



D7.2 Conclusive policy recommendations guide

Version 1: EU and general policy recommendations

QualDeEPC H2020 project

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ABBREVIATIONS

- DRNP:** Deep Renovation Network Platform
- EC:** European Commission
- EPBD:** Energy performance of buildings directive
- EPC:** Energy performance certificate
- HVAC:** Heating, ventilation, and air conditioning
- MS:** Member State
- nZEB:** nearly zero energy building

PROJECT PARTNERS

- WI:** Wuppertal Institut für KLIMA, UMWELT, ENERGIE gGMBH
- CRES:** Centre for renewable energy sources and saving
- DENA:** Deutsche Energie-Agentur GmbH (dena)
- EAP:** Energy agency of Plovdiv Association
- EKODOMA**
- ENERGIAKLUB:** Energiaklub Szakpolitikai Intezet Modszertani Kozpont Egyesulet
- E-P-C:** EPC Project Corporation Climate. Sustainability. Communications. mbH
- FEDARENE:** Federation europeenne des agencies 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 original objectives for introducing Energy Performance Certificates (EPCs) were 1) to make energy performance transparent in the building market, as a measure of energy costs of using a building that a potential buyer or tenant would be interested in; and 2) to encourage energy efficiency renovation. However, the current implementation of EPC schemes in the Member States still shows significant challenges in achieving these two objectives. The recast of the EU Directive on the Overall Energy Performance of Buildings (EPBD) provides a chance to enhance both the usefulness and quality of EPCs and the EPC schemes overall.

This document aims to inform both the debate on the recast of the EPBD and the enhancement of national EPC schemes in EU Member States. It presents the draft **policy recommendations of the Horizon 2020 QualDeEPC project for making the EPBD and the national schemes more effective, particularly for deep renovation, and enhance their quality overall**. The policy recommendations particularly target the link between EPCs and deep (energy) renovation¹, while increasing the levels of ambition and convergence across the EU in terms of building renovation. Deep (energy) renovation is crucial for mitigating climate change and for energy security. The EPBD and all of its articles, as well as national EPC schemes, should aim to make deep (energy) renovation the default. This objective would be embedded and ensured in EPC schemes, if the policy recommendations provided in this document were adopted and implemented.

The draft policy recommendations are agreed upon between the QualDeEPC partners and are ready to use in the debate. They are **called ‘draft’**, because they are currently being discussed with stakeholders, i.a., in national workshops, and may be revised thereafter.

Combined with supporting tools developed by the QualDeEPC consortium, the draft policy recommendations are formulated to take into account the European Commission’s proposal for a recast of the EPBD (European Commission, 2021); they look particularly at the articles relevant to EPCs.

For each of these 10 policy recommendations, we offer a **concrete suggestion on how the content of the recast of the EPBD could be further improved**.

- 1 Ensure high user-friendliness of the EPC template and data
- 2 Implement a clear and ambitious definition of ‘Deep (Energy) Renovation’
- 3 Enhance the renovation recommendations on EPCs toward deep (energy) renovation
- 4 Increase the coverage of the building stock with EPCs based on an energy audit or Renovation Passports
- 5 Develop a better specification of energy data and classes on EPCs by the EPBD
- 6 Provide an online tool on deep renovation options for building owners in each Member State
- 7 Create Deep Renovation Network Platforms
- 8 Require regular mandatory EPC assessor training or examination
- 9 Provide voluntary/mandatory advertising guidelines for EPCs
- 10 Improve compliance with the mandatory use of EPCs in real estate advertisements

¹ In our work, we decided to speak of ‘deep energy renovation’, although the official documents always use the term ‘deep renovation’. It must be noted, however, that there are countries, in which ‘deep renovations’ are also defined based on the extent of renovation *overall*, i.e., the quantity and quality of work undertaken for the renovation of a building’s interior and exterior, not only for energy efficiency. In order not to create confusion, we mostly use ‘deep (energy) renovation’ in this text, except for concrete proposals to change the legal text in the draft EPBD recast, where we use ‘deep renovation’.



Of the above 10 draft policy recommendations, the first one may be the most important to improve the user-friendliness of EPCs and their link to deep (energy) renovation. It is based on an enhanced EPC form template developed by QualDeEPC. The next four are closely related to deep (energy) renovation. No. 3 is also one of seven development priorities of QualDeEPC and would renovation recommendations on the EPCs consistent with deep (energy) renovation. Nos. 2, 4, and 5 concern three general topics linked to deep renovation.

Policy recommendations 6 to 10 are based on the other five priorities of QualDeEPC for the development of enhanced EPC schemes. Number 6 and 7 further strengthen the link between the EPCs and deep (energy) renovation, by making use of EPC data and providing further information supporting the implementation of renovation recommendations on the EPCs. No. 8 aims to improve the quality of EPCs in general. Finally, nos. 9 and 10 will strengthen the compliance of building owners with the requirement to present EPC energy data in real estate advertisements and thereby enhance the effectiveness EPC schemes in real estate markets.

(Note: the order, in which the 10 policy recommendations are presented in chapter 2, is somewhat different from the above table, due to a different logic of presenting them.)

In addition to suggestions for the further improvement of the EPBD recast, a set of **policy recommendations and tools for national decision makers** were elaborated to further improve legal and institutional frameworks on the EPCs at the national level. They **can be used by any Member State** to improve their national EPC schemes. Further detail on the policy proposals and tools developed by QualDeEPC can be found in the Deliverable D5.3, *Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme* ([Korma et al., 2022](#)).

These national-level recommendations were also **specified by each project partner for their own country**. They are not included in this first version of the Conclusive policy recommendations guide, but can also be found in the Deliverable D5.3, *Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme* (Korma et al., 2022).



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1 INTRODUCTION

The original objectives for introducing Energy Performance Certificates (EPCs) were 1) to make energy performance transparent in the building market, as a measure of energy costs of using a building that a potential buyer or tenant would be interested in; and 2) to encourage energy efficiency renovation. However, the current implementation of EPC schemes in Member States still shows significant challenges in achieving these two objectives. The recast of the EU Directive on the Overall Energy Performance of Buildings (EPBD) provides a chance to enhance both the usefulness and quality of EPCs, and the EPC schemes overall. To support this recast and the ongoing implementation, the European Commission has provided funding to several projects under the Horizon 2020 programme's EE-5 cluster on Next Generation EPCs. One of the first three of these projects is the QualDeEPC project. It started in 2019 and aims to enhance (1) the quality and cross-EU convergence of Energy Performance Certificate (EPC) schemes, and (2) the link between EPCs and deep renovation.

This conclusive policy recommendations guide presented by the QualDeEPC project provides a high-level summary of all the policy recommendations for the further EPC policy process in all EU Member States as well as at EU level, which have been developed during the project. Policy lessons learnt and recommendations were on the one hand developed for European policy makers. They suggest how the European Commission, the European Parliament, and the Member States could enhance the development of the EPC policy and regulation towards stronger effectiveness for deep (energy) renovation as well as higher quality and convergence at reasonable costs. The **EU-level recommendations** were developed jointly by the project consortium, based on national and local experience. They aim at **making the EPBD more effective for deep renovation**.

On the other hand, a set of **policy recommendations for national decision makers** were elaborated to further improve legal and institutional frameworks on the EPCs at the national level. These national-level recommendations are available in general form for policy-makers in all EU Member States, and they were developed to further detail by each national project partner in the QualDeEPC project for their own country.

This document presents the EU-level policy recommendations and the general form of national-level policy recommendations in chapter 2. Chapter 3 concludes the guide in this first version.

The specific national-level policy recommendations for the seven EU Member States represented in the QualDeEPC project are not included in this first version of the Conclusive policy recommendations guide, but can be found in the Deliverable D5.3, *Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme* ([Korma et al., 2022](#)). D5.3 also holds further detail on the policy proposals and tools developed by QualDeEPC in their general form.



2 EU-LEVEL POLICY RECOMMENDATIONS AND GENERAL RECOMMENDATIONS TO MEMBER STATES

First, an **overview** of the **EU-level policy recommendations** for further enhancing the draft for the recast of the EPBD is offered in this chapter, followed by a discussion of the **contribution** of our policy recommendations to objectives for enhanced EPC scheme.

Chapter 2.3 holds specific recommendations for establishing a close link between EPCs and **deep (energy) renovation**.

Finally, chapter 2.4 provides the same detail as chapter 2.3 for specific policy recommendations, which are **related to the seven priorities** elaborated in detail by QualDeEPC for the development of enhanced EPC schemes:

- A) Improving the recommendations for renovation, which are provided on the EPCs, towards deep (energy) renovation
- B) Providing an online tool on deep renovation options for building owners
- C) Creating Deep Renovation Network Platforms
- D) Requiring regular mandatory EPC assessor training or examination on assessment and renovation recommendations for certification/accreditation and registry
- E) Ensuring high user-friendliness of the EPC template and data – a proposal for an enhanced EPC template form
- F) Providing voluntary/mandatory advertising guidelines for EPCs
- G) Improving compliance with the mandatory use of EPCs in real estate advertisements

These policy recommendations are, on the one hand, formulated **in a general way directed to all Member States**, which would **improve cross-EU convergence** of Energy Performance Certificate schemes.

