



HIGH-QUALITY ENERGY PERFORMANCE  
ASSESSMENT AND CERTIFICATION IN EUROPE  
ACCELERATING DEEP ENERGY RENOVATION

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

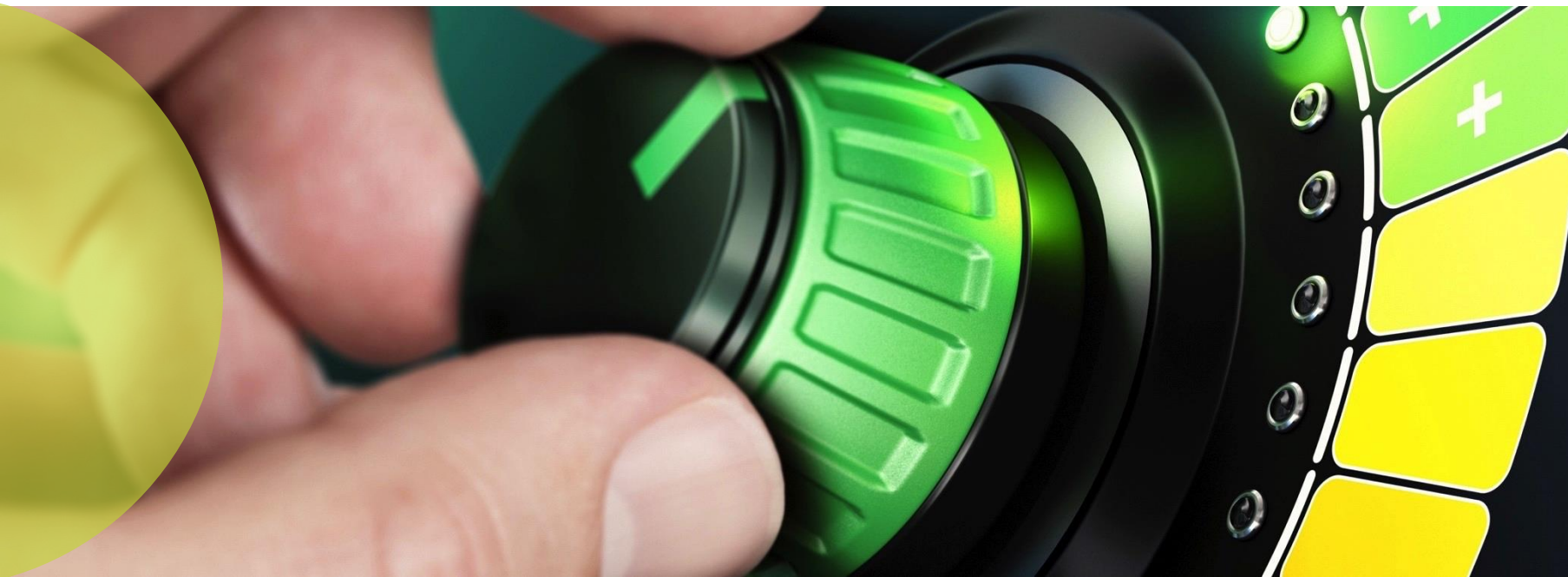




Roundtable on draft EU policy recommendations, 3<sup>rd</sup> February 2022

Dr. Stefan Thomas – Wuppertal Institute for Climate, Environment, Energy

# INTRODUCTION TO QualDeEPC



# QualDeEPC Project

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- High-**quality** **E**nergy **P**erformance Assessment and **C**ertification in Europe Accelerating **D**eep Energy Renovation
- Horizon2020 project
- **Project duration** from September 2019 - August 2022
- **Project coordination** by Wuppertal Institut, Germany
- Project partners from **Belgium, Bulgaria, Germany, Greece, Hungary, Latvia, Sweden and Spain**

