

# iBRoad2EPC – Upgrading EPCs to support Europe’s climate ambitions

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## Abstract

Energy Performance Certificates (EPC) and Building Renovation Passports (BRP) will play a central role in the roll-out of EU’s Renovation Wave, as the instruments are key to trigger renovation demand and ensure targeted renovations. The EPC is the basic element that informs about the energy performance of buildings. Thus, it raises interest for energy performance and makes it part of building assessment in the market. Millions of EPCs are issued every year across the EU. BRPs were introduced in the Energy Performance of Buildings Directive (EPBD) to “provide a clear roadmap for staged renovation over the lifetime of a building, helping owners and investors plan the best timing and scope for interventions.”

The Horizon 2020 project “iBRoad2EPC” aims to bridge the BRP with the EPC. It is building on the results of the iBRoad project (2017–2020) which developed, tested and delivered a model for the BRP supporting homeowners with personalised advice to facilitate stepwise deep renovation. This bridging will make EPCs more useful and provide tailored advice for stepwise deep renovation.

The aim is to improve reliability and effectiveness of EPCs, thereby establishing the next generation of EPCs that will sup-

port Europe’s decarbonisation ambitions. This will be done by clustering the project’s activities around four main pillars:

1. assess the needs, potential and practicability of merging the EPC with the BRP in a new form: the iBRoad2EPC;
2. adapt the iBRoad concept to become part of EPCs;
3. test and evaluate the applicability of iBRoad2EPC in six countries (Bulgaria, Greece, Poland, Portugal, Romania and Spain), including training for energy auditors and EPC issuers and
4. facilitate the adoption and exploitation of the iBRoad2EPC model across Europe. Implementing authorities in the six countries are directly involved in the process of conceptualisation, development and testing of iBRoad2EPC to become an integral part of existing relevant schemes. Targeted communication, dissemination and exploitation activities will support further acceptance and uptake.

This paper presents the conceptualisation and design of integrating BRP elements into EPCs according to pillar 2. This comprises the question of information depth in the iBRoad2EPC which is determined by the targeted market coverage on the one hand and by the effort that the required added information causes on the other hand. As the aims of EPCs differ slightly across the Member States, information depth of the iBRoad2EPC has to adapt flexibly to the specific country requirements. The paper also presents the BRP and Building Log-book developed in the predecessor project iBRoad.

## Introduction

The building sector accounts for approximately 40 percent of total energy consumption and 36 percent of CO<sub>2</sub> emissions in the European Union. 85 per cent of the European building stock was built before 2001<sup>1</sup> and is mainly heated by fossil fuels<sup>2</sup>, while the building renovation rate is very low<sup>3</sup>. 75 to 85 per cent of today's buildings are expected to be still in use in 2050. Defining a pathway towards a 'highly efficient and decarbonised building stock by 2050' is a fundamental pillar of the proposal for a recast of the Energy Performance of Buildings Directive (EPBD), requiring the transformation of the majority of buildings from inefficient to zero-emission buildings. Deep building renovation has the potential to lead to significant energy savings and to lower CO<sub>2</sub> emissions and thus, contributes to the energy and climate objectives at national and European level.

However, building owners face multiple barriers when planning a renovation, which they have to overcome to achieve these goals. An important barrier to renovation is the lack of knowledge about what measures to implement in which order. Building renovation is often considered a burden usually associated with time-consuming planning, uncertainty about the costs and value of the planned measures, disturbances and unreliable professionals. To address the lack of information, EPCs contain renovation recommendations that provide a basic overview of possible measures. However, the information often remains at a superficial level. BRPs are intended to provide decision-makers with much more precise, individualised and target-oriented renovation strategies. However, they require more consulting effort and are thus likely to have a lower reach. The iBRoad2EPC is intended to bridge the gap between EPCs and BRPs by inserting BPR elements into the EPCs. This relates in particular to the strategic reference to climate targets and the avoidance of lock-in situations in the case of staged renovation.

The paper first introduces the BRP and the Logbook produced in the iBRoad project as they build the basis to further develop EPCs to iBRoad2EPCs. It then presents the concept of the iBRoad2EPC and an outline of the assistant tool to issue the iBRoad2EPC.

