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Training Presentation



iBRoad2EPC Issuer Training



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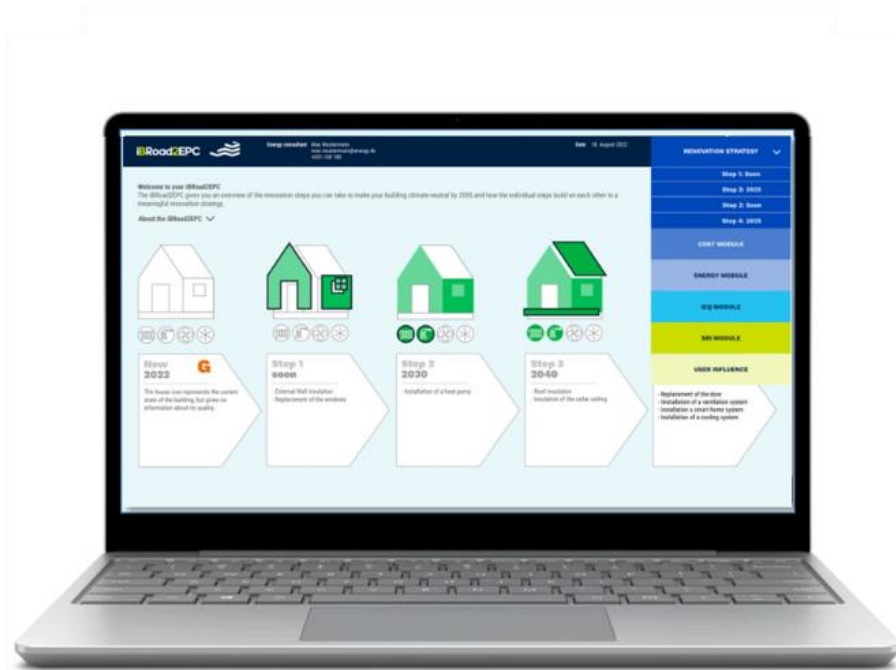




Agenda

- What is iBRoad2EPC?
- Five Steps to issue the iBRoad2EPC
- iBRoad2EPC Assistant
- Additional Functionalities of iBRoad2EPC

What is iBRoad2EPC



- iBRoad2EPC is an **energy consultation** for building owners, issued by building professionals.
- iBRoad2EPC outlines an initial **renovation strategy** on how a building can become climate neutral in the long term.
- The strategy can include a full renovation in **one step**, but also a renovation in **several steps**.
- The long-term perspective means that the individual renovation steps build on each other, building component connections can be prepared in good time and even future renovation obligations can be taken into account today.



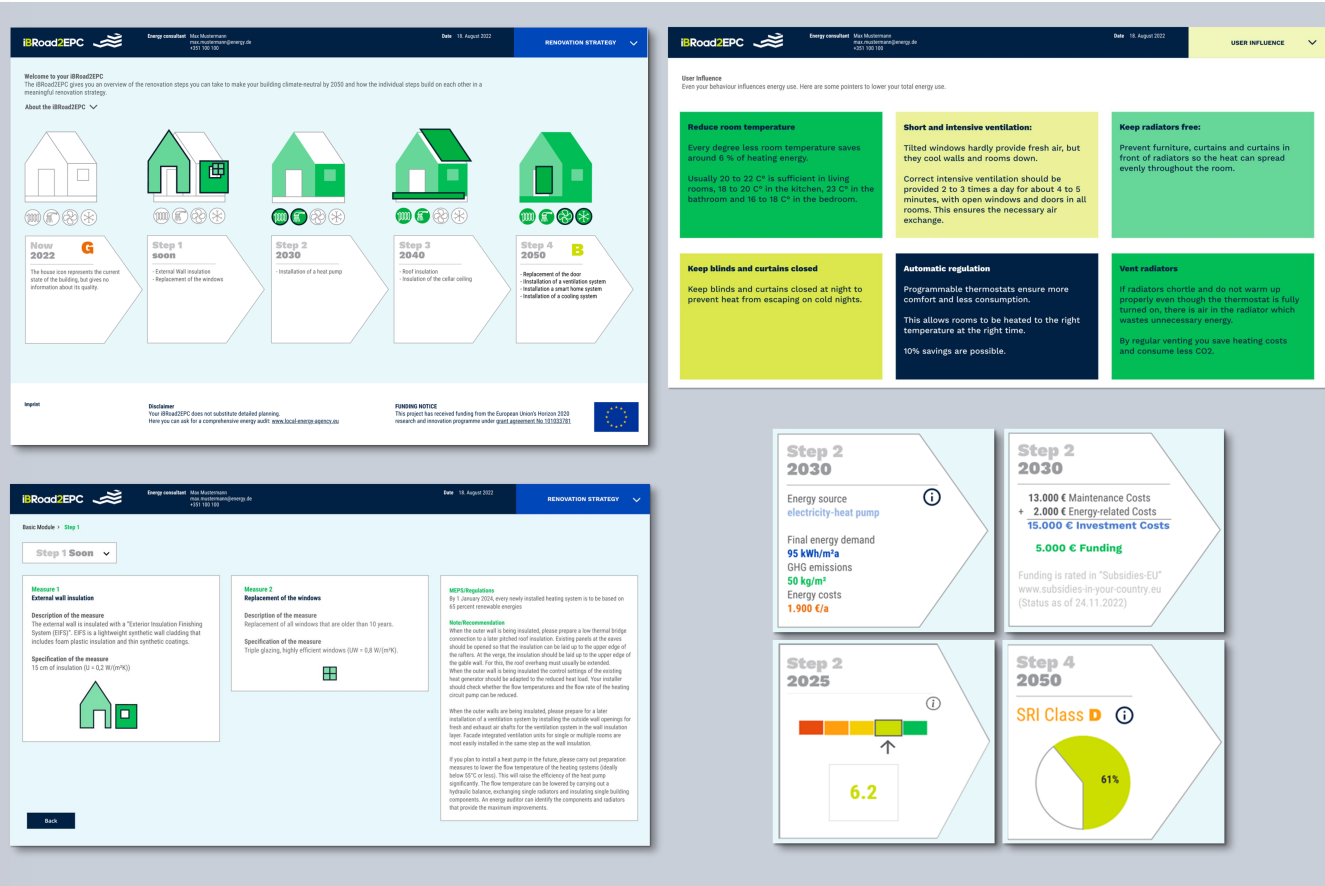
What is iBRoad2EPC

iBRoad2EPC is an online document that consists of the following pages:

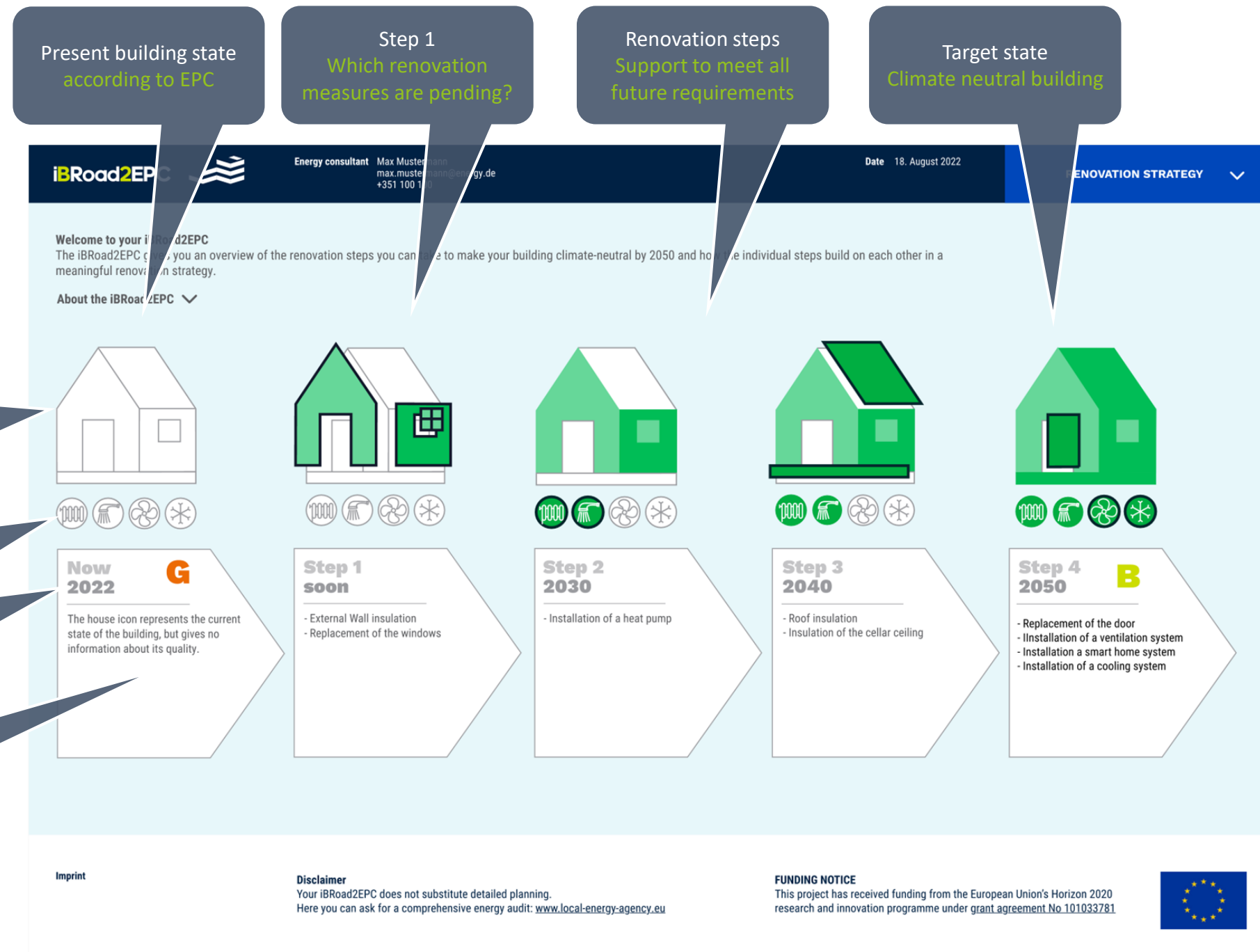
- Overview of the renovation strategy
- Details of renovation steps
- Advice for energy-saving user behaviour

It can be extended with

- Energy demand, cost and GHG emissions
- Investment cost
- Indoor environment quality (IEQ)
- Smart readiness indicator (SRI)



Overview Page



Detail Page

Name of the measure
same as in the
overview for easy
orientation

Description of the
measures
What should be
renovated?

Specification of the
measures
How should it be
renovated?

Icon
same as in the
overview for easy
orientation

Step
that is described in this
page

One box per measure
A renovation step can
comprise several
measures

Future Requirements
Information about
content and timing

Preparation for later
renovation steps
reach deep renovation
and avoid lock-in




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Date 18. August 2022

RENOVATION STRATEGY

Basic Module > Step 1

Step 1 Soon

Measure 1
External wall insulation

Description of the measure
 The external wall is insulated with a "Exterior Insulation Finishing System (EIFS)". EIFS is a lightweight synthetic wall cladding that includes foam plastic insulation and thin synthetic coatings.

Specification of the measure
 15 cm of insulation ($U = 0,2 \text{ W}/(\text{m}^2\text{K})$)



Measure 2
Replacement of the windows

Description of the measure
 Replacement of all windows that are older than 10 years.

Specification of the measure
 Triple glazing, highly efficient windows ($UW = 0,8 \text{ W}/(\text{m}^2\text{K})$).



MEPS/Regulations
 By 1 January 2024, every new / installed heating system is to be based on 65 percent renewable energy.

Note/Recommendation
 When the outer wall is being insulated, please prepare a low thermal bridge connection to a later pitched roof insulation. Existing panels at the eaves should be opened so that the insulation can be laid up to the upper edge of the rafters. At the verge, the insulation should be laid up to the upper edge of the gable wall. For this, the roof overhang must usually be extended. When the outer wall is being insulated the control settings of the existing heat generator should be adapted to the reduced heat load. Your installer should check whether the flow temperatures and the flow rate of the heating circuit pump can be reduced.

When the outer walls are being insulated, please prepare for a later installation of a ventilation system by installing the outside wall openings for fresh and exhaust air shafts for the ventilation system in the wall insulation layer. Facade integrated ventilation units for single or multiple rooms are most easily installed in the same step as the wall insulation.

If you plan to install a heat pump in the future, please carry out preparation measures to lower the flow temperature of the heating systems (ideally below 55°C or less). This will raise the efficiency of the heat pump significantly. The flow temperature can be lowered by carrying out a hydraulic balance, exchanging single radiators and insulating single building components. An energy auditor can identify the components and radiators that provide the maximum improvements.

Back

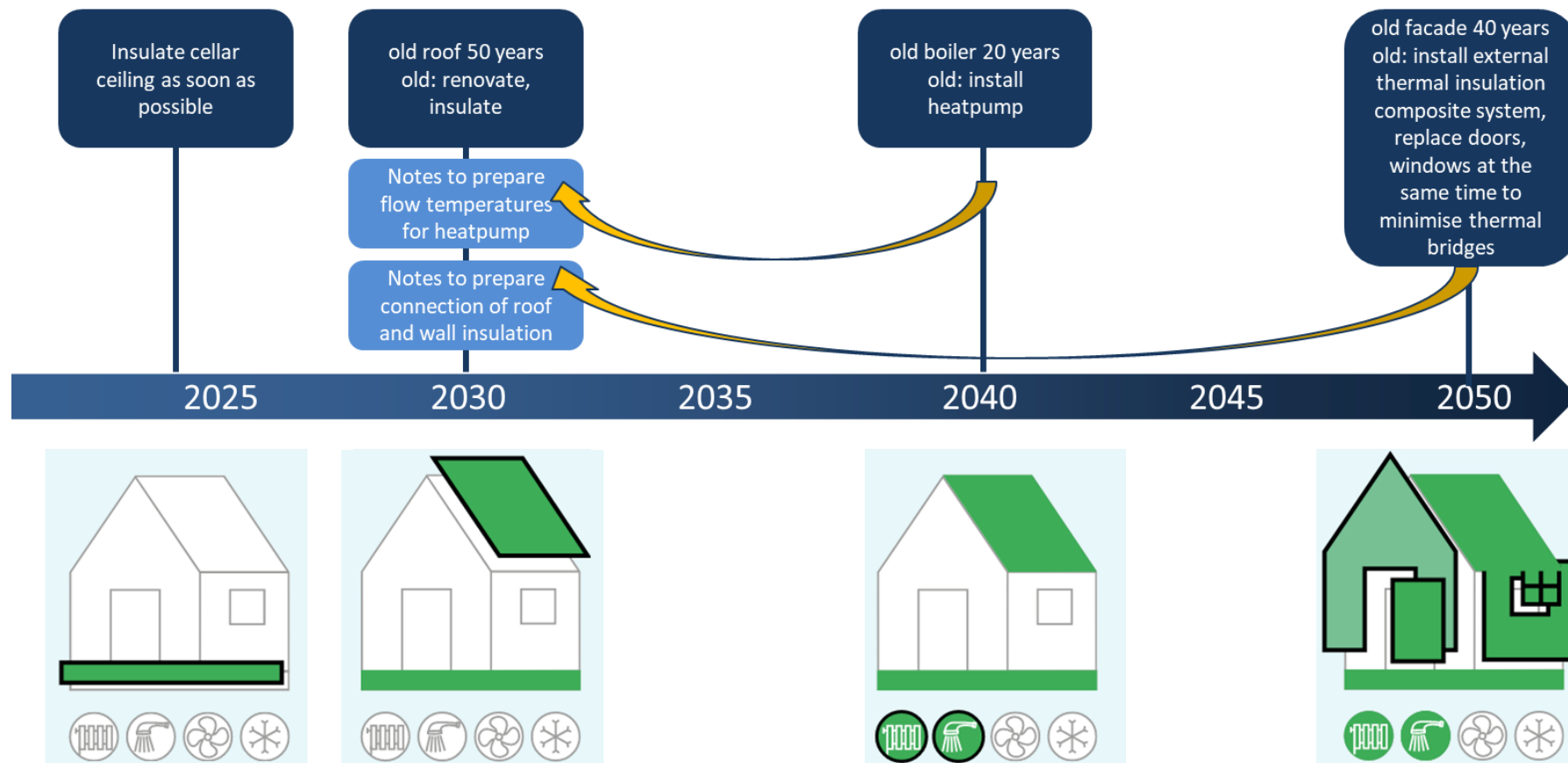
What is iBRoad2EPC

Added value of iBRoad2EPC for building owners

- Better renovation recommendations in EPCs through BRP elements
- Outline of an individual long-term renovation strategy considering
 - step-by-step renovations that gradually lead to a meaningful whole,
 - avoidance of mistakes through early preparation of later renovation measures,
 - alignment with overarching national building targets, future requirements and obligations (e.g. ban of fossil fuels, minimum energy performance standards) in order to prepare the building and fulfil all legal requirements