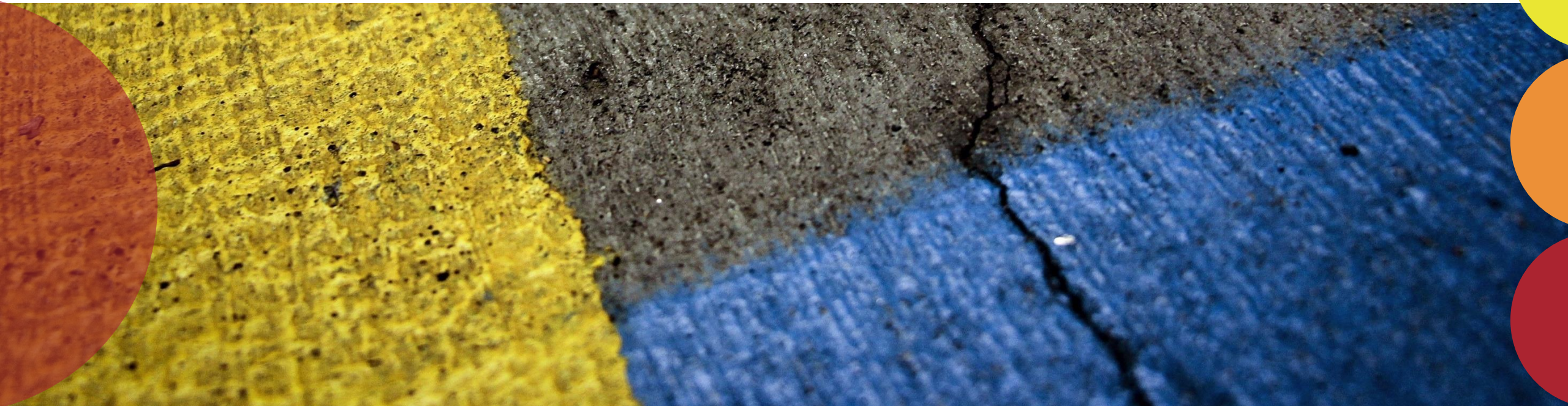


# QualDeEPC Partners





# OBJECTIVES and METHODOLOGY of QualDeEPC



# Objectives

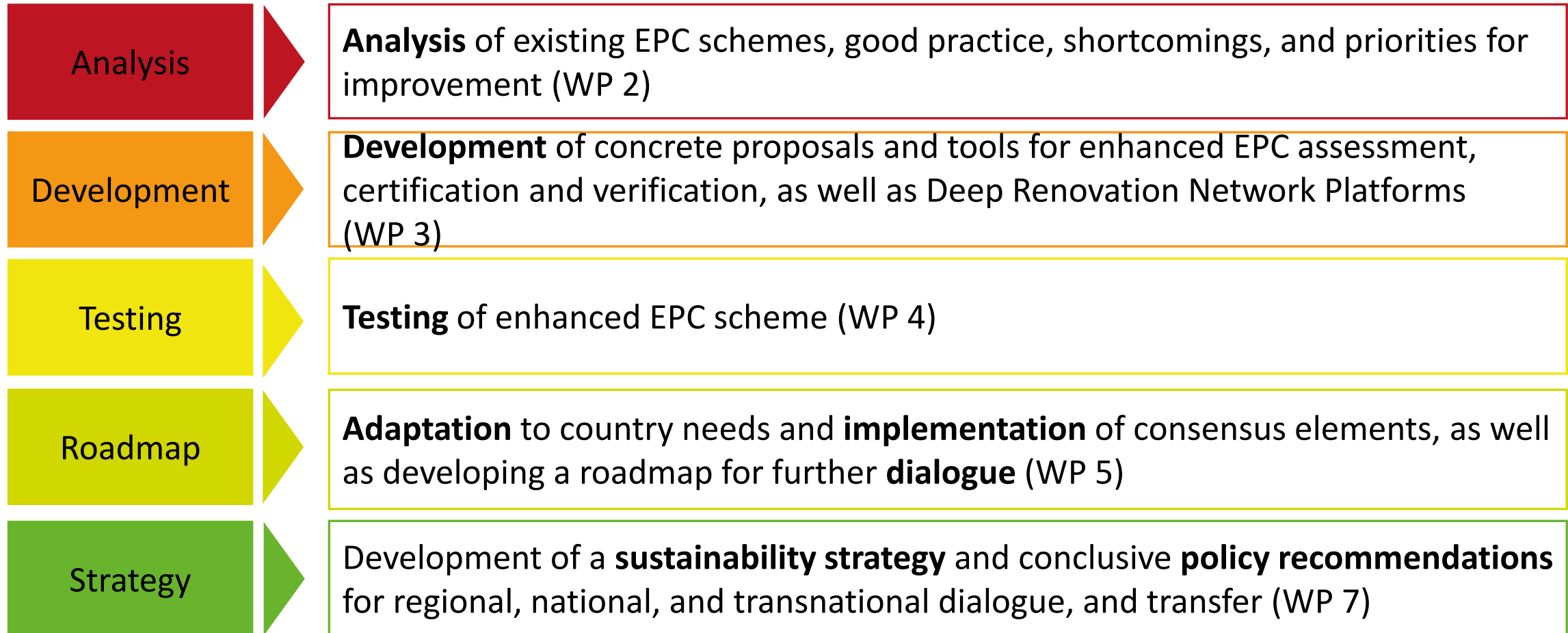
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Enhance EPC assessment, certification, and verification, regarding

- (1) the **quality and cross-EU convergence of Energy Performance Certificate (EPC) schemes**, including building assessment and EPC issuance, design, verification, and use;
- (2) the **link between EPCs and deep renovation**.