## Instruments to provide information to building owners

Renovating a building can be very complex and time consuming. For building owners, the lack of knowledge about what to do, where to start and in which order to implement renovation measures, is one of the obstacles to improve the energy performance of their buildings. So far, appropriate tools, which drive deep renovations and turn them from "a nuisance" into an "opportunity to improve the home and the living environment" are widely lacking.

The iBRoad project was implemented from 2017 to 2020<sup>4</sup>. Funded by Horizon 2020, it aims at overcoming and eliminating barriers to deep renovation and avoiding the risk of lock-in

effects by developing, designing and demonstrating a Building Renovation Passport (BRP) concept for residential buildings. This comprised the Individual Building Renovation Roadmap (or short: Roadmap), combined with a digital repository of building-related information, the iBRoad Logbook.

The individual Building Renovation Roadmap developed in this project outlines a customised renovation plan with a long-term horizon for deep staged renovation of single- and two-family houses as well as small multi-family houses. Thus, the iBRoad Roadmap allows building owners to have an overview over the full range of the building's renovation strategy adapted to the individual preferences and those of the building occupants. As a result, the iBRoad Roadmap facilitates the owners' decision to invest in deeper renovation.

In addition, the iBRoad Logbook serves as a building repository where the building owner can digitally store all building-related information (e.g., energy bills, incentives, loan and tax documents). In addition, the iBRoad Logbook provides feedback about the energy-related quality of the components of the building hull and of technical building systems.

Both tools, iBRoad Roadmap and Logbook, have successfully proven their usefulness and practicability during a field test in four European countries: Bulgaria, Poland, Portugal and Ireland. 15–20 buildings per country were examined. 50 homeowners' questionnaires and 48 energy auditors' questionnaires were evaluated. The homeowners' and auditors' feedback concerning the iBRoad Renovation Roadmap was very positive: 22 out of 50 homeowners rated the description of technical details and costs for the renovation steps in the Roadmap as "rather useful", another 22 homeowners rated them "very useful". The features of the iBRoad Logbook were rated as "rather useful" in 37 percent of the answers and as "very useful" in 38 per cent.

iBRoad2EPC is a follow-up Horizon 2020 funded project that started in 2021<sup>5</sup>. Its main objective is to merge Building Renovation Passport elements developed in iBRoad with the Energy Performance Certificates, mainly -but not limited - by improving the renovation recommendations in EPCs through roadmap elements.

The iBRoad Roadmap, the iBRoad Logbook and the iBRoad2EPC are all products designed to support a targeted long-term perspective in building renovation, however with different approaches.

## iBRoad individual Building Renovation Roadmap

The iBRoad Individual Building Renovation Roadmap is a BRP. It is a tool primarily intended for building owners, which provides a diagnosis on the building's overall performance and delivers a customised and stepwise renovation plan for single-family and small multi-family houses over a long-term period (e.g., 1–30 years). Most renovations are carried out in stages. This means that building owners renovate components primarily when they are due for renewal anyway. From the owners' point of view, this approach is understandable because the current value of components is taken into account. However, from the point of view of energy efficiency, renovation in one step

1. European Commission, 2020.

2. Kruit et al., 2020.

3. EU annual average renovation rate is confirmed at 1 %, with deep renovations accounting for only 0.2–0.3 % of the renovated floor area (Navigant, Ipsos Belgium, 2019).

4. <https://ibroad-project.eu/>

5. <https://ibroad2epc.eu/>

would usually be easier to handle. Particularly in the case of deep renovations, which are necessary to achieve the climate targets, the individual renovation steps must result in an efficient whole at the end. To achieve this, the goal must already be clear from the first step on. Thermal bridges and building tightness can only be optimised by planning component connections in advance and preparing the subsequent steps. Otherwise, there is a risk of lock-in situations. There are already tools that are very close to a BRP on national and regional level, such as the “woning pas” in Flanders, the “Passeport Efficacité Énergétique” in France and the “individueller Sanierungsfahrplan” in Germany.