What is iBRoad2EPC



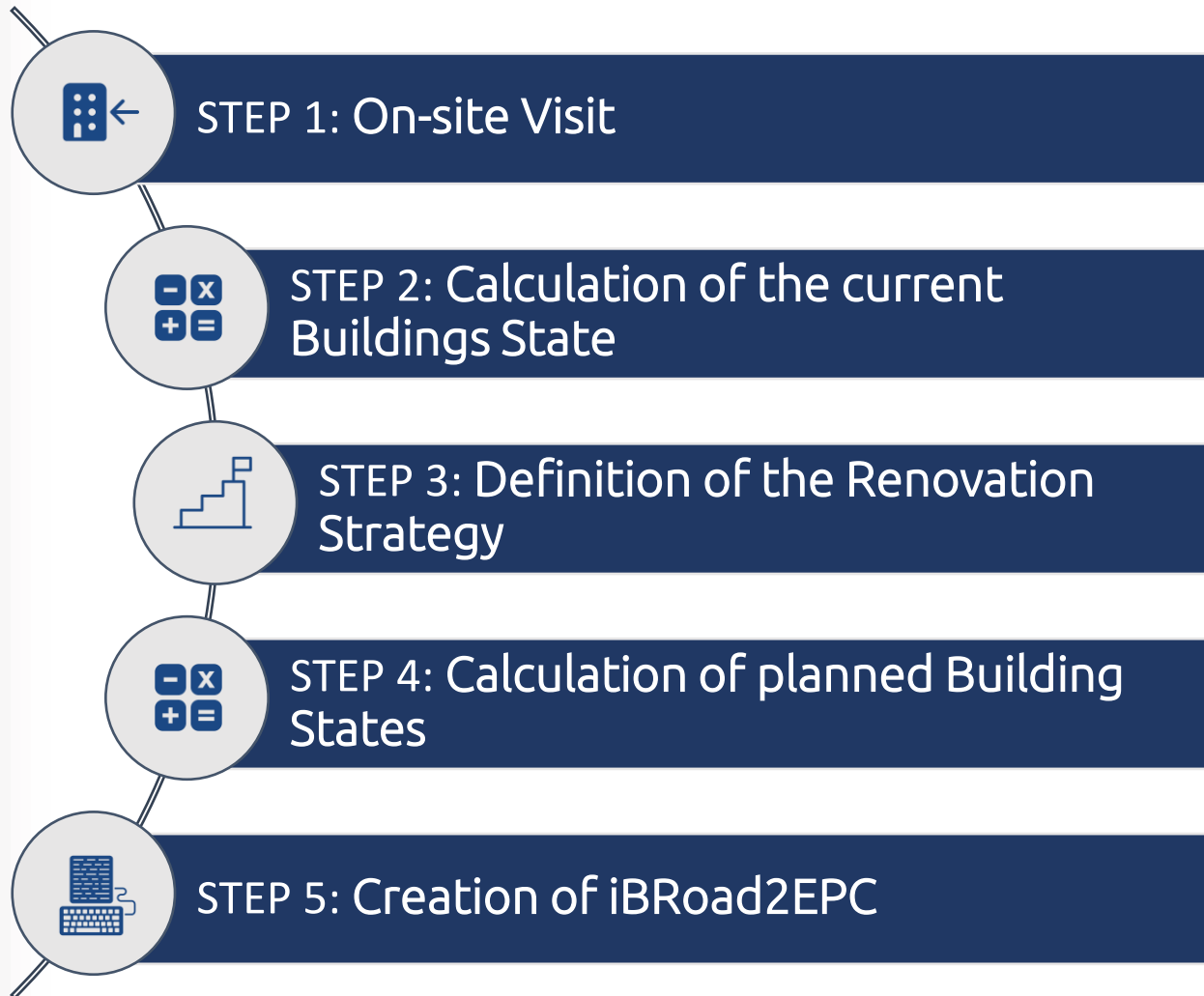
iBRoad2EPC creates a renovation strategy that allows planning ahead and thus preparing for later renovations



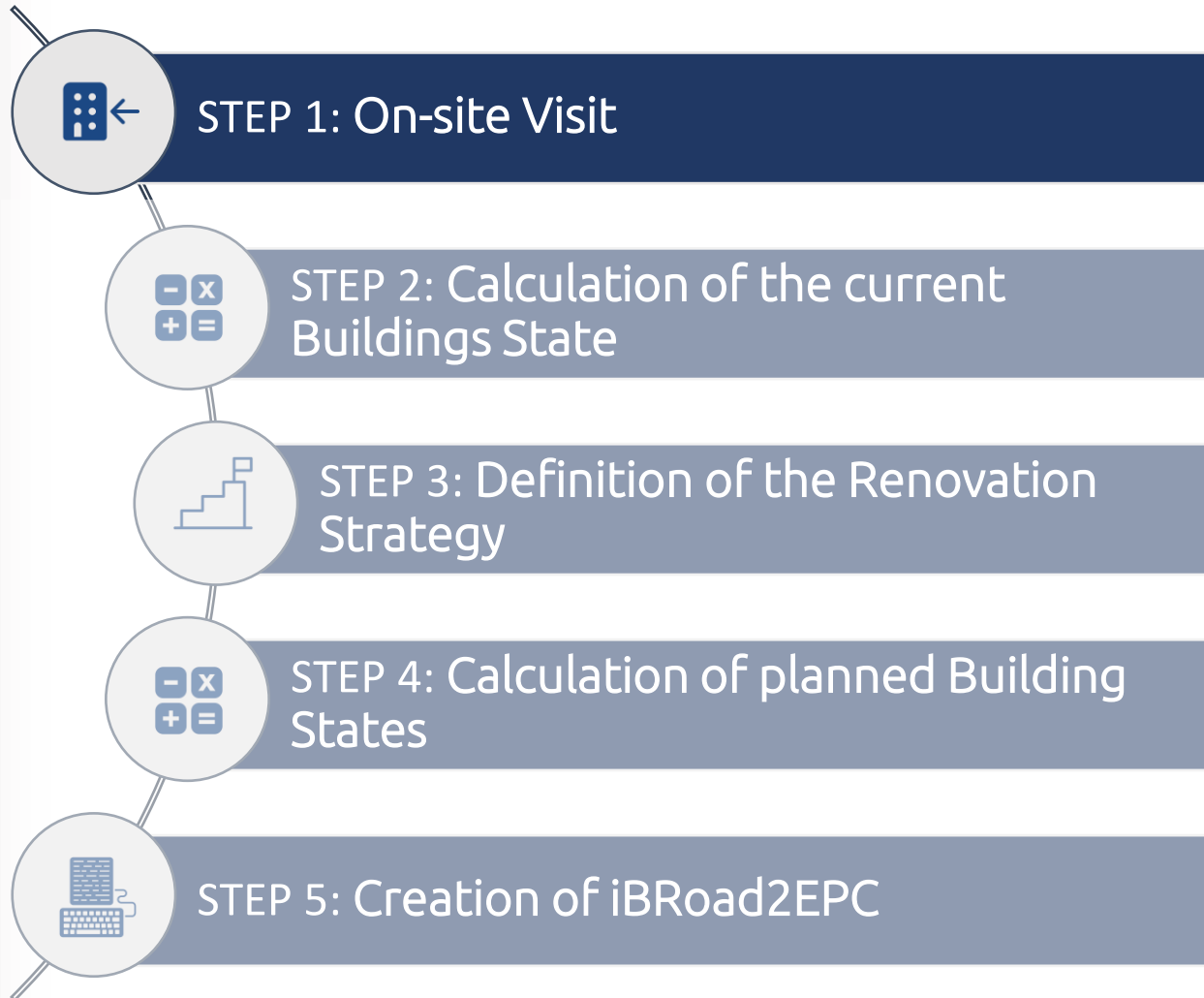
Agenda

- What is iBRoad2EPC?
- **Five Steps to issue the iBRoad2EPC**
- iBRoad2EPC Assistant
- Additional Functionalities of iBRoad2EPC

FIVE STEPS TO ISSUE THE IBROAD2EPC



STEP 1: On-site Visit



- The on-site visit is crucial to the quality of the consultation in iBRoad2EPC.
- It ensures that the long-term renovation strategy is individually tailored to the building.
- Issuers gather the ideas and wishes of the building owners during the visit and answer initial questions

STEP 1: On-site Visit

Checklist for the on-site visit

- ✓ What kind of renovation measures does the homeowner plan to undertake anyway?
- ✓ Is the homeowner interested in a full renovation in one step or rather in a staged renovation?
- ✓ What renovation measures is the homeowner interested in?
- ✓ Is a certain system technology preferred by the homeowner (for heating, cooling,)?
- ✓ Which renewable energy source is the homeowner interested in?
- ✓ Does the building already fulfil the next obligations in the future? If not, which measures would help to meet them?
- ✓ Are there foreseeable occasions, when future renovation steps can be carried out preferably concerning the living situation of the owner or user or periods in which renovation is inappropriate?
- ✓ Are there weak points in the building that require immediate action?
- ✓ Are there any measures that lead to major improvements with little effort?
- ✓ Are there any measures that can be carried out at any time without preconditions?
- ✓ Which components and systems of the building will soon reach the end of their life span?
- ✓ Which components and systems can probably be used longer?
- ✓ Which components and systems should be renovated simultaneously for physical or technical reasons, even if their life span has not reached the end yet?
- ✓ In which technically useful sequence should the components and systems be renovated?



STEP 1: On-site Visit

Blank template

iBRoad2EPC	Year of construction	Energy improvements / renovations in the past	Step 1 ASAP no legal requirements	Step 2 2030 at least class E	Step 3 2040 at least class D ban on new fossil fuel boilers	Step 4 2050 climate neutral building
Building 						
inhabitants 						
roof 						
outer walls 						
windows / doors 						
floor / cellar 						
heating sytem 						
domestic hot water 						
ventilation 						
cooling 						





STEP 1: On-site Visit

Blank template

iBRoad2EPC		Year of construction	Energy improvements / renovations in the past	Step 1 ASAP no legal requirements	Step 2 2030 at least class E	Step 3 2040 at least class D ban on new fossil fuel boilers	Step 4 2050 climate neutral building
Building		1967				Life insurance payout	
inhabitants					Roof insulation, New tiles		
roof		1967					External insulation
outer walls		1996	only painted				passive house windows
windows / doors		1996	double-glazed insulated windows				
floor / cellar		1967		Insulate from below			
heating sytem		2007				Air/water Heat pump	
domestic hot water		2007	condensing boiler				
ventilation		none					Ventilation with heat recovery and cooling
cooling		none					

STEP 2: Calculation of the current Buildings State



STEP 1: On-site Visit



STEP 2: Calculation of the current Buildings State



STEP 3: Definition of the Renovation Strategy

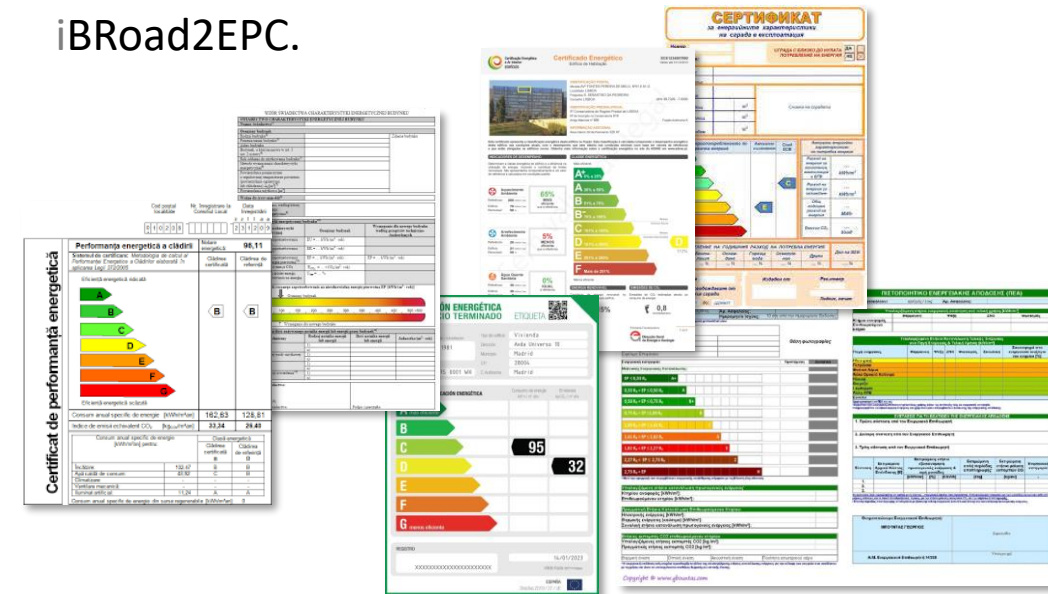


STEP 4: Calculation of planned Building States

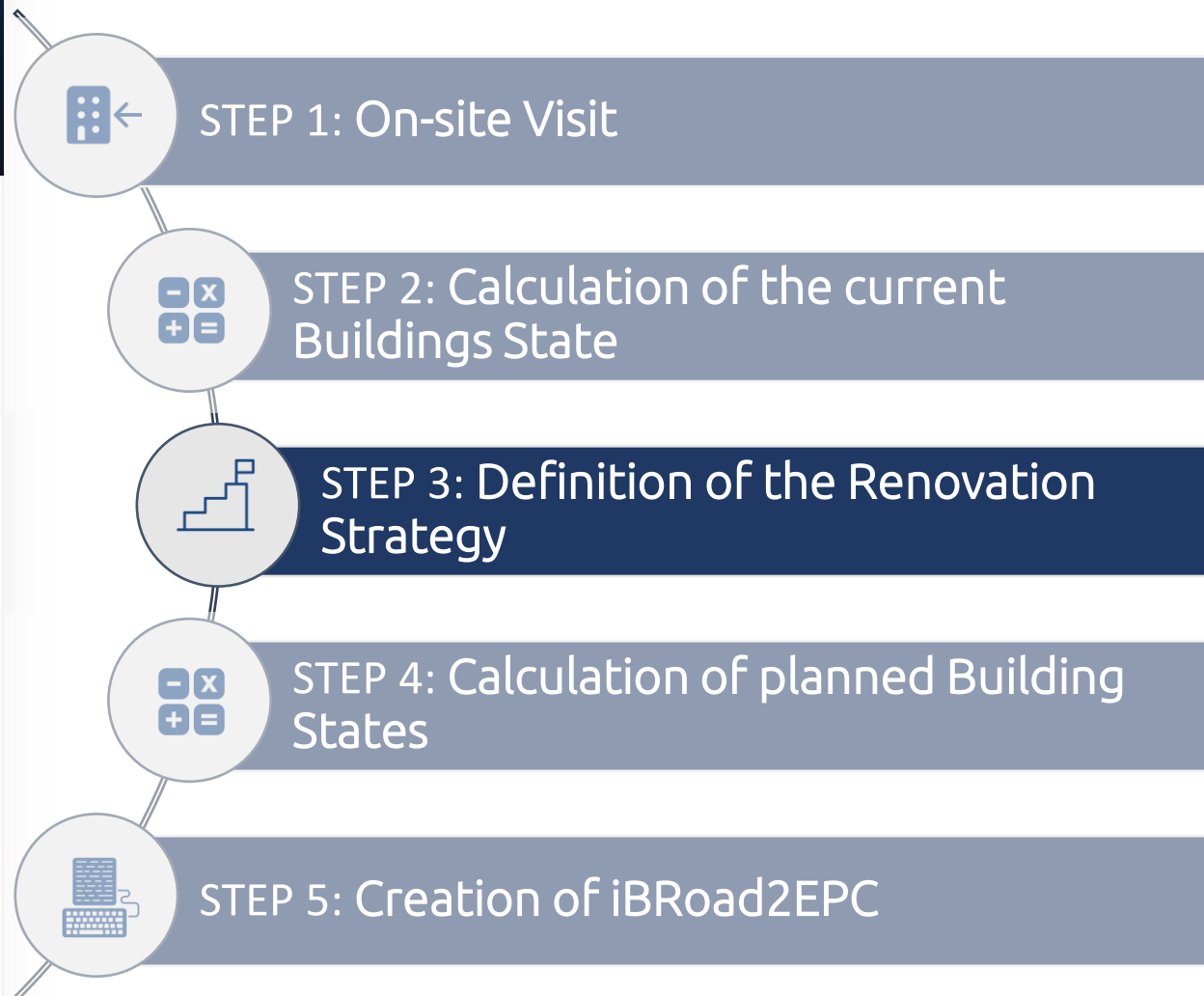


STEP 5: Creation of iBRoad2EPC

- The current state of the building is calculated with the EPC software.
- The calculation is exactly the same as the calculation to issue an EPC based on energy demand.
- This means, an EPC is always issued with each iBRoad2EPC.



STEP 3: Definition of the Renovation Strategy



- This is the central step in the iBRoad2EPC and the main task of the issuer.
- Issuers create the individual renovation strategy for this building based on
 - the on-site visit,
 - the wishes of the building owners,
 - the technical correlations,
 - and their experience.

STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

- **Full renovation or gradual renovation**
- **Age of the Components**
- **Sequence of Measures**
- **Components that should be combined**
- **Obligations that must be met**

STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

- **Full renovation or gradual renovation**
- A full renovation has many advantages over a step-by-step approach. Issuers should recommend a full renovation in one step if it is technically feasible and can be afforded by the owners.
 - The GHG emissions of the building fall immediately to the target value, i.e. the cumulative emissions over the entire period are significantly lower.
 - Building component connections can be made in such a way that all thermal bridge and airtightness requirements are met.
- However, since full renovations are time-consuming and expensive, many building owners opt for stepwise renovations.

STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

- **Age of the Components**
- In the case of stepwise renovation, the building components can be prioritised according to their age.
 - Components that have already reached or will soon reach the end of their normal technical life span must be renovated earlier than those that will still be usable for many years.
 - The usual technical life span is individually different for all components.

STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

- **Sequence of Measures**

- The renovation measures must build on each other.
- For example, it often makes sense to improve the building envelope first. This means that later a heat generator with a lower heat capacity can be installed, which is more cost-effective.
- Many renewable heat generators, such as heat pumps, only work efficiently if a building is at least partially insulated.

STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

- **Components that should be combined**
- In addition to the age of the components, issuers must also consider which components should preferably be renovated together.
- For example, many problems with connecting windows to the façade can be avoided if both components are renovated in one step.

