ Energirenovering ▾ Aktuellt

[Om plattformen](#) 🔍

Energirenovera

A QualDeEPC platform

Välkommen till en informationsplattform om energirenovering

Vill du renovera din byggnad och samtidigt minska energianvändningen? Med en omfattande energirenovering är det möjligt att avsevärt förbättra din byggnads energiprestanda samtidigt som du bibehåller eller förbättrar inneklimat och komfort.

Energirenovera.se är en informationsplattform med främsta syfte att uppmuntra och vägleda byggnadsägare som vill se över och förbättra sin byggnads energiprestanda.

Här kan du läsa om vad som påverkar byggnadens energibalans, vad en omfattande energirenovering kan innebära, och hur energideklarationer kan vara till hjälp. Du hittar även tips relaterat till olika delar av renoveringsprocessen, från energibesiktning till uppföljning, och goda exempel från andra fastighetsägare.

Hemsidan är under uppbyggnad



Energi i Byggnader



Energideklaration



Energirenovering



Aktuellt

The part on Energy in buildings include information on for example the heat balance of a building; building envelope and reduction of transmission losses (including u-values); technical systems for



heating, cooling, ventilation, DHW and electricity and an efficient use of energy; different energy sources and on-site electricity production (solar).

Under the heading ‘EPCs’ the user will find a short description of the Swedish EPC systems, an example of the current EPC template and a link to further reading. This section also includes information about building renovation passports.

Energy renovation covers methodology, guidelines and checklists, common energy efficiency measures, deep renovation specifically, good examples, how to find and choose professionals, and tools.

During the first couple of months (at least), any visitors of the platform will kindly be asked to answer a short questionnaire for feedback and development suggestions. This information will be considered either in upcoming updates of the QualDeEPC platform, or in the development of a national platform (please see the first paragraph of this section).

3.7.3 Mapping - Needed steps, competent bodies, and likelihood of legislative changes for official application of enhanced EPC and other policy proposals to the national framework

This section is considering feedback from the 3rd and 4th round of national workshops.

Boverket’s regulations and general advice (2006:1592) on energy performance certificates for buildings (BED)	
Related to item(s): A	
Responsible legislator / decision maker	National Board of Housing, Building and Planning
Date of Last modification	11 March 2021 (BFS 2021:3)
Planned to be modified for any other reason	n/a
Additional legislation, standard to be amended (if any)	Electronic EPC form handled by Boverket
decision maker	
last date of modification	
planned to be modified for any other reason	
Procedure of the amendment with estimated timeline	A definition, or guiding, on the requirement of cost-effective recommendations in Regulation (2006:1592) on energy performance certificates for buildings (BED). This should also



	<p>include how to consider measures that are not cost effective in a short perspective.</p> <p>Recommended levels (enhanced and exceptional) of energy efficiency measures could be developed within the electronic EPC form designed and handled by Boverket .</p> <p>Suggestion of renovation package to reach deep energy renovation should be included in the EPC template.</p> <p>Consider energy rating for building components and technical systems to be included in the EPC template.</p> <p>Any changes to the first page of the EPC form requires an update of the template given in an appendix to the Regulation (2006:1592) on energy performance certificates for buildings (BED).</p> <p>Any additional element or other changes to the Swedish EPC require changes in the electronic EPC form designed and handled by Boverket.</p>
Possibilities, arguments to convince the decision maker(s)	<p>It might be possible to include the suggested changes in the next modification of the regulation BED, which will be earliest 2025. Best would be if the suggestions were included in EPBD. The main argument for adopting the suggestions of amendments is improved EPCs with higher, and more uniform quality, of renovation recommendations given by the energy expert.</p>
Relevant stakeholders who may support the convincing process	<p>EPC assessors</p> <p>Large building owners and their trade organisations, who might see the advantages of receiving improved recommendations.</p>
Has the enhanced EPC such elements that need major changes compared to the current state? Which are they?	<p>Changes are needed in the EPC template.</p> <p>A definition, or guiding, on the requirement of cost-effective recommendations in Regulation (2006:1592) on energy performance certificates for buildings (BED). This should also include how to consider measures that are not cost effective in a short perspective.</p> <p>Recommended levels (enhanced and exceptional) of energy efficiency measures could be developed within the electronic EPC form designed and handled by Boverket .</p> <p>Suggestion of renovation package to reach deep energy renovation should be included in the EPC template.</p> <p>Consider energy rating for building components and technical systems to be included in the EPC template.</p>
What is needed for these changes	<p>Any changes to the first page of the EPC form requires an update of the template given in an appendix to the Regulation</p>



	<p>(2006:1592) on energy performance certificates for buildings (BED).</p> <p>Any additional element or other changes to the Swedish EPC require changes in the electronic EPC form designed and handled by Boverket.</p>
Other barriers which can complicate or hinder the changes	Boverket is currently working on developing new building regulations and the energy section should be ready in mid-2025. First after that, resources needed for the changes discussed here may be available.
Possible timeline for modification	2026 (after the work with the new building regulations, which will not include regulations for EPC-assessment.)