# Approach





# QualDeEPC— 7 development priorities

**White paper holds concepts developed for the seven priorities that QualDeEPC identified in its first phase:**

- A. Improving the **recommendations** for renovation, 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 renovation 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**

# QualDeEPC's development priorities and EPBD-related policy recommendations

<https://qualdeepc.eu/white-paper-on-good-practice-in-epc-assessment-certification-and-use>



## E) High user-friendliness of the EPC

- Make it more useful as first step to deep renovation and for buying/rental market

**Policy proposal:** draft enhanced general template for EPC form with these elements:

| No. | Element   | Implementation<br>in enhanced<br>EPC form temp. | Recommended<br>for enhanced<br>EPC form temp. | Not<br>recommended<br>on EPC temp. |
|-----|---|---|---|------------------------------------|
| 1   | Inclusion of past metered or modelled total energy consumption per yr | X   |   |                                    |
| 2   | Details on building envelope and building HVAC system                 | X   |   |                                    |
| 3   | Display of improved classifications and energy performance            | X   |   |                                    |
| 4   | No. 3 + energy savings in kWh/year                                    | X   |   |                                    |
| 5   | Detailed renovation recommendations by component + cost estimation    | X   | (X)   |                                    |
| 6   | Useful combination of renovations & stepwise implementation           | X   |   |                                    |
| 7   | General information about EPC   |   | X*  |                                    |
| 8   | Link to Deep Renovation Network Platform                              | X   | (X)   |                                    |
| 9   | Glossary of most important terms                                      |   | X*  |                                    |
| 10  | Link/ information on funding programs                                 |   | (X*)  | X                                  |

\* May be included in Deep Renovation Network Platform

() A simplified version can be implemented.

## E) High user-friendliness of the EPC

**Example:** section for elements 3 - Display of improved classifications and energy performance, and 4 – energy savings in kWh/yr

| Energy classification and performance  |                        |              |  |  |   |
|--|------------------------|--------------|--|--|---|
| minValue<br>[kWh/m²yr]   | maxValue<br>[kWh/m²yr] | Energy class | 1 <sup>st</sup> value, e.g. Primary<br>energy [kWh/m²yr] | 2 <sup>nd</sup> value, e.g. final en-<br>ergy [kWh/m²yr] | "Improved value" for<br>Main Option* [kWh/m²yr] |
|  |                        | A+           |  |  |   |
|  |                        | A            |  |  |   |
|  |                        | B            |  |  | 234   |
|  |                        | C            |  |  |   |
|  |                        | D            |  |  |   |
|  |                        | E            |  |  |   |
|  |                        | F            | 987  |  |   |
|  |                        | G            |  |  |   |
|  |                        | H            |  |  |   |
| CO <sub>2</sub> -/GHG-emissions [kg CO <sub>2</sub> /(m²yr)]:  |                        |              |  |  |   |
| * The underlying renovation recommendations and implementation scheme for the Main option are given on p. 3 & 4. |                        |              |  |  |   |
| Potential final energy savings for renovation according to the Main Option:                                      |                        |              | XYZ kWh/yr   |  |   |
| Potential savings of CO <sub>2</sub> -/ GHG-emissions according to the Main Option:                              |                        |              | ABC kg CO <sub>2</sub> / yr                              |  |   |

„Main option“:  
a recommended combination  
of energy efficiency and  
renewable energy actions  
among the renovation  
recommendations

Objective of elements 3 and 4:  
**easy visibility** of potential  
improvements in energy class  
and potential energy savings  
and GHG reductions



## E) High user-friendliness of the EPC

### Policy recommendation for EPBD:

- **In Art. 16: Require additional content in the EPC**, e.g. from the list included in draft offered by QualDeEPC, and a **length of the main document** of 3 to 5 pages, as well as 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.
- **Particularly, add to Annex V the following mandatory indicators:**
  - Display of improved classifications and energy performance after implementing a recommended combination of renovation actions ('main option') on p. 1
  - Potential energy savings (in kWh/yr) after implementing the 'main option' on p.1
  - Details on building envelope and building HVAC system, using a traffic light system
  - Detailed renovation recommendations by component, consistent with deep energy renovation (QualdeEPC priority A), using the traffic light system too
  - Useful combination of renovations and stepwise implementation – as a first step towards a Building Renovation Passport
  - Link to a Deep Renovation Network Platform (QualdeEPC priority C)

# A) Recommendations for renovation on the EPCs geared towards deep energy renovation

- Make recommendations compatible with deep renovation
- Maybe the first step to a building deep renovation roadmap
- Guiding principle: component efficiency levels derived from nZEB standards (considered cost-optimal)
- **Policy Proposal:** 15 areas of recommendations, examples:

|  | Specific recommendation  | Example for Germany (draft values)      |
|--|--|---|
| External wall insulation                               | Wall with enhanced thermal insulation properties (nZEB for renovation standard or similar)       | $U=0.2 \text{ W}/(\text{m}^2\text{K})$  |
|  | Wall with exceptional thermal insulation properties (nZEB for new buildings standard or similar) | $U=0.15 \text{ W}/(\text{m}^2\text{K})$ |
| Replacement/<br>modernization of the<br>heating system | Heating systems with EU energy label Cat. A or above,<br>for example:<br>...                     |   |
| ...  | ...  |   |