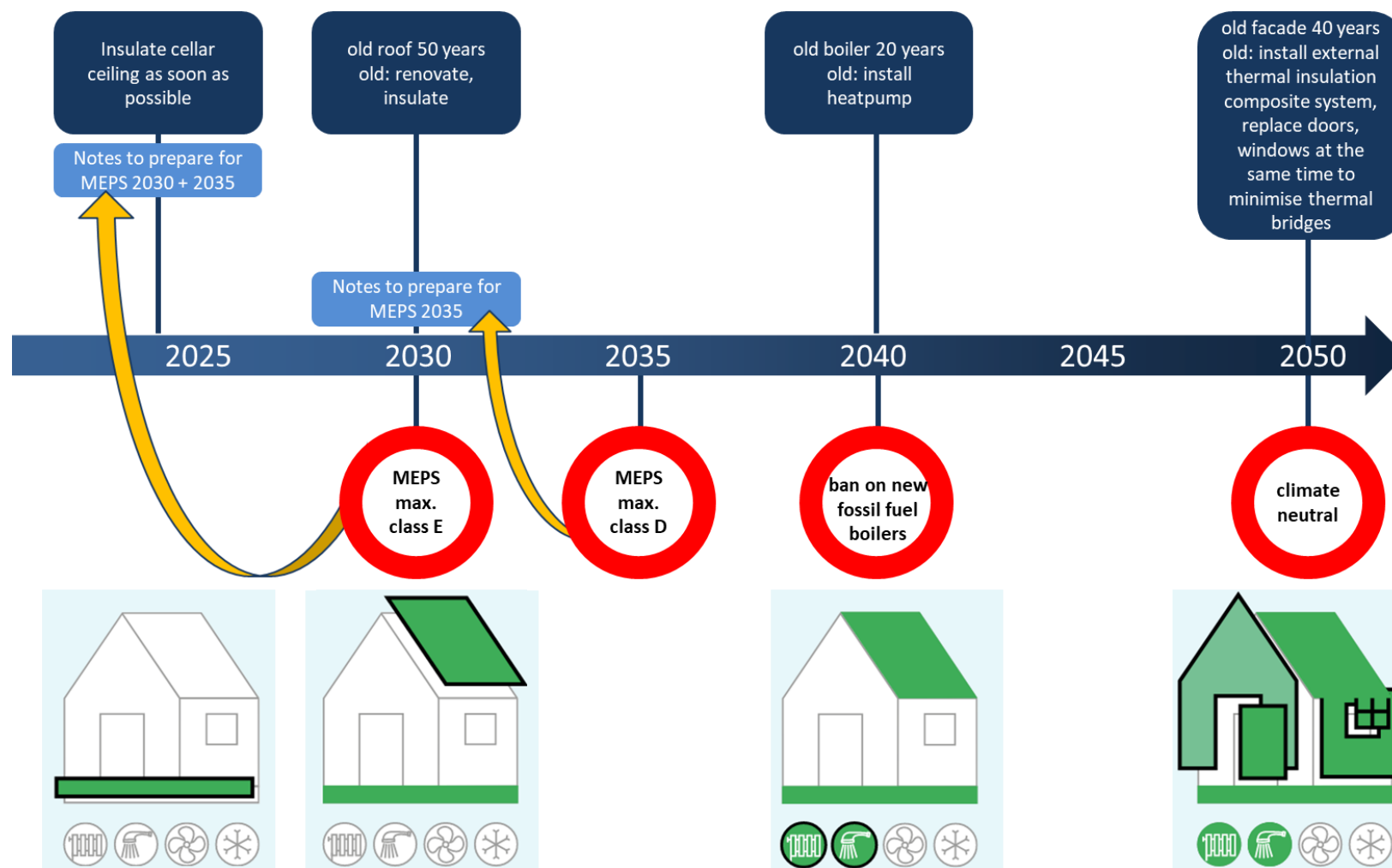
STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

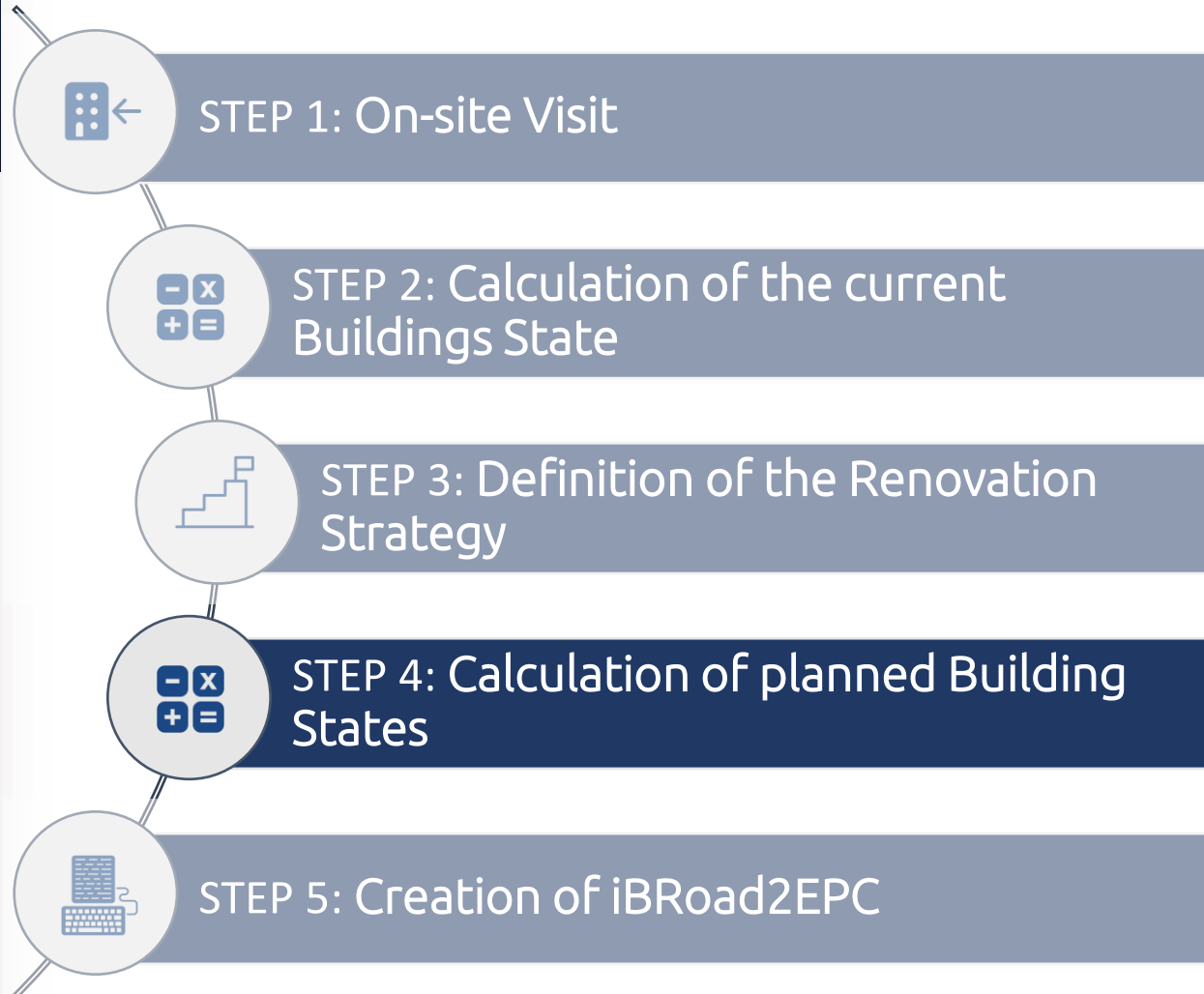
- **Obligations that must be met**
- The renovation measures must be put together in such a way that obligations with which the building must comply, and which are already foreseeable are fulfilled.
- For example, according to the draft of the EPBD recast (15.12.2021), it should be noted that buildings with efficiency classes G must be renovated by 2030 and buildings with efficiency class F by 2033.

STEP 3: Definition of the Renovation Strategy

Guiding Principles to define the Strategy

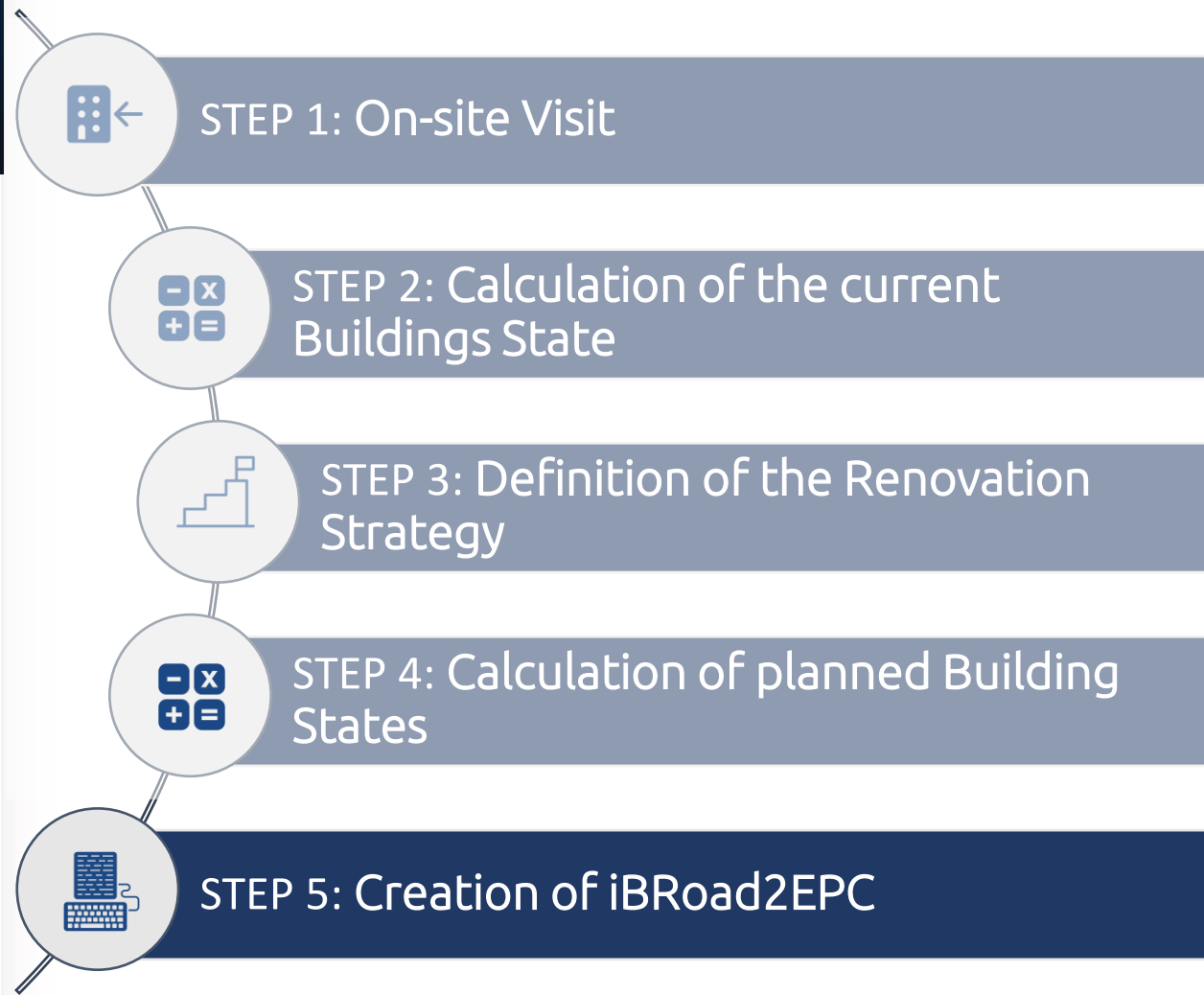


STEP 4: Calculation of planned Building States



- This step is not needed for the basic functionalities of iBRoad2EPC
- It is required for the Energy Demand Module (which is part of the field test)
- The calculation is carried out with the regular EPC software.
- The energy demand is calculated for each renovation step. Usually, the calculation for the actual state can be copied and renovation measures for the respective step can be entered.
- More details will follow in the description of the Energy Demand Module.

STEP 5: Creation of iBRoad2EPC



The iBRoad2EPC is created with an online tool called the iBRoad2EPC Assistant.

This will be explained in the following section.



Feedback

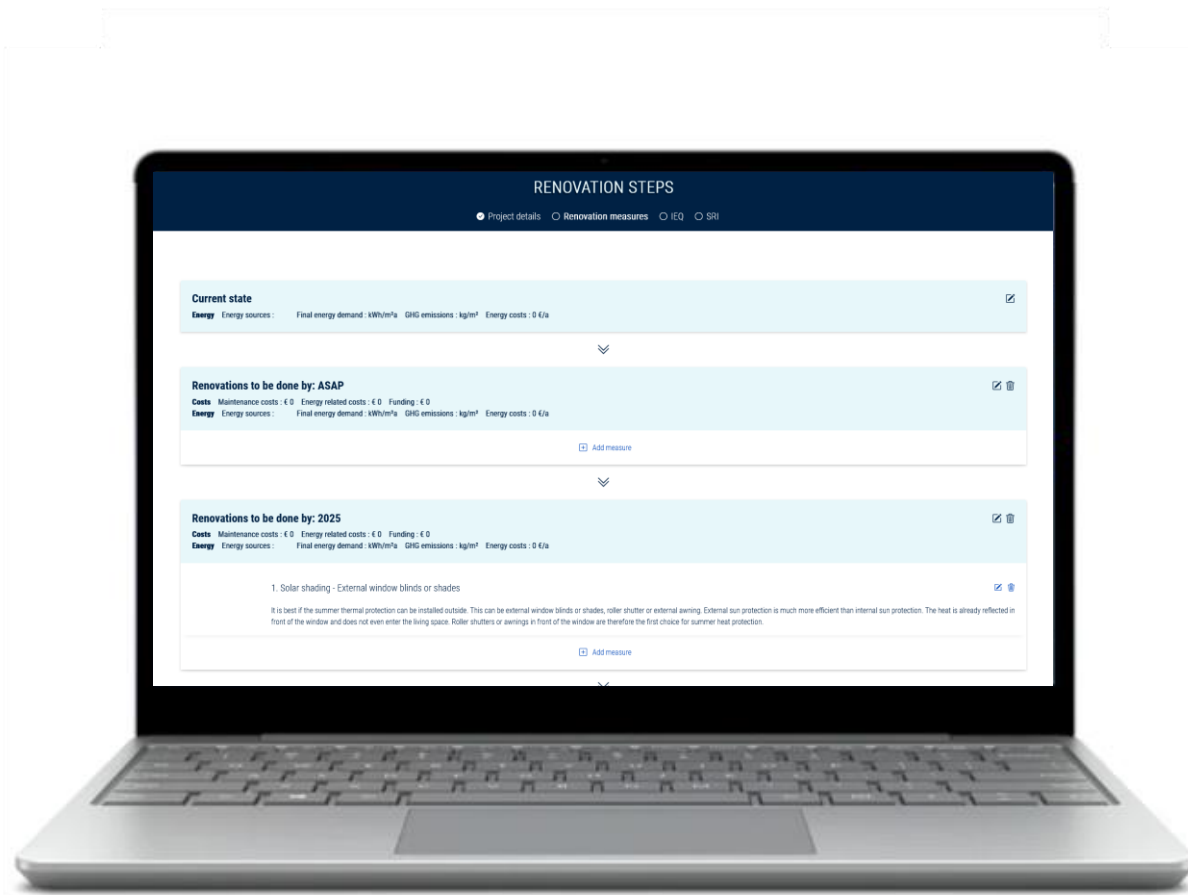
- Do you think auditors will understand the concept of a long-term strategy?
- Do you think auditors need additional information on the concept?
- Do you think auditors need additional information on basic renovation knowledge?



