

TAKING
COOPERATION
FORWARD

📍 Block 2: Energy efficiency in buildings
2.1. nZEB legislation in EU

💬 E-learning course

👤 FEEDSCHOOLS, by RIC PRO-AKADEMIA

This module is part of a training package developed to provide local authorities with free tuition that may inspire and help them in adopting new technical and financial solutions to implement ‘nearly Zero Energy Building’ (NZEB) renovation activities in schools.

This block is meant to introduce you to EU legislation related to energy efficiency of buildings and NZEB. Beside regulations introduced at the European level, examples of their implementation in selected countries will be presented.

Beginner: No special knowledge is needed.

Intermediate: No special knowledge is needed.

Advanced: No special knowledge is needed.



2.1.1 Motivation -
energy consumption in
buildings in the EU

2.1.2 Key provisions
for Member States
regarding energy
efficiency

2.1.3 nZEB concept
and its
implementation in
selected EU countries

Learning Objective:

At the end of this module attendees will be provided with general knowledge about legal basis of energy efficiency in buildings in the EU.



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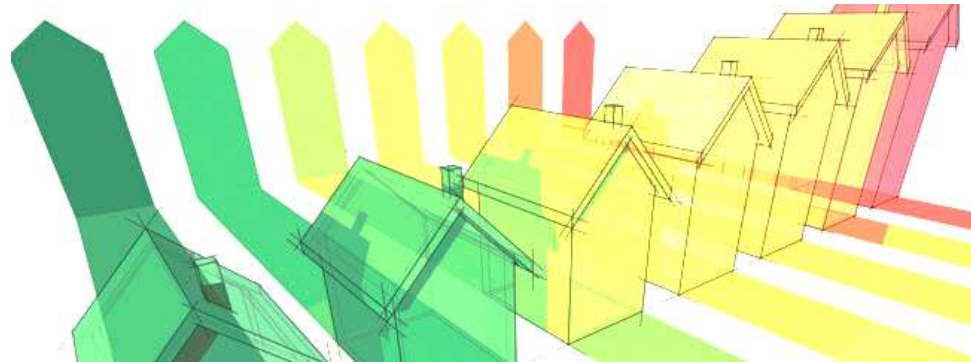
2.1.1 Motivation - energy consumption in buildings in the EU

Objective

In this unit you will learn why increasing energy efficiency in buildings is important in the EU.



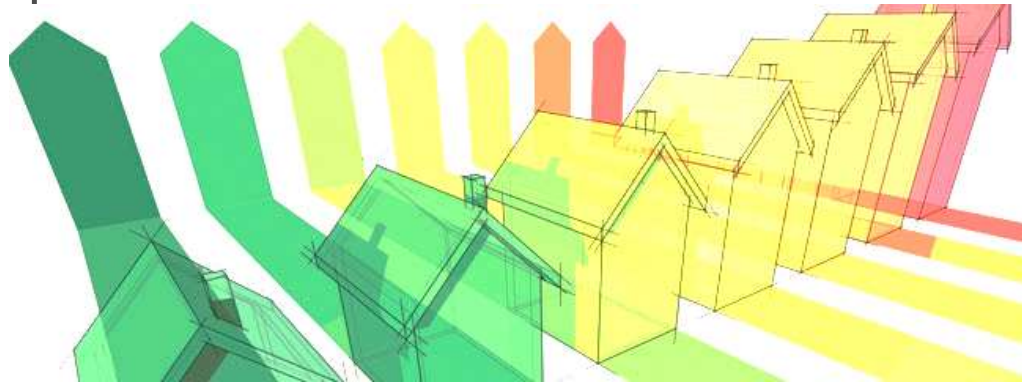
- According to European Commission data, buildings are responsible for 40% of energy consumption and 36% of CO₂ emissions in the EU.
- Currently, about 35% of EU buildings are over 50 years old.
- 75% of the existing European building stock is energy inefficient, and estimates show that 90% of these buildings will still be in use by 2050.