The iBRoad Roadmap shows how building owners or investors can improve the building both in terms of energy performance as well as comfort while ensuring to avoid unwanted lock-in-effects (such as renovations that are not compatible with the targets or missing preparation for following measures) and taking into account the preferences and capabilities of the building owner. Thus, it provides building owners with an overview of upcoming or pending renovation measures including additional information e. g., on how to finance these actions and how to implement them, illustrate what are practicable “renovation steps” (combined renovation measures that are carried out at the same time) and what are the saving effects of implementation. The iBRoad Roadmap takes the perspective of a building owner in an owner-occupied building into account in terms of investment, return on investment and indoor comfort.

The iBRoad Roadmap consists of a general overview page, a detailed overview (see Figure 1), and detailed descriptions for each renovation step (see Figure 2). The overview pages summarise the energy efficiency classes over the course of the renovation, starting with the present state and display for each renovation step when, what and at which cost action should be taken. Additionally, the detailed Roadmap overview shows the expected energy demand, greenhouse gas emissions and comfort improvements. Each single renovation step is described in detail in a dedicated page that comprises technical details for every renovation measure and building component subject to the renovation step. Furthermore, it includes information about specific costs and incentives as well as specific notes to prepare for follow-up or future renovation steps and prevent lock-in situations.

The level of ambition in the iBRoad Roadmap is defined by the energy auditor considering the building specifics and the individual capability of the owner, following the five iBRoad principles. The auditor defines the time horizon together with the owner. Accordingly, the level of ambition and the time horizon are individually optimised but not necessarily aligned with the overarching GHG targets.

## iBRoad Roadmap Principles

### BEST-POSSIBLE-PRINCIPLE

Every building is unique. Therefore, it is not possible to formulate a universal target that applies to all buildings. However, all existing buildings together must fulfil the target of a zero-emission building stock by 2050. Thus, energy auditors should pursue and propose the measures with the highest possible en-

ergy efficiency, considering the technical circumstances of the individual building and the preferences or financial capabilities of the owner – importantly, “best possible” does not mean “no matter how expensive”. However, a renovation that is pending anyway is the best occasion to make a building fit for the future. A guiding approach should be that once a building component needs refurbishment this has to be done in a future-proof manner.

### INDIVIDUAL RENOVATION CONTEXT

Assessing the homeowner's and building inhabitant's situation today and how it is expected to evolve in the future is essential: this includes, for instance, financial opportunities, comfort requirements, living space changes, or family planning (e. g. having a baby, children moving out or grandparents moving in).

When creating the iBRoad Roadmap, energy auditors also need to consider the circumstances of the respective building, e.g.: Are there weaknesses in the building requiring immediate or rapid action? Are there measures that lead with little effort to major improvements? The iBRoad Roadmap should be based upon the homeowner's perspective. It is intended to support homeowners, not oblige them.

### LONG-TERM PERSPECTIVE

It is important to pursue a long-term renovation plan to avoid lock-in effects: certain building components have a life span of 40 years or more. If the opportunity to install efficient building components is missed, an additional renovation will be needed before the end of the component's life span and cause extra cost.

Lock-in effects can occur in a staged renovation when the interlinkage of components is not planned in advance: e.g., when a roof is renovated one has to consider a sufficient overhang to prevent additional effort in a future wall insulation. To avoid unwanted lock-in effects, the iBRoad Roadmap provides energy auditors with a list of typical renovation situations to pay attention to.

### TIMING AND SEQUENCING

In many cases, the individual situation of the homeowner does not allow comprehensive refurbishment in a single operation so that many buildings are only partially renovated. However, a staged renovation can be as good as a one-step renovation and is also possible with limited budget. In contrast, early replacement of components can also lead to economic losses. Summarising, a staged modernisation also leads to the final goal, if each renovation step is well planned and takes into account the following steps.

### ATTRACTIVE AND MOTIVATING

The iBRoad Roadmap needs to be attractive and easily understandable for homeowners in order to motivate them to take action. Energy auditors create large shares of the Roadmap individually for the respective building. They should use pictures whenever appropriate to illustrate specific situations and pay attention to comprehensibility. Building owners have to be guided through the Roadmap process and receive clear indications so that they can take action without feeling lost. The homeowner should recognise his own wishes, needs and future plans in the iBRoad Roadmap.

