

## International Conference

Sustainable Energy for Environmental Protection. Reviewing International Best Practice  
May, 28 November 2024

# European Union's Experience in Promoting Energy Efficiency: Achieved Results and Prospects

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# WHY ENERGY EFFICIENCY FIRST?



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# Energy efficiency first principle (1)

- **Energy Efficiency is one of the key pillars not only to meet EU's climate objectives but also to reduce dependence on fossil fuels and increase security of supply and the use of renewable energy**
- **Energy efficiency first (EE1st) principle is generally understood as a guiding principle for energy-related policymaking, planning, and investments**
- The principle aims **to treat energy efficiency as a source of energy** in its own right in which the public and the private sector can invest ahead of other more complex or costly energy sources
- This includes **giving priority to demand-side solutions** whenever they are more cost-effective than investments in energy infrastructure to meet policy objectives

# Energy efficiency first (EE1st) principle (2)

- The EE1st principle was formally introduced into EU legislation in the Governance Regulation (European Union 2018), which includes a formal definition and **requires Member States to report on the implementation of EE1st in their National Energy and Climate Plans (NECPs)**
- In essence, it is meant to **consider and prioritise** investments in both:
  - demand-side resources (end-use energy efficiency, demand response, etc.)
  - supply-side energy efficiency**whenever these cost less or deliver more value** than default energy infrastructure



# EU EE TARGETS



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# EU EE targets - Key figures by 2030

- Under the revised Energy Efficiency Directive (2023) the EU has agreed on an ambitious **energy efficiency target of reducing final energy consumption by at least 11.7%** compared to projections of the expected energy use for 2030 (based on the 2020 reference scenario)
- **Final energy consumption - 763 Mtoe**
- **Primary energy consumption - 992.5 Mtoe**
  
- The building sector offers the second largest potential for energy savings

# The revised Energy Performance of Buildings Directive brings new changes

2020

All new buildings in EU must be **Near Zero Energy Buildings (NZEB)**

2025

Energy performance certificates (EPCs) must be based on a **harmonised energy performance scale** by **2025**

All buildings must have a **smart readiness indicator (SRI)** by **2026**, to assess their ability to integrate smart technologies

2030

All new buildings in the EU must be **zero-emission buildings (ZEBs)** from **2030**

2050

Existing public buildings must be **renovated to a high energy performance level**, with minimum energy performance standards set at EU level

Building **life cycle carbon emissions calculation** will be introduced

All new public buildings must be **zero-emission buildings (ZEBs)** from 2028

**DECARBONIZED BUILDING STOCK IN 2050**

# Energy Performance of Buildings Directive



- As of **2030 all new buildings must be zero-emission**; new public buildings must be zero emission already by 2027



- The **worst-performing 15% of the EU building** stock will have to be upgraded from Energy Performance Certificate (EPC) label **G to at least label F by 2030**, public and non-residential buildings leading the way by 2027. Residential buildings should be renovated from G to at least F by 2030, and to at least E by 2033



- The **obligation to have an energy performance certificate is extended to buildings undergoing major renovation**, buildings for which a **rental contract is renewed** and **all public buildings**



- Requirement to roll out **charging infrastructure for electric vehicles in residential and commercial buildings** and to promote dedicated parking space for bicycles



- Buildings or building units which are **offered for sale or rent must have an energy performance certificate**, and the energy performance class and indicator should be stated in all advertisements



- National Building Renovation Plans will be fully integrated into National Energy and Climate Plans to ensure comparability and tracking of progress – they will need to include **roadmaps for phasing out fossil fuels in heating and cooling by 2040 at the latest**





# OPPORTUNITIES AND CHALLENGES IN THE BUILDING SECTOR



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# Role of Building stock

- Buildings account for approximately **40% of final energy consumption**
- Investing in EE measures in buildings can yield **substantial energy savings**, while **supporting economic growth, sustainable development and creating jobs**
- Greater use of **energy-efficient appliances and technologies**, combined **with renewable energy**, are cost-effective ways of enhancing **the security of energy supply**

# Building stock

- Public buildings, incl. Central Government Buildings
- Commercial sector buildings (offices, etc.)
- Industrial Buildings
- Residential buildings
  - Multi-apartment buildings
  - Family houses