On the other hand, there are suggestions for potential **regulation that may be included in the revised EPBD**, which would require or support the Member States to implement the recommendations we suggest to them here. Following the European Commission's proposal for a recast of the EPBD of 15 December 2021, COM(2021) 802 final, we have included a discussion of elements relevant to our EU-level suggestions, and **specific suggestions on how the draft recast of the EPBD could be enhanced further**.

For a quick overview, the EPBD-related policy suggestions by QualDeEPC are assembled in chapter 2.1. They are grouped according to the three objectives for enhanced EPC schemes discussed in chapter 2.2.

The analysis and the general national level policy recommendations can be found in chapters 2.3 and 2.4.



2.1 Overview of policy recommendations for further enhancing the draft for the recast of the EPBD

Objective 1: Establish a close link between EPCs and deep (energy) renovation

A clear and ambitious definition of ‘Deep (Energy) Renovation’ (chapter 2.3.1)

- The Commission’s proposal includes a clear and ambitious definition of ‘Deep Renovation’, which is based on nearly zero energy buildings (nZEB) definitions in Member States. This is close to the approach proposed by QualDeEPC.
However, the definition of ‘staged deep renovation’ should be improved:
- **Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further**
Additional text – *written in italics* – should enable the definition of ‘staged deep renovation’ to apply for buildings that do not have a renovation passport, in ***Art. 2 (20) of the draft recast:***
20. ‘staged deep renovation’ means a deep renovation carried out in several steps, *that each achieve energy standards for building elements equal to at least those that are usually required to achieve deep renovation, for example*, following the steps set out in a renovation passport in accordance with Article 10;

Enhanced renovation recommendations on EPCs (chapter 2.4.1)

- **In Article 16 (4) or a new paragraph in Art. 16:**
Require Member States 1) to adapt the definition for ‘deep renovation’ and 2) to specify the renovation recommendations that must be provided on EPCs in the following way:
 - **Specify that the energy efficiency levels to be recommended** for different types of actions must be consistent with deep (energy) renovation leading to nZEB or ZEB standards for existing buildings, even when implemented step by step in a staged deep renovation,
e.g. **using the proposal for enhanced renovation recommendations** (chapter 2.4.1) **and traffic light system** (on the enhanced EPC template presented in chapter 2.4.5) **provided by QualDeEPC**;
 - **Clarify that in the EPC itself,**
 - 1) 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),
 - and 2) that the EPC assessor should **clarify**
 - i) **whether the recommendations are cost-effective on their own or only** with financial incentives existing at the time of issuance of the EPC, and
 - ii) whether the measures and their costs are independent of, or carried out in connection to, a major renovation of the building envelope or technical building system or systems that is scheduled anyway (meaning that cost-effectiveness of renovation will always be based on *energy-related* costs only, as it is already specified in the EPBD).
- **3) Require Member States to develop a set of methods and data to assess co-benefits of building renovation and require their use** in the assessment and in the presentation of cost-effectiveness or as direct co-benefits data (if not possible to monetise) on the EPC.
- **4) In Art. 22 on independent experts: Require Member States to include all of the former into the training or examination** of EPC assessors. Note: Such training or examination should be regular and mandatory (chapter 2.4.4).

Increasing the coverage of the building stock with EPCs based on an energy audit or with Building Renovation Passports (chapter 2.3.2)



We suggest to add to the EPBD the following provisions:

- **New Art. 10 (4): 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 are not renovated to close to an nZEB level, **have an EPC based on an energy audit or a renovation passport**, whatever is more appropriate in a Member State, **the latest by 2030**. For the worst-performing half of the building stock, this shall be achieved **by 2027**.
- **In Art. 10: Require Member States to 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 Renovation Passport.
- Furthermore, require **disclosure** of an existing renovation passport to potential buyers or tenants (Art. 10 or 19).
- **Add to Art. 16 (4, 5): Member States shall ensure** that the EPCs shall **indicate** whether and how the **renovation recommendations on the EPCs** can be implemented **in staged deep renovation**, e.g., consistent with a renovation passport.

A better specification of energy data and classes on EPCs by the EPBD (chapter 2.3.3)

- **Require the European Commission** in the **recast EPBD** to perform a **feasibility study** for this proposal, to prepare a possible change to the indicators and scales for the next recast or amendment. This would mean to change the energy performance calculation from primary energy to two indicators (1) and (2) and to provide, on the EPCs, the below information:
 - 1) an indicator (1) for the energy performance of the building envelope and the heat/cold/air distribution system (e.g., heat/cold input demand ($\text{kWh}/\text{m}^2/\text{yr}$) for space heating and cooling and water heating plus electricity for lighting (non-res.) and ventilation), which is also an indirect indicator of energy costs, and an indicator (2) on operational greenhouse gas emissions ($\text{kg CO}_2/(\text{m}^2*\text{yr})$), to inform about the climate impact of the building, as the result of both energy efficiency of the building shell and the heat/cold/air distribution, and the heating and cooling system(s) installed;
 - 2) consequently, splitting the energy performance class into a new **energy efficiency class** based on indicator (1) and a **climate class or greenhouse gas emission class** based on indicator (2);
 - 3) final energy demand ($\text{kWh}/\text{m}^2/\text{yr}$ and kWh/yr) and type of energy source, for **informing real estate transactions** and calculating energy costs
 - For all of these three indicators, the **potential savings and changes** in the energy efficiency and climate classes from implementing a recommended combination of deep (energy) renovation actions should be provided as well.

Objectives 2 and 3: Improve the quality and cross-EU convergence of Energy Performance Certificate schemes

High user-friendliness of the EPC template and data (chapter 2.4.5)

We recommend to add to the EPBD (**Art 16 of the draft recast**) the following provisions and add detail for Annex V:

- **In Art. 16: Require**
 - **additional content, including** the content of the **proposal** on an enhanced EPC form template developed by QualDeEPC (see chapter 2.4.5) and the **list** of mandatory indicators and content for Annex V of the EPBD recommended here below,
 - that the **renovation recommendations** be consistent with deep (energy) renovation in their selection and energy efficiency levels (chapter 2.4.1), and
 - that possibilities for a stepwise implementation are indicated (enabling staged deep renovation, see chapter 2.3.2).



- **Particularly, add to Annex V the following mandatory indicators and content:**
 - Improved classification(s), using the same scale as for the current energy class, and improved energy performance value(s) 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, illustrated by a traffic light system
 - Detailed renovation recommendations by component, consistent with deep (energy) renovation (chapter 2.4.1), illustrated by the same traffic light system
 - Useful combination of renovations and stepwise implementation – indicating possibilities for staged deep renovation
 - Link to an official online platform for further information, such as a Deep Renovation Network Platform (chapter 2.4.3)

Online tool on deep renovation options for building owners (chapter 2.4.2)

- ***In Art. 26 (2) of the draft recast: 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.***

Creating Deep Renovation Network Platforms (chapter 2.4.3)

We suggest to add to the EPBD (**Art 15 (6) of the draft recast**) the following provision:

- “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.”

Regular mandatory EPC assessor training or examination (chapter 2.4.4)

We recommend to add to the EPBD (**Art 22 of the draft recast**) the following provision:

- **Require the Member States to require either an initial and regular training or a 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 (chapter 2.4.1) should be a special focus.**

Voluntary/mandatory advertising guidelines for EPCs (chapter 2.4.6)

We suggest to add to the EPBD (**Art 17 (4) of the draft recast**) the following provisions:

- **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.**

Improving compliance with the mandatory use of EPCs in real estate advertisements (chapter 2.4.7)

Art. 17 on Issue of energy performance certificates includes a new provision in paragraph 4., which would be equivalent to one of our suggestions:

“Member States shall carry out sample checks or other controls to ensure compliance with these requirements.”

Therefore, we recommend to add to the EPBD (**Art 17 (4) of the draft recast**) the following three further provisions:



- Require Member States to
 - explicitly 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 advertisements, and of the advertisement guidelines (chapter 2.4.6)
 - define **staged penalties** for non-compliance.

2.2 Contribution of policy recommendations to objectives for enhanced EPC schemes

In general, we see the need to enhance EPCs and EPC schemes particularly regarding the following three objectives:

- Establish a close link between EPCs and deep (energy) renovation
- Improve the quality of Energy Performance Certificate schemes, both for the EPCs and their data, and the processes of assessment, certification, verification
- Improve cross-EU convergence of Energy Performance Certificate schemes.

This sub-chapter allocates the seven priorities developed by QualDeEPC and a number of additional specific measures to link EPCs and deep (energy) renovation to the three objectives. Chapter 2.3 presents the recommendations and analysis for these additional specific measures. Chapter 2.4 holds the recommendations and analysis for the seven priorities developed by QualDeEPC.

2.2.1 Establish a close link between EPCs and deep (energy) renovation

For this objective, we see the need for

- A clear and ambitious definition of ‘Deep (Energy) Renovation’ (chapter 2.3.1)
- enhanced renovation recommendations (chapter 2.4.1)
- increasing the coverage of the building stock with EPCs based on an energy audit or with Building Renovation Passports (chapter 2.3.2)
- a better specification of energy data and classes on EPCs in the EPBD (chapter 2.3.3).

Providing an online tool on deep renovation options for building owners (chapter 2.4.2) and Creating Deep Renovation Network Platforms (chapter 2.4.3) will also contribute to this objective.