# Detailed Renovation Roadmap

## Step by Step Plan





	ENERGY CLASS <b>E</b>	ENERGY CLASS <b>B-</b>	ENERGY CLASS <b>B</b>	ENERGY CLASS <b>A+</b>
	Your Building Moment of delivery	Renovation Step 1 2020  Pending Maintenance Measures	Renovation Step 2 When Plaster needs Renovation  Pending Maintenance Measures	Renovation Step 3 2045  pending renovation
Measures		Measures <ul style="list-style-type: none"> <li>• Substitution of the heating system by a condensing gas boiler</li> <li>• Insulation of the cellar ceiling</li> </ul>	Measures <ul style="list-style-type: none"> <li>• External Wall insulation</li> </ul>	Measures <ul style="list-style-type: none"> <li>• Roof insulation</li> <li>• Substitution of the heating system by a heating pump</li> </ul>
Energy Use	Primary Energy Demand 150 kWh/m <sup>2</sup> a Main Energy Source Natural Gas Final Energy Demand Main Source 123 kWh/m <sup>2</sup> a  Second Energy Source Wood Final Energy Demand second Source 12 kWh/m <sup>2</sup> a Auxiliary Energy Source Electricity Final auxiliary Energy Demand 12 kWh/m <sup>2</sup> a Energy Bill 3000 €/a	Primary Energy Demand 130 kWh/m <sup>2</sup> a Main Energy Source Natural Gas Final Energy Demand Main Source 111 kWh/m <sup>2</sup> a  Second Energy Source Wood Final Energy Demand second Source 12 kWh/m <sup>2</sup> a Auxiliary Energy Source Electricity Final auxiliary Energy Demand 12 kWh/m <sup>2</sup> a Energy Bill 2700 €/a	Primary Energy Demand 80 kWh/m <sup>2</sup> a Main Energy Source Natural Gas Final Energy Demand Main Source 88 kWh/m <sup>2</sup> a  Second Energy Source Wood Final Energy Demand second Source 12 kWh/m <sup>2</sup> a Auxiliary Energy Source Electricity Final auxiliary Energy Demand 12 kWh/m <sup>2</sup> a Energy Bill 2000 €/a	Primary Energy Demand 50 kWh/m <sup>2</sup> a Main Energy Source Natural Gas Final Energy Demand Main Source 45 kWh/m <sup>2</sup> a  Second Energy Source Wood Final Energy Demand second Source 5 kWh/m <sup>2</sup> a Auxiliary Energy Source Electricity Final auxiliary Energy Demand 6 kWh/m <sup>2</sup> a Energy Bill 1030 €/a
CO <sub>2</sub>	Carbon Emissions 12 kg/(m <sup>2</sup> a)	Carbon Emissions 12 kg/(m <sup>2</sup> a)	Carbon Emissions 8 kg/(m <sup>2</sup> a)	Carbon Emissions 3 kg/(m <sup>2</sup> a)
Costs		Investment Costs for Renovation Step 10000 € Included Costs for Maintenance 7000 €	Investment Costs for Renovation Step 22000 € Included Costs for Maintenance 15000 €	Investment Costs for Renovation Step 34000 € Included Costs for Maintenance 25500 €
Subsidies		Name of Incentives Funding  Incentives 1200 €	Name of Incentives  Incentives 12345 €	Name of Incentives Funding  Incentives 6000 €
Comfort Changes		Changed Comforts   	Changed Comforts	Changed Comforts 

Figure 1. iBRoad individual Building Renovation Roadmap, detailed overview page (ifeu 2019).

# Details of the renovation Roadmap

## Renovation Step 1

ENERGY CLASS	
<b>B-</b>	
Renovation Step 1 2020 Pending Maintenance Measures	
Primary Energy Demand 130 kWh/m <sup>2</sup> a	
Main Energy Source Natural Gas	
Final Energy Demand Main Source 111 kWh/m <sup>2</sup> a	
Second Energy Source Wood	
Final Energy Demand second Source 12 kWh/m <sup>2</sup> a	
Auxiliary Energy Source Electricity	
Final auxiliary Energy Demand 12 kWh/m <sup>2</sup> a	
Energy Bill 2700 €/a	
Carbon Emissions 12 kg/(m <sup>2</sup> a)	
Investment Costs for Renovation Step 10000 €	
Included Costs for Maintenance 7000 €	
Name of Incentives Funding	
Incentives 1200 €	