# A) Recommendations for renovation on the EPCs geared towards deep energy renovation

## Policy recommendation for EPBD:

- ***In Article 16 (4) or a new paragraph in Art. 16:***  
Require Member States to adapt the definition for ‘deep renovation’ and specify the renovation recommendations that must be provided on EPCs in the following way:
  - **Specify the energy efficiency levels to be recommended** for different types of actions, so that these are consistent with deep renovation leading to nZEB standards for existing buildings, even when implemented step by step according to a Renovation Passport, e.g. **using the proposal for enhanced renovation recommendations (priority A) and traffic light system (priority E) provided by QualDeEPC**
  - **Clarify that in the EPC itself, the EPC assessor should include all potential recommendations** needed to achieve nZEB standards for existing buildings (i.e., deep renovation according to the proposal for the EPBD recast), **but clarify whether they are cost-effective only** with financial incentives existing at the time of issuance of the EPC, or in connection to renovation works that are scheduled anyway (i.e., based on *energy-related* costs only, as it is already specified in the EPBD).
  - **Develop a set of methods and data to include co-benefits** of building renovation into the cost-effectiveness calculation and require their use.
- ***In Art. 22 on independent experts:*** Possibly also **require Member States to include all of the former into the mandatory training or examination** (QualDeEPC priority D).

# EPCs geared towards deep energy renovation: Additional policy recommendation 1)

- Draft recast of EPBD **defines ‘deep renovation’** to achieve **nZEB** before 2030 and **zero-emission building** from 2030: **good!**
- Also, defines ‘staged deep renovation’ in relation to renovation passport:
- What about buildings that do not have a renovation passport (from 2025, voluntary)?

## Policy recommendation for EPBD:

- A second part – written in italics – could be added to the definition of ‘staged deep renovation’ **Art. 2 (20) of the draft recast:**

20. ‘staged deep renovation’ means a deep renovation carried out in several steps, following the steps set out in a renovation passport in accordance with Article 10, *or, where such a renovation passport is not available for a building, in steps that achieve energy standards for building elements equal to at least those that are usually required to achieve deep renovation;*



# EPCs geared towards deep energy renovation: Additional policy recommendation 2)

- Draft recast of EPBD **proposes ‘renovation passport’ : good!**
- Also, defines ‘staged deep renovation’ in relation to renovation passport:
- However, needs time: start from 2025; and proposed as **voluntary only**
- **Should be available for all buildings ASAP!**

## Policy recommendation for EPBD:

- 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 which are not renovated to close to an nZEB level have a Building Renovation Passport the latest by 2028.**
  - ***Add to Art. 16 (4, 5):* Member States shall ensure that the renovation recommendations on the EPCs are presented in a way consistent with a full Building Renovation Passport.**

# EPCs geared towards deep energy renovation: Additional policy recommendation 3)

- Draft recast of EPBD **proposes primary energy as the main indicator**
- However, with RES-based electricity: mixes envelope efficiency and decarbonized supply
- **Split energy performance and climate performance indicators and classes!**

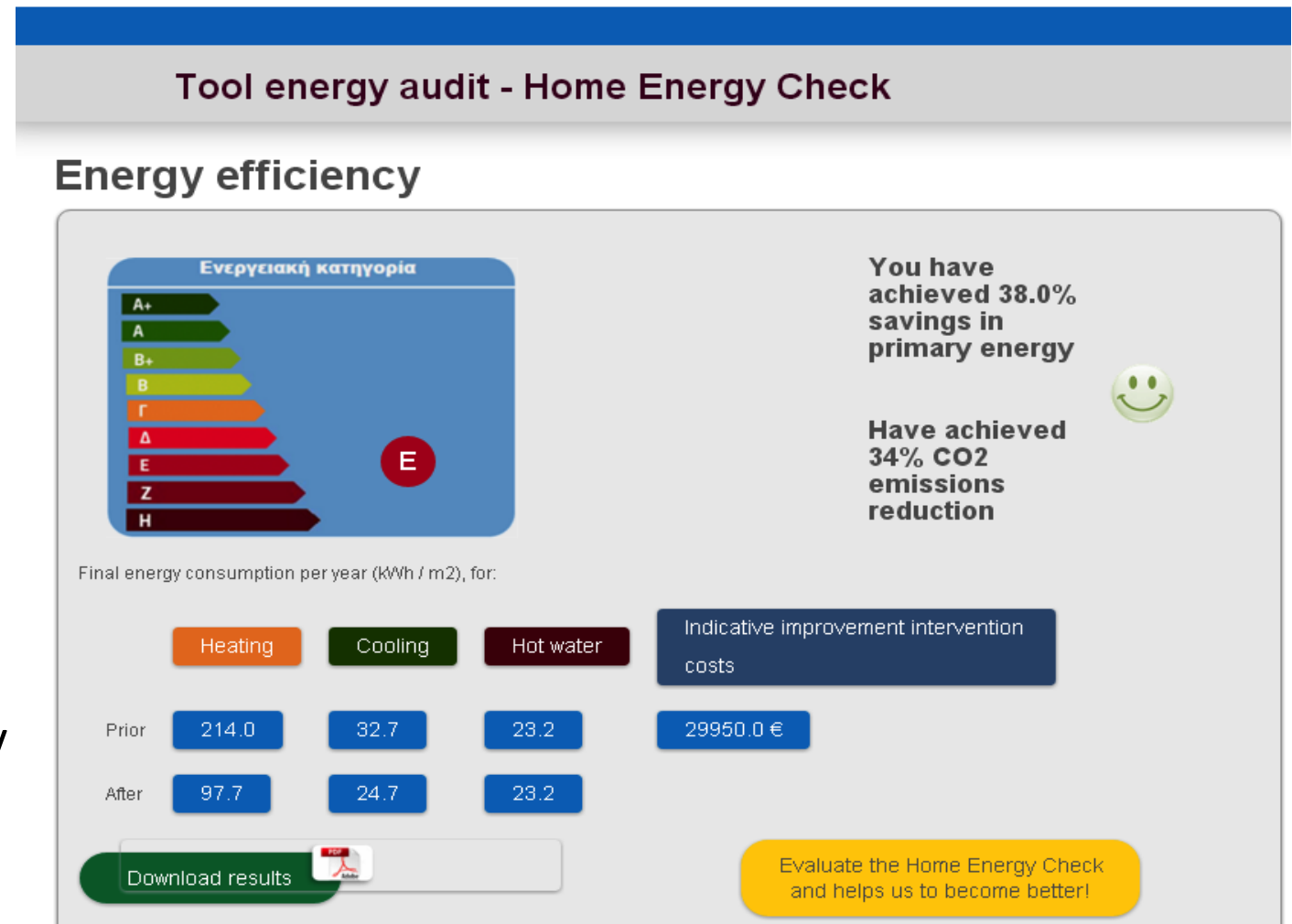
## Policy recommendation for EPBD:

- Require Member States to provide, on the EPCs, the below information:
  - 1) **heat/cold input demand** (kWh/m<sup>2</sup>/yr) for space heating and cooling and water heating plus electricity for lighting (non-res.) and ventilation, to inform about the efficiency of the building shell and the heat/cold/air distribution; => this indicator should become the basis for the **energy efficiency class** of the building; it is also an indicator of costs;
  - 2) **GHG emissions** (t CO<sub>2</sub>eq/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 CO<sub>2</sub>eq/(m<sup>2</sup>\*yr)) should be the basis for a **new climate class** of the building; if that is not possible to agree, a second-best alternative could be non-renewable primary energy
  - 3) **final energy demand** (kWh/m<sup>2</sup>/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.

## B) Online tool for to deep energy renovation recommendations

- For building owners: allowing “2nd opinion” on recommendations from an EPC, or „1st opinion“ if no EPC exists
- Master tool based on the Greek Home Energy Check tool
- Results:
  - Estimate for current energy efficiency
  - Selection of renovation options (from *Priority A*)
  - Estimation of energy efficiency in case of renovation
  - Recommendation to obtain energy audit



## B) Online tool for to deep energy renovation recommendations

### Policy recommendation for EPBD:

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



## C) Creating Deep Renovation Network Platforms

- **Deep Renovation Network Platform =**  
One-stop shop (OSS) for building owners willing to renovate  
*plus* Networking Platform for renovation supply-side actors and their joint communication/marketing
- Will help building owners take the steps needed for renovation after/based on the EPC => Green paper identified **15 potential services** with list of content, including information on and link to EPCs, and **recommendations** from *priority A*)
- Can take different **forms** (online platform or physical hub; information OSS and networking only; active coaching of renovations; organising implementation)
- **Policy proposal:**  
**combine** 1) national level online platform for information OSS and networking *and* 2) support for network of local/regional physical hubs for local networking, marketing of renovation, and active coaching of renovations

## C) Creating Deep Renovation Network Platforms

### Policy recommendation for EPBD:

- 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.”

## D) Regular mandatory EPC assessor training

**Policy proposal:** mandatory *periodic* training or examination for *maintaining* certification and registration as an EPC assessor after a validity period

### General framework

- Regularity: periods of 3-5 years
- Form:
  - Training courses
  - Workshops/ seminars
  - Verification of issued EPCs
- Workload to be determined on national level

### Training content

- Changes in national or EU Building Performance Acts
- State-of-the-art technology, esp. deep energy renovation options
- Common mistakes, general learning
- Funding programs for energy-efficient renovations
- Contract design

## D) Regular mandatory EPC assessor training

### Policy recommendation for EPBD:

- 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* an initial and regular examination** of EPC assessors as the precondition to be certified or accredited and registered as an EPC assessor.  
Renovation recommendations consistent with deep energy renovation (QualDeEPC priority A) should be a special focus.