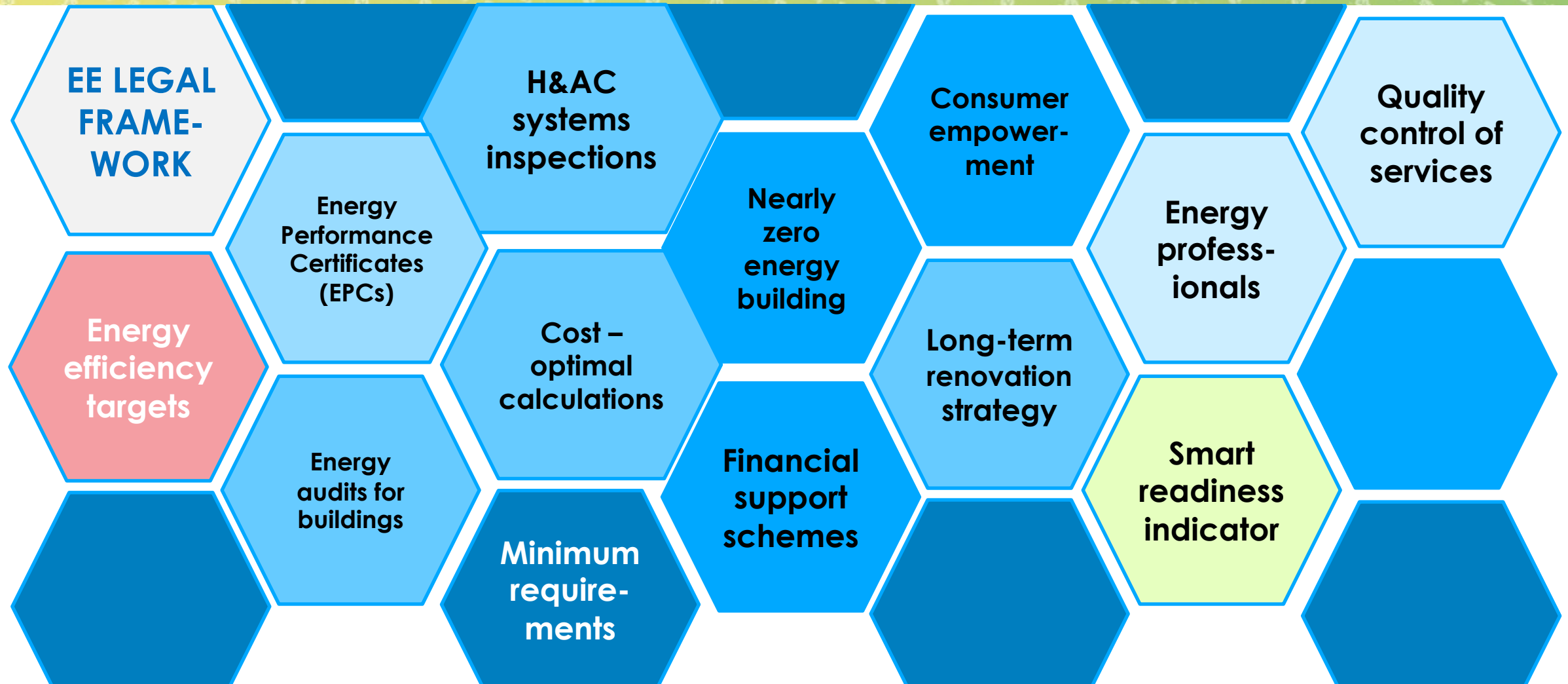


**Each group/ type of buildings has different features - ownership, operation and maintenance models, etc.**

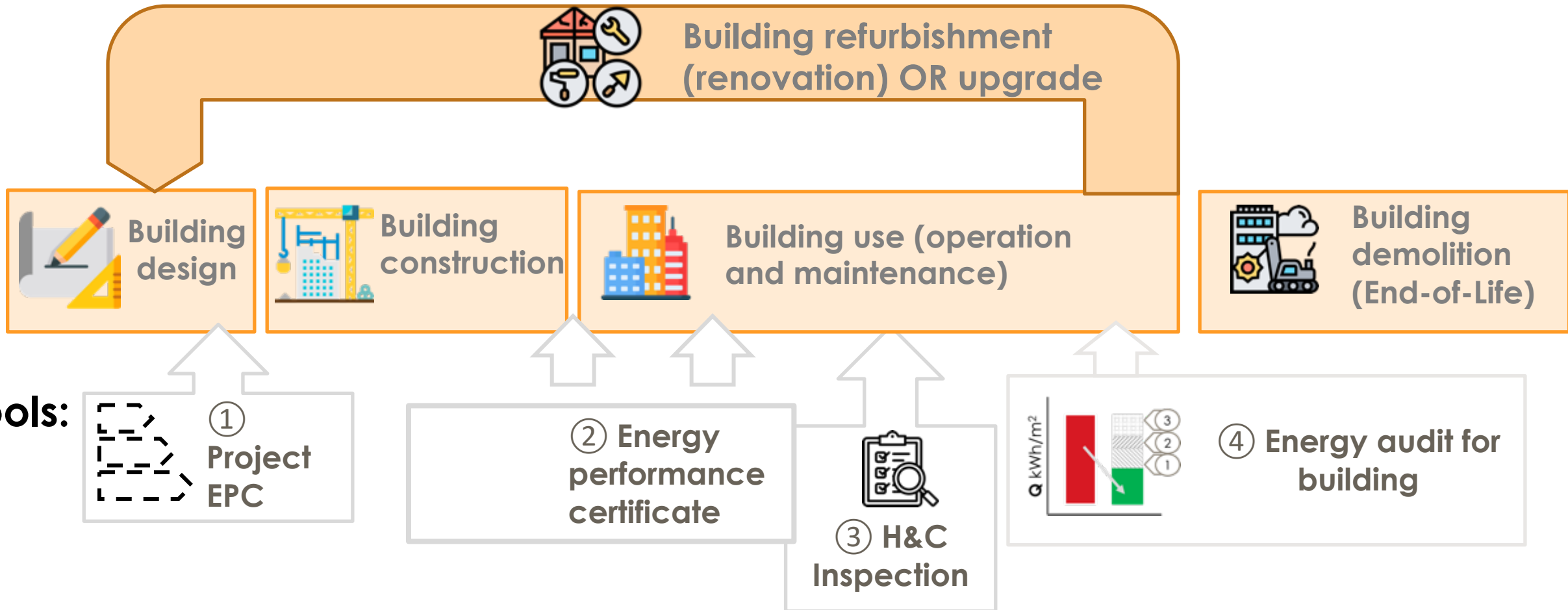


# OVERALL APPROACH TO THE PROMOTION OF EE IN BUILDINGS

# Policy elements and instruments/ tools for EE in Buildings



# Key tools for promotion of EE improvement in Building life cycle



# Sustainable and energy efficient building certifications

## EU legislative requirements:

- **Energy performance certificates (EPCs) and Minimum energy efficiency requirements (MEPRs)**