Measure	Substitution of the heating system by a condensing gas boiler
Improvement	Removal of the old boiler and hot water storage tank. Installation of a condensing boiler. Adaptation of the chimney.
Technical Details	heating capacity 11 kW
Renovation Costs	8000 €
Included Costs for Maintenance	7000 €
Note	Watch for proper hydraulic balancing of the heating system and lowest possible system temperatures.
Incentives Information only relating to this Measure	funding granted by public xy-bank
Specific Incentive Bonus	1000 €

Measure	Insulation of the cellar ceiling
Improvement	Reduced heat losses through the cellar ceiling, floor in the ground floor feels warmer.
Technical Details	Insulation of the cellar ceiling with 12 cm of polystyrene (035)
Renovation Costs	2000 €
Included Costs for Maintenance	0 €
Note	no prerequisites, measure can be carried out independently from other components; heat load in ground floor rooms drops; this influences the required heating capacity of the new boiler
Incentives Information only relating to this Measure	10% funding granted for this measure by public xy-bank
Specific Incentive Bonus	200 €

Figure 2. iBRoad individual Building Renovation Roadmap, description of a single renovation step that contains two measures (ifeu 2019).

## Methodology for the iBRoad Roadmap

Energy auditors produce the iBRoad Roadmap by going through the following steps:

On-site visit: Energy auditors inspect and examine the building and its components on-site. This corresponds to other common assessments for energy audits or EPCs. For the purpose of the iBRoad Roadmap, however, they should also figure out the homeowner's relevant situation (e.g., financial capacity) as well as expectations and wishes for the future (e.g. individual preferences and comfort requirements).

Calculation of the building with national calculation software: This is the starting point for the technical modelling of the iBRoad Roadmap. Energy auditors model the present building state (the U-values of the building envelope, the heating demand, the efficiency of the heating system etc.) with the help of existing national calculation software.

Definition of renovation steps: Based on the current energy demand and the detected weak spots of the building, in combination with the wishes and preferences of the building owner, energy auditors combine technically useful renovation pack-