Source: https://ec.europa.eu/info/sites/info/files/epbd_factsheet_20180503_dc_v03e_final.pdf



- By improving the energy efficiency of buildings, total EU energy consumption could be reduced by 5-6%, whilst CO₂ emissions could decrease by about 5%.
- Among the public buildings, the educational buildings account 17% of the built area and 12% of the final energy use of the non-residential sector in Europe.



Source: <https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings>



2.1.2 Key provisions for Member States regarding energy efficiency

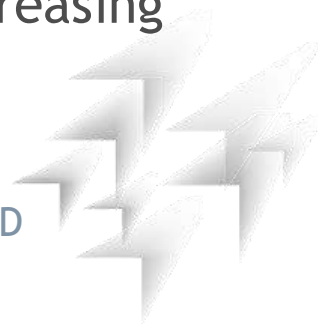
Objective

In this unit you will learn which EU directives are essential in terms of energy efficiency of buildings, and what requirements they put on EU Member States



Directive 2010/31/EU on the energy performance of buildings (EPBD)

- Sets minimum energy performance requirements for new buildings, for the major renovation of buildings and for the replacement or retrofit of building elements
- Requires that all new buildings must be nearly zero-energy buildings ('nZEB') since 2021.
- Requires that buildings occupied and owned by public authorities must be nZEB since 2019.
- Member States are required to develop National Plans for increasing the number of NZEBs



Directive 2012/27/EU on energy efficiency (EED)

- Member States are required to make energy efficient renovations to at least 3% of buildings owned or leased by the central government every year,
- Member States are required to develop long-term building renovation strategies.



Directive (EU) 2018/844 amending 2010/31/EU and 2012/27/EU directives

- Each Member State shall establish a **long-term renovation strategy** (residential & non-residential buildings, public & private) facilitating the cost-effective transformation of existing buildings **into nearly zero-energy buildings by 2050.**
 - milestones for 2030, 2040 and 2050
 - the long-term 2050 goal of reducing greenhouse gas emissions in the EU by 80-95 % compared to 1990
- Member States shall not only to **set a national nZEB definition**, but also to actively promote higher market uptake of such buildings.



Each EU directive needs to be legally transposed by national laws.
The following deadlines have been set for the transposition:

**Directive 2010/31/EU
on the energy
performance of
buildings (EPBD)**

- 2012-07-09
- Selected articles:
 - 2013-01-09
 - 2013-07-09
 - 2015-12-31

**Directive 2012/27/EU
on energy efficiency
(EED)**

- 2014-07-05

**Directive (EU)
2018/844**

- 2020-03-10



2.1.3 nZEB concept and its implementation in selected EU Countries

Objective

In this unit you will learn what does “nearly-zero energy building” mean and how selected Central European countries implemented this concept into their national regulations



General definition:

Nearly-zero-energy building means a building that has a very high energy performance. 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.

EPBD Directive (2010/21/EU)

National definitions are required. Beside the general implications from the directive, they also need to:

- reflect national, regional or local conditions;
- include a numerical indicator of primary energy use expressed in kWh/m² per year.



- Each Country develops its own definition
- Definitions should cover various building types, classes and categories

Type	Classification	Category	Subcategory
<ul style="list-style-type: none">• New• Renovated	<ul style="list-style-type: none">• Private• Public	<ul style="list-style-type: none">• Residential• Non-residential	<ul style="list-style-type: none">• apartment blocks• offices• educational buildings• hospitals• hotels• wholesale and retail buildings

Source: [Synthesis Report on the National Plans for Nearly Zero Energy Buildings \(NZEBs\)](#), JRC, 2016



Country	Residential buildings (kWh/m ² /y)		Non-residential buildings (kWh/m ² /y)		Notes
	New	Existing	New	Existing	
Austria	160	200	170	250	Maximum values; final value depends on the volume/surface rate
Czechia	75-80% PE	75-80% PE	90% PE	90% PE	PE - primary energy consumption of a reference building.
Croatia	33-41	NA	NA	NA	-
Hungary	50-72	NA	60-115	NA	-
Italy	Class A1	Class A1	Class A1	Class A1	-
Poland	60-75	NA	45-70-190	NA	Depending on building type
Slovenia	75 (single family), 80 (multi-family)	95 (single family), 90 (multi-family)	55	65	-



Croatia:

Nearly zero energy building is a building that has **very high energy performance**. This almost zero or very low amount of energy should be covered to a considerable extent by energy from **renewable sources**, including renewable energy produced at or near the building.