# F) Voluntary/mandatory advertising guidelines for EPCs

**Policy proposal** for features of guidelines to ease compliance for building owners:

| Content-related guidelines  | Publication -related guidelines  |
|---|--|
| <ul style="list-style-type: none"> <li>Specify EPC content that should be displayed across all media: at least energy class, colour, and specific energy consumption (primary or final as displayed on the EPC); in some countries also CO<sub>2</sub> emissions</li> <li>Specify medium-specific EPC content that should be displayed in various media, such as print (especially small text in newspapers and magazines), digital and internet, audio-visual.</li> <li>URL to the EPC or EPC number should be provided, when possible, especially if EPCs are in public domain</li> <li>The entire energy label that shows the building's energy class concerning the entire spectrum of energy classification should be shown, when possible, especially in digital media</li> </ul> | <ul style="list-style-type: none"> <li>Provide publication parameters for displaying the EPC content such as size, colours, background, pixels, and typography.</li> <li>Provide softcopies of the EPC content, especially for digital media</li> <li>Provide graphical and text examples of advertisements for various media</li> </ul> |

**Also, proposed legal text** if a country wishes to make use of the guidelines mandatory

## F) Voluntary/mandatory advertising guidelines for EPCs

### Policy recommendation for EPBD:

- 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.**



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

**Policy proposal** drafted for instruments further to advertising guidelines (*priority F*)

| Way to improve compliance                           | Description  |
|---|--|
| Appointment of nodal authorities                    | Appoint the same nodal authorities for compliance verification with the mandatory use of EPCs in real estate advertisements.   |
| Resources and competences                           | Adequate financial resources and manpower  |
| Check advertisements for compliance                 | A random checking mechanism for real-estate portals etc., similar to quality control of EPCs, could be adopted.  |
| Methods of enforcement (passive): raising awareness | Awareness campaigns should be conducted targeting various stakeholder groups to sensitize them regarding the mandatory use of EPCs in real-estate advertisements and appraise them of the guidelines for advertising, and penal provisions for non-compliance. |
| Methods of enforcement (active): penal provisions   | Levy staged penalties for non-compliance, starting from re-sensitizing, warning, and up to monetary penalties, depending on the relative importance of the stakeholder group and their reach.  |

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

- Art. 17 on Issue of energy performance certificates includes new provision in paragraph 4., equivalent to one of our suggestions:
- “Member States shall carry out sample checks or other controls to ensure compliance with these requirements.”

### => **Policy recommendation for EPBD:**

- add to the EPBD (**Art 17 (4) of the draft recast**) the following three further provisions:
- Require Member States to
  - Appoint a **nodal authority with sufficient resources** and the mandate to perform the random checking and the following measure:
  - **Raising awareness** of the duty to display EPC energy data/class in real estate advertisement, and of the advertisement guidelines (priority F)
  - Define **staged penalties** for non-compliance.



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# QUESTIONS?

Dr. Stefan Thomas

Wuppertal Institute for  
Climate, Environment, Energy




# Thank You.

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# E) High user-friendliness of the EPC – proposed template

 **EPC form** *for residential buildings*  
in accordance with Building Energy Act XZY

Registry no.: 123456789    Valid until: DD/MM/YYYY<sup>#</sup>    EPC type: e.g. asset rating  
\*EPC is valid 10 years from the date of issuance

other requirement(s), e.g. nZEB standard, calculation method

**Building data**

|                                      |                         |                             |
|--------------------------------------|-------------------------|-----------------------------|
| Type of building                     | e.g. multi-family home, | Current picture of building |
| Address                              |                         |                             |
| Additional specification of building | e.g. nine apartments;   |                             |
| Year of construction                 |                         |                             |
| Area                                 |                         |                             |
| Additional value                     |                         |                             |

**Energy classification and performance**

| minValue [kWh/m²·yr] | maxValue [kWh/m²·yr] | Energy class | 1 <sup>st</sup> value, e.g. Primary energy [kWh/m²·yr] | 2 <sup>nd</sup> value, e.g. final energy [kWh/m²·yr] | "Improved value" for Main Option* [kWh/m²·yr] |
|----------------------|----------------------|--------------|--|--|---|
|                      |                      | A+           |  |  |   |
|                      |                      | A            |  |  |   |
|                      |                      | B            |  |  | 234   |
|                      |                      | C            |  |  |   |
|                      |                      | D            |  |  |   |
|                      |                      | E            |  |  |   |
|                      |                      | F            | 987  |  |   |
|                      |                      | G            |  |  |   |
|                      |                      | H            |  |  |   |

CO<sub>2</sub>-/GHG-emissions [kg CO<sub>2</sub> / (m²·yr)]:

\* The underlying renovation recommendations and implementation scheme for the Main option are given on p. 3 & 4.