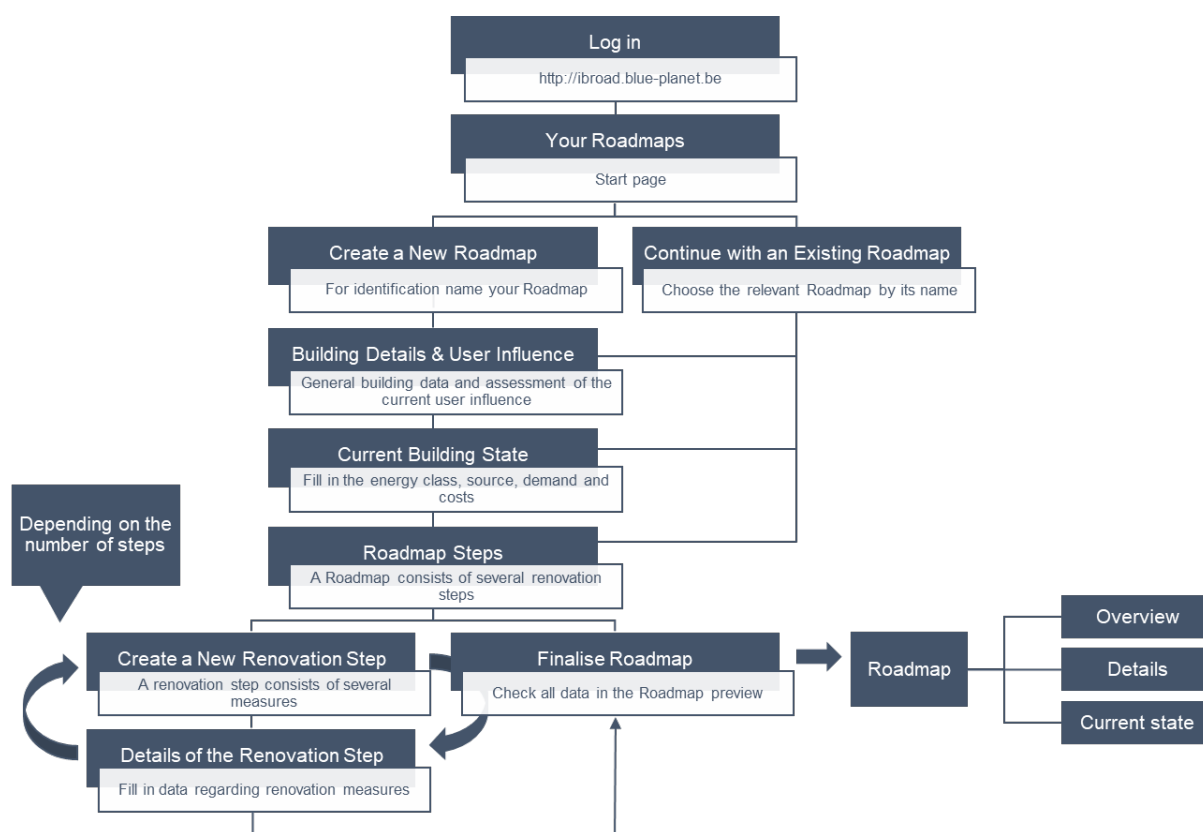


Figure 3. iBRoad Roadmap Assistant navigation menu (ifeu 2019).

ages and define an adequate schedule based on components' life spans and given inhabitants' occasions. They calculate the energy demand, investment and energy cost of each renovation step. In addition, they consider financing advice and information on support schemes.

Production of the Roadmap in the iBRoad Roadmap Assistant: Energy auditors put all results and descriptions together in the iBRoad Roadmap Assistant. The online tool supports them with preconfigured text blocks and allows displaying and printing the iBRoad Roadmap in a unified design with country specific adaptations.

### iBRoad Logbook

The iBRoad Building Logbook (short: the Logbook) serves primarily as a building data repository where all building-related information can be stored digitally (e. g., EPC calculation data, renovation measures, energy bills, incentives, loan and tax documents). The main user of the Logbook is the building owner. However, he/she can grant access to third parties, for instance, energy auditors. All issues concerning compliance with the General Data Protection Regulation (GDPR) are laid down in a separate report.

Three main functionalities of the Logbook were developed:

1. Building data repository: this functionality allows the user to enter and view information in the Logbook data repository. Each change (e.g., renovation measure) is entered in a new building state while all older states are being saved. The

Logbook will grow gradually with each new building state and "log" all changes in time.

2. Building diagnosis: this functionality allows displaying the actual building performance by showing the building's energy class. Furthermore, there is an assessment of the building's envelope (Figure 4) and the building's equipment performance by showing ratings in a coloured scale.
3. Link to the iBRoad Roadmap: this functionality allows displaying a summarised overview of the iBRoad Roadmap as well as details of the Roadmap.

The Logbook can contain building data in high resolution, e.g. surface areas and U-values of single components, however the assessment of the data is kept clear and easy-to-understand for laypersons.

### Outlook to the iBRoad2EPC

#### OBJECTIVES

The aim of the iBRoad2EPC is to merge the existing Energy Performance Certificate (EPC) with elements from Building Renovation Passports (BRP) and more in specific the iBRoad Roadmap. Herewith, the core benefits of BRPs shall be spread amongst a majority of building owners, such as a targeted long-term plan, overarching strategy for stepwise renovation, quality assurance to achieve deep renovation and avoid lock-in situations. In order to reach a large share of building owners, issuing

