



iBRoad2EPC

TRAINING MODULE FOR CONSTRUCTION
PROFESSIONALS

2 - Interpret the iBRoad2EPC and the underlying documentation



This project has received funding from the European Union's HORIZON 2020 research and innovation programme
under grant agreement No 101033781

TRAINING MODULE FOR CONSTRUCTION PROFESSIONALS

2 -Interpret iBRoad2EPC



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ULO No	Autonomy and responsibility	Skills	Knowledge
2	Interpret the iBRoad2EPC and the underlying documentation	Understand and explain iBRoad2EPC and underlying documentation and recommendations incl. step-by-step recommendations with focus on achieving MEPs at the first renovation step of the staged renovation project	iBRoad2EPC and underlying documentation, energy performance certificates, building energy passports and other instruments for evaluating the energy efficiency measures and step-by-step renovation (deep understanding) Use online instruments for building renovation and building data collection

Dictionary

Energy consumption

Energy consumption - actual energy supplied to the building (purchased energy from natural gas, electricity, renewable energy, etc.)

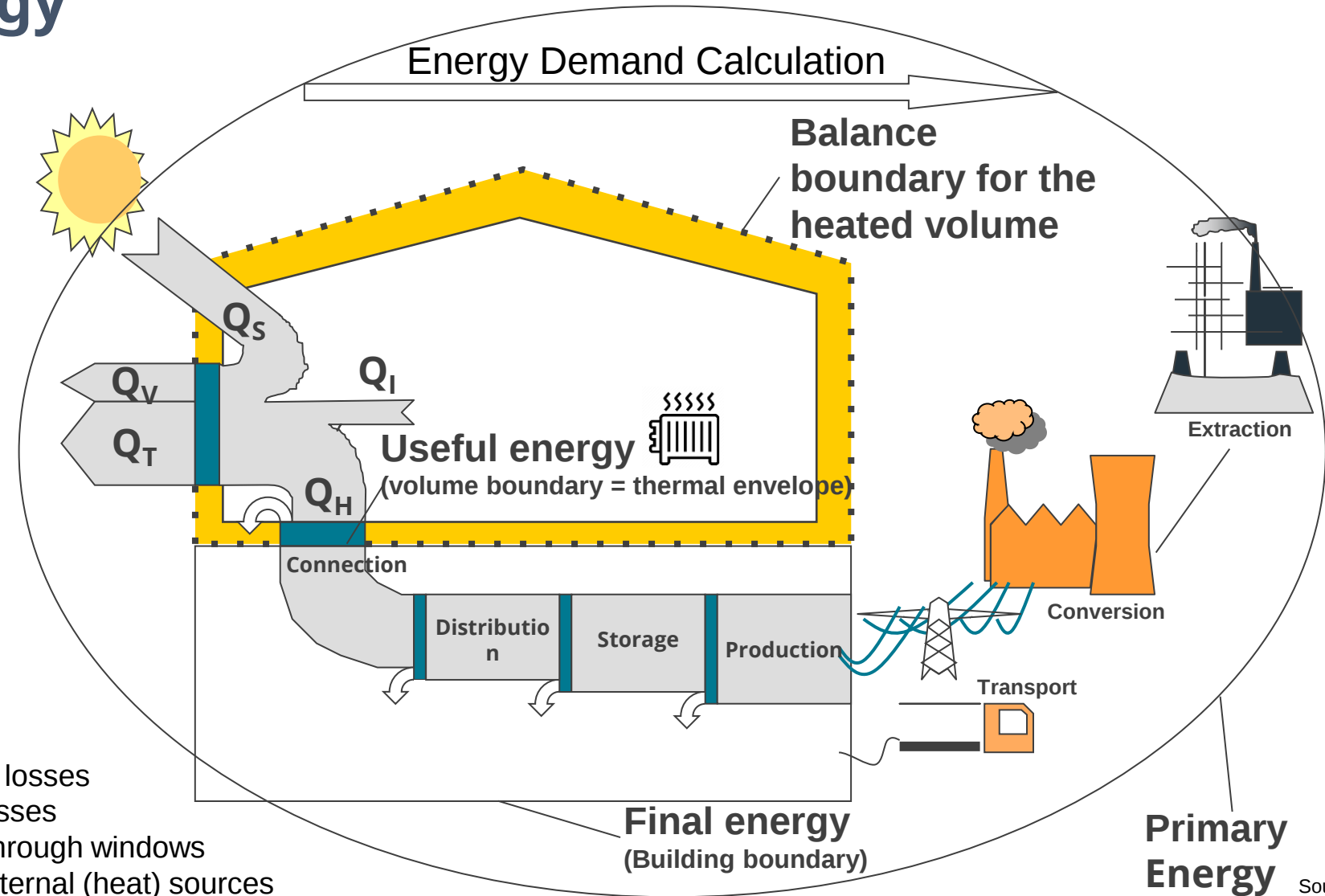
Useful energy - energy needed to cover building needs (e.g., energy delivered from the heating system to the heated area)

Final energy - calculated energy to be supplied to the building to meet the normative requirements (natural gas, electricity, renewable energy)

CO₂ emissions - carbon emissions associated with the energy used in the building

Dictionary

Primary energy

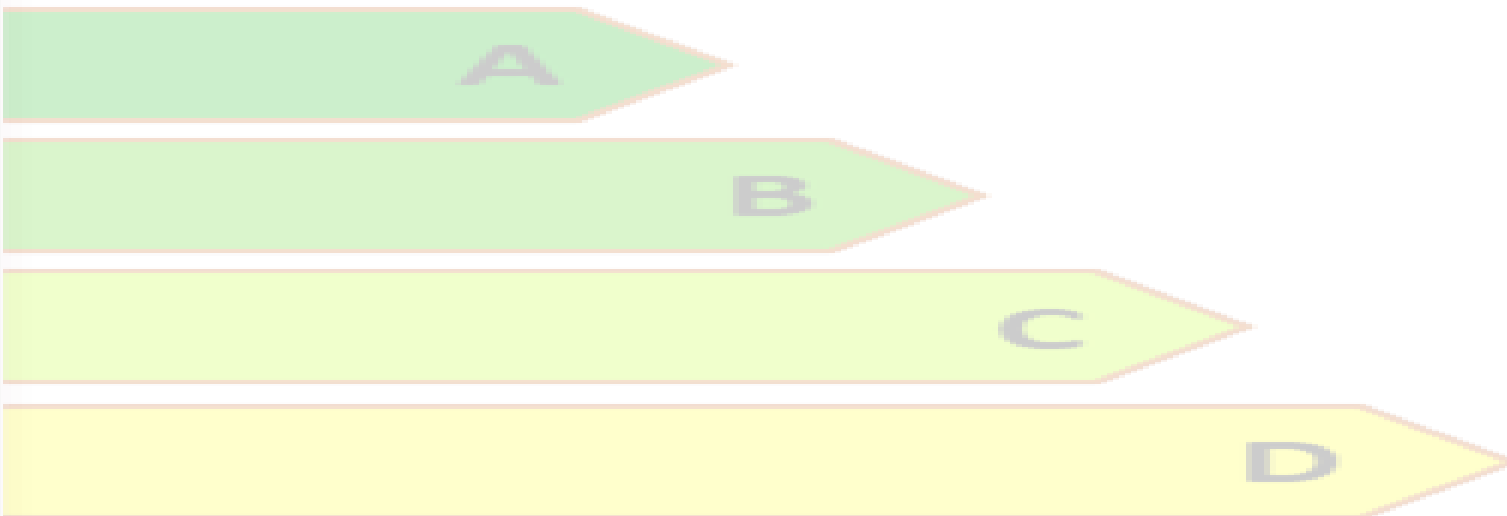


Dictionary

Measures

In some EPCs there are descriptions of measures, where the basic information you will need is:

- Investment costs;
- Saved energy;
- Payback period;



Dictionary

NZEB

General nZEB definition according to the Energy Performance of Buildings Directive (EPBD) :

Nearly zero energy building (nZEB) means a building that has a very high energy performance, while the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby.

First nZEB Principle: Energy demand

There should be a clearly defined boundary in the energy flow related to the operation of the building that defines the energy quality of the energy demand with clear guidance on how to assess corresponding values.

Second nZEB Principle: Renewable energy share

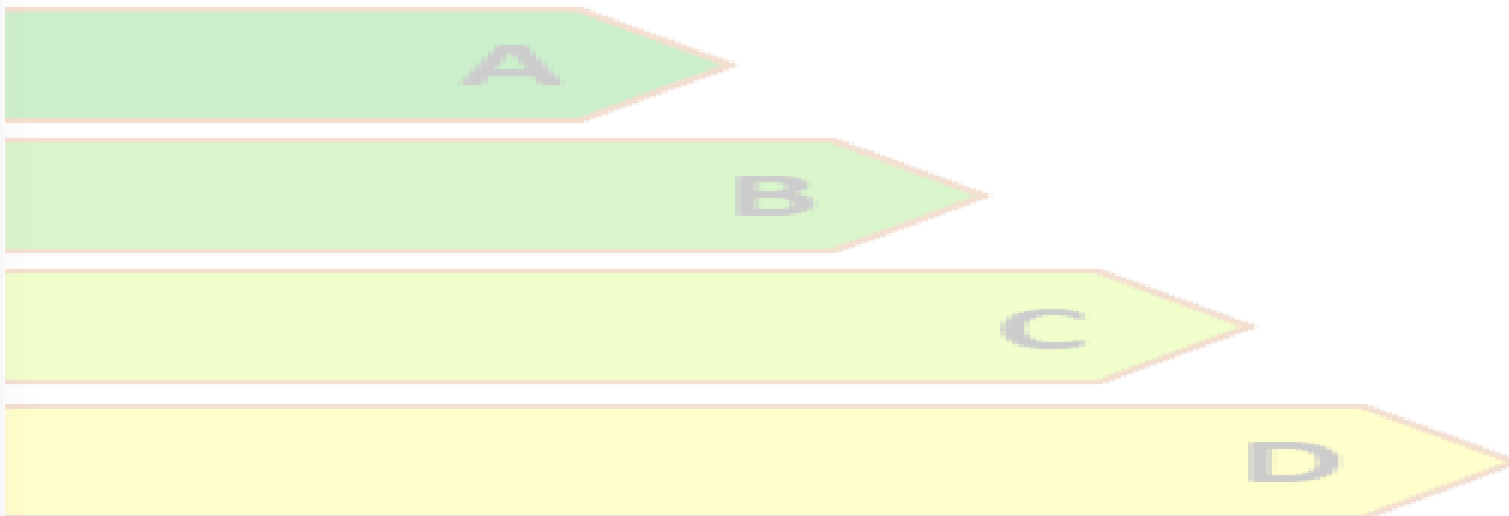
There should be a clearly defined boundary in the energy flow related to the operation of the building where the share of renewable energy is calculated or measured with clear guidance on how to assess this share.

Third nZEB Principle: Primary energy and CO₂ emissions

There should be a clearly defined boundary in the energy flow related to the operation of the building where the overarching primary energy demand and CO₂ emissions are calculated with clear guidance on how to assess these values.

Energy Performance Certificate (EPC)

An Energy Performance Certificate (EPC) is a legally valid document which provides an energy efficiency rating (displayed on an A-G scale) in relation to a property's running costs. This rating will take into account the potential energy performance of the property itself (the fabric) and its services (heating, lighting, hot water, etc).



Energy Performance Certificate

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Issuing system

- Following ORDER No. E-RD-04-2 of December 16, 2022
- Together with energy efficiency audit

Requirements

- The energy performance of the building must correspond to the minimum regulatory requirements - to achieve energy class "C" or higher.

Energy Performance Certificate

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СЕРТИФИКАТ
за енергийни характеристики на сграда в експлоатация

Номер: _____ СГРАДА С ВЛИЗКО ДО КУПАТА ПОТРЕБЛЕНИЕ НА ЕНЕРГИЯ: ДА ☐ НЕ ☐ Дел на потребната възобновяема енергия на отопление, охлаждане, вентилация, ВГТ и осветление: ... %

Валиден до: _____

Идентификатор (по смисъла на ЗКИР):

Характеристики на сградата		Нормализирано потребление на първична енергия	
		Вид енергия	Специфично kWh/m ²
Година на първоначално въвеждане в експлоатация		Първична възобновяема енергия	
Разгната застроена площ	 m ²	Първична възобновяема енергия	
Обща климатизирана площ	 m ²	Първична енергия - обща	
Общ климатизиран обем	 m ³	Изнесена възобновяема енергия	

EP _{норм} kWh/m ²	EP kWh/m ²	EP _{норм} kWh/m ²	Многофазов класификационен индекс на енергопотребление по възобновяема първична енергия	EP след ЕСМ kWh/m ²	EP след ЕСМ kWh/m ²
0	EP < 90	90	A		
90	90 ≤ EP < 180	180	B		70
180	180 ≤ EP < 235	235	C		
235	235 ≤ EP < 290	290	D		245
290	290 ≤ EP < 363	363	E		
363	363 ≤ EP < 435	435	F		
435	435 ≤ EP		G		

Потребна енергия, генерирана емисии CO₂ и дел на възобновяемата енергия

Потребна енергия е нормализирано състояние	Генерирана емисии CO ₂ е нормализирано/ базово състояние	Генерирана емисии CO ₂ след ЕСМ	Дел на първичната възобновяема енергия е нормализирано състояние	Дел на първичната възобновяема енергия след ЕСМ
..... kWh/год	 тона/год	 тона/год	 %	 %

РАЗПРЕДЕЛЕНИЕ НА ГОДИШНОТО ПОТРЕБЛЕНИЕ НА ПОТРЕБНА ЕНЕРГИЯ

Отопление	Вентилация	Охлаждане	Гореща вода	Осветление	Уреди
... %	... %	... %	... %	... %	... %

Срок на освобождаване от данък сгради по ЗМДТ
от XX.XX.XXXX г. до XX.XX.XXXX г.