2.2.2 Improve the quality of Energy Performance Certificate schemes

The quality of the Energy Performance Certificate schemes can be improved in all of assessment, certification, and verification, as well as the usefulness and use of EPCs in the market. Out of the enhancement measures analysed and developed by QualDeEPC, the following would particularly contribute to this objective:

- improve EPCs’ renovation recommendations towards deep (energy) renovation (chapter 2.4.1)
- mandatory regular training or examination of EPC assessors (chapter 2.4.4)
- high user-friendliness through an enhanced EPC template and data (chapter 2.4.5)
- advertising guidelines and other measures to improve compliance with presenting energy class and/or data from EPCs in advertisements (chapters 2.4.6 and 2.4.7)



2.2.3 Improve cross-EU convergence of Energy Performance Certificate schemes

- All seven priorities developed by QualDeEPC, if implemented by many or all Member States, would contribute to improving cross-EU convergence of Energy Performance Certificate schemes.
- There is particular potential for higher convergence in the enhanced EPC form (chapter 2.4.5).

2.3 Specific policy recommendations for establishing a close link between EPCs and deep (energy) renovation

This sub-chapter presents and analyses three specific policy recommendations that are important for establishing a close link between EPCs and deep (energy) renovation. The first one is based on a proposal developed by the QualDeEPC project team as the basis for its work, the other two are additional policy recommendations prepared for this document.

In addition to these three specific policy recommendations, the **enhanced renovation recommendations** for the EPCs (chapter 2.4.1) are most important for this objective. Providing an online tool on deep renovation options for building owners (chapter 2.4.2) and Creating Deep Renovation Network Platforms (chapter 2.4.3) will also contribute to this objective.

For each policy recommendation, the respective sub-chapters hold the following content:

- An **analysis of the background and problem to be addressed**, which discusses the need for the respective policy recommendation;
- **Concepts and tools provided by QualDeEPC**; these could be used by EU Member States interested in improving the EPC schemes as food for thought or tools for their implementation;
- **Policy recommendation to EU Member States** – this is our general national level policy recommendation to all EU Member States. For the seven Member States represented in the QualDeEPC project team, they have been further adapted to their national situation, see chapter 3;
- **Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further**: this would include the substance of the respective policy proposal into the EPBD;
- **Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal**: this section presents comments from QualDeEPC on gaps that may exist in the Commission's proposal, and why therefore there is the need to further enhance it, e.g. in the way QualDeEPC recommends it.
- If necessary, a section with further detail.

2.3.1 Implement a clear and ambitious definition of 'Deep (Energy) Renovation'

Background and problem to be addressed:

Deep (energy) renovation is crucial for mitigating climate change and for energy security. The EPBD and all of its articles should aim to make deep (energy) renovation the default. There is, therefore, the need for a clear and ambitious definition of 'Deep Renovation'. The European Commission included a suggestion for such a definition, and also for staged deep renovation, in its proposal for the Recast of the EPBD of December 2021 (see below). However, it may be refined further based on the approach developed by QualDeEPC, and we recommend to widen the scope of staged deep renovation.



Concepts and tools provided by QualDeEPC:

- nearly zero-energy building (nZEB)-based **approach for defining ‘deep (energy) renovation’¹**, based on four staged criteria reflecting nZEB definitions available in Member States (Chapter 2.1 of Deliverable D5.3 (Korma et al., 2022) and below, and national adaptations in chapters 3.x.1 of D5.3)

Policy recommendation to EU Member States:

- Following an agreement on the recast of the EPBD, create a consistent definition for ‘deep (energy) renovation’

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

- Additional text – *written in italics* – should enable the definition of ‘staged deep renovation’ to apply for buildings that do not have a renovation passport, in ***Art. 2 (20) of the draft recast:***
 20. ‘staged deep renovation’ means a deep renovation carried out in several steps, *that each achieve energy standards for building elements equal to at least those that are usually required to achieve deep renovation, for example*, following the steps set out in a renovation passport in accordance with Article 10;

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC’s proposal

The Commission’s proposal for the Recast of the EPBD – COM(2021) 802 final – includes the following definition in Art. 2:

“19. ‘deep renovation’ means a renovation which transforms a building or building unit

- (a) before 1 January 2030, into a nearly zero-energy building;
- (b) as of 1 January 2030, into a zero-emission building; “

This is, therefore, linked to two further definitions:

“2. ‘zero-emission building’ means a building with a very high energy performance, as determined in accordance with Annex I, where the very low amount of energy still required is fully covered by energy from renewable sources generated on-site, from a renewable energy community within the meaning of Directive (EU) 2018/2001 [amended RED] or from a district heating and cooling system, in accordance with the requirements set out in Annex III;

¹ In our work, we decided to speak of ‘deep *energy* renovation’, although the official documents always use the term ‘deep renovation’. It must be noted, however, that there are countries, in which ‘deep renovations’ are also defined based on the extent of renovation *overall*, i.e., the quantity and quality of work undertaken for renovation of a building’s interior and exterior, not only for energy efficiency. In order not to create confusion, we mostly use ‘deep (energy) renovation’ in this text, except for concrete proposals to change the legal text in the draft EPBD recast, where we use ‘deep renovation’.

And deep (energy) renovation should also not be confused with ‘major renovation’ according to the EPBD, which triggers the legal requirement to renovate the whole part of the building shell that is subject to the planned renovation according to legal standards for component energy efficiency in renovation. Such major renovations are defined based on the extent of energy renovation, i.e., the quantity of work undertaken for energy renovation, e.g., as a certain percentage of total building shell area or area of walls, roof, windows etc.



3. ‘nearly zero-energy building’ means a building with a very high energy performance, as determined in accordance with Annex I, which cannot be lower than the 2023 cost-optimal level reported by Member States in accordance with Article 6(2) and where the nearly zero or very low amount of energy required is covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby;”

Comments from the QualDeEPC project

The QualDeEPC team welcomes the fact that the European Commission has included a proposal for ‘deep renovation’ in its Directive proposal. We are pleased to see that, as the approach for a definition recommended by our project, it is based on the nearly zero-energy building and that it goes further in ambition to the zero-emission building in 2030. In comparison to our approach, this is simpler; this may be justified, if all EU Member States have defined nZEBs at sufficiently ambitious levels, be they for new build or renovation. Otherwise, our approach may be more appropriate.

The Commission’s proposal also includes a definition of ‘staged deep renovation’, which is based on the ‘renovation passport’ that is also defined in the draft Directive. However, the renovation passport is only proposed as a voluntary tool, and will not be operational before 2025. Therefore, we still see the need for ensuring that partial or staged renovations are in line with deep renovation also for buildings that do not have a renovation passport. This could be done by including our approach to energy standards for deep renovation in the definition of ‘staged renovation’, as outlined in the policy recommendation above.

Detail on the approach proposed by QualDeEPC:

Based on the analysis of existing proposals for defining ‘deep (energy) renovation’, QualDeEPC proposes a modified nZEB-based approach for defining deep (energy) renovation, based on the following four staged criteria:

1. For those member states that have defined their objective or legal nZEB definitions/ standards for existing buildings, QualDeEPC proposes to link deep (energy) renovation with these definitions of nZEB; and define deep (energy) renovation as ‘renovation achieving component energy standards equal to at least those that are usually required to meet nZEB requirements for existing buildings’.
2. For countries that only have nZEB definitions for new build but not existing buildings, and in which the nZEB requirements for new build are not so ambitious and would be achievable through renovation, QualDeEPC proposes to define deep (energy) renovation as ‘renovation achieving component energy standards equal or close to those that are usually required to meet nZEB requirements for new buildings’.
3. In countries that only have nZEB definitions for new build but not existing buildings, and in which the nZEB requirements for new build are too ambitious to reach through renovation, QualDeEPC proposes to define deep (energy) renovation as ‘renovation achieving component energy standards close to those that are usually required to meet nZEB requirements for new buildings, as much as is technically and economically feasible’. QualDeEPC partners have been asked to present values for improved component energy standards that are better than the legal requirements in case of a major renovation, and are often proposed in practice by energy consultants. It can be assumed that these are somewhat accepted and available in the market, and not considered too far outside of cost-effectiveness considerations. They could be adopted as component energy standards for deep renovation.
4. In countries without current availability of such improved component energy standards or with very lax nZEB definitions, QualDeEPC recommends adopting best practices and component improvements



in deep (energy) renovation from other member states with similar climates, and where such standards exist.

As additional guidance, a definition of deep (energy) renovation could recommend aiming for values for non-renewable primary energy savings² above 60%, if the original building energy performance of existing buildings is at levels achieved before building energy standards or with early historic building energy standards. Such savings can usually only be achieved through a full renovation of all parts of a building and its technical systems (whole-building renovation). For a staged approach, e.g., according to a Building Renovation Passport with a deep (energy) renovation roadmap for a building, the component energy efficiency levels that are legally required or usually necessary to achieve deep (energy) renovation in the above nZEB-based definition would apply. In any case, where this is feasible for a building, it is always recommendable to install renewable energy systems in addition to deep (energy) renovation.