Potential final energy savings for renovation according to the Main Option: XYZ kWh/yr  
Potential savings of CO<sub>2</sub>-/ GHG-emissions according to the Main Option: ABC kg CO<sub>2</sub>/ yr

**Issuer**  
e.g. address, telephone no., registry no.

**Date**  
Signature



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 **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: _____ |
|-----|-----------------------------------|---------------|--|---------|-----|----------------------|--------------|
|     |                                   |               | Total  | Heating | DHW |                      |              |
| 1   |                                   |               |  |         |     |                      |              |
| 2   |                                   |               |  |         |     |                      |              |
| 3   |                                   |               |  |         |     |                      |              |


\*\*measured energy consumption depends on the use of heating, cooling, ventilation system (inkl. 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

**Assessment of building envelope and technical system**

| Building envelope                          | Area [m²] | Description or Avg. U-value [W/m²K] | Energy rating <sup>##</sup> |
|--|-----------|-------------------------------------|-----------------------------|
| 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 <sup>##</sup> |
|--------------------|------------------------------------|--|-----------------------------|
| Heating system     |                                    |  |                             |
| Domestic hot water |                                    |  |                             |
| Ventilation system |                                    |  |                             |
| Cooling system     |                                    |  |                             |
| Renewable energies |                                    |  |                             |
| Lighting           |                                    |  |                             |

<sup>##</sup> 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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# E) High user-friendliness of the EPC – proposed template

EPC form *for residential buildings*  
in accordance with *Building Energy ACT XYZ*

## Renovation recommendations – component evaluation

| Building envelope                          | Recommendation | "new" avg. U-value [W/m²K] | New Energy rating*                           | Cost effectiveness (e.g. pay-back time) | Included in Main option? |
|--|----------------|----------------------------|--|---|--------------------------|
| Roof or attic                              |                |                            | <div><div></div><div></div><div></div></div> |   | <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 CO<sub>2</sub>-/ GHG-emissions according to the Main Option: ABC kg CO<sub>2</sub>/ yr



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EPC form *for residential buildings*  
in accordance with *Building Energy ACT XYZ*

## Renovation recommendations – renovation concepts

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

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



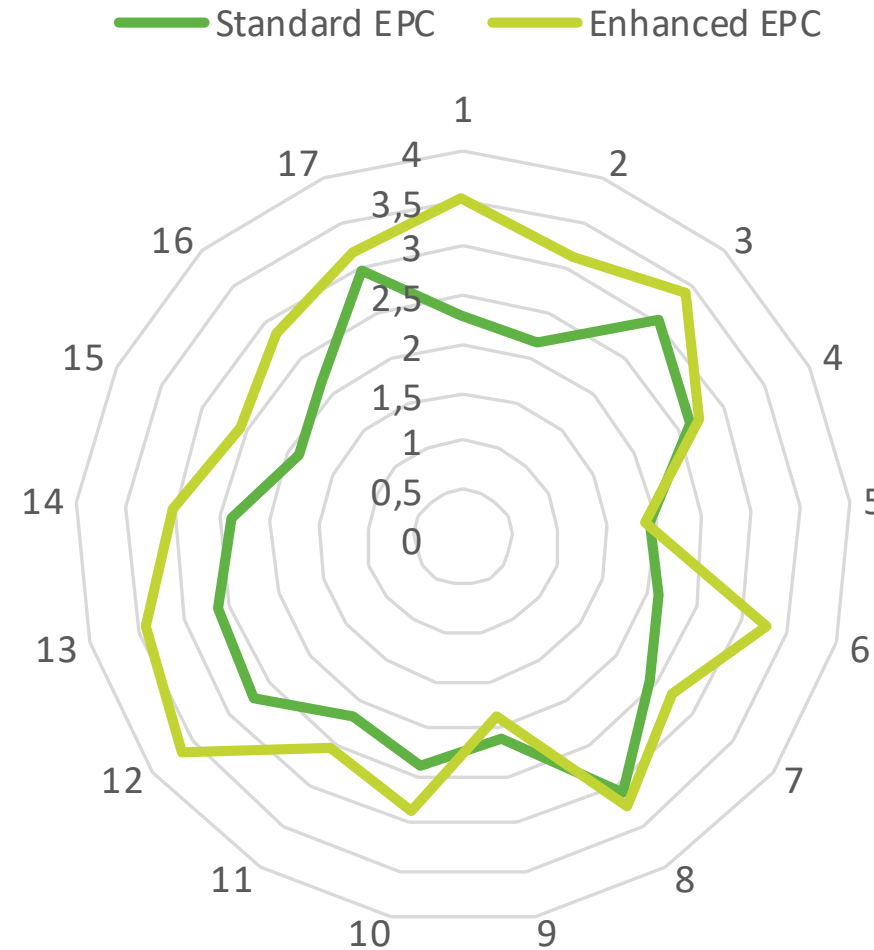
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# What do building owners and stakeholders say?