Издаден на: _____

Издаден от: _____
(именно или юридическо лице) (име, функция на длъжност)

Регистрационен номер
№ / г. (общи, част)

The front (first) page of the certificate contains representative data and shows:

Class of energy consumption and value of the general integrated energy characteristic of the building "specific annual energy consumption" in kWh/m²y. at the time of the act examination;

The predicted class of energy consumption and value of the general integrated energy characteristic of the building "specific annual energy consumption" in kWh/m²y., which are expected to be achieved after the implementation of a package of energy-saving measures chosen by the contractor/owner of the building after acceptance of survey results.

And:

- the basic administrative data of the building
- the distribution of consumed energy by consumers
- various important data about energy consumption
- share of renewable energy
- verification for NZEB

Energy Performance Certificate

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СЕРТИФИКАТ

2

ЕНЕРГИЙНИ ХАРАКТЕРИСТИКИ НА СГРАДАТА				
ОГРАЖДАЩИ ЕЛЕМЕНТИ НА КОНСТРУКЦИЯТА				
Наименование	Площ	Коефициент на топлопренинаване ^[2]		
		Нормативен	Преди ECM	След ECM
-	m ²	W/m ² .K	W/m ² .K	W/m ² .K
Стени (външни)				
Прозорци (външни)				
Прозорци на покрива				
Врати (външни)				
Покрив				
Под				

ЕНЕРГИЙНИ ХАРАКТЕРИСТИКИ НА СИСТЕМИТЕ ЗА ГЕНЕРИРАНЕ НА ЕНЕРГИЯ					
1. Показатели за технологичните процеси на отопление и вентилация					
Показател	Преди ECM	След ECM	Преди ECM	След ECM	Норма ^[2]
Инсталирана мощност за отопление, kW	...	...	...	...	...
Ефективност на рекуперацията на топлина при вентилация, %			...	...	Пр.мн ≥ ... %
3. Ефективност на генератора на студ (ексклузивно термопомпа с приложение за отопление)					
Показател	Преди ECM	След ECM	Норма ^[2]		
Коефициент на трансформация при генерирането на топлина	...	...	...		
Коефициент на трансформация при генерирането на студ	...	...	...		
Сарадна система за автоматизация и управление съгласно ЗЕЕ					
4. Сарадна система за автоматизация и управление съгласно ЗЕЕ	Преди ECM	След ECM			

Издаден на

Издаден от

СЕРТИФИКАТ

3

РАЗПРЕДЕЛЕНИЕ НА ГОДИШНОТО ПОТРЕБЛЕНИЕ НА ПОТРЕБНА ЕНЕРГИЯ				
АКТУАЛНО СЪСТОЯНИЕ КЪМ МОМЕНТА НА ОБСЛЕДВАНЕТО				
Система	Енергиен ресурс	Генератор	Годишно потребление на потребна енергия	
			Специфично	Общо
Вид	Вид	Вид	kWh/m ²	kWh
Отопление			...	...
Вентилация			...	...
Охлаждане			...	...
Гореща вода			...	...
Осветление			...	...
Други - уреди, консумиращи енергия			...	...
Отопителни деградуси, DD				
Климатична зона (от 1 до 9)				
Препоръки:				
Информация относно възможностите за финансиране на ЕСМ и друга актуална информация за състоянието на енергийната ефективност в България може да бъде намерена на електронната страница на Агенция за устойчиво енергийно развитие: http://www.seea.government.bg				

Издаден на

Издаден от

Energy Performance Certificate

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СЕРТИФИКАТ

4

БАЗОВА ЛИНИЯ НА ЕНЕРГОПОТРЕБЛЕНИЕТО

ГОДИШНО РАЗПРЕДЕЛЕНИЕ НА СПЕЦИФИЧНОТО ЕНЕРГОПОТРЕБЛЕНИЕ

Издаден на

Издаден от

СЕРТИФИКАТ

5

ЕНЕРГОСПЕСТЯВАЩИ МЕРКИ И ОПОЛЗОТВОРЯВАНЕ НА ЕНЕРГИЯ ОТ ВЪЗБЪНОВЯЕМИ ИЗТОЧНИЦИ

Енергоспестяващи мерки (ЕСМ)	Инвестиции, лева	Спестена потребна енергия, kWh/год.	Спестени емисии CO ₂ , тона/год.	Срок на откупване, год.		
Мерки по елементи						
B1.....						
B2.....						
B3.....						
B4.....						
B5.....						
Мерки по системите						
C6.....						
C7.....						
C8.....						
C9.....						
C10.....						
C11.....						
C12.....						
D13.....						
D14.....						
Пакети от мерки						
P1.....						
Оползотворяване на енергия от възобновяеми източници						
Слънчева – PV електричество						
Слънчева – Термална						
Вятърна – електричество						
От околната среда: Гео-; Аеро-; Хидротермална						
ЕНЕРГОСПЕСТЯВАЩИ МЕРКИ И ОПОЛЗОТВОРЯВАНЕ НА ЕНЕРГИЯ ОТ ВИ						
ОБЩО						
Избран пакет за изпълнение от възложителя/собственика на сградата				П1		
Клас на енергопотребление след изпълнение на избрания пакет от ЕСМ						
Потребна енергия след изпълнение на ЕСМ от избрания пакет		Първична невъзобновяема енергия след изпълнение на ЕСМ от избрания пакет		Първична възобновяема енергия след изпълнение на ЕСМ от избрания пакет		Спестени Емисии CO ₂
Специфично	Общо	Специфично	Общо	Специфично	Общо	Общо
kWh/m²	kWh/год.	kWh/m²	kWh/год.	kWh/m²	kWh/год.	тона/год.
.....						