2.3.2 Increasing the coverage of the building stock with EPCs based on an energy audit or Building Renovation Passports

Background and problem to be addressed:

Only those buildings that get sold or rented out are currently in need to show an EPC. In addition, the EPC does not have to be based on an energy audit that will enable a comprehensive roadmap towards deep (energy) renovation. On the other hand, the Commission's draft proposal for the recast of the EPBD includes a new article 10 on renovation passports, which are more informative for deep (energy) renovation than most Member States' EPCs currently are. However, these renovation passports too would not be mandatory for a building, but voluntary according to the draft for the EPBD recast. Both tools, EPCs and renovation passports, would therefore not cover all buildings in need of energy efficiency renovation. However, all building owners should be informed as soon as possible about a renovation roadmap specific to their building, which would allow to achieve deep (energy) renovation in stages.

Concepts and tools provided by QualDeEPC:

- The enhanced EPC template form developed by QualDeEPC (see chapter 2.4.5) includes a section with useful combinations of renovation actions and stepwise implementation of the 'Main Option', and the same for other renovation recommendations not included in the 'Main Option'. This will be a 'light' way to indicate whether the renovation recommendations on the EPCs can be implemented in staged deep renovation.

Policy recommendation to EU Member States:

- Ensure that all **buildings**, which were built **before** a national building energy code came into force that required at least low-energy buildings and are not renovated to close to an nZEB level, **have an EPC based on an energy audit or a renovation passport**, whatever is more appropriate in a Member State, **the latest by 2030**. For the worst-performing half of the building stock, this shall be achieved **by 2027**.

² A more precise definition of this metric will be needed, since primary energy factors e.g. for district heat or electricity already take renewable energy shares into account.



- **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 Renovation Passport.**
- **Require disclosure of an existing renovation passport to potential buyers or tenants (Art. 10 or 19).**
- In addition, require and ensure that the EPCs **indicate** whether and how the **renovation recommendations on the EPCs** can be implemented **in staged deep renovation**, e.g., consistent with a renovation passport.

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

We suggest to add to the EPBD the following provisions:

- **New Art. 10 (4): 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 are not renovated to close to an nZEB level, **have an EPC based on an energy audit or a renovation passport**, whatever is more appropriate in a Member State, **the latest by 2030**. For the worst-performing half of the building stock, this shall be achieved **by 2027**.
- **In Art. 10: Require Member States to 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 Renovation Passport.
- Furthermore, require **disclosure** of an existing renovation passport to potential buyers or tenants (Art. 10 or 19).
- **Add to Art. 16 (4, 5): Member States shall ensure** that the EPCs shall **indicate** whether and how the **renovation recommendations on the EPCs** can be implemented **in staged deep renovation**, e.g., consistent with a renovation passport.

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

The Commission's draft proposal for the recast of the EPBD includes a new article 10 on renovation passports. These are defined in Art. 2:

“18. ‘renovation passport’ means a document that provides a tailored roadmap for the renovation of a specific building in several steps that will significantly improve its energy performance;”

Article 10 states that by 31 December 2023, the Commission shall establish a common European framework for renovation passports and that based on this framework, by 31 December 2024, Member States shall introduce a scheme of renovation passports. It also specifies:

“3. The renovation passport shall comply with the following requirements:

- (a) it shall be issued by a qualified and certified expert, following an on-site visit;
- (b) it shall comprise a renovation roadmap indicating a sequence of renovation steps building upon each other, with the objective to transform the building into a zero-emission building by 2050 at the latest;
- (c) it shall indicate the expected benefits in terms of energy savings, savings on energy bills and operational greenhouse emission reductions as well as wider benefits related to health and comfort and the improved adaptive capacity of the building to climate change; and
- (d) it shall contain information about potential financial and technical support.”



The explanatory memorandum clarifies (p. 14 of the Commission document for the recast, recital (b)) that the renovation passports shall be voluntary.

Comments from the QualDeEPC project

The QualDeEPC team welcomes the proposal to introduce renovation passports in addition to EPCs, and the fact that they are aiming for deep renovation in the long run (“with the objective to transform the building into a zero-emission building by 2050 at the latest”).

However, the Commission’s proposal does not include any targets to Member States for equipping all energy-inefficient buildings with a renovation passport. It only includes indirect incentives, e.g. in Art. 15 (11) on financial incentives for staged deep renovation, and in Art. 16 (11) on simplified updating of EPCs when a renovation passport exists. Therefore, the speed and coverage of the voluntary uptake of renovation passports by building owners is uncertain.

Furthermore, renovation passports will only be available in most Member States from 2025 onwards. In the meantime, at least the enhanced EPCs could serve as a first step towards renovation passports, and even if the latter are introduced in 2025, the enhanced EPCs and their renovation recommendations should be consistent with the renovation passports and indicate the possibility and ways of staged deep renovation.

However, neither article 16 nor Annex V of the Commission’s proposal specify that the renovation recommendations on the EPCs are presented in a way consistent with a full renovation passport.

On the other hand, some national EPC schemes already require the EPCs to be based on a detailed energy audit. In these Member States, such as Bulgaria and Latvia, there may not be the need for an additional renovation passport. Instead, the EPC should indicate whether and how the renovation recommendations on the EPCs can be implemented in staged deep renovation. This is why we propose the open formulation allowing both, an EPC or a renovation passport.

In addition, the methodology for renovation passports should include the consideration of multiple impacts of renovation just as for EPCs (see our policy recommendation on the renovation recommendations, chapter 2.4.1), and the renovation passport should also be disclosed to potential buyers or renters of a building.

2.3.3 A better specification of energy data and classes on EPCs by the EPBD

Background and problem to be addressed:

Energy data presented on EPCs vary between Member States. They can be final, primary, non-renewable primary energy, CO₂ emissions, and sometimes the share of renewable energies in addition. For deep (energy) renovation, non-renewable primary energy or CO₂ emissions are informative, but they do not distinguish between (1) the energy efficiency of the building envelope and the heat/cold distribution system and (2) the energy efficiency and emissions of the heat/cold supply systems. An additional indicator to measure the energy efficiency of the building envelope would therefore be needed. Final or delivered energy is not sufficient for that purpose either: for example in Germany, the same building can achieve an EPC energy class of E, if heated with gas, and B, if an electric heat pump is installed.

Total primary energy, which is the indicator proposed by the European Commission for defining the energy class, would be more appropriate to cover the energy performance of the building envelope, as long as the primary factor of electricity is not approaching 1.0 due to the increasing share of



renewable energies. Once this happens, an additional indicator to measure the energy performance of the building envelope will therefore still be needed. On the supply side, it will ultimately be the operational greenhouse gas emissions that matter.

On the other hand, potential buyers or tenants of a building or dwelling will be interested in final energy consumption, to estimate energy costs.

Concepts and tools provided by QualDeEPC:

- QualDeEPC has not specifically analysed this problem in more detail than here above. The enhanced EPC form leaves flexibility to Member States for using the energy terms they have been using so far. Here, we offer some recommendations for converging energy/CO₂ terms in the future. To prepare potential future changes in the indicators required, it would be good if the revised EPBD mandated the European Commission to study such an alternative three-indicator and two-classes system.

Policy recommendation to EU Member States:

On the EPC, study and **consider to provide the following energy- and climate-related information, and to split the scale for the energy class into two separate scales:**

1) an indicator for the energy performance of the building envelope and the heat/cold/air distribution system (e.g., heat/cold input demand (kWh/m²/yr) for space heating and cooling and water heating plus electricity for lighting (non-res.) and ventilation), which is also an indicator of energy costs

=> this indicator would become the basis for the **energy efficiency class** of the building;

2) operational greenhouse gas emissions (t CO₂eq/yr) to inform about the climate impact of the building, as the result of both energy efficiency of the building shell and the heat/cold/air distribution, and the heating and cooling system(s) installed

=> the specific value (kg CO₂eq/(m²*yr)) would be the basis for a **new climate class** of the building;

3) final energy demand (kWh/m²/yr and kWh/yr) and type of energy source, for **informing real estate transactions** and calculating energy costs.

For all of these three terms, the **potential savings and changes** in the energy efficiency and climate classes from implementing a recommended combination of deep (energy) renovation actions should be provided as well.

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

We consider that our above proposal to

- change the energy performance calculation from primary energy to an indicator 1) for the energy performance of the building envelope and the heat/cold/air distribution system, and a second indicator on operational greenhouse gas emissions (kg CO₂/(m² year)), and
- consequently, split the energy performance class into a new energy efficiency class and a climate class or greenhouse gas emission class

is as easy to calculate as primary energy, removes the need to define primary energy factors (but introduces the need to define greenhouse gas emission factors including energy conversion efficiencies from input demand to primary energy), and provides a more accurate presentation of both the energy efficiency of the building envelope and the climate impact of building energy systems and energy supply.



However, the full implications of this proposal may need further study. For example, one A to G scale is certainly easier to comprehend for EPC users than two separate scales.