Results from testing 98 buildings, survey of representatives, and roundtable discussions

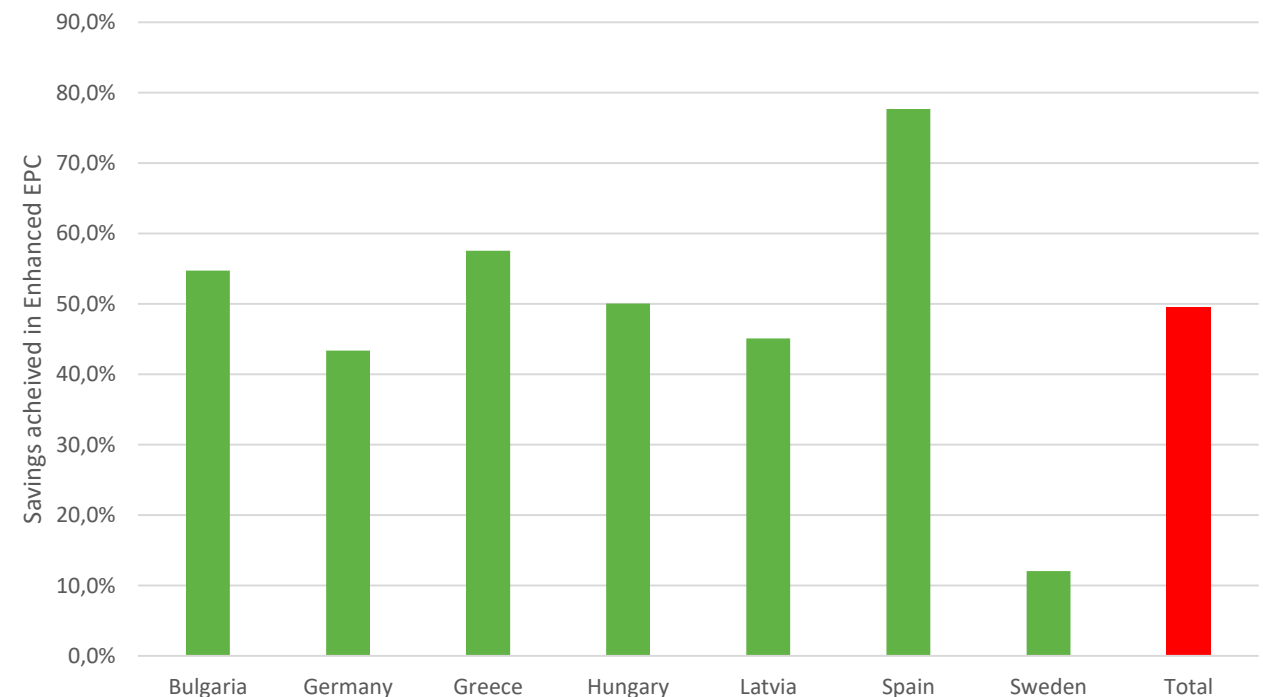
- **Enhanced EPC scored better on almost all questions (exception: comparison with other buildings)**
- **Highest improvement on:**
  - 1 - The EPC gives an overview of the strengths and weaknesses of the building's energy performance (=> traffic light system)
  - 2 - The information in the EPC is presented in understandable language and figures
  - 6 - The energy efficiency potential of my building is clearly shown
  - 12 - The EPC clearly shows what energy efficiency measures should be implemented in my building



# What about deep energy renovation?

Results from testing 98 buildings (residential and non-residential)

- Enhanced EPCs included more recommendations (between 3 and 6)
- Savings from main option were higher than in standard EPCs and average almost 50%, see figure
- Exception for both: Bulgaria and Latvia (standard EPC is already based on detailed energy audit)
- Numbers of recommendations and savings could be even higher with clearer guidance to EPC issuers
- E.g., Swedish partner used narrow definition of cost-effectiveness (but Sweden also has efficient buildings)



# C) Creating Deep Renovation Network Platforms

Overview of the concept of a deep renovation network platform (basic version, *selection*)

| Services/products  | Description of services  | Minimum version  |
|--|--|--|
| <b>1. Information on renovation actions</b><br><b>1.1 General information</b>    | <ul style="list-style-type: none"> <li>• Providing general information and other benefits due to renovation</li> <li>• Providing information on principles of insulation, heating, cooling, and ventilation systems, renewable energies</li> <li>• descriptive texts and graphics on the website with information</li> <li>• text and graphic documents downloadable as pdf-documents</li> </ul> | General information on: <ul style="list-style-type: none"> <li>• building insulation</li> <li>• windows</li> <li>• ventilation</li> <li>• heating system</li> <li>• renewables</li> <li>• deep renovation</li> </ul>   |
| <b>2.2 Linking with building deep renovation roadmap and possibly a passport</b> | <ul style="list-style-type: none"> <li>• Linking EPC information to detailed analysis to upgrade it to a Building deep renovation roadmap</li> <li>• Possibly development of the content and form of the "Building Passport" for bringing together the history of a building and the information tied to it (roadmap, energy audits, energy-saving works and/or restoration works)</li> </ul>    | Information on building renovation roadmap and passport <ul style="list-style-type: none"> <li>• How can the EPC be a starting point?</li> <li>• Benefit of the renovation roadmap and passport: why is it useful?</li> <li>• Methodology of the building renovation roadmap and passport</li> <li>• Links to further information about the roadmap/passport</li> <li>• Energy efficiency of buildings</li> <li>• Links to subsidy programmes</li> <li>• Links to the online renovation calculator tool</li> </ul> |
| ...  | ...  | ...  |