Step By Step

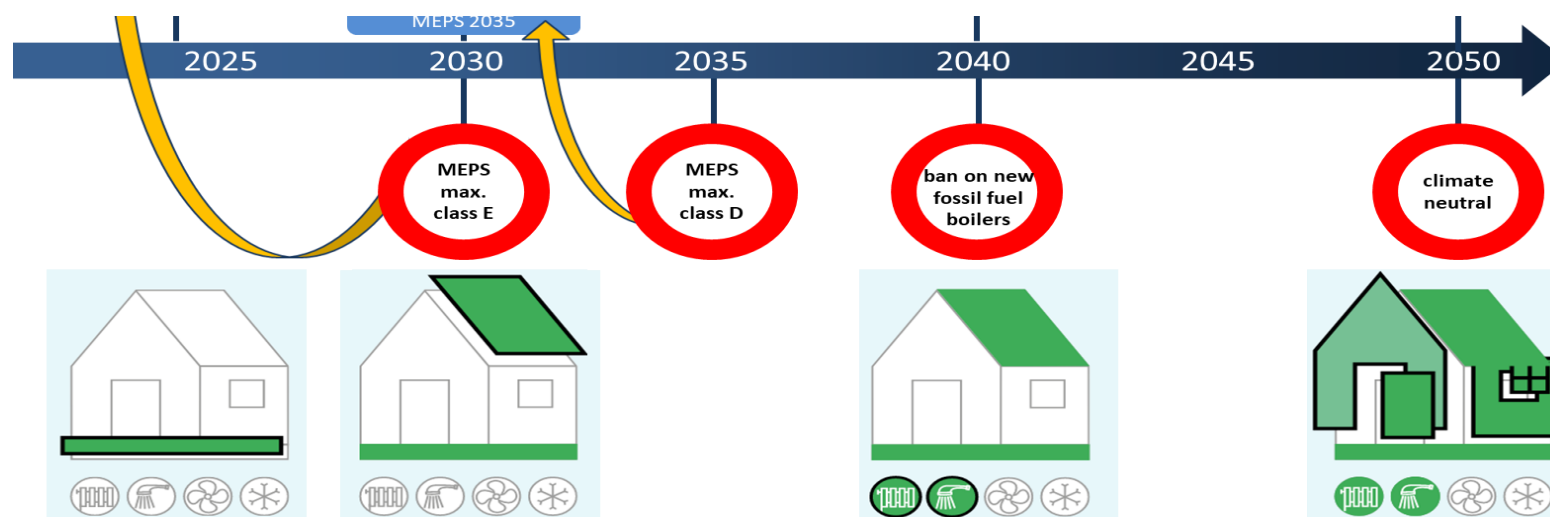
Lock-in effect

When sufficient funds cannot be allocated to renovate buildings, compromises with quality are often resorted to. For example, instead of installing insulation 15 cm thick, 5 cm is installed, or additional activities are omitted, such as sealing joints around windows or other work. Thus, the building is now completely, or sometimes partially, renovated, but with measures that do not result in sufficiently low energy consumption. These measures, once done, cannot be redone with thicker insulation or better window frames installed at least for the next 30-50 years (lifecycle of the measures). It is this effect that is called the lock-in effect.



Step By Step Concept

The step-by-step renovation concept is based on the principle of step-by-step implementation of energy efficiency measures, with each subsequent step complementing the effect of the previous one without allowing the so-called "lock-in effect".

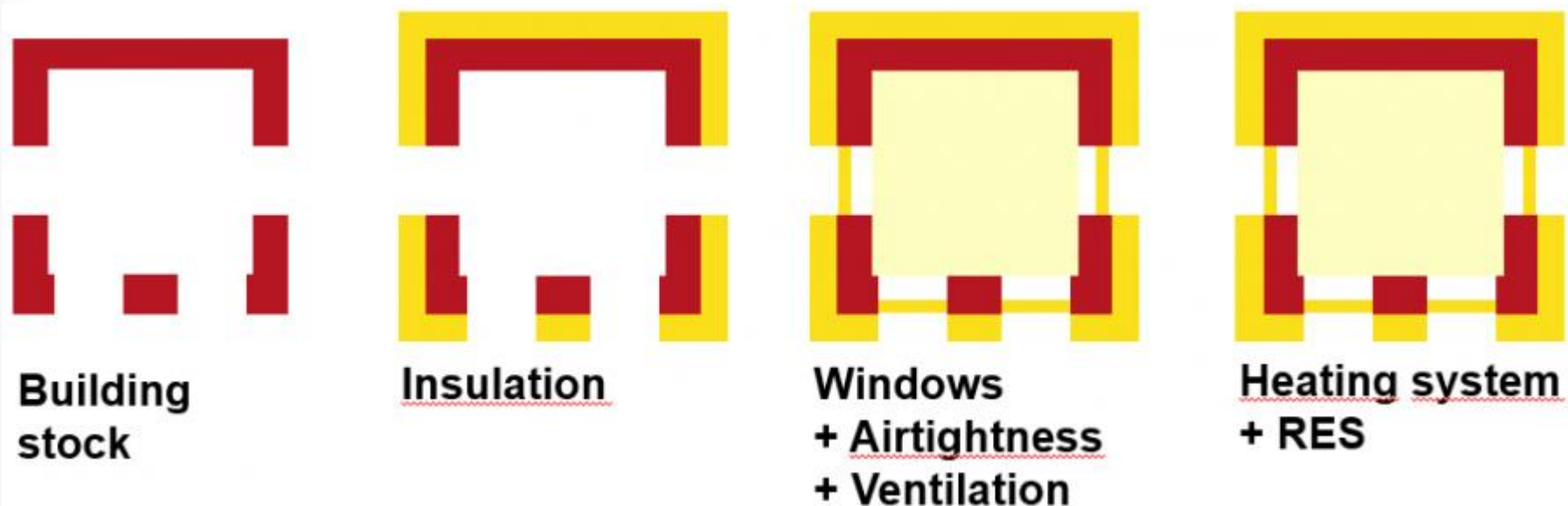


Step-by-step recommendations

In general, we can differentiate between two types of step-by-step retrofit processes:

Sequential retrofitting of building components

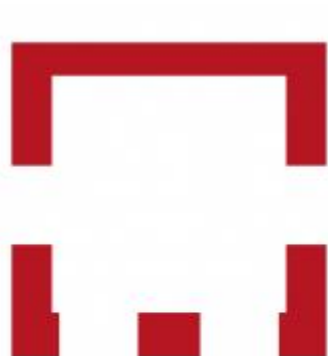
- Step 1 consists of the wall insulation;
- Step 2 – the windows will be replaced and a ventilation system is installed;
- Step 3 – the roof insulation, the heating system and other measures are implemented to finally reach NZEB Standard.



When performing a step-by-step renovation, it is very important that the activities are planned in such a way that it does not get the so-called "lock-in" effect.

Step-by-step recommendations

- **Sequential retrofitting of building parts or sections**, for example, a refurbishment of single building wings, apartments, new extensions or terraced houses.
- Even the retrofit of single sides of a building only can be envisaged.



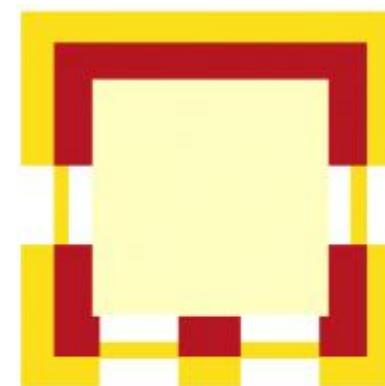
**Building
stock**



North side



**Windows
+ Airtightness
+ Ventilation**



**Remaining sides
+
RES**

Energy Efficiency Audit

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The energy efficiency audit of a building in operation:

- establishes the normalised (baseline) energy consumption of a building in its existing condition at the time of the audit;
- determines the specific possibilities for reducing the normalised energy consumption with guaranteed maintenance of the normative parameters of the microclimate
- carries out a technical and economic evaluation of the measures to increase the energy efficiency of the building.