We therefore suggest

- **to require the European Commission in the recast EPBD to perform a feasibility study** for this proposal, to prepare a possible change to these indicators and scales for the next recast or amendment. This would mean to change the energy performance calculation from primary energy to two indicators (1) and (2) and to provide, on the EPCs, the below information:
 - 1) an indicator (1) for the energy performance of the building envelope and the heat/cold/air distribution system (e.g., heat/cold input demand ($\text{kWh}/\text{m}^2/\text{yr}$) for space heating and cooling and water heating plus electricity for lighting (non-res.) and ventilation), which is also an indirect indicator of energy costs, and an indicator (2) on operational greenhouse gas emissions ($\text{kg CO}_2/(\text{m}^2*\text{yr})$), to inform about the climate impact of the building, as the result of both energy efficiency of the building shell and the heat/cold/air distribution, and the heating and cooling system(s) installed;
 - 2) consequently, splitting the energy performance class into a new **energy efficiency class** based on indicator (1) and a **climate class or greenhouse gas emission class** based on indicator (2);
 - 3) final energy demand ($\text{kWh}/\text{m}^2/\text{yr}$ and kWh/yr) and type of energy source, for **informing real estate transactions** and calculating energy costs.
 - For all of these three indicators, the **potential savings and changes** in the energy efficiency and climate classes from implementing a recommended combination of deep (energy) renovation actions should be provided as well.

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

In a new Annex V to the EPBD, the Commission has proposed a template for the EPCs, which Member States should follow from 2026 the latest (Art. 16 (2)).

Annex V holds that:

- “1. On its front page, the energy performance certificate shall display at least the following elements:
- (a) the energy performance class;
 - (b) the calculated annual primary energy use in $\text{kWh}/(\text{m}^2 \text{ year})$;
 - (c) the calculated annual primary energy consumption in kWh or MWh ;
 - (d) the calculated annual final energy use in $\text{kWh}/(\text{m}^2 \text{ year})$;
 - (e) the calculated annual final energy consumption in kWh or MWh ;
 - (f) renewable energy production in kWh or MWh ;
 - (g) renewable energy in % of energy use;
 - (h) operational greenhouse gas emissions ($\text{kg CO}_2/(\text{m}^2 \text{ year})$);
 - (i) the greenhouse gas emission class (if applicable). “

In addition, Annex 1 (1) specifies that



"The energy performance of a building shall be expressed by a numeric indicator of primary energy use per unit of reference floor area per year, in kWh/(m².y) for the purpose of both energy performance certification and compliance with minimum energy performance requirements."

Comments from the QualDeEPC project

The proposed template would present a lot more information than today, including operational greenhouse gas emissions (indicator 2) proposed above, although not in absolute terms but per m²) and final energy use (indicator 3) proposed above, both in absolute terms – annual kWh or MWh – and in specific terms – kWh/(m² year). This is considered a progress.

On the other hand, the main indicator, on which the energy performance class shall be based, would continue to be primary energy use. The indicator 1) proposed above for the energy performance of the building envelope and the heat/cold/air distribution system, and the splitting of the energy performance class into a new energy efficiency class and a climate class, is not considered in the draft recast of the EPBD. However, the template seems to allow Member States to develop a greenhouse gas emission class.

If the study we recommend shows that the change to two separate indicators and scales as we suggested would be important to maintain the incentive to minimize the energy consumption of buildings while decarbonizing it, and would be understandable to EPC users, it should be included in the next amendment or recast of the EPBD.

2.4 Policy recommendations specifically based on QualDeEPC's seven development priorities

Following analysis of a wide range of potential enhancements of EPCs and EPC schemes, QualDeEPC has focused its work on seven development priorities:

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

Further details can be found in the Deliverable D5.3, *Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme* ([Korma et al., 2022](#)), hereinafter mentioned as the Deliverable D5.3.

This section develops policy recommendations based on QualDeEPC's seven development priorities.



2.4.1 Recommendations for deep (energy) renovation

Background and problem to be addressed:

Currently, the renovation recommendations in EPCs in most European countries are oriented towards the minimum legal requirements and are often low-cost options, but not necessarily the most cost-effective ones. In addition, EPC assessors may often not include all energy renovation actions that may be only cost-effective in the long run, with financial incentives, or in connection to renovation works that were scheduled anyway. Based on their understanding of “cost-effective”, they may only recommend a limit set of low-cost options.

Currently, it seems that the EPBD and also the proposal for its recast see deep renovation as the ‘gold standard’ of renovation, while achieving the climate targets would require to make it the default. Therefore, the EPBD and the national transposition should include much clearer requirements for EPC assessors to formulate their renovation recommendations in a way consistent with deep (energy) renovation, as suggested in the Policy Recommendation in this chapter 2.4.1.

Concepts and tools provided by QualDeEPC:

- 1) **Proposal for enhanced renovation recommendations** in general form and for each of the 7 Member States represented in QualDeEPC in the D5.3, chapters 2.2 and 3.x.2 (Korma et al, 2022).
- 2) **Traffic light system for recommendations** on the enhanced EPC form template (chapter 2.4.5 below)
- 3) **Proposal for principles of defining ‘deep (energy) renovation’** in chapter 2.3.1.

Policy recommendations to EU Member States:

- 1) **Specify the energy efficiency levels to be recommended** for different types of actions, so that these are consistent with deep (energy) renovation leading to nZEB or ZEB standards for existing buildings, even when implemented step by step in a staged deep (energy) renovation, e.g. **using the Tools 1) and 2) provided by QualDeEPC**
- 2) **Define nZEB standards for existing buildings or deep (energy) renovation**, if these definitions do not yet exist, e.g. **using the Tool 3) provided by QualDeEPC**
- 3) **Clarify that in the EPC itself**,
 - 1) the EPC assessor should **include all potential recommendations** needed to achieve nZEB or ZEB standards for existing buildings or deep (energy) renovation,
and 2) that the EPC assessor should **clarify**
 - i) whether the recommendations are cost-effective on their own or only with financial incentives existing at the time of issuance of the EPC, and
 - ii) whether the measures and their costs are independent of, or carried out in connection to, a major renovation of the building envelope or technical building system or systems that is scheduled anyway (meaning that cost-effectiveness of renovation will always be based on *energy-related* costs only, as it is already specified in the EPBD).
- 4) **Develop a set of methods and data to assess co-benefits** of building renovation **and require their use** in the assessment and in the presentation of cost-effectiveness or as direct co-benefits data (if not possible to monetise) on the EPC.
- 5) **Include all of the former into the mandatory training or examination** (chapter 2.4.4).

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

The above recommendations made by QualDeEPC would be important to ensure a better contribution of the renovation recommendations on EPCs to deep (energy) renovation. Therefore, we recommend to add to the EPBD the following provisions:

- ***In Article 16 (4) or a new paragraph in Art. 16:***
Require Member States 1) to adapt the definition for ‘deep renovation’ and 2) to specify the renovation recommendations that must be provided on EPCs in the following way:
 - **Specify that the energy efficiency levels to be recommended** for different types of actions must be consistent with deep (energy) renovation leading to nZEB or ZEB standards for existing buildings, even when implemented step by step in a staged deep renovation,
 e.g. **using the proposal for enhanced renovation recommendations** (chapter 2.4.1) and **traffic light system** (on the enhanced EPC template presented in chapter 2.4.5) **provided by QualDeEPC;**
 - **Clarify that in the EPC itself,**
 - 1) 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),
 - and 2) that the EPC assessor should **clarify**
 - i) **whether the recommendations are cost-effective on their own or only** with financial incentives existing at the time of issuance of the EPC, and
 - ii) whether the measures and their costs are independent of, or carried out in connection to, a major renovation of the building envelope or technical building system or systems that is scheduled anyway (meaning that cost-effectiveness of renovation will always be based on *energy-related* costs only, as it is already specified in the EPBD).
- **3) Require Member States to develop a set of methods and data to assess co-benefits** of building renovation **and require their use** in the assessment and in the presentation of cost-effectiveness or as direct co-benefits data (if not possible to monetise) on the EPC.
- **4) In Art. 22 on independent experts: Require Member States to include all of the former into the training or examination** of EPC assessors. Note: Such training or examination should be regular and mandatory (chapter 2.4.4).

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC’s proposal

As discussed in chapter 2.3.1 above, the Commission’s proposal includes an ambitious definition of ‘deep (energy) renovation’.

However, the proposal does not specify that the actions proposed in the renovation recommendations on the EPCs should be consistent with deep renovation, nor that they should include all potentials needed for deep renovation, or that these should be included in the training of independent experts. The EPBD already included the requirement to distinguish between recommendations carried out in connection with a major renovation vs. those independent of a major renovation (now Art. 16 (4)). As before, EPCs may provide an estimate for the range of payback periods or cost-benefits over the economic lifecycle of a renovation action.

Co-benefits of building renovation shall be included in the cost-optimality calculations (now Art. 6) but not in the assessment or recommendations for EPCs.



Comments from the QualDeEPC project

In the Commission's proposal, there is little improvement regarding the recommendations, as compared to the policy recommendations made by QualDeEPC. There is a new requirement in Art. 16 (4) to provide an estimate for the energy savings and the reduction of operational greenhouse gas emissions, which is in line with the proposal for an enhanced EPC template developed by QualDeEPC (chapter 2.4.5), and one new paragraph (Art. 16 (6)) on assessing whether a building can be made 'heat pump ready'.

The above policy recommendation is, therefore, considered necessary to ensure the full value and impact of EPCs, and particularly their renovation recommendations, for achieving deep (energy) renovation in the buildings that have an EPC.