Agenda

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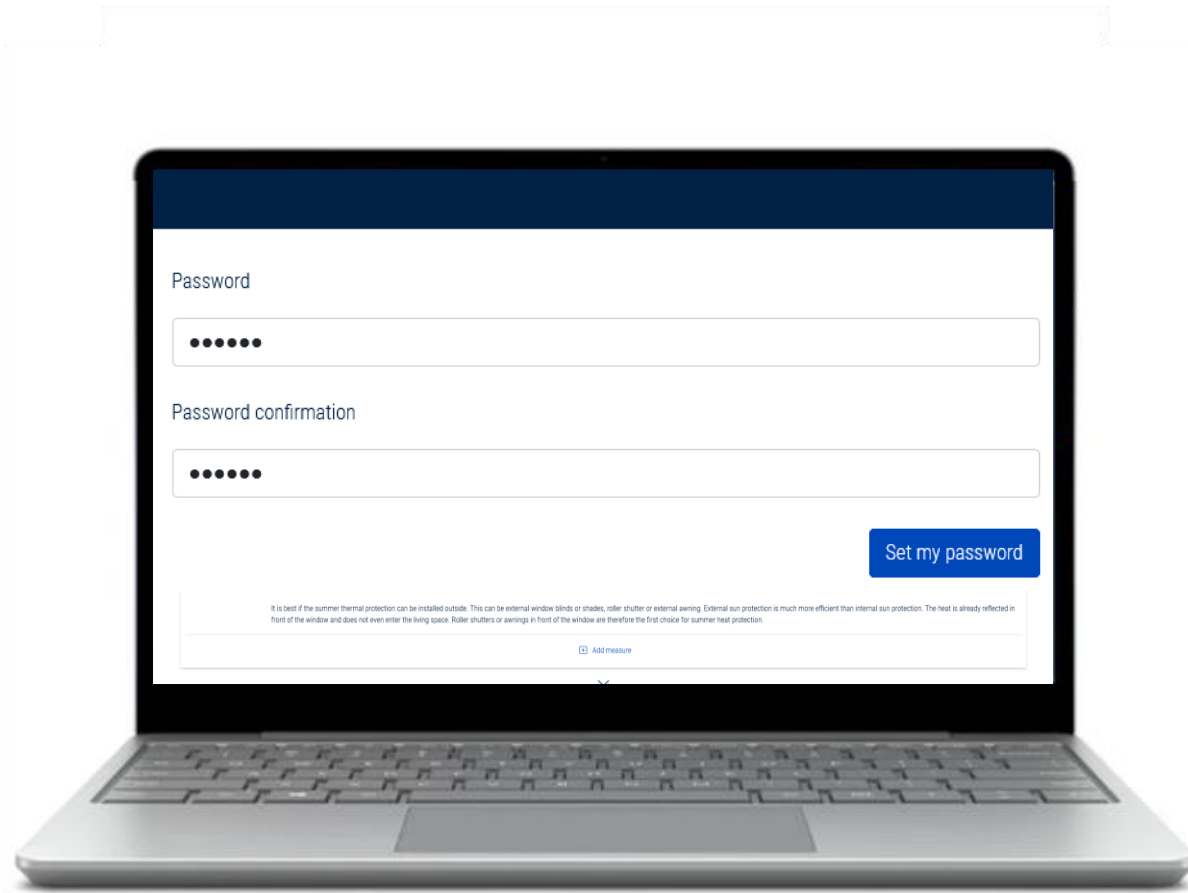
iBRoad2EPC Assistant



The iBRoad2EPC is created with an online tool called the iBRoad2EPC Assistant. The main objectives of this tool are:

- create the iBRoad2EPC in a uniform design,
- output the iBRoad2EPC in an online format,
- facilitate issuers in assigning renovation measures at specific points in time,
- support issuers with prefabricated content,
- allow easy overwriting of all default texts by the issuer.

iBRoad2EPC Assistant



All participants in the field test will receive a personalised invitation link to the iBRoad2EPC Assistant.

This will allow them to sign in and create a password.

iBRoad2EPC Assistant

All texts for the iBRoad2EPC were translated and transferred to the iBRoad2EPC assistant



iBRoad2EPC Assistant Sign In

 Projects Test User : Log out

MY PROFILE

[Edit](#)

Name	Client number	Status	Created at	Actions
p test		Created	April 11, 2023 08:37	Complete details 

Clicking your name in the upper right corner opens the page “my profile”

You can edit your profile by clicking “edit”.

This will open a new window with your data

 Test User : Log out

EDIT MY PROFILE

First name *

Last name *

Phone number *

[Update User](#)

iBRoad2EPC Assistant for Issuers

Add a Project

 Projects

Test User : Log out

PROJECTS

Add a project

Name	Client number	Status	User	Country	Created at	Actions
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New project

Name *

Create Project

iBRoad2EPC Assistant for Issuers

Add a Project

 Test User : Log out

PROJECTS Add a project

Name	Client number	Status	User	Country	Created at	Actions
p_test_04	123	Submitted	Test User	Portugal	April 26, 2023 14:12	Show 
small test		Validated	Test User	Portugal	April 20, 2023 09:36	Complete details 
p_test_03		Submitted	Test User	Portugal	April 17, 2023 15:14	Show 
test		Created	Test User	Portugal	April 17, 2023 11:51	Complete details 
p test_02		Submitted	Test User	Greece	April 13, 2023 09:39	Show 
p test		Submitted	Test User	Portugal	April 11, 2023 08:37	Show 

iBRoad2EPC Assistant for Issuers

Add a Project

 Projects Test User [Log out](#)

COMPLETE PROJECT DETAILS

☐ Project details ☐ Renovation measures

Name *	Client number	
Test_	111	
Building constructed in	Country *	
1990	Portugal	
Climate zone *	Current energy class *	
IT V1	F	
Building type *	Building sub type *	
Residential building	Multi-family building	
Environment *	Tenure status *	
Urban	Rented	
Heating system constructed in	Cooling system constructed in	
1990	1990	
Project trigger *	Project receiver *	Recommendations target *
Extension	Owner	Building owner
Image *		
Durchsuchen... Keine Datei ausgewählt.		
Previous epc *		
Durchsuchen... Keine Datei ausgewählt.		

[Confirm details](#)

After creating a project please fill in the project details

iBRoad2EPC Assistant for Issuers

Add a Project

 Projects Test User Log out

COMPLETE PROJECT DETAILS
☐ Project details ☐ Renovation measures

Name *

Test_

✓

Client number

111

✓

Building constructed in

1990

✓

Country *

Portugal

✓

Climate zone *

IT V1

✓

Current energy class *

F

✓

Building type *

Residential building

✓

Building sub type *

Multi-family building

✓

Image

Browse

no file selected

EPC certificate *

Browse

no file selected

Confirm details

You can upload an image of the building. It will show up in the summary.

Please upload an EPC for the current building state in pdf format. The link to the iBRoad2EPC will be attached to the EPC in an extra page to the pdf. You can forward this enhanced pdf-file to the building owner or print it out.

Clicking “confirm details” takes you to the renovation steps.

Projects

Test User : Log out

RENOVATION STEPS

● Project details

○ Renovation measures

○ IEQ

Current state

Energy Energy sources : Final energy demand : kWh/m²a GHG emissions : kg/m³ Energy costs : 0 €/a

⇅

Renovations to be done by: ASAP

Costs Maintenance costs : € 1,000 Energy related costs : € 1,000 Funding : € 5,000

Energy Energy sources : 1. Solar 2. Biomass Final energy demand : 32 kWh/m²a GHG emissions : 32 kg/m³ Energy costs : 0.0 €/a

✎

🗑

1. Floor - Insulation on the basement ceiling

Insulation of the cellar ceiling from below.

✎

🗑

2. Heating - Substitution of the heating system by a gas boiler

Remove your old heating system and install a new gas boiler.

⚠ Preparation for later renovation steps

✎

🗑

➕ Add measure

⇅

Renovations to be done by: 2025

Costs Maintenance costs : € 2,500 Energy related costs : € 2,500 Funding : € 0

Energy Energy sources : Final energy demand : kWh/m²a GHG emissions : kg/m³ Energy costs : 0 €/a

✎

🗑

1. Window - Window glazing substitution

Windows glazing substitution, keeping the actual frames.

⚠ Preparation for later renovation steps

✎

🗑

2. External wall - External insulation (EIFS System)

The external wall is insulated with an "Exterior Insulation Finishing System (EIFS)". EIFS is a lightweight synthetic wall cladding that includes foam plastic insulation and thin synthetic coatings.

⚠ Preparation for later renovation steps

✎

🗑

➕ Add measure

This page shows the current building state and all future renovation steps in an overview.

The dates of the renovation steps are already filled in as a template. They reflect future climate targets or legal obligations.

Issuers are free to add more steps if required.

You can edit every step by clicking the pencil icon on the right.



Project: test_04: edit step for 2031

Target year

2031

✓

☐ Asap

Submit

You can edit every step by clicking the pencil icon on the right.



This will open a menu where you can change the date (target year) of the respective renovation step.

If a renovation step should not refer to a certain year but be carried out as soon as possible you can click the checkbox “Asap”.

Clicking “Submit” will save the changes.

Renovations to be done by: 2030

Costs Maintenance costs : € 0 Energy related costs : € 0 Funding : € 0

Energy Energy sources : Final energy demand : kWh/m²a GHG emissions : kg/m² Energy costs : 0 €/a

[+ Add measure](#)

Regulation targets

By 1 January 2030, buildings constructed prior to 1990 will need to have at least category III comfort levels via the introduction of passive measures on the envelope (insulation, efficient windows, etc). [✎](#)

By 1 January 2030, 65% of residential buildings will need to have replaced all the lighting by LED and have upgraded electric equipment [✎](#)

By 1 January 2030, 23% of residential buildings that don't achieve category III comfort levels after the introduction of passive measures will need to have efficient heating and cooling systems such as electrical heat pumps in place. LPG systems replaced with priority for families living in energy poverty. [✎](#)

Até 1 de Janeiro de 2030, 50% das necessidades de aquecimento de água para edifícios residenciais terão de ser asseguradas por sistemas solares térmicos (cerca de 23% do parque habitacional deverá estar equipado com estes sistemas) [✎](#)

⌵

Foreseeable future legal obligations are automatically marked and explained in the overview page. The texts will be displayed in the detailed output pages of each renovation step. You can edit the texts by clicking

A square button with a light blue background and a dark blue icon of a pencil writing on a document.



Projects

Test User : Log out

RENOVATION STEPS

Project details

Renovation measures

IEQ

Current state

Energy

Energy sources :

Final energy demand : kWh/m²a

GHG emissions : kg/m²

Energy costs : 0 €/a

Renovations to be done by: ASAP

Costs

Maintenance costs : € 1,000

Energy related costs : € 1,000

Funding : € 5,000

Energy

Energy sources :

1. Solar

2. Biomass

Final energy demand : 32 kWh/m²a

GHG emissions : 32 kg/m²

Energy costs : 0.0 €/a

1. Floor - Insulation on the basement ceiling

Insulation of the cellar ceiling from below.

2. Heating - Substitution of the heating system by a gas boiler

Remove your old heating system and install a new gas boiler.

Preparation for later renovation steps

Add measure

Renovations to be done by: 2025

Costs

Maintenance costs : € 2,500

Energy related costs : € 2,500

Funding : € 0

Energy

Energy sources :

Final energy demand : kWh/m²a

GHG emissions : kg/m²

Energy costs : 0 €/a

1. Window - Window glazing substitution

Windows glazing substitution, keeping the actual frames.

2. External wall - External insulation (EIFS System)

The external wall is insulated with an "Exterior Insulation Finishing System (EIFS)". EIFS is a lightweight synthetic wall cladding that includes foam plastic insulation and thin synthetic coatings.

Preparation for later renovation steps

Add measure

Every renovation step can comprise several renovation measures.

Step: a point in time when renovations are carried out

Measure: energetic improvement of one building component

You can assign measures to the steps by clicking  Add measure

New measure

Measure type *

Substitution of the heating system by a heat pump

Description

Install a heat pump. There are two common types of heat pumps: With ground-source heat pumps, a liquid is pumped through pipes laid in the ground and is heated by the temperature of the soil. Air source heat pumps use outside air as a heat source. What all heat pumps have in common is that the heat they absorb is then raised to a higher temperature level for heating and hot water with the help of electricity. As a rule, heat pumps should produce three to four parts of heat from one part of electricity.

Specification

The heat pump should feature a coefficient of performance (COP) of at least 4.0.

Submit



Clicking into the field “measure type” will open a dropdown menu. Here you can choose the desired measure from a list.

Clicking a measure will automatically fill in the name, description and specification.

The description can be edited if required.

The technical specification is aligned with the long-term climate targets in your country. You can overwrite it if applicable.

Clicking “Submit” will save the measure and return to the steps overview page.

New measure

Measure type *

Solar shading

Improve solar solar radiation heat gains

Window or door

Change glazing with energy saving glazing

Substitution of the old windows

Substitution of the old doors

Cooling

Installation of a chiller

Installation of an absorption chiller connected to thermal solar collectors (solar cooling)

Substitution of the heating/cooling system by a heat pump (Air to Air technology)

Domestic hot water (DHW)

Installation of a condensing gas boiler for domestic hot water

Installation of a thermal solar system for domestic hot water

Installation of a biomass boiler for domestic hot water

Installation of a heat pump for domestic hot water

translation missing: en.non_db_models.record_translations.measure_types.district_heating_network_water

Installation of local electric hot water boiler

Connection to a existing heating system

Heating



English

Test User

Log out

RENOVATION STEPS

Project details

Renovation measures

ISO

SP

Current state

Energy

Energy sources

Final energy demand: 60 kWh/m²

GHG emissions: 1 kg/m²

Energy costs: 0 €/m²

Renovations to be done by: ABAP

Costs

Maintenance costs: -40

Energy related costs: -40

Retrofitting: -40

Energy

Energy sources

Final energy demand: 60 kWh/m²

GHG emissions: 1 kg/m²

Energy costs: 0 €/m²

+

ADD MEASURE

Renovations to be done by: 2025

Costs

Maintenance costs: -40

Energy related costs: -40

Retrofitting: -40

Energy

Energy sources

Final energy demand: 60 kWh/m²

GHG emissions: 1 kg/m²

Energy costs: 0 €/m²

+

ADD MEASURE

Renovations to be done by: 2030

Costs

Maintenance costs: -40

Energy related costs: -40

Retrofitting: -40

Energy

Energy sources

Final energy demand: 60 kWh/m²

GHG emissions: 1 kg/m²

Energy costs: 0 €/m²

+

ADD MEASURE

Regulation targets

By 1 January 2030, buildings constructed prior to 1990 will need to have at least category II comfort levels via the introduction of passive measures on the envelope (insulation, efficient windows, etc.)

By 1 January 2030, 65% of residential buildings will need to have replaced all the lighting by LED and have upgraded electric equipment

By 1 January 2030, 50% of residential buildings that don't achieve category II comfort levels after the introduction of passive measures will need to have efficient heating and cooling systems such as electrical heat pumps in place. LFG systems replaced with priority for families living in energy poverty

Until 1 de Janeiro de 2030, 65% das necessidades de aquecimento de água para edifícios residenciais terão de ser asseguradas por sistemas solares térmicos (parce de 65% do parque residencial deverá estar equipado com estes sistemas)

Renovations to be done by: 2040

Costs

Maintenance costs: -40

Energy related costs: -40

Retrofitting: -40

Energy

Energy sources

Final energy demand: 11.5 kWh/m²

GHG emissions: 0.1 kg/m²

Energy costs: 0.0002 €/m²

+

ADD MEASURE

Regulation targets

By 1 January 2040, residential buildings constructed prior to 2014 will need to have at least category II comfort levels via the introduction of passive measures on the envelope (insulation, efficient windows, etc.)

By 1 January 2040, 100% of residential buildings will need to have replaced all the lighting by LED and have upgraded electric equipment

Until 1 de Janeiro de 2040, 77% dos edifícios residenciais que não atingem a categoria II de conforto terão de introduzir medidas passivas tanto de isolamento térmico como de sistemas de aquecimento e arrefecimento, tais como bombas de calor elétricas. Também os sistemas de gás a gás deverão ser substituídos por sistemas elétricos.

By 1 January 2040, 100% of residential buildings that don't achieve category II comfort levels after the introduction of passive measures will need to have efficient heating and cooling systems such as electrical heat pumps in place

Until 1 de Janeiro de 2040, 77% do stock de edifícios residenciais terá de introduzir medidas passivas e/ou produção fotovoltaica e/ou armazenamento elétrico.

By 1 January 2040, 100% of the residential building stock will have either heat pumps and/or PV electrical production and/or electrical storage

+

ADD MEASURE

Test step

The renovation for the individual building is created by assigning renovation measures to the steps the way described before.

The definition of the renovation strategy is the main task of the issuer. Guiding questions in this task are (as described above):

- Full renovation or gradual renovation
- Age of the Components
- Sequence of Measures
- Components that should be combined
- Obligations that must be met

Issuers aim to achieve a complete renovation of all relevant building components until the target year thus reaching a climate-neutral building state.

When the strategy is ready you click “create overview document” to proceed.

Renovations to be done by: ASAP

Costs	Maintenance costs : € 0	Energy related costs : € 0	Funding : € 0
Energy	Energy sources : 1. Gas	Final energy demand : 167 kWh/m²a	GHG emissions : 40 kg/m²
			Energy costs : 2800.0 €/a

1. Roof - Insulation of the top storey ceiling  

Isolamento da cobertura do piso superior em sótão (desvão ventilado - espaço não útil). As placas de isolamento são colocadas sobre a esteira horizontal. No caso de tectos permeáveis ao vapor, pode ser necessário colocar uma barreira de vapor sob o isolamento para evitar a acumulação de humidade no material de isolamento. Pergunte ao seu projectista sobre isto. Se o sótão tiver de ser pisado, o material de isolamento deve ser coberto com tábuas estáveis.

 Preparations for later renovations steps 

 Add measure

While assigning more renovation measures to the steps you will notice that “preparations for later renovation steps” appear automatically beneath some measures. They open up when clicked.

These prefabricated text blocks provide advice on how to prepare for later steps while implementing the actual measure. They depend on the sequence of measures.

You can edit them when you click the pencil icon.

2. External wall - External insulation (EIFS System)  

The external wall is insulated with an “Exterior Insulation Finishing System (EIFS)”. EIFS is a lightweight synthetic wall cladding that includes foam plastic insulation and thin synthetic coatings.

 Preparation for later renovation steps 

Preparation for a later insulation of a flat roof 

When the outer walls are being insulated, please prepare for a later flat roof insulation. The upper edge of the parapet should be insulated. The sheeting should be wide enough so that the later flat roof insulation can be connected.

iBRoad2EPC

Partner countries

EnglishTest UserLog out

PROJECT: TEST_04

Download enhanced EPC pdfOverview pageEdit

RENOVATION PLAN

Current state

Renovations to be done by: ASAP

Renovations to be done by: 2025

Renovations to be done by: 2030

Regulation targets

Renovations to be done by: 2040

Regulation targets

PROJECT DETAILS

User: Test User

Environment: Urban

Building type: Residential building

Current energy class: F

Year of Construction of the Heating System: 2010

Thermal status: Owner occupied

Receiver of iBRoad2EPC: Owner

Have the building's components already been renovated to the target state?