Energy Efficiency Audit

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Subject of the audit

- identification of building enclosing structures and elements and systems for ensuring the microclimate, measurement and calculation of energy characteristics, analysis and determination of the potential for reducing energy consumption;
- ESM development;
- technical-economic assessment of the ESM and the "cost-benefit" ratio;
- assessment of the CO₂ emissions that will be saved as a result of the implementation of the ESM;
- analysis of the technical possibility and economic expediency for using energy from RES, as part of the assessment of the indicators for annual energy consumption in the building.

Energy Efficiency Audit

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The following documents are issued with the energy efficiency (EE) audit:

- EE audit report;
- summary of the EE audit- predefined template;
- certificate for energy performance of buildings (EPC)/parts of buildings in operation - according to the template;
- protocol of evaluation of the energy savings of buildings - according to the model and when commissioned by the owner;
- a report on the energy efficiency of the heating installations with water boilers - if applicable;

Building renovation tools

- Energy performance certificate (EPC);
- Energy efficiency audit;
- Design documentation;
- One Stop Shops;
- Other? (country specific)



- Building renovation passport;
- Building logbook;
- Online registries;
- iBRoad2EPC;
- Others;

Building renovation tools

The iBRoad Building Renovation Passport

	ENERGY CLASS G	ENERGY CLASS E	ENERGY CLASS D	ENERGY CLASS B	ENERGY CLASS A
	Your Building Moment of delivery	Renovation Step 1 When Boiler needs to be exchanged	Renovation Step 2 2025 - 2030	Renovation Step 3 2030 - 2035	Renovation Step 4 2035 - 2040
Measures		Measures • Add a thermal solar system	Measures • External Wall Insulation	Measures • Substitution of the old windows • Roof insulation	Measures • Installation of a heat recovery unit • Substitution of the heating system by a heating pump
Energy Use	Primary Energy Demand 250 kWh/m ² a	Primary Energy Demand 210 kWh/m ² a	Primary Energy Demand 160 kWh/m ² a	Primary Energy Demand 100 kWh/m ² a	Primary Energy Demand 100 kWh/m ² a
	Main Energy Source Natural Gas	Main Energy Source Natural Gas	Main Energy Source Natural Gas	Main Energy Source Natural Gas	Main Energy Source Electricity
	Final Energy Demand Main Source 200 kWh/m ² a	Final Energy Demand Main Source 200 kWh/m ² a	Final Energy Demand Main Source 150 kWh/m ² a	Final Energy Demand Main Source 80 kWh/m ² a	Final Energy Demand Main Source 30 kWh/m ² a
	Final Energy Demand second Source 0 kWh/m ² a	Final Energy Demand second Source 15 kWh/m ² a	Final Energy Demand second Source 15 kWh/m ² a	Final Energy Demand second Source 15 kWh/m ² a	Final Energy Demand second Source 15 kWh/m ² a
	Auxiliary Energy Source Electricity	Auxiliary Energy Source Electricity	Auxiliary Energy Source Electricity	Auxiliary Energy Source Electricity	Auxiliary Energy Source Electricity
CO ₂	Final auxiliary Energy Demand 30 kWh/m ² a	Final auxiliary Energy Demand 15 kWh/m ² a	Final auxiliary Energy Demand 15 kWh/m ² a	Final auxiliary Energy Demand 15 kWh/m ² a	Final auxiliary Energy Demand 15 kWh/m ² a
	Energy Bill 4600 €/a	Energy Bill 2300 €/a	Energy Bill 1800 €/a	Energy Bill 1100 €/a	Energy Bill 900 €/a
	Carbon Emissions 40 kg/(m ² a)	Carbon Emissions 30 kg/(m ² a)	Carbon Emissions 20 kg/(m ² a)	Carbon Emissions 10 kg/(m ² a)	Carbon Emissions 10 kg/(m ² a)
Costs		Investment Costs for Renovation Step 10000 €	Investment Costs for Renovation Step 2500 €	Investment Costs for Renovation Step 25000 €	Investment Costs for Renovation Step 26000 €
		Included Costs for Maintenance 15000 €	Included Costs for Maintenance 20000 €	Included Costs for Maintenance 40000 €	Included Costs for Maintenance 26000 €
Subsidies		Name of Incentives KWK	Name of Incentives	Name of Incentives KWK	Name of Incentives
		Incentives 5000 €	Incentives 0 €	Incentives 10000 €	Incentives 0 €
Comfort Changes		Changed Comforts	Changed Comforts	Changed Comforts	Changed Comforts

Building Renovation Passports (BRPs) are detailed prescriptions for phased building renovation.

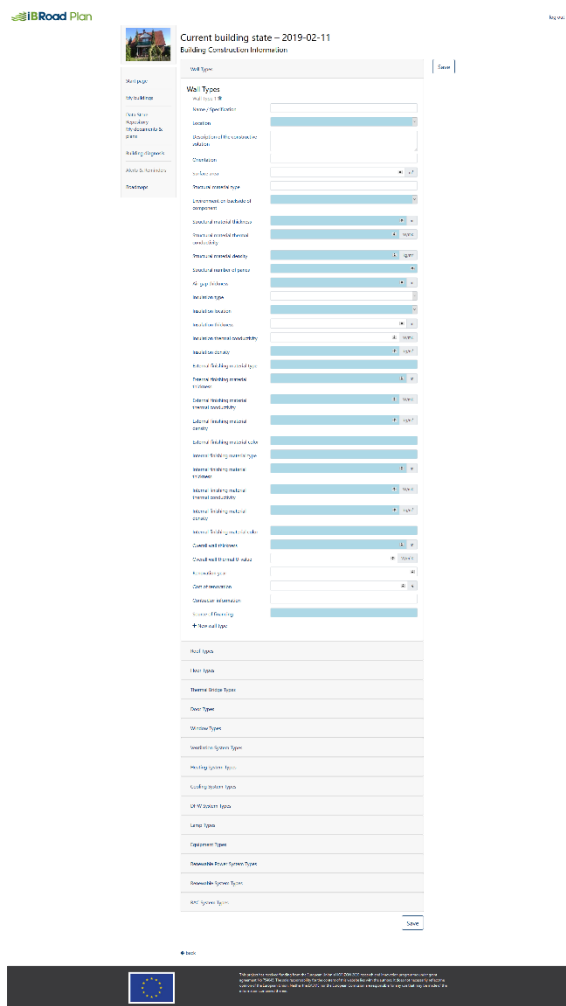
In them, the measures are recommended individually for each building after a visit by an energy auditor.

In BRP, for each step, many factors are taken into account, such as the condition of each element in the building, the remaining life of the elements in the building, the types of heating installation, etc.