2.4.2 Online tool on deep renovation options for building owners

Background and problem to be addressed:

In some MS, there are already tools that allow building owners or tenants to see, which energy renovation actions may be useful for his or her building, and what would be savings achievable, and often an indication of costs. These recommendations could be compared to those of an EPC, or be used to prepare a discussion with an energy consultant or EPC issuer. Such a tool is as accurate as it can be, but is not meant to replace a professional calculation of the energy demand and potential savings as well as a detailed energy advice by an expert energy consultant. Therefore, the tool should advise the user to obtain a professional energy advice to understand the options for improving energy efficiency of the home and their benefits and costs better.

However, such tools are not yet available in all EU MS, and their quality may differ. In particular, the renovation recommendations provided may not always be consistent with deep (energy) renovation. Therefore, QualDeEPC project partners think such tools are useful but should be made consistent with deep (energy) renovation.

Concepts and tools provided by QualDeEPC:

- 1)** **Concept** for such a tool, with renovation recommendations consistent with deep (energy) renovation (chapter 2.4.1); see Chapter 2.5 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.5 of D5.3
- 2)** **Master Tool in English** showing the functionalities of the tool (based on Greek data); see Chapter 2.5 of Deliverable D5.3
- 3)** Partners are working to provide **new or enhanced tools with these functions in national languages** in the seven EU Member States represented in the QualDeEPC project team.

Policy recommendation to EU Member States:

- If such a tool does not yet exist: **Create a high-quality energy calculation and recommendations tool for self-use**. Ensure that it is kept updated and that the renovation **recommendations provided are consistent with deep (energy) renovation**. Member States could **use the concept and master tool provided by QualDeEPC**.
- If such a tool already exists: Ensure that it is kept updated and that the renovation **recommendations provided are consistent with deep (energy) renovation**



Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

- **In Art. 26 (2) of the draft recast:** 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 renovation.

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

The Article on information (now Art. 26) is unchanged regarding the following provision in paragraph 2.: “Member States shall provide the information through accessible and transparent advisory tools such as renovation advice and one-stop-shops.”

Comments from the QualDeEPC project

These advisory tools may include online tools such as the one developed by QualDeEPC, but they are not specifically mentioned. This should be changed, following our above policy recommendation.

2.4.3 *Creating Deep Renovation Network Platforms*

Background and problem to be addressed:

Not all Member States already provide easy access to all the information relevant for energy efficiency renovation, and practical support for implementation, and often not in one central place (online and/or in a physical shop). In addition, there is the need for more active marketing of deep (energy) renovation and coordination of supply-side actors, including for regular training of energy consultants (including EPC assessors).

Concepts and tools provided by QualDeEPC:

Deep Renovation Network Platforms would serve as a tool to building owners and all actors in the market for deep (energy) renovation. They include the emerging concepts of one-stop-shops (OSS) for deep (energy) renovation, the task of which is to relieve the customer of research, design, or bureaucratic processes. In addition to OSS, the Deep Renovation Network Platforms would coordinate supply-side actors and support their marketing, training (see chapter 2.4.4), and quality.

Concepts provided by QualDeEPC (Chapter 2.6 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.6 of D5.3):

- 1) Concept for **Basic Deep Renovation Network Platform**
- 2) Concept for **Extended Deep Renovation Network Platform**
- 3) In the framework of the QualDeEPC project, online platforms providing all necessary information are under development/developed in participating countries and may be examples for other countries.

The **basic platform** would be a **web platform** that provides a one-stop-shop including all relevant information (including on EPCs, chapter 2.4.5; and the enhanced renovation recommendations, chapter 2.4.1), plus active marketing. This would also either include an adaptation of the online tool presented above or to similar existing tools offering the same functionality (chapter 2.4.2). Chapter 2.6 of



Deliverable D5.3 presents a detailed list of seven types of information and activities that could be offered by the basic version.

In the **extended concept**, the platform could be extended together with regional partners to become more than a website. A network of partners could provide a (**virtual or even physical**) hub for active marketing and connecting stakeholders, professional training and further necessary services.

The platforms can be adapted to country needs, and several services can be proposed or prepared and organised. Intended services are e.g. step-by-step guidance for deep renovation projects, or even a platform for suppliers to organize one-stop supply offers for renovation, or the use and linking or expansion of existing training and learning platforms to maintain specialist knowledge and sector capacities.

Policy recommendation to EU Member States:

Physical hubs involve higher costs than online-only solutions. Both types may need funding from the national or regional government to local/regional agencies implementing the hub, and support and coordination from the national or regional energy agency. Therefore, QualDeEPC recommends the following to national and/or regional governments competent for implementing energy efficiency policies for buildings and particularly EPC schemes:

Each EU Member State should operate a combination of two types of Deep Renovation Network Platforms:

- 1) **An online platform at the national level**, including a One-Stop Shop at least for information, i.e. all information services of the basic version (No. 1. to 5.).
It should also be endowed with sufficient resources to perform the two further services of the basic version: 6. Active marketing and 7. Network (platform) for learning, exchange and cooperation. The networking could be expanded to interregional or international networking (service 8. of the extended concept).
Out of the extended concept, services 9. Capacity building and training, 11. Monitoring the implementation of project(s), and 14. Carrying out demonstration project(s) could also be linked to this platform or be implemented by the platform operator, particularly if this is a national energy agency or similar.
- 2) **A network of local or regional physical hubs** with combined core funding from the national level and income from some of the services. These hubs could offer most of the services of an extended platform, including coordination of renovation projects (guiding/coaching through implementation, service 10.), or even implementation (service 13.). They would be part of a national network within the central platform (see above) and receive technical and financial support from the national level for their information, active marketing, training, and other agreed activities. Particularly the ability of physical hubs to actively reach out to local building owners is important for the impact of the Deep Renovation Network Platforms.

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

We suggest to add to the EPBD (**Art 15 (6) of the draft recast**) the following provision in slightly adapted form:

- “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.”

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC’s proposal

There is no definition of one-stop-shops in Art. 2.

The new Article 9 on Minimum Energy Performance Standards would require Member States to support compliance with minimum energy performance standards by all the following measures:

- (a) ...
- (b) providing technical assistance, including through one-stop-shops;

Art. 15 on Financial incentives and market barriers, in the new para 6., states that “Member States shall ensure the establishment of technical assistance facilities, including through one-stop-shops, targeting all actors involved in building renovations, including home owners and administrative, financial and economic actors, including small- and medium-sized enterprises.”

The Article on information (now Art. 26) is unchanged regarding the following provision in paragraph 2.: “Member States shall provide the information through accessible and transparent advisory tools such as renovation advice and one-stop-shops.”

Comments from the QualDeEPC project

Although there is no definition of one-stop-shops, the description in Art. 15 (6) comes very close to the concept of the Deep Renovation Network Platforms developed by QualDeEPC. This article also includes a requirement to establish such facilities, which is welcomed by the QualDeEPC project team.

However, the requirement is relatively vague. It does not require a network of physical hubs and includes no target for building owners reached per year. We consider that this is paramount for the effectiveness of support to renovations due to the ability of physical hubs to actively reach out to local building owners, and therefore included it in QualDeEPC’s above policy recommendation.

2.4.4 Regular mandatory EPC assessor training or examination

Background and problem to be addressed:

High-quality energy assessment and certification requires regular training of energy consultants and EPC assessors. Requirements defined by Member States for qualifications, training, and examinations to be certified or accredited and registered as an EPC assessor differ significantly. A University degree may not be needed to become a high-quality EPC assessor. However, QualDeEPC’s research and stakeholder discussion support the conclusion that **either** there should be initial and **regular training** of EPC assessors on calculation methods, avoiding errors, dealing with new technologies and changes in legislation, issuing EPCs, explaining the functions and content of the EPC and renovation to their clients, and particularly on the deep (energy) renovation recommendations; **or** there should be a **regular examination** (combined with voluntary training) on these types of content.

Concepts and tools provided by QualDeEPC:

- **Proposal for the content of regular training or examination** of EPC assessors (Chapter 2.4 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.4 of D5.3);

- **Proposal for a peer review** of the quality of a sample of EPCs issued by an assessor as part of the training (chapters 2.4.3 of D5.3).

Policy recommendation to EU Member States:

- **Require either** an initial and **regular training or a regular examination** of EPC assessors as the precondition to be certified or accredited and registered as an EPC assessor; regular means every 3 to 5 years. Renovation recommendations consistent with deep (energy) renovation (chapter 2.4.1) should be a special focus.

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

We recommend to add to the EPBD (**Art 22 of the draft recast**) the following provision:

- **Require the Member States to require either** an initial and **regular training or a 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 (chapter 2.4.1) should be a special focus.

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

There is no material change in the Article on Independent Experts, now Art. 22. It requires these experts to be qualified and certified, where the *availability* of certification is regulated in the respective article of the Energy Efficiency Directive (Art. 26 in the proposed revision).

Comments from the QualDeEPC project

Neither in the draft recast EPBD nor in the draft recast EED is there a mention of regular mandatory trainings or examinations. This should be added.

2.4.5 High user-friendliness of the EPC template and data

Background and problem to be addressed:

EPC forms are implemented to meet the information requirements set by the EPBD. On one hand, the EPCs have to include all technical aspects to show the energy performance of a building. On the other hand, the “user” of the EPC, i.e. building owners or representatives, potential buyers, and tenants, need to understand the information given on the EPC forms. Moreover, third parties such as financial advisors or real estate agents may also require specific information on the energy efficiency of a building. Hence, the EPC forms need to be highly user-friendly to successfully convey the given information to all users.