Country: Portugal

Climate zone: IT n°1

Building subtype: Multifamily building

Year of Construction of the Building: 1990

Year of Construction of the Cooling System: No legal trigger

Trigger point for iBRoad2EPC: Building owner

Recommendations addressed to: Submitted

Status: Submitted

Currently attached image

Currently attached EPC document

energ_boulevard.pdf

After all entries are ready and confirmed you are shown an overview page.

A new menu appears in the upper right corner.

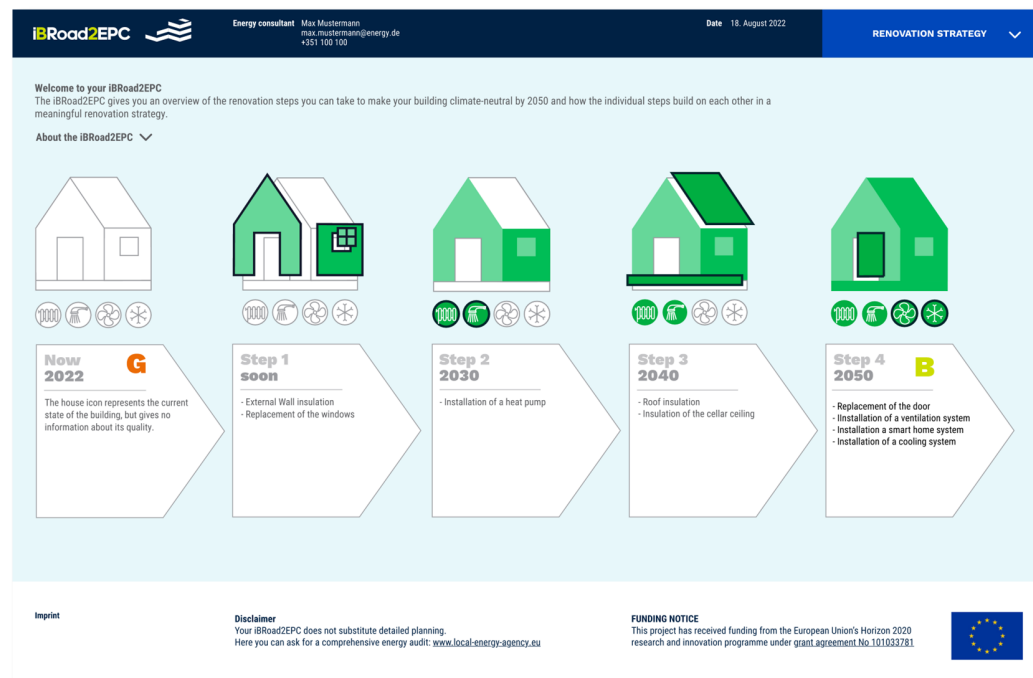
Download enhanced EPC pdf

Overview page

Edit

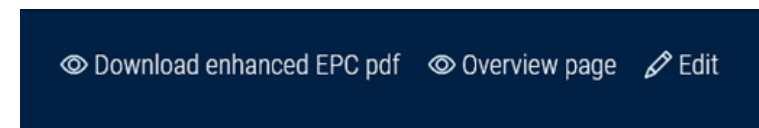
It allows you to

- edit the entered data
this leads you back to the previous page
- See the iBRoad2EPC output document (overview page)
- Download the EPC enhanced with an additional page with links to the iBRoad2EPC in pdf format



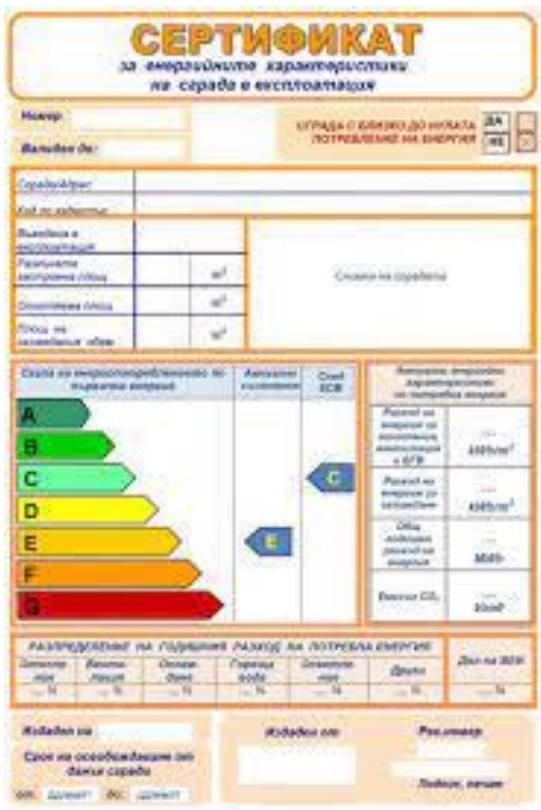
After all entries are ready and confirmed you are shown an overview page.

A new menu appears in the upper right corner.



It allows you to

- edit the entered data
this leads you back to the previous page
- **See the iBRoad2EPC output document (overview page)**
- Download the EPC enhanced with an additional page with links to the iBRoad2EPC in pdf format



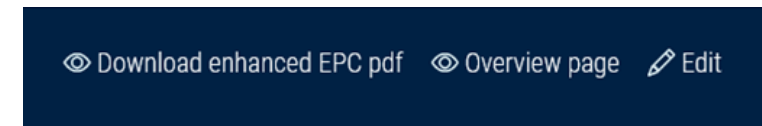

iBRoad2EPC

Find your enhanced iBRoad2EPC document via the qr code below:



After all entries are ready and confirmed you are shown an overview page.

A new menu appears in the upper right corner.



It allows you to

- edit the entered data
this leads you back to the previous page
- See the iBRoad2EPC output document (overview page)
- **Download the EPC enhanced with an additional page with links to the iBRoad2EPC in pdf format**



Agenda

- What is iBRoad2EPC?
- Five Steps to issue the iBRoad2EPC
- iBRoad2EPC Assistant
- Additional Functionalities of iBRoad2EPC

iBRoad2EPC Assistant for Issuers

ADDITIONAL FUNCTIONALITIES OF IBROAD2EPC

Step 2 2030

Energy source
electricity-heat pump



Final energy demand

95 kWh/m²a

GHG emissions

50 kg/m²

Energy costs

1.900 €/a

Step 2 2030

13.000 € Maintenance Costs
+ 2.000 € Energy-related Costs
15.000 € Investment Costs

5.000 € Funding

Funding is rated in "Subsidies-EU"
www.subsidies-in-your-country.eu
(Status as of 24.11.2022)

Step 2 2025



6.2

Step 4 2050

SRI Class D



The following Modules are available

- Energy Demand Module
- Investment Cost Module
- Indoor Environment Quality (IEQ) Module
- Smart Readiness Indicator (SRI) Module
- Measured Energy Performance Indicator (MEPI) Module

Acum 2023

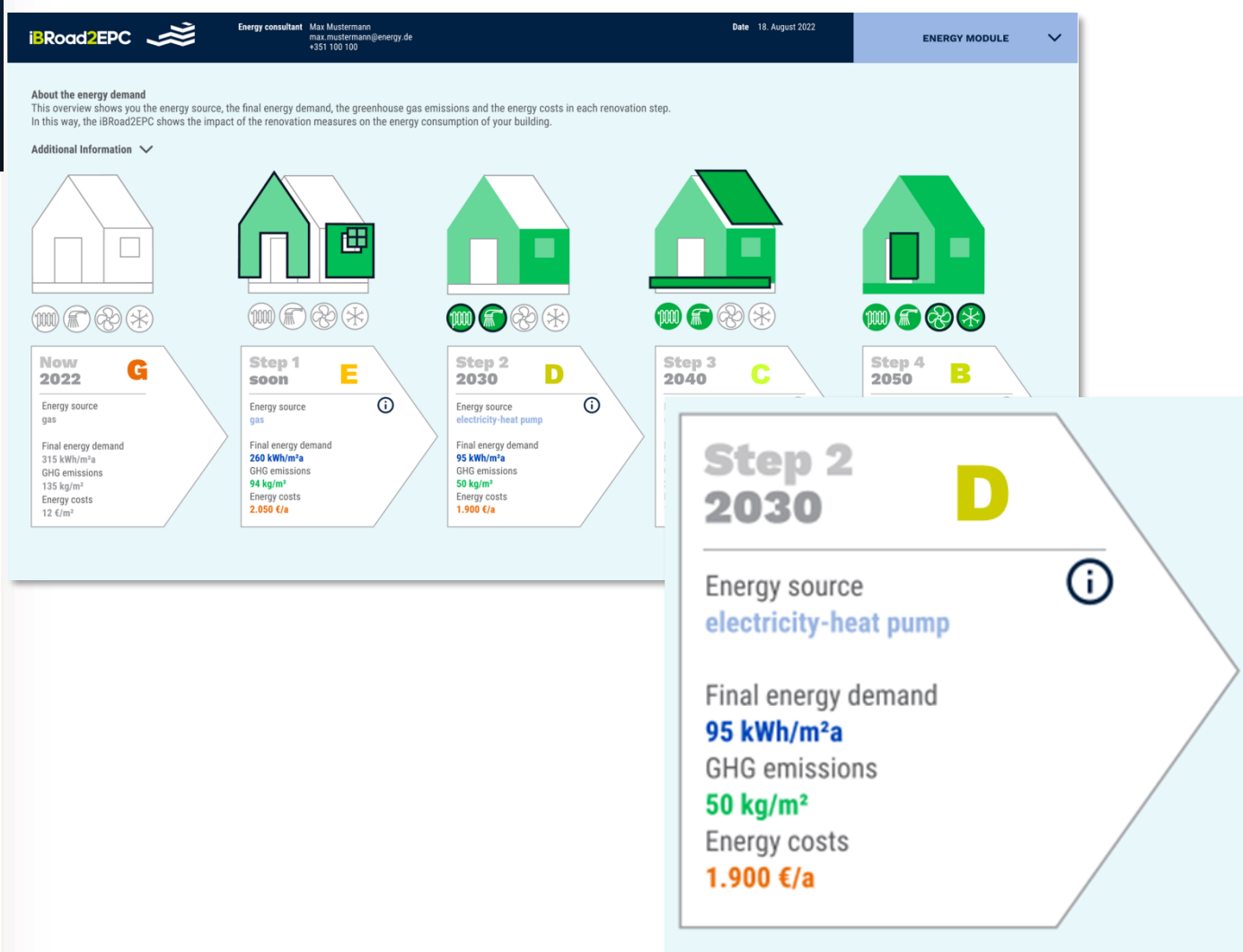
F

Punctaj MEPI ?

Încălzirea spațiilor	27
Apă caldă menajeră	13
Răcirea spațiului	0
Altele	2
Producția de energie electrică	6
Energie electrică exportată	4



iBRoad2EPC Assistant for Issuers Energy Demand Module



The Energy Demand Module adds the following information for each renovation step to the iBRoad2EPC:

- Final energy demand
- efficiency class
- greenhouse gas emissions
- energy costs



iBRoad2EPC Assistant for Issuers Energy Demand Module

Project: p test: edit step for ASAP

Target year

✓ **Asap**

Energy

Energy sources

1. Gas

+ -

Final energy demand

153 kWh/m²a

GHG emissions

39 kg/m²

Current energy class

E

A+

A

B

B-

C

D

Energy costs

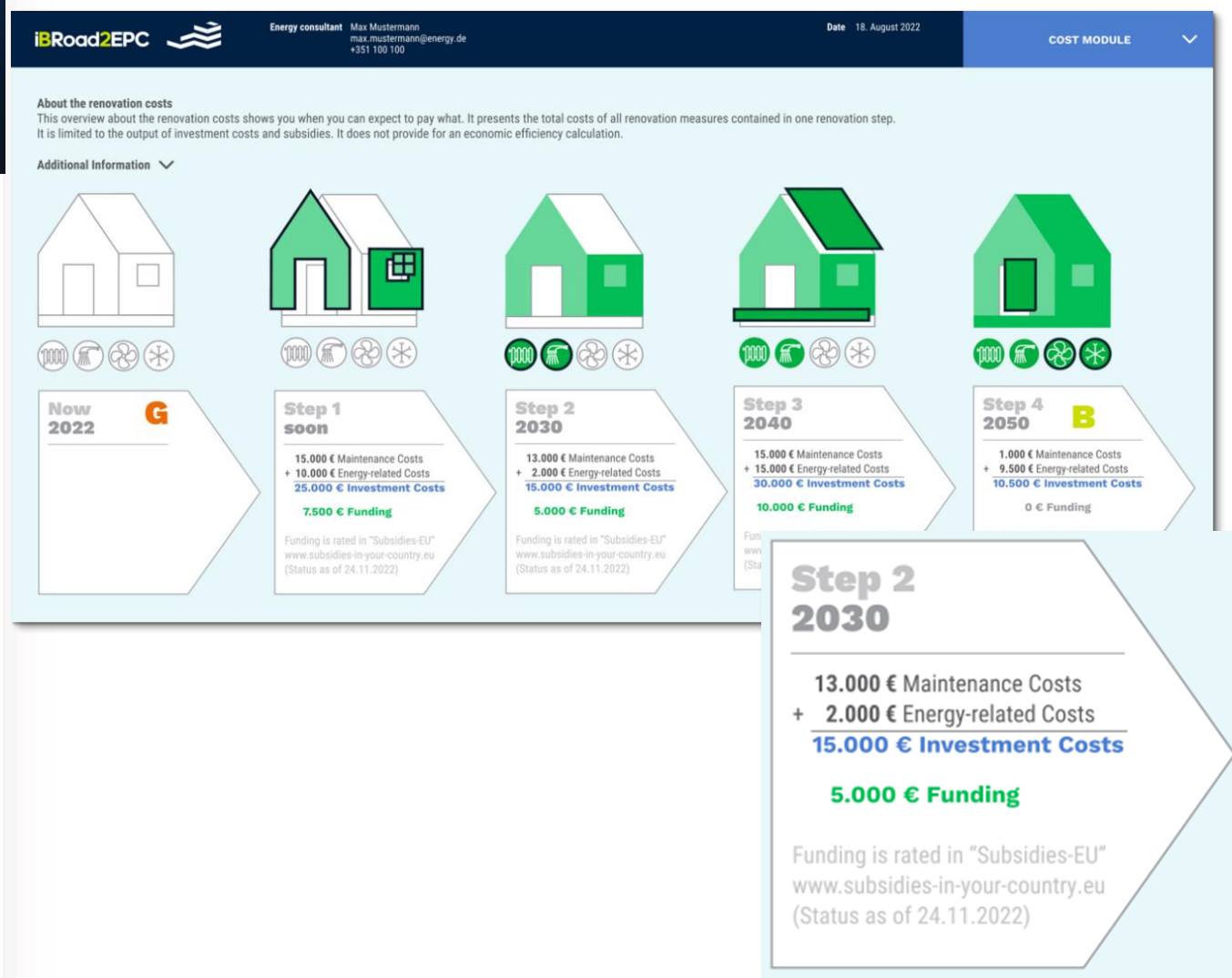
3000 €

Submit

When the Energy Demand Module is active it adds an input field to the iBRoad2EPC Assistant.

It allows you to enter energy features for every renovation step.

iBRoad2EPC Assistant for Issuers Investment Cost Module



The Investment Cost Module allows for the display of renovation costs in iBRoad2EPC. The following cost types can be presented:

- Total investment costs
- Maintenance costs
- Energy-related additional costs
- Funding

iBRoad2EPC Assistant for Issuers Investment Cost Module

Project: p test: edit step for ASAP

Target year

☒ **Asap**

Renovation step costs

Maintenance costs

10000

€

Energy related costs

5000

€

Funding

2000

€

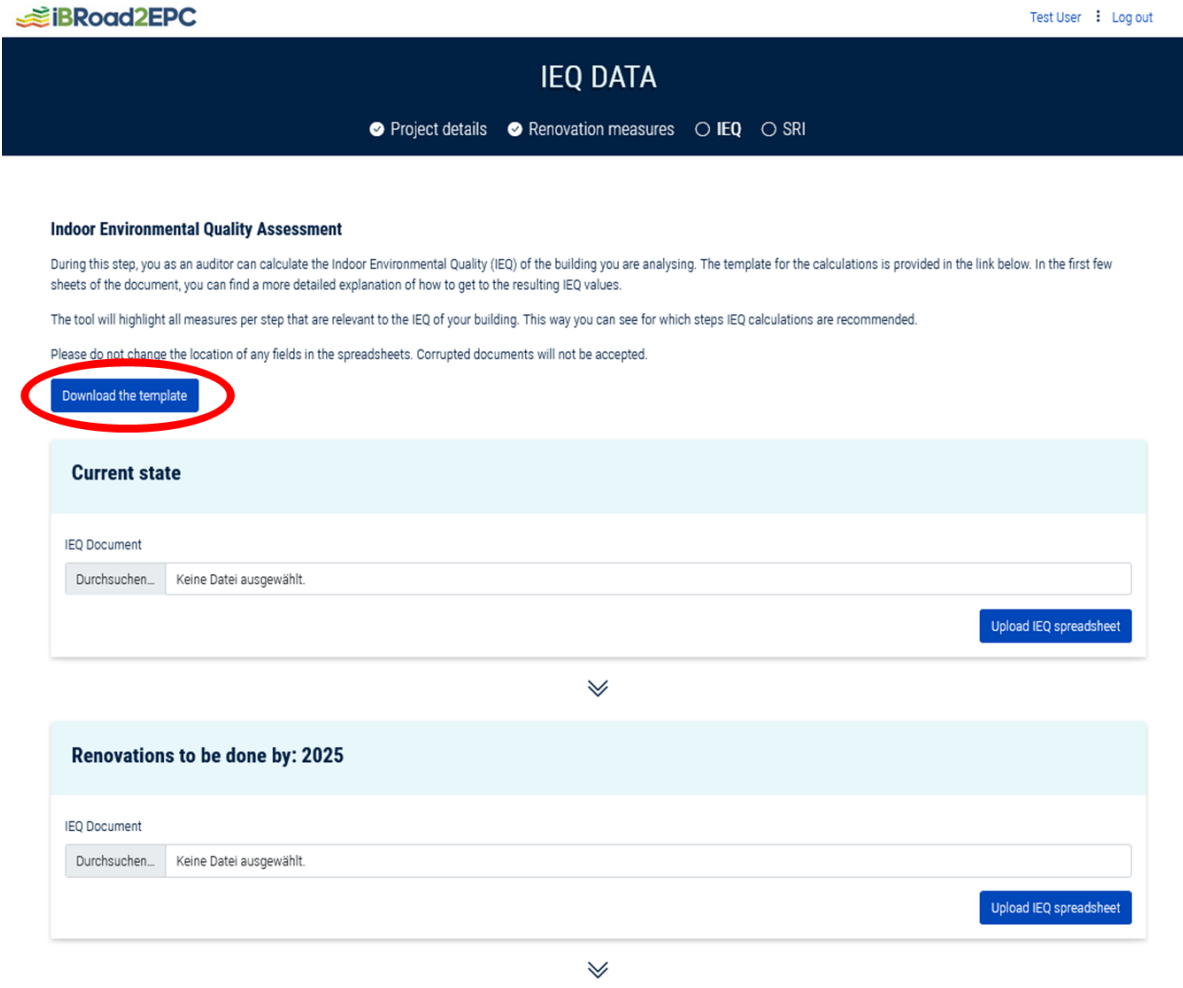
Submit

When the Investment Cost Module is active it adds an input field to the iBRoad2EPC Assistant. It allows you to enter cost data for every renovation step.