Boverket's regulations and general advice (2007:5) for the certification of energy experts (CEX)
Related to item(s): D

Responsible legislator / decision maker	National Board of Housing, Building and Planning
Date of Last modification	23 november 2016 BFS (2016:15)
Planned to be modified for any other reason	
Additional legislation, standard to be amended (if any)	
decision maker	
last date of modification	
planned to be modified for any other reason	
Procedure of the amendment with estimated timeline	<p>Introduction of the deep energy renovation recommendations into the training curricula.</p> <p>If recommendations of energy renovation packages are added to the EPCs, this must also be included in the training. The same reasoning applies for other changes regarding EPC content.</p> <p>Any additional knowledge (competence) requirements for EPC assessors would require a change in Boverket's regulations and general advice (2007:5) for the certification of energy experts (CEX).</p>



Possibilities, arguments to convince the decision maker(s)	Today, the basis for EPCs is that recommended measures need to be cost effective. Hence, an introduction of deep energy renovation probably needs to be preceded by a change in EPBD.
Relevant stakeholders who may support the convincing process	Politicians
Has the enhanced EPC such elements that need major changes compared to the current state? Which are they?	Introduction of the deep energy renovation recommendations into the training curricula.
what is needed for these changes	Any additional knowledge (competence) requirements for EPC assessors would require a change in Boverket's regulations and general advice (2007:5) for the certification of energy experts (CEX).
Other barriers which can complicate or hinder the changes	Boverket is currently working on developing new building regulations and the energy section should be ready in mid-2025. First after that, resources needed for the changes discussed here may be available.
Possible timeline for modification	2026 (after the work with the new building regulations, which will not include regulations for EPC-assessment.)



3.7.4 Overview of the necessary steps for the official application of enhanced EPC and other policy proposals to the Swedish framework

This section is considering feedback from the 3rd and 4th round of national workshops.

Item	QualDeEPC priority	Key changes of the current regulation	Timeline, milestones	Human and material resources needed	Actions planned (for project partner) to support the changes
1	Definition of “Deep Energy Renovation” based on a modified nZEB-based approach. (Policy proposal)	<p>A definition needs to be specified.</p> <p>An amendment of the Planning and Building Ordinance, PBF (2011:338) would be required.</p>	<p>New Building regulations are under development. The definition could be implemented directly in them. Deadline for the energy-related regulations is January 1, 2025, at the earliest.</p>	<p>Human resources are already devoted for the task of developing new building regulations at the national Board of Housing, Building Planning (Boverket)</p>	<p>Round table meetings with authorities.</p> <p>Support Boverket with expert advice in the process</p>
A)	Improving the recommendations for renovation, which are provided on the EPCs, towards deep energy renovation (Policy proposal)	<p>a. A definition, or guiding, on the requirement of cost-effective recommendations in Boverket’s regulations and general advice (2006:1592) on energy performance certificates for buildings (BED). This should also include how to consider measures that are not cost effective in a short perspective.</p> <p>b. Recommended levels (enhanced and exceptional) of energy efficiency measures could be developed within Boverket’s EPC-template.</p> <p>c. Suggestion of a renovation package to reach deep energy renovation should be included in the EPC.</p> <p>In large extent, enhanced levels are already included in the current Building regulations. However, new Building regulations are under development, and these will be less detailed than before. Therefore, Boverket’s EPC template is likely more suitable for b. and c.</p>	<p>2026 (after the work with the new building regulations, which will not include regulations for EPC-assessment.)</p>	<ul style="list-style-type: none"> Resources needed at Boverket. Resources for an expert group that can support Boverket in their work. 	<ul style="list-style-type: none"> Continue the discussion with the authorities about the need for improvements. Support Boverket with expert advice in the process.