However, today the number of pages varies between Member States (from just one to many pages), and the level of detail provided varies accordingly. The usefulness of the presentation of the data varies too.

Concepts and tools provided by QualDeEPC:



In order to improve the usefulness of the EPCs, in particular for providing the information needed to stimulate deep (energy) renovation, QualDeEPC developed an **enhanced EPC form template**, with 4 pages plus optional annexes, which is inserted below.

- **Enhanced EPC form template** (Chapter 2.3 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.3 of D5.3), with 4 pages plus optional annexes; content of the 4 pages:
 - General data and building specification (standard requirement) on p. 1
 - Energy performance and classification (standard requirement) on p. 1
 - 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'
 - Past metered or modelled yearly total energy consumption on p. 2
 - Details on building envelope and building HVAC system, illustrated by a traffic light system, on p. 2
 - Detailed renovation recommendations by component, consistent with deep (energy) renovation (chapter 2.4.1), illustrated by the same traffic light system, on p. 3
 - Useful combination of renovations and stepwise implementation – as a first step towards a Building Renovation Passport – on p. 4
 - Link to an official online platform for further information, such as a Deep Renovation Network Platform (chapter 2.4.3), on p. 4.

Policy recommendation to EU Member States:

- **Enhance the data and presentation of the EPC further**, e.g. using the draft template form offered by QualDeEPC, and requiring 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.
- In addition, **develop a guidebook or tutorial** for EPC assessors **on how to fill in** the enhanced EPC form.

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

We recommend to add to the EPBD (**Art 16 of the draft recast**) the following provisions and add detail for Annex V:

- **In Art. 16: Require**
 - **additional content, including the content of the proposal** on an enhanced EPC form template developed by QualDeEPC (see chapter 2.4.5) and the **list** of mandatory indicators and content for Annex V of the EPBD recommended here below,
 - that the **renovation recommendations** be consistent with deep (energy) renovation in their selection and energy efficiency levels (chapter 2.4.1), and
 - that possibilities for a stepwise implementation are indicated (enabling staged deep renovation, see chapter 2.3.2).
- **Particularly, add to Annex V the following mandatory indicators and content:**
 - Improved classification(s), using the same scale as for the current energy class, and improved energy performance value(s) 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, illustrated by a traffic light system



- Detailed renovation recommendations by component, consistent with deep (energy) renovation (chapter 2.4.1), illustrated by the same traffic light system
- Useful combination of renovations and stepwise implementation – indicating possibilities for staged deep renovation
- Link to an official online platform for further information, such as a Deep Renovation Network Platform (chapter 2.4.3)

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

In a new Annex V to the EPBD, the Commission has proposed a template for the EPCs, which Member States should follow from 2026 the latest (Art. 16 (2)). Annex V holds that:

1. On its front page, the energy performance certificate shall display at least the following elements:
 - a) the energy performance class;
 - b) the calculated annual primary energy use in kWh/(m² year);
 - c) the calculated annual primary energy consumption in kWh or MWh;
 - d) the calculated annual final energy use in kWh/(m² year);
 - e) the calculated annual final energy consumption in kWh or MWh;
 - f) renewable energy production in kWh or MWh;
 - g) renewable energy in % of energy use;
 - h) operational greenhouse gas emissions (kg CO₂/(m² year));
 - i) the greenhouse gas emission class (if applicable).

Annex V also mentions a further more than 20 indicators that may be included.

There are few amendments only in the Articles on EPCs (now Art. 16 to 18, plus a new Art. 19 on Databases for energy performance of buildings).

Comments from the QualDeEPC project

The template proposed by the Commission in Annex V includes many useful indicators, but no specification regarding the presentation of renovation recommendations. In particular, the following features of the enhanced EPC template developed by QualDeEPC are not included:

- 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, illustrated by a traffic light system
- Detailed renovation recommendations by component, consistent with deep (energy) renovation (chapter 2.4.1), illustrated by the same traffic light system
- Useful combination of renovations and stepwise implementation – as a first step towards a Building Renovation Passport
- Link to an official online platform for further information, such as a Deep Renovation Network Platform (chapter 2.4.3).

However, the link to a Deep Renovation Network Platform can be a form of the information required in Art. 16 (7) (*was 4. before*): "The energy performance certificate shall provide an indication as to where the owner or tenant can receive more detailed information, including as regards the cost-effectiveness of the recommendations made in the energy performance certificate."



Of relevance for the user-friendliness, there is a new requirement in Art. 16 (4) to provide an estimate for the energy savings and the reduction of operational greenhouse gas emissions, which is in line with the proposal for an enhanced EPC template developed by QualDeEPC.

Art. 16 (1) would now require the EPCs to include “reference values such as minimum energy performance requirements, minimum energy performance standards, nearly zero-energy building requirements and zero-emission building requirements, in order to make it possible for owners or tenants of the building or building unit to compare and assess its energy performance.” This option may still need to be included in QualDeEPC’s proposed enhanced template.

Comparing the information needs reflected in our proposed form template and the proposed EPBD recast (see list of proposed indicators displayed above), the additional information suggested in the above Policy Recommendation will need to be included.



Background: QualDeEPC's proposal for the enhanced EPC form template

EPC form <i>for residential buildings</i>					
in accordance with <i>Building Energy ACT XZY</i>					
Registry no.: 123456789	Valid until: DD/MM/YYYY [#] <small>*EPC is valid 10 years from the date of issuance</small>	EPC type: e.g. asset rating <i>other requirement(s), e.g. nZEB standard, calculation method</i>			
Building data					
Type of building	e.g. multi-family home,				
Address					
Additional specification of building	e.g. nine apartments;				
Year of construction					
Area					
Additional value					
Energy classification and performance					
minValue [kWh/m ² /yr]	maxValue [kWh/m ² /yr]	Energy class	1 st value, e.g. Primary energy [kWh/m ² /yr]	2 nd value, e.g. final energy [kWh/m ² /yr]	"Improved value" for Main Option*[kWh/m ² /yr]
		A+			
		A			
		B			
		C			
		D			
		E			
		F		987	
		G			
		H			
CO ₂ -/GHG-emissions [kg CO ₂ / (m ² /yr)]:					
<small>* The underlying renovation recommendations and implementation scheme for the Main option are given on p. 3 & 4.</small>					
Potential final energy savings for renovation according to the Main Option:			XYZ kWh/yr		
Potential savings of CO ₂ -/ GHG-emissions according to the Main Option:			ABC kg CO ₂ / yr		
Issuer <i>e.g. address, telephone no., registry no.</i>			Date Signature		
	This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 847100				

Figure 1 First page of the enhanced EPC form template

EPC form *for residential buildings*

in accordance with *Building Energy ACT XZY*

Details on the current energy performance of the building

Energy consumption**		measured:			modelled***:		
No.	Period of measurement (from – to)	Energy source	Energy consumption for space-heating and domestic hot water (DHW) [kWh/yr]			Electricity [kWh/yr]	Other:
1			Total	Heating	DHW		
2							
3							

**measured energy consumption depends on the use of heating, cooling, ventilation system (incl. windows) and domestic hot water system of building occupants, as well as the number of occupants. Also, the weather conditions during the period of measurement;

***modelled energy consumption may differ from actual use

2

Assessment of building envelope and technical system

Building envelope	Area [m ²]	Description or Avg. U-value [W/m ² K]	Energy rating##
Roof or ceiling to attic			
External walls			
Windows			
Doors/Gates			
Ground floor or floor to unheated basement			

Technical systems	Year of construction/installation	Energy source, provided power, EU energy label	Energy rating##
Heating system			
Domestic hot water			
Ventilation system			
Cooling system			
Renewable energies			
Lighting			

Meaning of energy rating:

- Exceeds significantly the minimum standards of Building Energy Act (e.g. as suggested by funding programs)
- Reaches or minimally exceeds the minimum standards of Building Energy Act (e.g. current regulations/laws)
- Lower than standards of Building Energy Act



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Figure 2 Second page of the enhanced EPC form template



EPC form *for residential buildings*

in accordance with *Building Energy ACT XZY*

Renovation recommendations – component evaluation

Building envelope	Recommendation	"new" avg. U-value [W/m ² K]	New Energy rating [#]	Cost effectiveness (e.g. pay-back time)	Included in Main option?
Roof or attic					<input type="checkbox"/>
External walls					<input type="checkbox"/>
Windows					<input type="checkbox"/>
Doors/Gates					<input type="checkbox"/>
Ground floor or floor to unheated basement					<input type="checkbox"/>

3

Technical systems	Recommendation	Energy source, provided power, EU energy label	New Energy rating [#]	Cost effectiveness (e.g. pay-back time)	Included in Main option?
Heating system					<input type="checkbox"/>
Domestic hot water					<input type="checkbox"/>
Ventilation system					<input type="checkbox"/>
Cooling system					<input type="checkbox"/>
Renewable energies (outside of other systems)					<input type="checkbox"/>
Other: e.g. Lighting					<input type="checkbox"/>

Potential final energy savings for renovation according to the Main Option:

XYZ kWh/yr

Potential savings of CO2-/ GHG-emissions according to the Main Option:

ABC kg CO2/ yr



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Figure 3 Third page of the enhanced EPC form template



EPC form *for residential buildings*

in accordance with *Building Energy ACT XZY*

Renovation recommendations – renovation concepts

Description of useful combination of renovations and stepwise implementation for the Main option:

4

Economic result (e.g. payback time, *optional*):

Main option meets requirements for: *Nearly zero energy buildings in case of renovation:*

Air tightness:

Reduced thermal bridging:

Min. 50% RES or equivalent measures:

Description of useful combination of renovations and stepwise implementation for further renovation options not included in the Main option:

Further information

The following link(s) provide further information on energy performance certification, use of EPCs and renovations to improve energy performance including financial assistance programmes:

- [Website A](#)
- [Website B](#)
- [Website C](#)



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

Figure 4 Fourth page of the enhanced EPC form template

2.4.6 Voluntary/mandatory advertising guidelines for EPCs

Background and problem to be addressed:

In all EU member states, it should by now be mandatory to display the energy class of the EPC and/or the energy performance included in the EPC in selling or renting advertisements, since this is required in the EPBD. However, the compliance in the markets varies.