- Total investment costs**
The total cost of all renovation measures included in a renovation step.
- Maintenance costs**
Part of the total costs that has to be spent anyway for the maintenance of the building.
- Energy-related additional costs**
Part of the total cost that arises only from the energy improvement.
- Funding**
The presentation of the funding mainly refers to grant subsidies not subsidised loans.

iBRoad2EPC Assistant for Issuers

Indoor Environmental Quality (IEQ) Module



The screenshot shows the 'IEQ DATA' section of the iBRoad2EPC interface. At the top, there are tabs for 'Project details', 'Renovation measures', 'IEQ' (which is selected), and 'SRI'. Below the tabs, the 'Indoor Environmental Quality Assessment' section is displayed. It contains a paragraph explaining the purpose of the step, a note about highlighting relevant measures, and a warning not to change field locations in spreadsheets. A blue button labeled 'Download the template' is circled in red. Below this, there are two sections: 'Current state' and 'Renovations to be done by: 2025'. Each section has an 'IEQ Document' input field with a search button and an 'Upload IEQ spreadsheet' button. The interface is clean and professional, with a dark blue header and light blue accents.

The IEQ Module allows issuers to evaluate the indoor environmental quality of a building. The main determinants of IEQ are

- indoor air quality
- thermal comfort
- lighting
- Acoustics

If the IEQ Module is implemented in a country, the corresponding input mask opens automatically after the definition of the renovation measures is completed. At the top left of the page is a link to download the excel tool (button "download the template").

iBRoad2EPC Assistant for Issuers Indoor Environmental Quality (IEQ) Module

Guideline IEQ by x-tendo



eXTENDING the energy performance assessment and
certification schemes via a mOdular approach

Comfort Asset Rating Procedure (CARP)

User-guide

Version 1.0

2022

This document describes Comfort Asset Rating Procedure (CARP)

Dated 21.04.2022.

This version is applicable to new and existing residential buildings, schools and offices that are
unoccupied.



This project has received funding from the European Union's Horizon 2020 research
and innovation programme under grant agreement No 847056.

Use the x-tendo Guideline to
create IEQ

	A	B	C	D	F	G	H	I	K	L	M
1											
2		Factors responsible for under-heating					Factors that reduce under-heating				
3											
4		Geography					Location				
5		Country		Poland							
6		Climatic zone	Climate zone	Climate zone V			The outdoor ambient temperatures in urban areas are generally higher than the rural areas.		City		
7											
8		Site characteristics					Site characteristics				
9		Mutual shading of glazed areas from trees/buildings in winter	Shading from neighbouring trees and buildings reduce solar gains from solar exposed E/W/S surfaces.	No			Barriers within 10m of the building against average wind direction at the site are effective in reducing heat loss through fabric and air leakage.		No		
10											
11		Building characteristics					Building characteristics				
12			Existing buildings before and after renovation would have significant difference in indoor comfort levels due to insulation against thermal discomfort and are primary components of heat loss in the fabric of buildings.								
13		Insulation (wall/roof/floor)		Walls+Roof+Floor			Thermal mass stores heat during the day and releases in the night keeping the building warm. Central heating systems are more effective than localised heating as it provides heating to the whole building.		Light		
14		Windows		Single					No		
15											
16		Heat loss					Heat gain				
17		Age of the building	Age of the building is a determinant of the degradation of the envelope and its capacity to provide air-tightness.	Post 2010							
18											
21		Under-heating probability									
22		Medium									

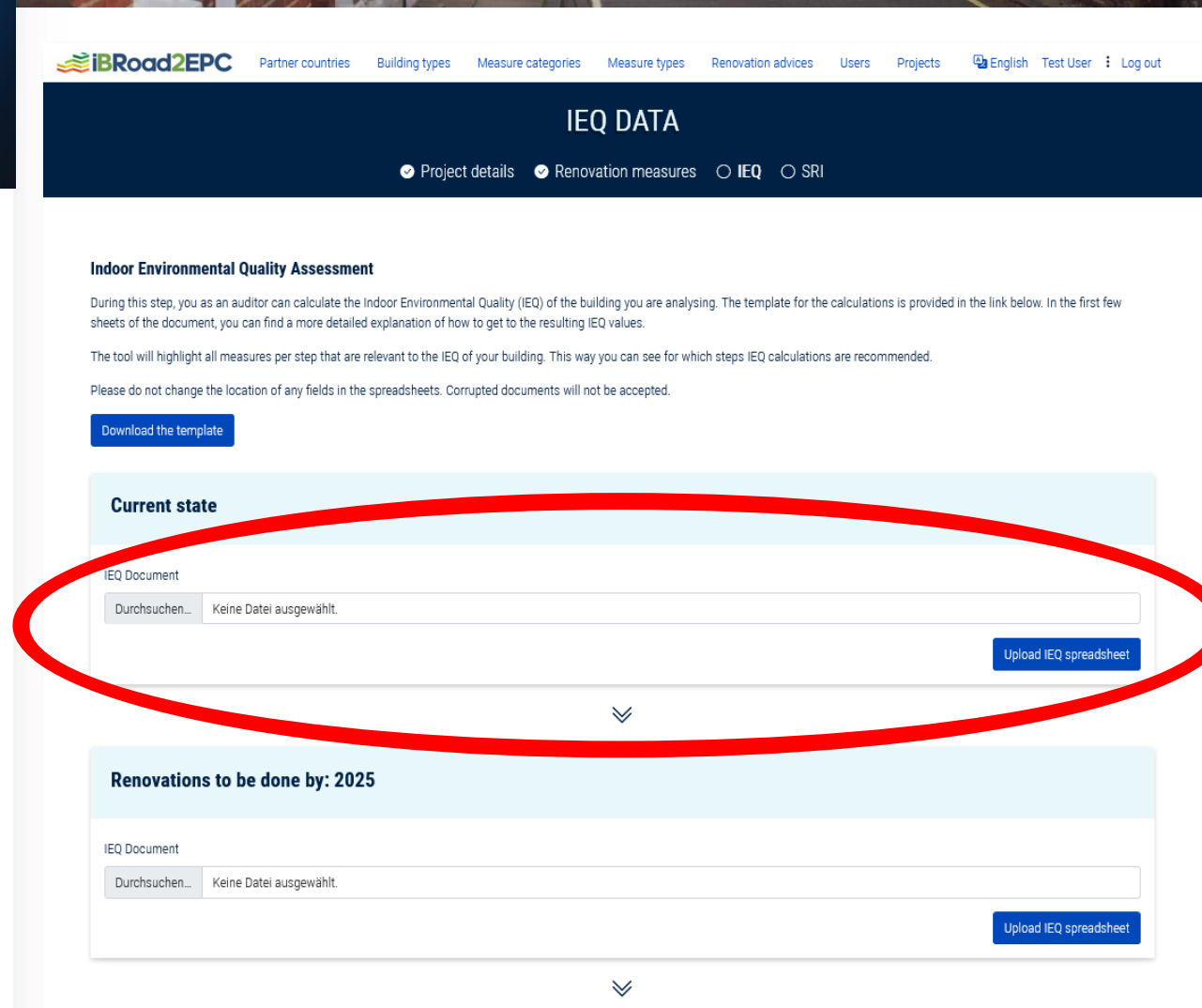
Dropdown

Dropdown

All other tabs work according to the same structure. After all sheets have been filled in, IEQ is calculated.

iBRoad2EPC Assistant for Issuers

Indoor Environmental Quality (IEQ) Module



IEQ DATA

Project details Renovation measures **IEQ** SRI

Indoor Environmental Quality Assessment

During this step, you as an auditor can calculate the Indoor Environmental Quality (IEQ) of the building you are analysing. The template for the calculations is provided in the link below. In the first few sheets of the document, you can find a more detailed explanation of how to get to the resulting IEQ values.

The tool will highlight all measures per step that are relevant to the IEQ of your building. This way you can see for which steps IEQ calculations are recommended.

Please do not change the location of any fields in the spreadsheets. Corrupted documents will not be accepted.

[Download the template](#)

Current state

IEQ Document

Durchsuchen... Keine Datei ausgewählt.

[Upload IEQ spreadsheet](#)

Renovations to be done by: 2025

IEQ Document

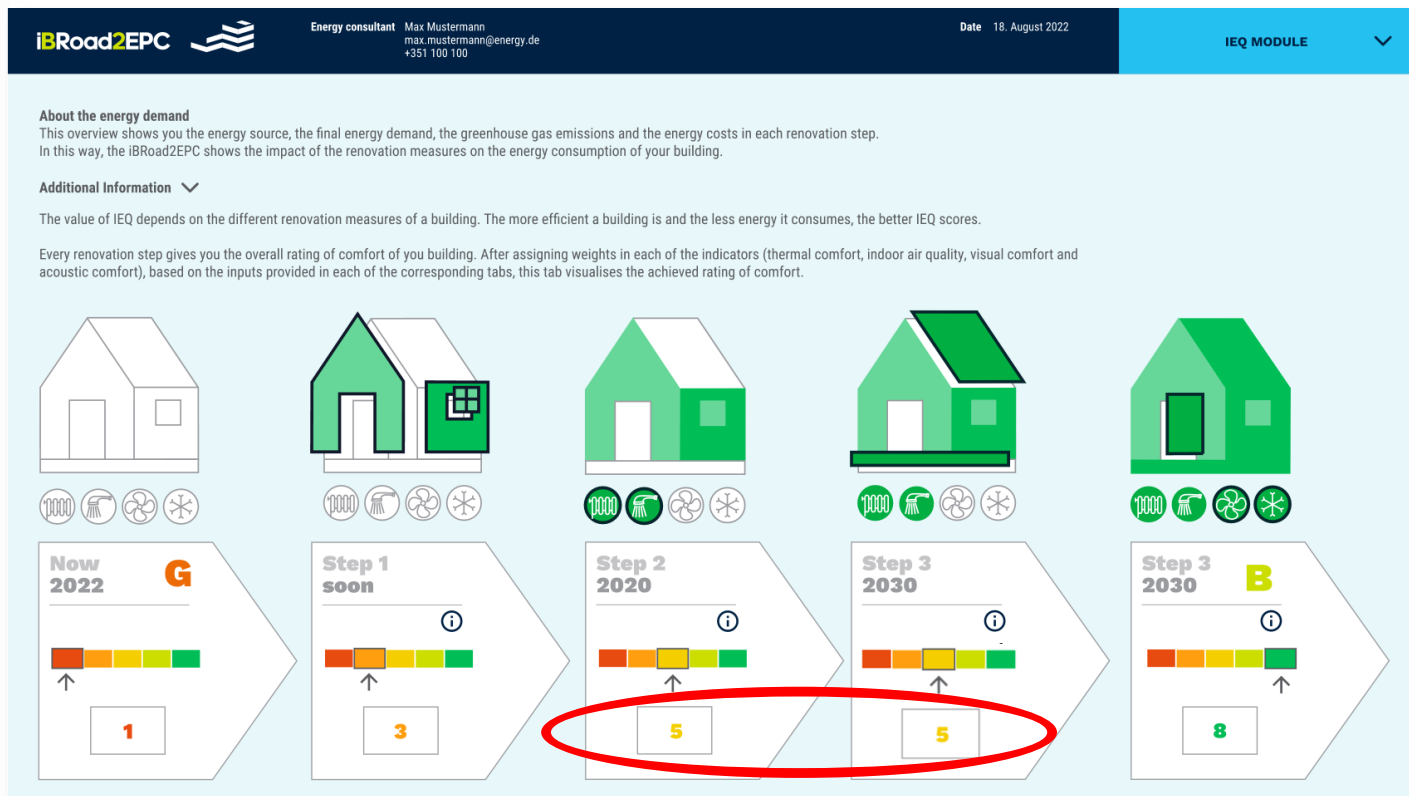
Durchsuchen... Keine Datei ausgewählt.

[Upload IEQ spreadsheet](#)

The IEQ is first calculated for the current state of the building. The completed excel-file can then be uploaded in the "current state" field. Issuers can browse their computer and select the appropriate excel file. Clicking the button "upload IQE spreadsheet" will submit the file.

The Assistant checks the plausibility and completeness of the spreadsheet and imports the IEQ result. Based on the provided inputs, the IEQ output page visualises the achieved rating of comfort after assigning weights to each of the indicators.

iBRoad2EPC Assistant for Issuers Indoor Environmental Quality (IEQ) Module

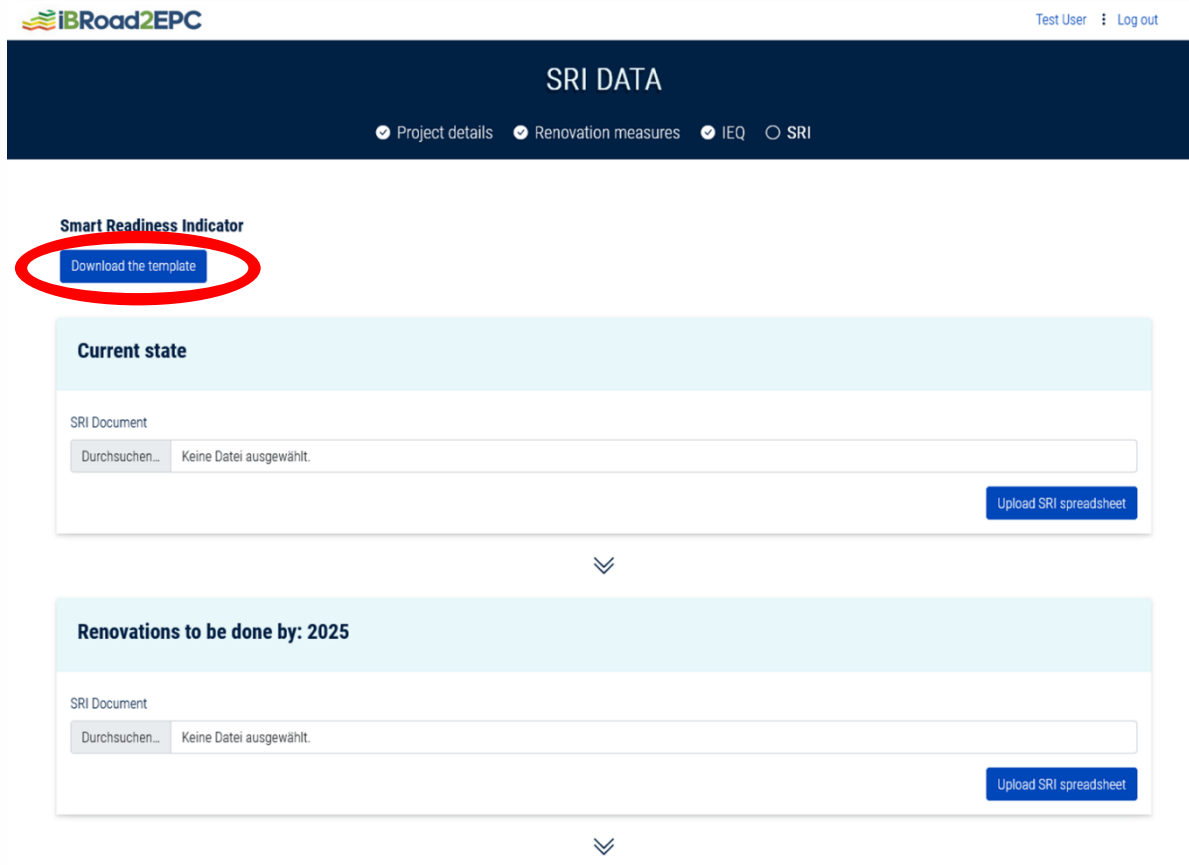


If measures are planned in the following renovation steps that affect the IEQ, the calculation has to be repeated for these steps and a new excel-file is uploaded in the corresponding step.

If no measures that affect the IEQ are planned in a renovation step (e.g. new heat generator), no new IEQ calculation needs to be performed for this step.