E)	High user-friendliness of the EPC, by way of an enhanced EPC template form, including an introduction of the proposed “Energy Rating” indicator (Policy proposal)	<p>Revision in existing laws is not required. However, Boverket’s EPC template needs to be revised.</p> <p>Any changes to the first page of the EPC form requires an update of the template given in an appendix to the Regulation (2006:1592) on energy performance certificates for buildings (BED).</p> <p>Any additional element or other changes to the Swedish EPC require changes in the electronic EPC form designed and handled by Boverket.</p>	2026 (after the work with the new building regulations)	<ul style="list-style-type: none"> Resources needed at Boverket. A revision of Boverket’s EPC template will require a revision of the EPC database, which in turn requires large resources. Resources for an expert group that can support Boverket in their work. 	<ul style="list-style-type: none"> Continue the discussion with the authorities about the need for improvements. Support Boverket with expert advice in the process.
D)	Regular mandatory EPC assessor training on assessment and recommendations required for certification/accreditation and registry (Policy proposal)	<p>a. A system with regular tests and voluntary training is already in place.</p> <p>b. Introduction of the deep energy renovation recommendations into the training curricula.</p> <p>Any additional knowledge (competence) requirements for EPC assessors would require a change in a change in regulation CEX.</p>			<p>a. No actions needed.</p> <p>b. Suggest this additional element to Boverket.</p>
F)	Voluntary/mandatory advertising guidelines for EPCs (Policy proposal)	Already implemented.			
G)	Improving compliance with the mandatory use of EPCs in real estate advertisement. (Policy proposal)	Responsible body already appointed. Extended control may be needed.	2025	Human resources at national and local authorities needed.	Round-table meeting with Boverket or in other way point out the need for extended control to improve compliance.



3.7.5 Outlining the further consultation needs and processes

The following further steps are needed:

- Continue the discussion with the authorities about the need for implementation of suggested improvements of the Swedish EPC system.
- Support the National Board of Housing Building and Planning with expert advice in the process of implementing suggested changes in regulations and Swedish EPC form.
- Continue the discussion with the authorities regarding a national energy renovation platform.
- Presentation and explanation of the proposed elements to the responsible politicians, e.g. via other projects currently underway.



4 ASSESSMENT OF THE POLICY PROCESSES REQUIRED AT EU LEVEL

For the EU level, the dialogue process on how the policy proposals by QualDeEPC could be reflected in the ongoing **EPBD revision** is a relevant subject of the roadmap. Regarding the policy proposals themselves, the ‘Conclusive Policy Recommendations Guide’ (Deliverable D7.2) explains all our proposals that are mentioned in this roadmap. This document also assesses the positive and synergic changes that the EPBD recast has raised and whether they are in line with our proposals. Where there are gaps in the proposal for the EPBD recast related to our proposals, the D7.2 elaborates concrete recommendations on how our policy proposals could be incorporated into the EPBD.

As tools (such as DRNPs) are developed and implemented at national levels, the corresponding processes are elaborated in chapters 3.1 to 3.7.

The policy recommendations have been presented to and discussed with national and EU policymakers during regular meetings and high-visibility events to advance consensus, possibly improve them further, and stimulate uptake of these policy proposals and instruments. The table below gives an overview of the identified key stakeholders and their role in this policy dialogue.

Key stakeholders and their role in this policy dialogue	
Key stakeholders	Their role
European Commission > Directorate-General for Energy Deputy Director-General - Coordination of the Just and Green Energy Transition (in charge of Directorates B and C) Directorate B: Just Transition, Consumers, Energy Efficiency and Innovation Unit Buildings and Products (ENER.B.3)	Body initiating and monitoring the EU policy, drafts the regulations, directives, etc. in accordance with the Union’s interests and submits the texts to the European Parliament and Council.
European Parliament > Members of the European Parliament (MEPs) Parliamentary committees Committee on Industry, Research and Energy (ITRE)	Body representing the citizens directly. The dedicated committee appoints a <i>rapporteur</i> who reviews and amend the Commission proposals in accordance with the political groups’ interests.
European Council: Energy attachés working in preparation for the ministerial meeting of Transport, Telecommunications and Energy Council (Energy)	Body representing the national governments, reviews and amends the Commission proposals in accordance with the national interests.
Concerted Action on the Energy Performance of Buildings Directive (CA EPBD)	CA EPBD is a joint initiative between the EU Member States and the European Commission. It involves representatives of national ministries or their affiliated