A potential way to improve compliance is to provide sellers, landlords and letting agencies with concrete and voluntary or even mandatory guidelines for the use and presentation of EPCs and the legally required data in advertisements of sales and rentals of buildings. This will make it easier for these target groups to comply with the advertisement requirements. Such guidelines issued by energy agencies/public authorities are already available in some Member States, e.g. Ireland and Sweden.

Concepts and tools provided by QualDeEPC:

- **Proposal for aspects to be considered** in terms of content and publication when creating such guidelines (Chapter 2.7.1 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.7 of D5.3)
- Proposed master text in English that Member States could use, if the wished to make the use of such guidelines mandatory (Chapter 2.7.2 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.7 of D5.3)

Policy recommendation to EU Member States:

- **Create easy-to-use advertising guidelines**, the use of which would ensure compliance with the mandatory display of EPC energy data/class
- **Communicate** the existence and usefulness of the guidelines widely and actively
- **Consider making the use mandatory**
- **Require EPC assessors to hand over a leaflet** with the guidelines and respective links, as well as the legal requirements, to building owners together with the EPC, particularly if using the guidelines is made mandatory

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

We suggest to add to the EPBD (**Art 17 (4) of the draft recast**) the following provisions:

- **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.**

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

Art. 17 on Issue of energy performance certificates would now read for paragraph 4. as follows:

"Member States shall require that buildings or buildings units which are offered for sale or for rent have an energy performance certificate, and that the energy performance indicator and class of the energy performance certificate of the building or the building unit, as applicable, is stated in online and offline advertisements, including in property search portal websites."



Comments from the QualDeEPC project

The requirements to have an EPC and to display the energy performance class are new. They are in line with QualDeEPC's proposal; but not covering the core of it, i.e. additional guidelines to make compliance easier.

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

Background and problem to be addressed:

Advertising guidelines (chapter 2.4.6) may not be sufficient to enhance compliance with the mandatory display of EPC energy data/class in real estate advertisement to high levels (close to 100%). The level of compliance with this requirement is varying between Member States, and data available to us are inconclusive to ascertain how many countries are actively controlling and enforcing this legal requirement.

The European Commission's proposal for the EPBD recast includes a new provision that the Member States shall carry out sample checks or other controls to ensure compliance with these advertisement requirements. However, we suggest that further action may be needed and should be included in the EPBD.

Concepts and tools provided by QualDeEPC:

- **A list of potential further ways of ensuring compliance** (Chapter 2.7.3 of Deliverable D5.3 (Korma et al., 2022) and national adaptations in chapters 3.x.7 of D5.3), including
 - Appointment of a **nodal authority with sufficient resources** and the mandate to perform the following two measures:
 - **Random checking of a sample of advertisements**, and denouncing non-compliance to the authorities able to impose penalties (if these are not the nodal authorities themselves)
 - **Raising awareness** of the duty to display EPC energy data/class in real estate advertisement, and of the advertisement guidelines (chapter 2.4.6)
 - Defining **staged penalties** for non-compliance.

Policy recommendation to EU Member States:

- Appoint a **nodal authority with sufficient resources** and the mandate to perform the following two measures:
- **Random checking of a sample of advertisements**, and denouncing non-compliance to the authorities able to impose penalties (if these are not the nodal authorities themselves)
- **Raising awareness** of the duty to display EPC energy data/class in real estate advertisement, and of the advertisement guidelines (chapter 2.4.6)
- Define **staged penalties** for non-compliance.

Recommendation by QualDeEPC on enhancing the European Commission proposal for the Recast of the EPBD further

Art. 17 on Issue of energy performance certificates includes a new provision in paragraph 4.:

"Member States shall carry out sample checks or other controls to ensure compliance with these requirements."

Therefore, we recommend to add to the EPBD (Art 17 (4)) the following three further provisions:

- Require Member States to
 - Explicitly 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 (chapter 2.4.6)
 - Define **staged penalties** for non-compliance.

Regulation proposed by the European Commission in its proposal for the Recast of the EPBD of 15 December 2021, and comparison to QualDeEPC's proposal

Art. 17 on Issue of energy performance certificates includes a new provision in paragraph 4.:

“Member States shall carry out sample checks or other controls to ensure compliance with these requirements.”

Comments from the QualDeEPC project

The QualDeEPC team welcomes this new provision, since it is equivalent to one of the four measures proposed by QualDeEPC. However, the other three are not explicitly mentioned, and should be added.



3 CONCLUSIONS

This document has presented the draft **policy recommendations of the Horizon 2020 QualDeEPC project for making the EPBD and the national schemes more effective, particularly for deep renovation, and enhance their quality overall**. This aims to inform both the debate on the recast of the EPBD and the enhancement of national EPC schemes in EU Member States.

The policy recommendations particularly target the link between EPCs and deep (energy) renovation, while increasing the levels of ambition and convergence across the EU in terms of building renovation. Deep (energy) renovation is crucial for mitigating climate change and for energy security. The EPBD and all of its articles, as well as national EPC schemes, should aim to make deep (energy) renovation the default. This objective would be embedded and ensured in EPC schemes, if the policy recommendations provided in this document were adopted and implemented.

The draft policy recommendations are agreed upon between the QualDeEPC partners and are ready to use in the debate. They are **called ‘draft’**, because they are currently being discussed with stakeholders, i.a., in national workshops, and may be revised thereafter.

Combined with supporting tools developed by the QualDeEPC consortium, the draft policy recommendations are formulated to take into account the European Commission’s proposal for a recast of the EPBD of 15 December 2021, COM (2021) 802 final; they look particularly at the articles relevant to EPCs.

For each of these 10 policy recommendations, we offer a **concrete suggestion on how the content of the recast of the EPBD could be further improved**.

- 1 Ensure high user-friendliness of the EPC template and data
- 2 Implement a clear and ambitious definition of ‘Deep (Energy) Renovation’
- 3 Enhance the renovation recommendations on EPCs toward deep (energy) renovation
- 4 Increase the coverage of the building stock with EPCs based on an energy audit or Renovation Passports
- 5 Develop a better specification of energy data and classes on EPCs by the EPBD
- 6 Provide an online tool on deep renovation options for building owners in each Member State
- 7 Create Deep Renovation Network Platforms
- 8 Require regular mandatory EPC assessor training or examination
- 9 Provide voluntary/mandatory advertising guidelines for EPCs
- 10 Improve compliance with the mandatory use of EPCs in real estate advertisements

Of the above 10 draft policy recommendations, the first one may be the most important to improve the user-friendliness of EPCs and their link to deep (energy) renovation. It is based on an enhanced EPC form template developed by QualDeEPC. The next four are closely related to deep (energy) renovation. No. 3 is also one of seven development priorities of QualDeEPC and would renovation recommendations on the EPCs consistent with deep (energy) renovation. Nos. 2, 4, and 5 concern three general topics linked to deep renovation.

Policy recommendations 6 to 10 are based on the other five priorities of QualDeEPC for the development of enhanced EPC schemes. Number 6 and 7 further strengthen the link between the EPCs and deep (energy) renovation, by making use of EPC data and providing further information supporting the implementation of renovation recommendations on the EPCs. No. 8 aims to improve the quality of EPCs in general. Finally, nos. 9 and 10 will strengthen the compliance of building owners with the



requirement to present EPC energy data in real estate advertisements and thereby enhance the effectiveness EPC schemes in real estate markets.

In addition to suggestions for the further improvement of the EPBD recast, a set of **policy recommendations and tools for national decision makers** were elaborated to further improve legal and institutional frameworks on the EPCs at the national level. They **can be used by any Member State** to improve their national EPC schemes. Further detail on the policy proposals and tools developed by QualDeEPC can be found in the Deliverable D5.3, *Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme* ([Korma et al., 2022](#)).

These national-level recommendations were also **specified by each project partner for their own country**. They are not included in this first version of the Conclusive policy recommendations guide, but can also be found in the Deliverable D5.3, *Guidebook for improved EPCs presenting the project's proposal for an enhanced and converging EPC assessment and certification scheme* (Korma et al., 2022).



4 REFERENCES

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