In such steps, the IEQ value from the previous step is automatically adopted.

iBRoad2EPC Assistant for Issuers Smart Readiness Indicator (SRI) Module



iBRoad2EPC Test User : Log out

SRI DATA

Project details Renovation measures **IEQ** SRI

Smart Readiness Indicator

[Download the template](#)

Current state

SRI Document

Durchsuchen... Keine Datei ausgewählt.

Upload SRI spreadsheet

Renovations to be done by: 2025

SRI Document

Durchsuchen... Keine Datei ausgewählt.

Upload SRI spreadsheet

The SRI rates the readiness of buildings in performing three key functionalities:

- to optimise energy efficiency and overall in-use performance
- to adapt their operation to the needs of the occupant
- to adapt to signals from the grid (for example, energy flexibility)

If the SRI Module is implemented in a country, the corresponding input mask opens automatically after the definition of the renovation measures is completed. At the top left of the page is a link to download the excel tool (button "download the template").

Smart Readiness Indicator (SRI) Module Calculation sheet

Guideline SRI by the EU commission



Smart Readiness Indicator (SRI)

**ASSESSMENT PACKAGE:
PRACTICAL GUIDE SRI
CALCULATION FRAMEWORK v 4.5**

Authors: Yixiao Ma, Stijn Verbeke, Christina Protopapadaki (VITO)
Sophie Dourlens-Quaranta (R2M Solution)

Date: April 2023



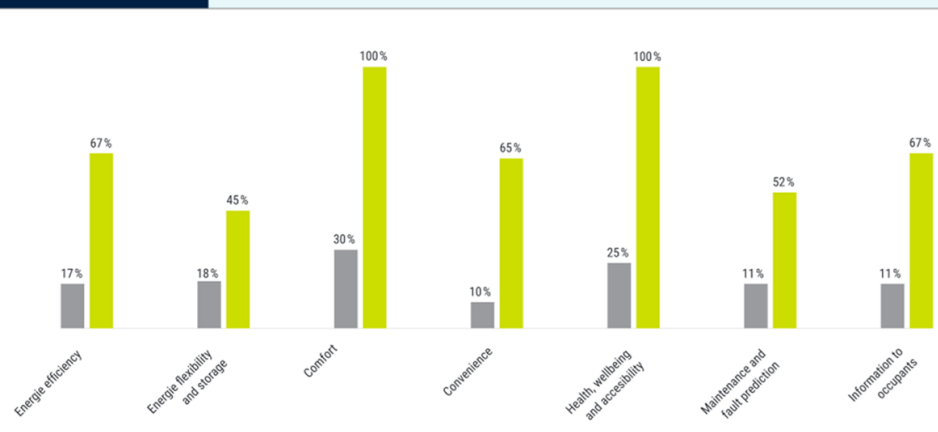
Background information is in the
SRI Guideline

INFO	Terms and conditions	Building Information	LINK	Calculation	Results	Weightings
------	----------------------	----------------------	------	-------------	---------	------------

If you wish, you can change the weighting here



iBRoad2EPC visualisation Smart Readiness Indicator (SRI) Module

Total SRI score **Now
2022****SRI Class E** **Step 4
2050****SRI Class D** **Impact scores** **Additional information**

The basic structure of the methodology is a flexible and modular multi-criteria assessment method which builds on assessing the smart ready services present in a building. Services are enabled by (a combination of) smart ready technologies, but are defined in a technology neutral way. The proposed calculation methodology is structured amongst 9 technical domains (heating, domestic hot water, cooling, ventilation, lighting, dynamic building envelope, electricity, electric vehicle charging, monitoring and control) and 7 impact criteria (energy efficiency, energy flexibility and storage, comfort, convenience, health, well-being and accessibility, maintenance and fault prediction, information to occupants).

For each of the services several functionality levels are defined. A higher functionality level reflects a "smarter" implementation of the service, which generally provides more beneficial impacts to building users or to the grid compared to services implemented at a lower functionality level.

The smart readiness score of a building or building unit is expressed as a percentage which represents the ratio between the smart readiness of the building compared to the maximum smart readiness that it could reach. By calculating and weighting the intermediate scores at domain and impact level the final single score will be assessed.

Various types of results are displayed in the tables

Total SRI score:

the total SRI score, taking into account domain weightings and impact weightings.

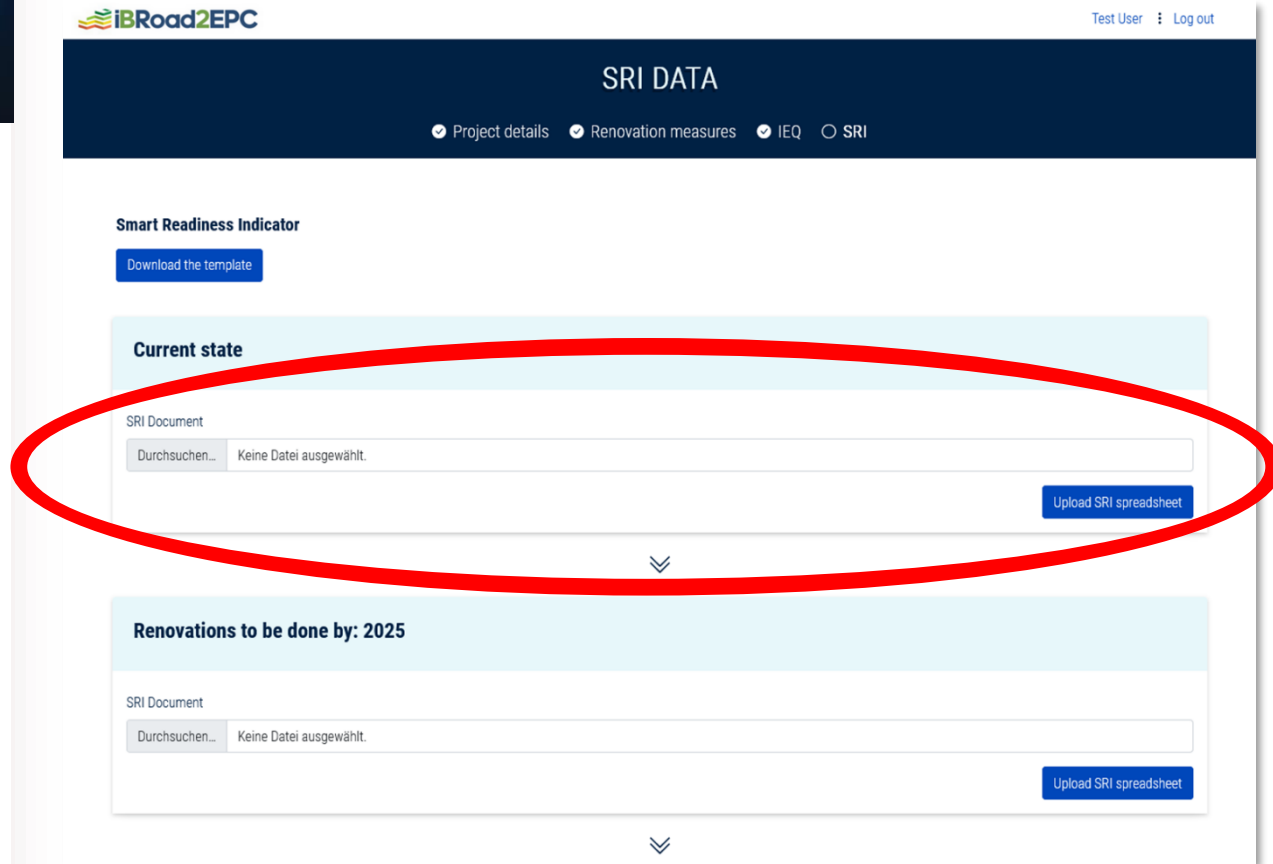
Impact scores:

the impact scores for each impact criterion, taking into account domain weightings.

Domain scores:

the domain scores for each domain, taking into account impact weightings.

iBRoad2EPC Assistant for Issuers Smart Readiness Indicator (SRI) Module



iBRoad2EPC Test User : Log out

SRI DATA

Project details Renovation measures **IEQ** SRI

Smart Readiness Indicator

Download the template

Current state

SRI Document

Durchsuchen... Keine Datei ausgewählt.

Upload SRI spreadsheet

Renovations to be done by: 2025

SRI Document

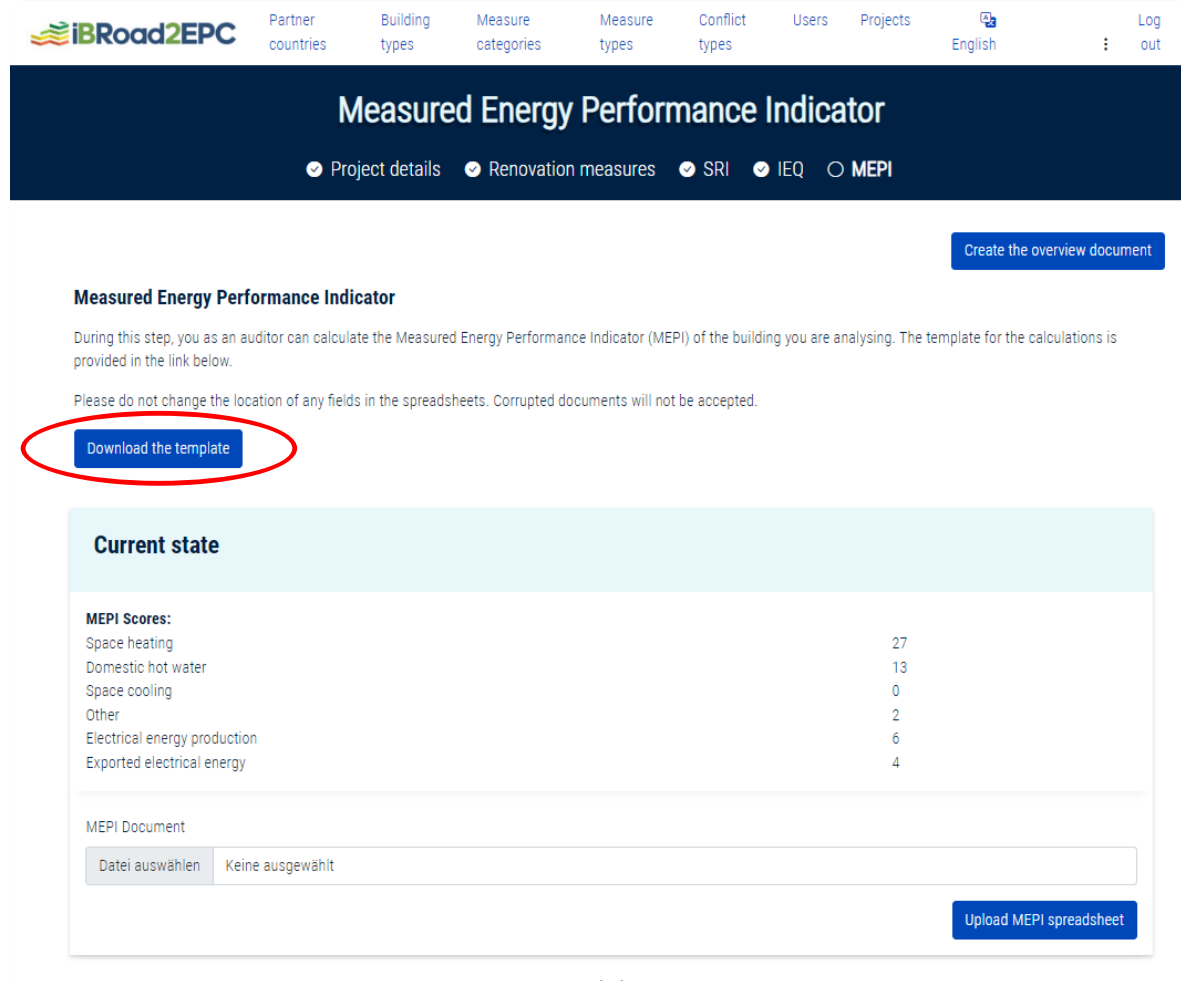
Durchsuchen... Keine Datei ausgewählt.

Upload SRI spreadsheet

The excel file with the completed calculations can be uploaded to the iBRoad2EPC Assistant. Here the results for the SRI are automatically extracted, checked, and inserted into the output format of the iBRoad2EPC SRI Module.

This should be done first for the current state of the building. Second, the issuer should check for every renovation step whether the package of measures is expected to result in a change in any of the input variables for the SRI calculation. Third, the issuer should carry out the SRI calculation for those renovation steps with a possible change of the SRI input variables and upload the spreadsheets.

iBRoad2EPC Assistant for Issuers Measured Energy Performance Indicator (MEPI) Module



The screenshot shows the iBRoad2EPC Assistant for Issuers interface. The top navigation bar includes links for Partner countries, Building types, Measure categories, Measure types, Conflict types, Users, Projects, English, and Log out. The main header is "Measured Energy Performance Indicator" with tabs for Project details, Renovation measures, SRI, IEQ, and MEPI (selected). A button "Create the overview document" is visible. Below the header, the "Measured Energy Performance Indicator" section contains instructions and a "Download the template" button, which is circled in red. The "Current state" section displays MEPI Scores for various energy carriers and an "MEPI Document" section with a file selection button and an "Upload MEPI spreadsheet" button.

MEPI Scores:	
Space heating	27
Domestic hot water	13
Space cooling	0
Other	2
Electrical energy production	6
Exported electrical energy	4

MEPI Document	
Datei auswählen	Keine ausgewählt

The MEPI Module allows issuers to evaluate the measured energy performance of a building for delivered and exported per energy carrier

- Space heating
- Domestic hot water
- Space cooling
- Other
- Electrical energy production

If the MEPI Module is implemented in a country, the corresponding input mask opens automatically after the definition of the renovation measures is completed. At the top left of the page is a link to download the excel tool (button "download the template").

iBRoad2EPC Assistant for Issuers Measured Energy Performance Indicator (MEPI) Module

Guideline Real energy consumption by x-tendo



eXTENDING the energy performance assessment and
certification schemes via a mOdular approach

Feature 4

Real energy consumption

Guidelines

April 2022

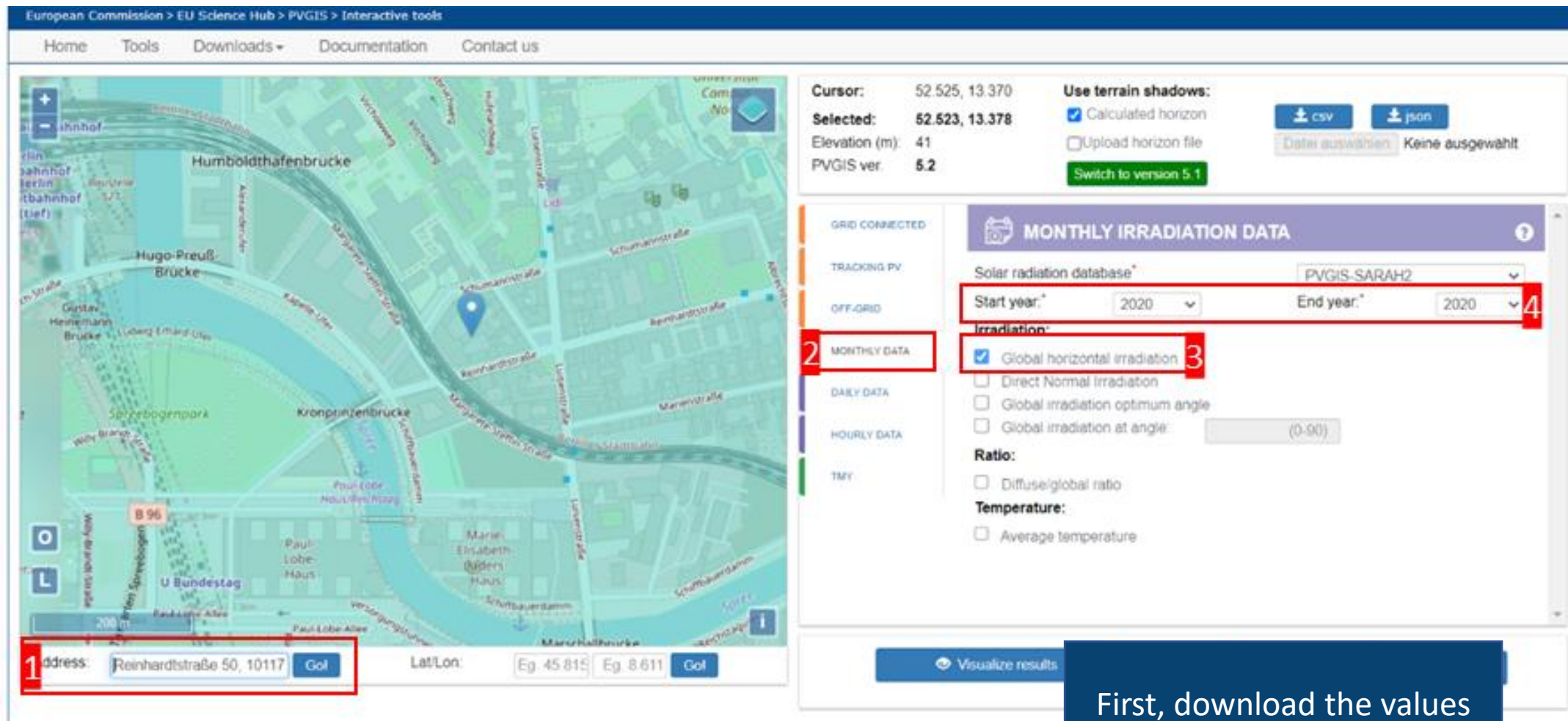


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 845958.