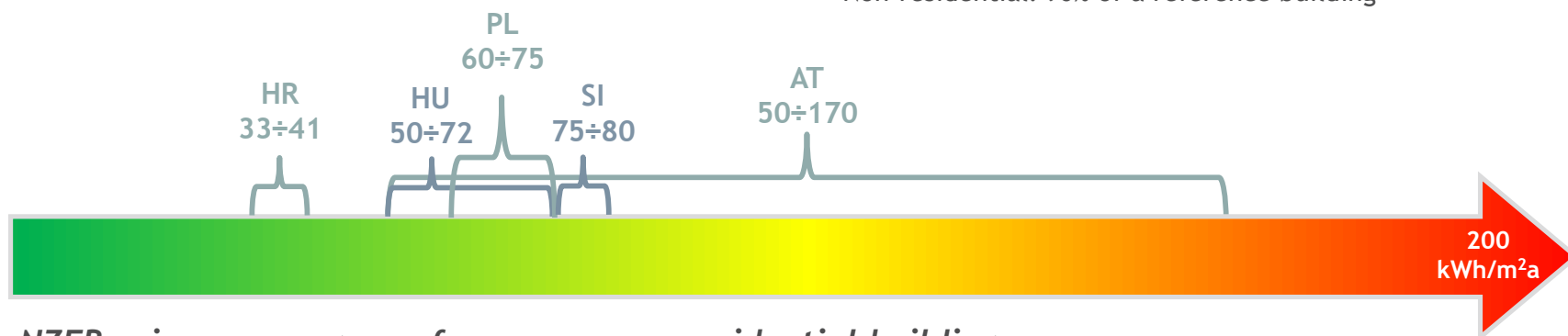
Technical regulation on energy economy and heat retention in buildings (Official Gazette 128/15)

Slovenia:

	New construction	Major renovation
Family houses	50 kWh/m ² a	90
Multi-dwelling	45	70
Non-residential	70	100

Czech Republic:

- Residential: 75-80% of a reference building
- Non-residential: 90% of a reference building



NZEB primary energy performance, new residential buildings

Source: [Synthesis Report on the National Plans for Nearly Zero Energy Buildings \(NZEBs\)](#), JRC, 2016



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SELF ASSESSMENT TEST

Which of the following sentences are true?

- A. Majority of buildings in the EU is energy efficient
- B. Most of the energy-inefficient buildings in the EU will be demolished in the next three decades
- C. EU's CO₂ emissions could be cut by 5% by improving the energy performance of buildings
- D. EU's CO₂ emissions could be cut by 40% by improving the energy performance of buildings



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- D. EU's CO₂ emissions could be cut by 40% by improving the energy performance of buildings



SELF ASSESSMENT TEST

Which of the following sentences are true?

- A. Since the beginning of 2021, all buildings (both existing and new) must be nZEB
- B. Currently public authorities cannot rent a building which is not nZEB
- C. There is no requirement to modernize existing buildings into nZEB - only new buildings must meet that rule
- D. National governments are obliged to promote nZEB



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SELF ASSESSMENT TEST

Which of the following sentences are true?

- A. Nearly-zero energy building does not need any kind of energy
- B. Nearly-zero energy building should be equipped with renewable energy sources installation or supplied with energy coming from external renewables
- C. nZEB requirements for residential and non-residential buildings differ
- D. There is no common nZEB definition in the EU and each country can adjust it to its local conditions



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