	<p>institutions who are in charge of preparing the technical, legal and administrative framework for the Energy Performance of Buildings Directive in each EU Member State, plus Norway. The objective is to enhance the sharing of information and experiences from national adoption and implementation of this important European legislation. It has assigned central working teams which deal with every EPBD article, and provides information about the status of every MS, country reports, and best practices applied to achieve energy efficiency in buildings.</p>
<p>European Energy Network (EnR)</p>	<p>EnR is a voluntary network currently numbering twenty-five European energy agencies, with responsibility for the planning, management or review of national research, development, demonstration, or dissemination programmes in the fields of energy efficiency and renewable energy and climate change abatement. It seeks to strengthen cooperation between member agencies and other European actors on all issues relevant to sustainable energy (energy efficiency, sustainable transport and renewable energy). International comparison and information sharing takes place primarily through eight Working Groups, which are also open to relevant non-member organisations.</p> <p>The EnR Buildings Working Group's focus is the energy performance of buildings and addresses policies, initiatives, and technical measures.</p>
<p>Housing Europe</p>	<p>Housing Europe is the European Federation of Public, Cooperative, and Social Housing.</p> <p>Established in 1988, it is a network of 46 national and regional federations which together gather about 43,000 public, social, and cooperative housing providers in 25 countries. Altogether they manage around 25 million homes.</p> <p>Social, public, and co-operative housing providers have a vision of a Europe which provides access to decent and affordable housing for all in communities, which are socially, economically and environmentally</p>



sustainable, and where everyone is enabled to reach their full potential.

Their Housing systems in transition Working Group is particularly relevant.

These recommendations have been regularly shared and promoted in QualDeEPC's final conference targeting policymakers and experts held in Brussels on November 15, 2022, and during further focused events and email exchanges with these stakeholders. FEDARENE has also intensively discussed with its members during a session at the FEDARENE General Assembly that was held on June 15, 2022.

Events and other dissemination activities aim to jointly present results with sister projects to cross-promote and mutually invite to events.



5 CONCLUSIONS

The report D5.4 Proposal for the Roadmap for the further revision and convergence process aims at outlining the needs (changes in legislation & regulation, funding, etc.) for implementing the project's proposals adapted to participating countries context and illustrate the:

- Policy conclusions on what may be feasible to be implemented during the project's duration as well as in the future,
- Enabling convergence between EPC schemes in different EU MS, and enabling action towards deep renovation will be of priority.

Feedback from the following specific target groups has been sought for this report:

- National Experts fora.
- Other stakeholders relevant for the development and implementation of a national enhanced EPC scheme (i.e. national and/or regional energy agencies).
- Fora and networks at EU level.

The roadmap produced could serve as a reference document for all actors involved in the application and implementation of the proposed enhanced EPC scheme at national level in countries represented in the project and beyond.



6 REFERENCES

Veselá, S., Thomas, S., Gokarakonda, S., Pannier, P., Korma, E., Lampropoulou, L., & Androutsopoulos, A. (2021). *QualDeEPC_D3.2_White-Paper-on-good-practice-in-EPC-assessment-certification-and-use*. https://qualdeepc.eu/wp-content/uploads/2021/11/QualDeEPC_D3.2_White-Paper-on-good-practice-in-EPC-assessment-certification-and-use.pdf

Korma E. et al. (2022). *D5.1 Report on the 7 nationally adapted enhanced assessment and certification schemes*. https://qualdeepc.eu/wp-content/uploads/2022/03/QualDeEPC_D5.1_Report-on-the-7-nationally-adapted-enhanced-assessment-and-certification-schemes_final.pdf

Puente M. et al. (2022). *D5.2 Report on the 7 nationally adapted Deep Renovation Network Platform concepts*. https://qualdeepc.eu/wp-content/uploads/2022/03/QualDeEPC_D5.2-DRNPs_220215_final.pdf

Korma E. et al. (2023). *D5.3 Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme - Consolidated results*. https://qualdeepc.eu/wp-content/uploads/2022/08/QualDeEPC_D5.3_Guidebook-for-improved-EPCs-komprimiert.pdf

Thomas, S, Venjakob M.,(2023) *D7.2 Conclusive policy recommendations guide- EU and general policy recommendations*. <https://qualdeepc.eu/public-project-deliverables>

Korma E. et al. (2022).*D3.3 Collection of tools developed*. <https://qualdeepc.eu/public-project-deliverables>