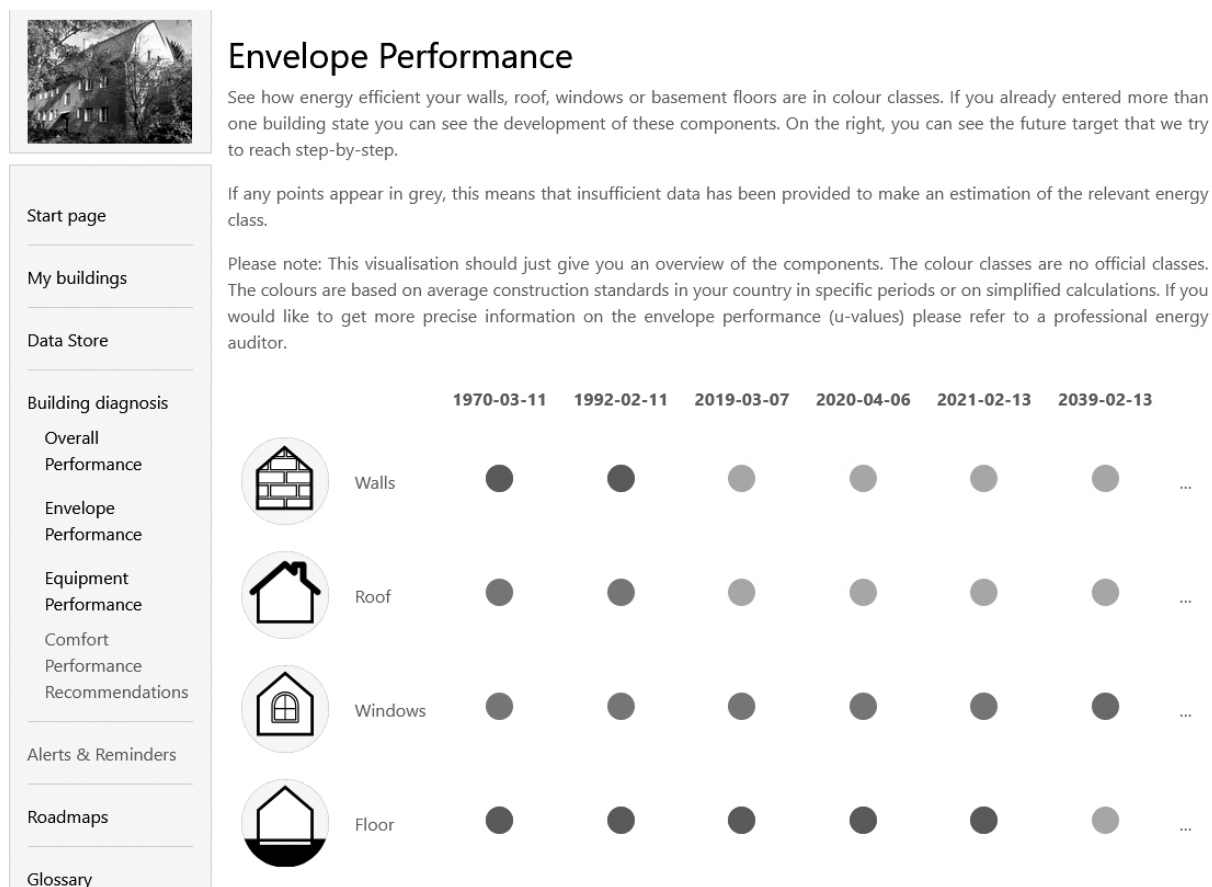


Figure 4. iBRoad Logbook, display of envelop performance (ifeu 2019).

the iBRoad2EPC ideally causes only a reasonable additional effort compared to issuing an EPC. In contrast to the BRP that provides a comprehensive information depth, which requires detailed calculations, the iBRoad2EPC will focus on core information that can be arranged for an individual building with minor additional effort. To this end, the project will provide an online tool to support the issuers, thus enabling an attractive offer to the receivers.

## DESIGN

The iBRoad2EPC will be complementary to the existing EPC. In particular, it will expand the EPC renovation recommendations with BRP elements. Accordingly, the iBRoad2EPC will be issued together with the EPC. The occasions to issue an EPC, the target groups, and the way to address them are generally laid down in the European Energy Performance of Buildings Directive and specified in national legislations. This framework also applies for the iBRoad2EPC.

iBRoad2EPC will produce additional pages that complement the regular EPC. Thus, the iBRoad2EPC will be completely independent from national EPC software solutions, national EPC layout and design or other national peculiarities. Designing an independent iBRoad2EPC format will allow for a union-wide unified design and processing.

The core features that the iBRoad2EPC will have to deliver are shown in Table 1. It also shows a comparison of the con-

tent of the iBRoad2EPC and the iBRoad Roadmap. The main differences result from the detailed calculation of energy demand and costs for each single renovation step in the iBRoad Roadmap, which is not necessarily foreseen in the iBRoad2EPC.