Use the x-tendo Guideline to
create the MEPI

European Commission > EU Science Hub > PVGIS > Interactive tools

Home Tools Downloads Documentation Contact us



1 address: Reinhardtstraße 50, 10117 **Go!** Lat/Lon: Eg. 45.815 Eg. 8.611 **Go!**

Cursor: 52.525, 13.370
Selected: 52.523, 13.378
Elevation (m): 41
PVGIS ver: 5.2

Use terrain shadows:
☒ Calculated horizon
☐ Upload horizon file
[Download CSV](#) [Download JSON](#)
[Daten auswählen](#) Keine ausgewählt

[Switch to version 5.1](#)

2 GRID CONNECTED
TRACKING PV
OFF-GRID
MONTHLY DATA
DAILY DATA
HOURLY DATA
TMY

MONTHLY IRRADIATION DATA

Solar radiation database* PVGIS-SARAH2

Start year* 2020 End year* 2020 **4**

Irradiation:
☒ Global horizontal irradiation **3**
☐ Direct Normal Irradiation
☐ Global irradiation optimum angle
☐ Global irradiation at angle: (0-90)

Ratio:
☐ Diffuse/global ratio

Temperature:
☐ Average temperature

[Visualize results](#)

First, download the values for the global horizontal solar irradiation specific to the address of the building

Measured energy performance indicator: input data

See document "F4_Guidelines" for more information on the method and guidance on how to obtain the required input.

Input

General input

Building	Name	[~]	House
	Identifier	[~]	43210
	Address line 1	[~]	Streetname Postbox n°
	Address line 2	[~]	Postal code City name
	Address line 3	[~]	Country name
	Year of construction	[YYYY]	1945
	Year of renovation	[YYYY]	2011
	Country	[~]	Belgium
	Region	[~]	Flemish region
	Type of building	[~]	Residential
	Subtype of building	[~]	Single-family houses
	Number of residential units in multi-family house	[~]	3
Building users	Building useful floor area	[m²]	180
	Actual number	[~]	4
EPC Practitioner	Name	[~]	John Doe
	Identifier	[~]	01234
	Contact information	[~]	Contact information

Choices related to options in the methodology

Options	Apply correction for solar irradiation (optional)?	[~]	Yes
	Apply correction for domestic hot water energy (optional)?	[~]	Yes
	Total system efficiency of DHW is known?	[~]	Yes
	Total system efficiency of DHW parameter?	[~]	Fixed value
	Apply correction for Indoor temperature (optional)?	[~]	Yes

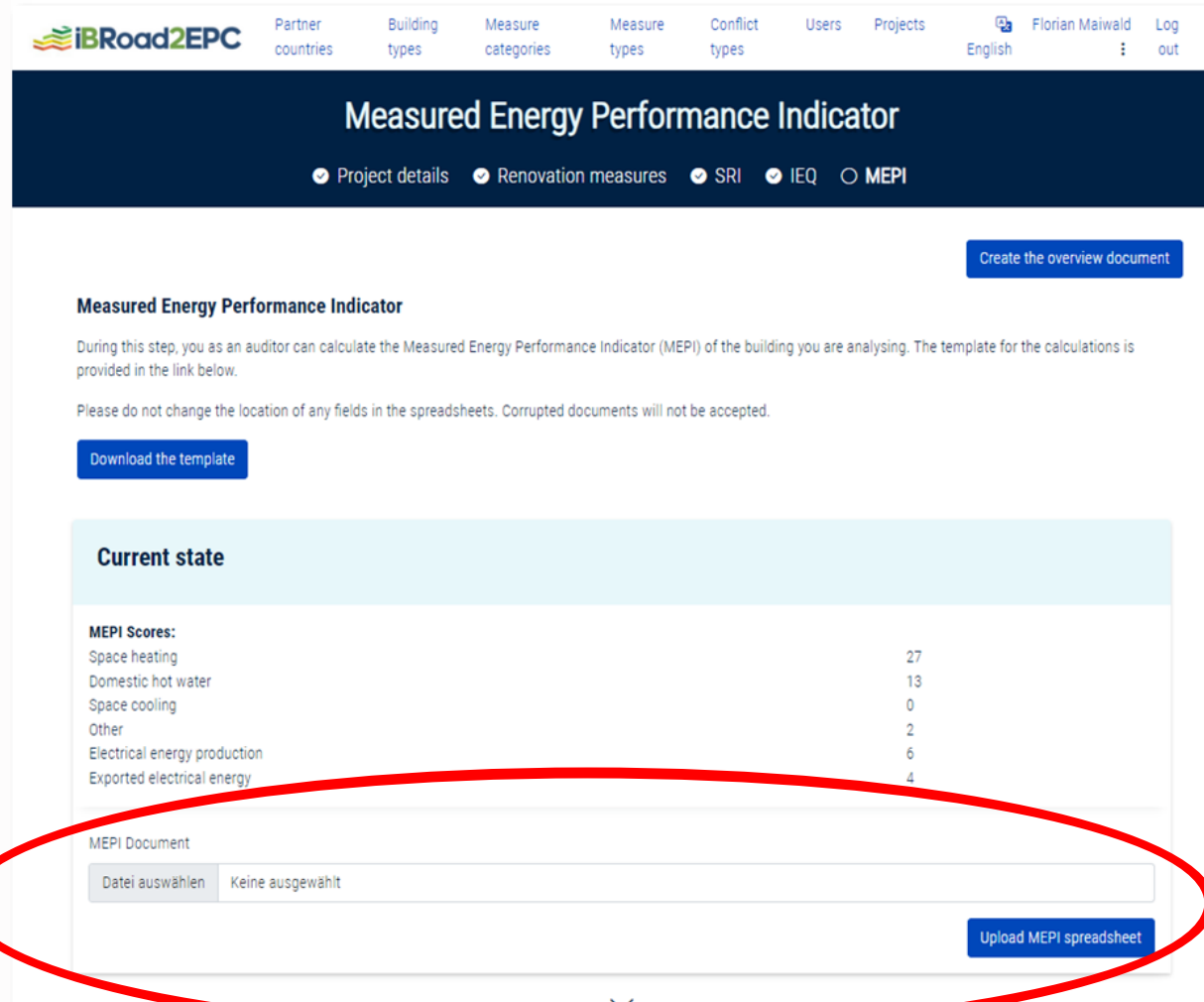
Input values

Energy carriers

		Energy carrier	Fuel	Fuel	Fuel for CHP	Electrical energy	District heating	District cooling	Electrical energy produced by CHP	Electrical energy from on-site	Solar thermal	Environment
Energy carrier subtype 1	[~]	Solid	Liquid	Gaseous								
Energy carrier subtype 2	[~]	Bio	Bio	Fossil								
Technology	[~]			CHP						PV		
Perimeter	[~]	Delivered from distant					Delivered from nearby		*	Delivered from on-site		
Monitoring period												
Start date	[dd/mm/yyyy]	15.11.2019	15.11.2019	15.11.2019	15.11.2019	15.11.2019			15.11.2019	15.11.2019	15.11.2019	15.11.2019
End date	[dd/mm/yyyy]	#####	#####	#####	#####	#####			#####	#####	#####	#####
Remarks on input (if any)	[~]	At least one of the set of start date & end date does not comply to the required specifications. See F4 Guidelines.										
Monitored energy												
Delivered for space heating	[kWh]	520	820	756	987	380	0	180	200	230	305	
Delivered for Domestic hot water	[kWh]	1200	2440	110	943	254	0	50	130	24	298	
Delivered for Space cooling	[kWh]	0	0	0	50	0	0	0	26	0	100	
Delivered for Other	[kWh]	20	10	36	57	10	0	150	35	28	8	
Delivered for Electrical energy production	[kWh]			1043								
Exported electrical energy	[kWh]								489	200		
Domestic hot water (optional)												
System efficiency												
Total system efficiency for DHW	[~]	0.68										
Linear model coefficient a	[~]	1.2										
Linear model coefficient b	[~]	32										
Indoor temperature (optional)												
Average actual Ti during heating season	[°C]	18.6										

Enter all required data.
Make sure, to enter the correct values for the measured energy.
Check your available data for the correct metering-scope!

iBRoad2EPC Assistant for Issuers Measured Energy Performance Indicator (MEPI) Module



Measured Energy Performance Indicator

Project details Renovation measures SRI IEQ MEPI

Create the overview document

Measured Energy Performance Indicator

During this step, you as an auditor can calculate the Measured Energy Performance Indicator (MEPI) of the building you are analysing. The template for the calculations is provided in the link below.

Please do not change the location of any fields in the spreadsheets. Corrupted documents will not be accepted.

Download the template

Current state

MEPI Scores:	
Space heating	27
Domestic hot water	13
Space cooling	0
Other	2
Electrical energy production	6
Exported electrical energy	4

MEPI Document

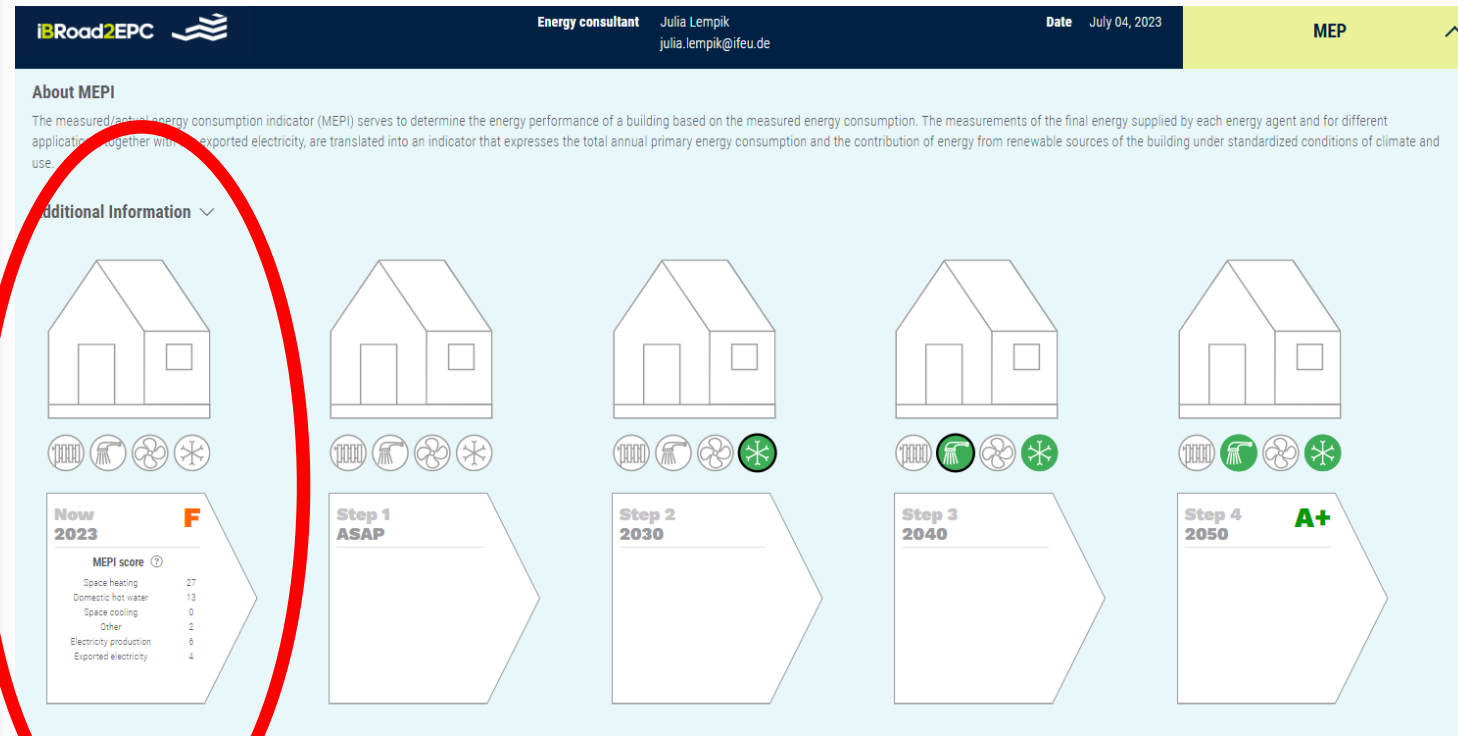
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Upload MEPI spreadsheet

The MEPI can **only** be calculated for the **current state of the building**. The completed excel-file can then be uploaded in the "current state" field. Issuers can browse their computer and select the appropriate excel file. Clicking the button "upload MEPI spreadsheet" will submit the file.

The Assistant checks the plausibility and completeness of the spreadsheet and imports the MEPI result. Based on the provided inputs, the MEPI output page shows the indicators that provide information about the real energy consumption.

iBRoad2EPC Assistant for Issuers Measured Energy Performance Indicator (MEPI) Module



The MEPI only provides information about the current building state. They can't be calculated for the future.



iBRoad2EPC visualisation

User Influence

User Influence

Even your behaviour influences energy use. Here are some pointers to lower your total energy use.

Reduce room temperature

Every degree less room temperature saves around 6 % of heating energy.

Usually 20 to 22 C° is sufficient in living rooms, 18 to 20 C° in the kitchen, 23 C° in the bathroom and 16 to 18 C° in the bedroom.

Short and intensive ventilation:

Tilted windows hardly provide fresh air, but they cool walls and rooms down.

Correct intensive ventilation should be provided 2 to 3 times a day for about 4 to 5 minutes, with open windows and doors in all rooms. This ensures the necessary air exchange.

Keep radiators free:

Prevent furniture, curtains and curtains in front of radiators so the heat can spread evenly throughout the room.

Keep blinds and curtains closed

Keep blinds and curtains closed at night to prevent heat from escaping on cold nights.

Automatic regulation

Programmable thermostats ensure more comfort and less consumption.

This allows rooms to be heated to the right temperature at the right time.

10% savings are possible.

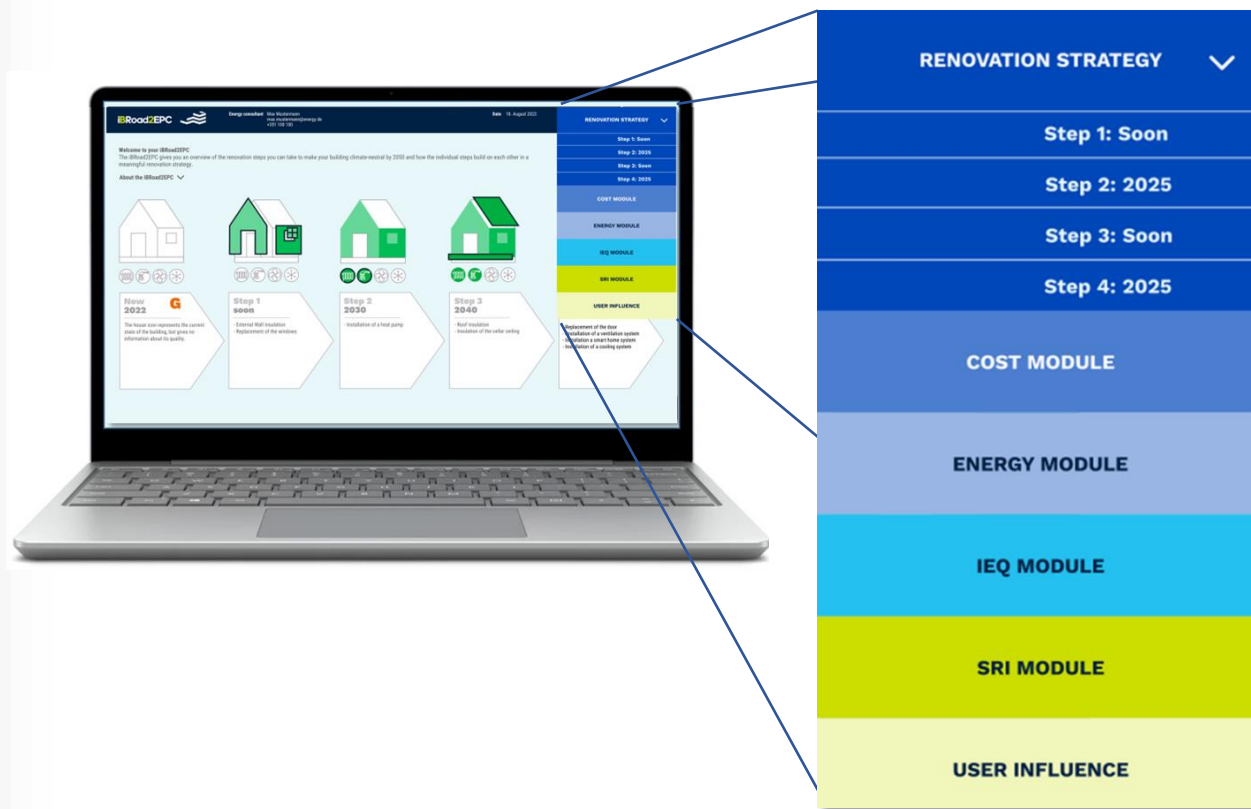
Vent radiators

If radiators chortle and do not warm up properly even though the thermostat is fully turned on, there is air in the radiator which wastes unnecessary energy.

By regular venting you save heating costs and consume less CO₂.

In iBRoad2EPC, residents receive advice for energy-saving behaviour on a separate page. The advice can be compiled individually for each country. Issuers can select the advices they want to give to building owners from a drop-down menu. Up to six advice messages can be displayed.

iBRoad2EPC Assistant for Issuers Navigation



The iBRoad2EPC output document has a tab in the upper right corner that can be used to navigate through all pages. It automatically adapts to the number of renovation steps and modules activated in a country. One can navigate to the details for the individual renovation steps by clicking on the desired step or by clicking on the respective icon. The top menu item "RENOVATION STRATEGY" takes you back to the overview page.

Stay in touch with iBRoad2EPC at
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