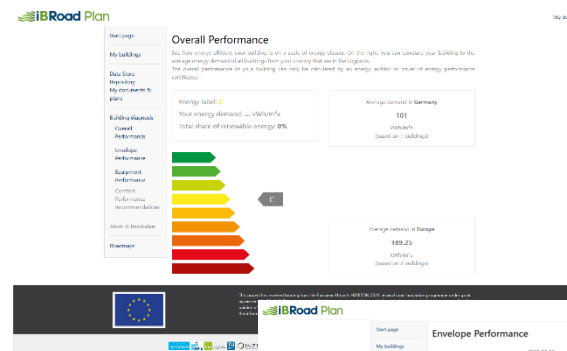
Building renovation tools

The iBRoad Building Renovation Passport

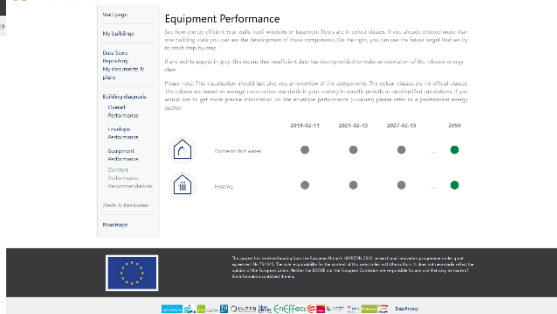
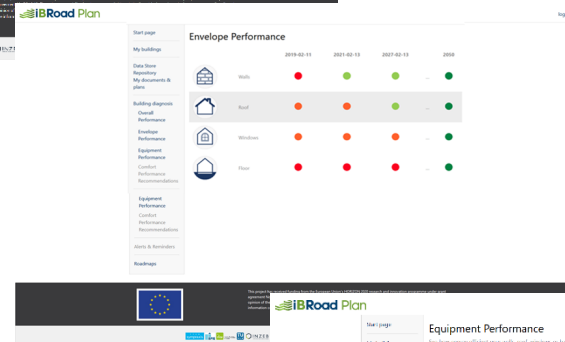
Data storage



Building performance



Envelop performance



Equipment performance

Building renovation tools

The iBRoad Building Renovation Passport



log out



Building state – 2027-02-13
Building Construction Information

Save

Start page

My buildings

Data Store

Repository

My documents & plans

Building diagnosis

Alerts & Reminders

Roadmaps

Glossary

Wall Types

Wall Types

Wall Type 1 

Name / Specification

AW W

Description of the constructive solution

Reibeputz außen, Leichtbetonsteine 30 cm, Holzfaserdämmung innen 6 cm, Lehmputz

Orientation

W

Surface area

24



m²

Structural material type

Masonry

Environment on backside of component

component against outside air



Insulation type

Wood Fibre Insulation



Insulation thickness

6



m

Insulation thermal conductivity

0,042



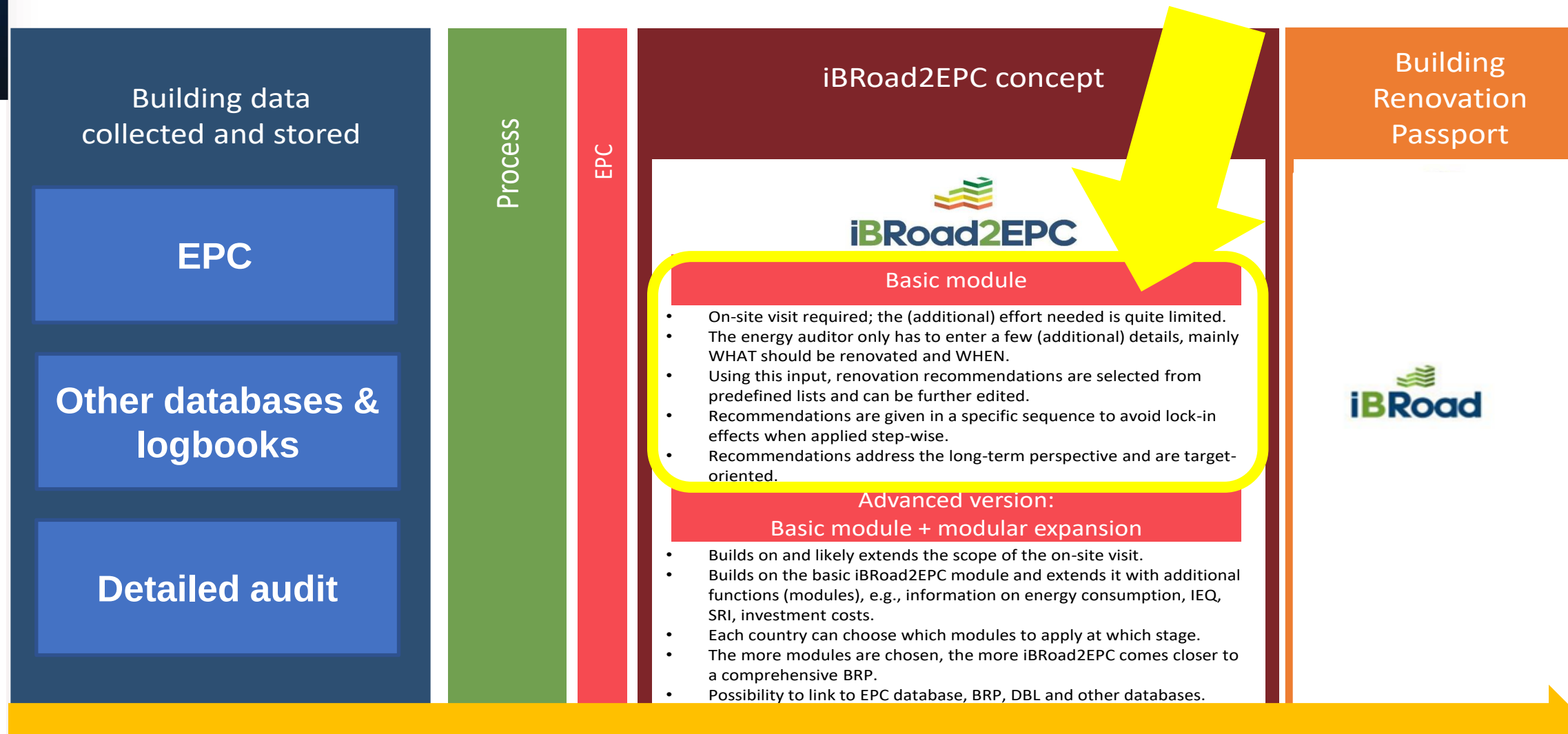
W/mK

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Building renovation tools

iBRoad2EPC



Building renovation tools

iBRoad2EPC


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PROJECT: P_TEST_04

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RENOVATION PLAN

Current state

Renovations to be done by: ASAP

Renovations to be done by: 2025

Renovations to be done by: 2030

Regulation targets

By 1 January 2022, 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 2022, 65% of residential buildings will need to have replaced all the lighting by LED and have upgraded electric equipment.

By 1 January 2022, 33% 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 electric heat pumps in place. LPS systems replaced with priority for families living in energy poverty.

Até 1 de Janeiro de 2022, 65% das necessidades de equipamento de iluminação de edifícios residenciais terão de ser asseguradas por sistemas de iluminação eficientes (porcentagem de 33% dos parques habitacionais deverão estar equipados com sistemas similares).

Renovations to be done by: 2040

Regulation targets

By 1 January 2040, residential buildings constructed prior to 2018 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.