Both, the iBRoad2EPC and the iBRoad Roadmap, display the target building state in the future. In the Roadmap the target state is always a calculated result based on the 'best possible' renovation measures that appear reasonable for a specific building. The energy auditor defines the best possible measures individually for each building component. This approach takes into account the individual features and given restrictions of each building. In contrast, the target state in the iBRoad2EPC may be derived from the National Building Renovation Plans (NBRP) of the respective Member State. They contain efficiency targets for the whole building stock that can be broken down to required insulation standards for certain building types. The same applies for heating and cooling technologies that are foreseen in the NBRP to cover large shares of the building stock in the future. They can be assigned to specific building types with respect to additional features. This top-down process to define the building target state assures that the renovation recommendations are aligned with the NBRP. However, these recommendations are only default values. However, these recommendations are only default values, which the issuer may overwrite them if they do not apply for a specific building.

Table 1. Comparison of the content of iBRoad2EPC and iBRoad Roadmap.

Building state	Content	iBRoad2EPC	iBRoad Roadmap
Present building state	Energy class	✓	✓
	Energy consumption	✓	✓
	SRI rating	✓	can be included
	IEQ rating	✓	can be included
	Obligations from EU MEPS	✓	✓
Future renovation steps	Estimated date of renovation	can be included	✓
	Description of renovation measures	✓	✓
	Individual details of renovation measures	can be included	✓
	Notes to prevent lock-in situations	✓	✓
	Energy demand after measure	can be included	✓
	Total investment	can be included	✓
	Costs for maintenance	can be included	✓
	Incentives	can be included	✓
	Energy bill	can be included	✓
Target building state	Required energy class according to LTRS	✓	
	Calculated best possible energy class	can be included	✓
	Calculated best possible energy demand	can be included	✓
	SRI rating	✓	can be included
	IEQ rating	✓	can be included
General	Next steps	✓	✓
	Reference to other iBRoad offers	✓	✓

#### OUTLINE TO THE IBROAD2EPC ASSISTANT

EPC issuers will be able to produce the iBRoad2EPC with an online tool called 'iBRoad2EPC Assistant' which combines several functionalities:

- entry of indicators that describe the present building state;
- entry of individual texts for user specific information;
- entry of renovation measures and grouping them into specific timeframes;
- output of text blocks describing insulation measures, heating and cooling technologies, recommendations to prepare future renovations and avoid lock-in situations and display of foreseeable legal obligations in the future concerning the particular building;
- adaptation to country specific features (language, obligations, codes);
- arrangement of data output in a unified design format

The objective of the iBRoad2EPC Assistant is to provide individually tailored recommendations based on only few relevant data entries. To this end, the Assistant guides the user through a simple data entry process. The inputs allow filtering the matching recommendation text blocks from a database.

Both the iBRoad2EPC form and the iBRoad2EPC Assistant will come in a semi-flexible structure. On the one hand, core

features and basic design are unified across the Community to raise recognisability and develop a 'brand'. On the other hand, country specific content, languages or colour codes for efficiency classes can be adapted to the national standards.

#### NEXT STEPS

The iBRoad2EPC concept will be tested and evaluated in six partner countries, i.e. Bulgaria, Greece, Poland, Portugal, Spain and Romania. The relevant authorities, energy agencies and other key stakeholders are involved in the development process and preparation for a national roll-out of the methodology through a series of national advisory committee meetings. The intention is to integrate specific comprehensive training for EPC issuers into existing national schemes prior to field-testing. It also foresees training modules for construction professionals, an advisory package for public authorities and a market development strategy to prepare the concrete implementation of iBRoad2EPC.

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## Abbreviations

BRP – Building Renovation Passport according to the EPBD

EPBD – Energy Performance of Buildings Directive

EPC – Energy Performance Certificate according to the EPBD

iBRoad – Name of the project (individual Building Roadmap)

iBRoad2EPC – Name of the follow-up project of iBRoad (including iBRoad elements into the EPC) and name of the enhanced EPC form containing BRP elements

NBRP – National Building Renovation Plans as introduced in the proposal for a recast of the EPBD