Até 1 de Janeiro de 2040, 77% dos edifícios residenciais que não atingem a categoria II de conformidade após a introdução de medidas passivas terão de dispor de sistemas eficientes de aquecimento e arrefecimento, tal como bombas de calor elétricas. Todos os sistemas de gás a gásóleo deverão ter sido 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 electric heat pumps in place.

Até 1 de Janeiro de 2040, 75% dos edifícios residenciais terão de atingir a categoria II de conformidade após a introdução de medidas passivas e/ou produção fotovoltaica e/ou armazenamento elétrico.

By 1 January 2040, 100% of the residential building stock will have solar water heaters and/or PV electrical production and/or electrical storage.

PROJECT DETAILS

User

Test User

Environment

Urban

Building type

Residential building

Current energy class

F

Year of Construction of the Heating System

2012

Tenure status

Owner occupied

Reason for iBRoad2EPC

Owner

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

Country

Portugal

Climate zone

IT-V1

Building subtype

Multi-family building

Year of Construction of the Building

1990

Year of Construction of the Cooling System

Trigger point for iBRoad2EPC

No legal trigger

Recommendations addressed to

Building owner

Status

Submitted

Currently attached image

Currently attached EPC document

energyaudit.pdf

Issuing

In this new tool that energy auditors and EPC issuers will be able to easily guide building owners to make phased renovations.

ZEB by 2050

With this approach EPC issuers will recommend measures to make buildings carbon neutral by 2050. During the transformation over the years, the measures will be spelled out over such a period as to meet the legal requirements when they change

Building renovation tools

iBRoad2EPC

Step 2
2030

D

Energy source
electricity-heat pump



Final energy demand
95 kWh/m²a

GHG emissions
50 kg/m²

Energy costs
1.900 €/a

Triggers

Any legal change can be considered as a trigger for a building change.

so, for example, if there are obligations for every building to be Class D by 2030 then the measures made to that particular building will have to meet that target in 2030

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the energy performance of buildings (recast) March 2023 iBRoad2EPC

The main proposed updates as compared to the current directive according to European Parliament position are:

- ✓ Zero-emission buildings (ZEB) will become the standard as of 2028, as opposed to the current nearly-zero energy buildings (NZEB) norm which is implemented by member states, while new buildings occupied, operated or owned by public authorities from 2026 .
- ✓ All new buildings should be equipped with solar technologies by 2028, where feasible (2032 for residential buildings undergoing major renovation).
- ✓ Residential buildings would need to reach EPC class E by 2030, and class D by 2033. Non-residential and public buildings would have to achieve the same classes by 2027 and 2030 respectively.

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the energy performance of buildings (recast) March 2023 iBRoad2EPC

The main proposed updates as compared to the current directive according to European Parliament position are:

- ✓ A limited set of exemptions would apply to certain categories of building, including public social housing, where renovations would lead to rent increases that were not compensated by greater savings on energy bills.
- ✓ Fossil fuels in new heating systems would be totally phased out by 2035, unless the Commission allowed their installation until 2040.
- ✓ The introduction of building renovation passports with a step-by-step roadmap for buildings to achieve net zero carbon by 2050.
- ✓ A requirement for national governments to establish long-term renovation strategies to decarbonise the national building stock by 2050.

Building renovation tools

iBRoad2EPC




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Date 18. August 2022

RENOVATION STRATEGY ▼

Welcome to your iBRoad2EPC

The iBRoad2EPC gives you an overview of the renovation steps you can take to make your building climate-neutral by 2050 and how the individual steps build on each other in a meaningful renovation strategy.

About the iBRoad2EPC ▼





Now 2022 **G**

The house icon represents the current state of the building, but gives no information about its quality.





Step 1 soon

- External Wall insulation
- Replacement of the windows





Step 2 2030

- Installation of a heat pump





Step 3 2040

- Roof insulation
- Insulation of the cellar ceiling





Step 4 2050 **B**

- Replacement of the door
- Installation of a ventilation system
- Installation a smart home system
- Installation of a cooling system

Imprint

Disclaimer
Your iBRoad2EPC does not substitute detailed planning.
Here you can ask for a comprehensive energy audit: www.local-energy-agency.eu

FUNDING NOTICE
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033781



Design

On the main page of iBRoad2EPC it is easy to distinguish the measures, both visually on the images and in the description below each image.

Building renovation tools

iBRoad2EPC

Various preliminary texts are included in the tool to warn of various possible problems resulting from the connection of the measures to be implemented in different steps.

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

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

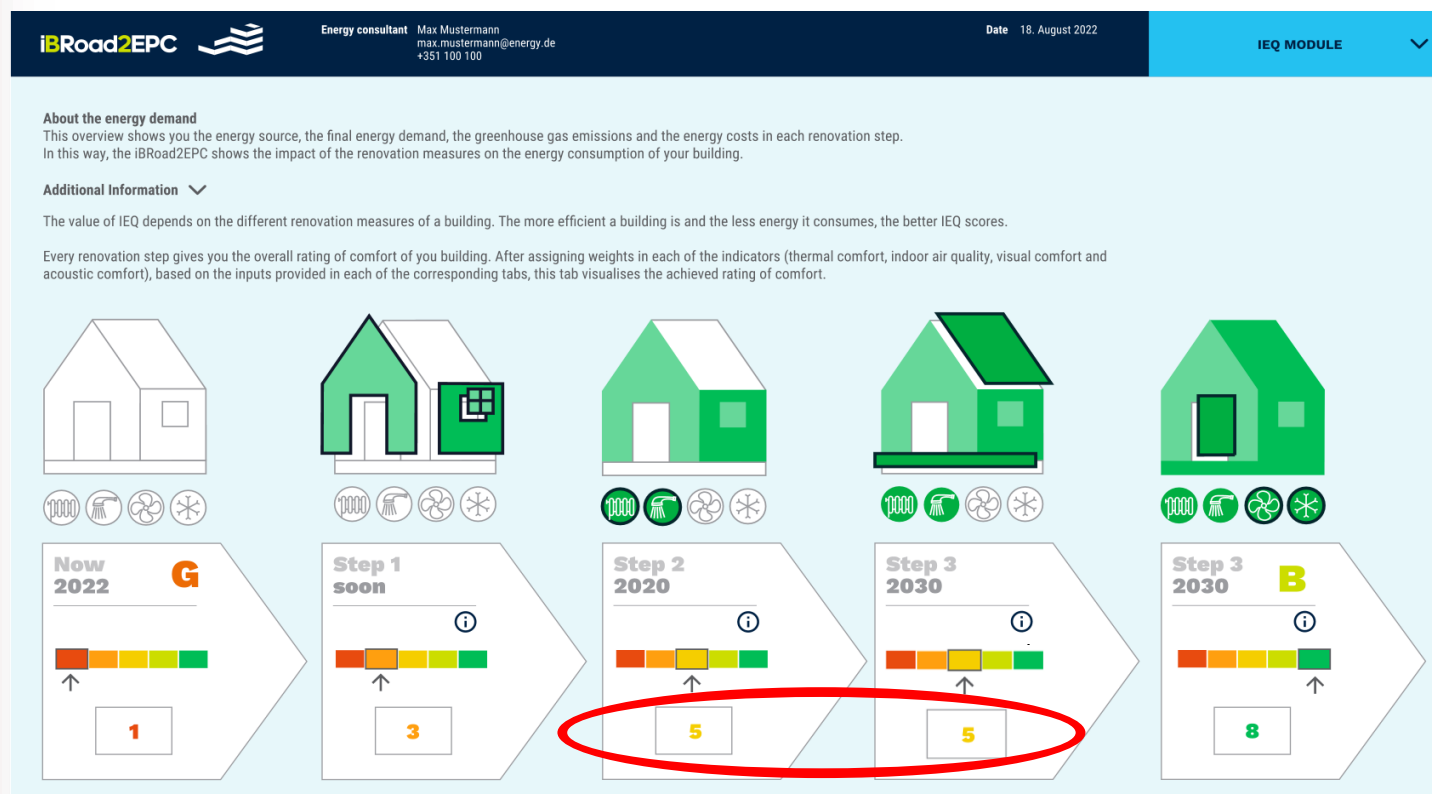
Preparation for a later insulation of a flat roof

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.

Building renovation tools

iBRoad2EPC

Additional tools implemented in the iBRoad2EPC assess also IEQ (indoor environmental quality) and SRI (smart readiness indicator)



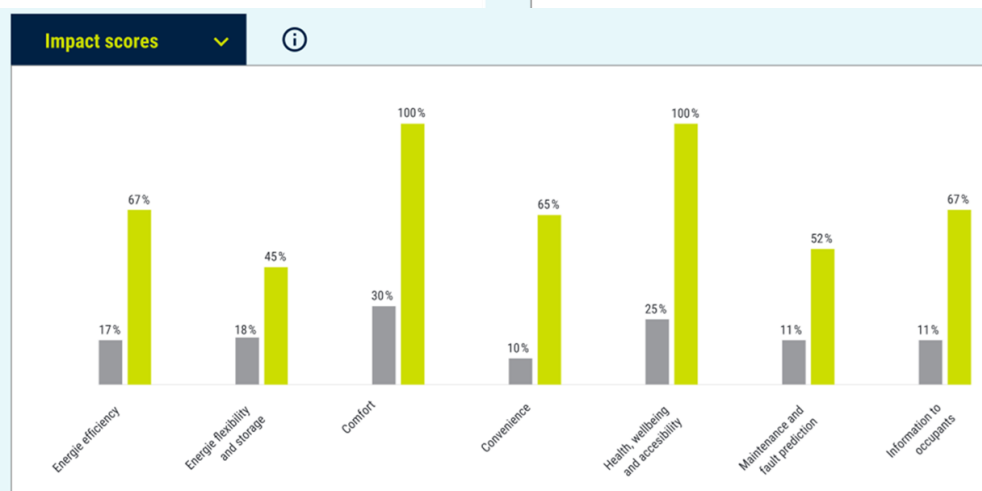
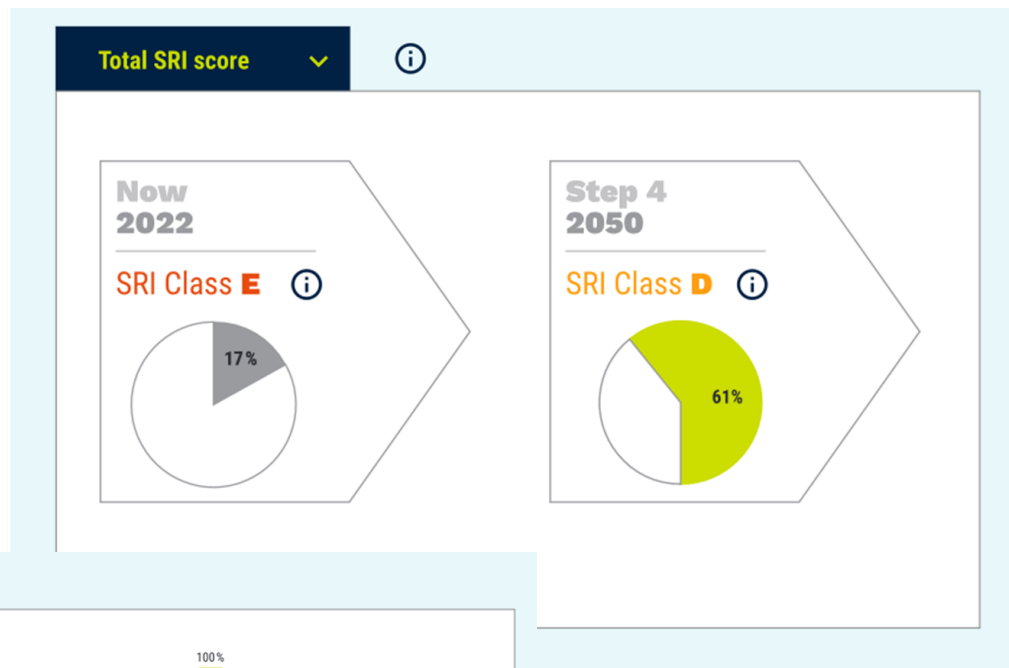
IEQ

Any measure that affects different aspects of comfort or air quality changes the overall IEQ score.

Building renovation tools

iBRoad2EPC

SRI






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Date 18. August 2022
Page 3

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.

Online tools

in your country

Adapt to your country

Регистър ЗЕЕ

ПАРАМЕТРИ НА ТЪРСЕНЕ

Регистър

Вписани фирми в регистъра по... ▼

Номер на удостоверение

Наименование

Булстат/ЕИК/ЕГН

Търси

Изчисти

Справка сгради - характеристики

Област:

Бургас ▼

Община:

▼

Населено място:

▼

Тип

Избери ▼

Клас преди обследването

Клас след обследването

Година на издаване на сертификата от

📅

Година на издаване на сертификата до

📅

Година на валидност на сертификата от

📅

Година на валидност на сертификата до

📅

Търси

Наименование	Област	Община	Населено място	Адрес	Година на въвеждане в експлоатация	Кадастрален идентификатор	Тип	Тип сертифи
МЖС-БУРГАС,	област	община		ж к СЛАВЕЙКОВ бл				

iBRoad2EPC

Adapt to your
country

Test Questions

1. What is an EPC?
 - a. The official document that provides an energy efficiency rating
 - b. More detailed energy audit
 - c. Online tool for building owners, where they can pay energy bills

2. What is an iBRoad2EPC
 - a. Improved version of the certificate
 - b. A very detailed energy audit suitable only for office buildings
 - c. European directive
 - d. Tool for house painting

3. Country specific question
 - a. ...
 - b. ...
 - c. ...



Stay in touch with iBRoad2EPC at www.ibroad2epc.eu

Our Physical Address

Phone & Email

Find us on Social Media



Thank you
for your time and collaboration

Name
email

For more information, please
visit www.ibroad2epc.eu



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