- **Nearly zero-energy building (NzEB) and Zero-emission buildings (ZEB) requirements** (starting from 2028) for new buildings
- Upcoming: CO<sub>2</sub> life cycle perspective and Level(s) framework

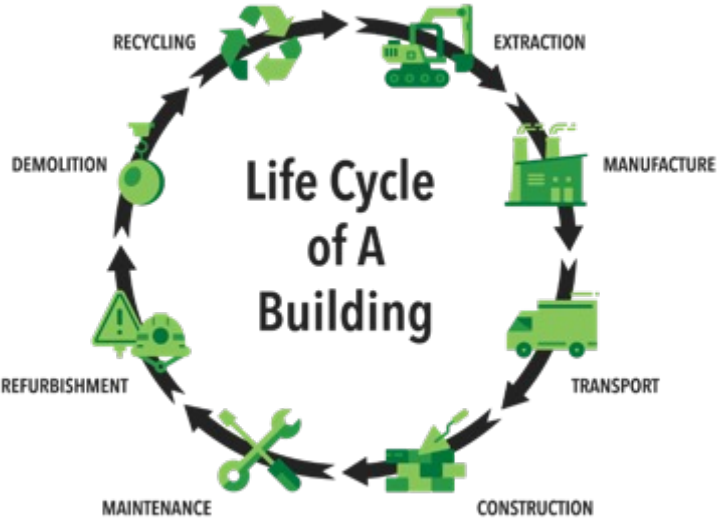
## Voluntary sustainable building certification schemes:

- BREEAM - Building Research Establishment's Environmental Assessment Method
- LEED - Leadership in Energy and Environmental Design
- DGNB - German Sustainable Building Council
- PH – Passive House
- EDGE - green building certification from International Finance Corporation (IFC), a member of the World Bank Group
- ..



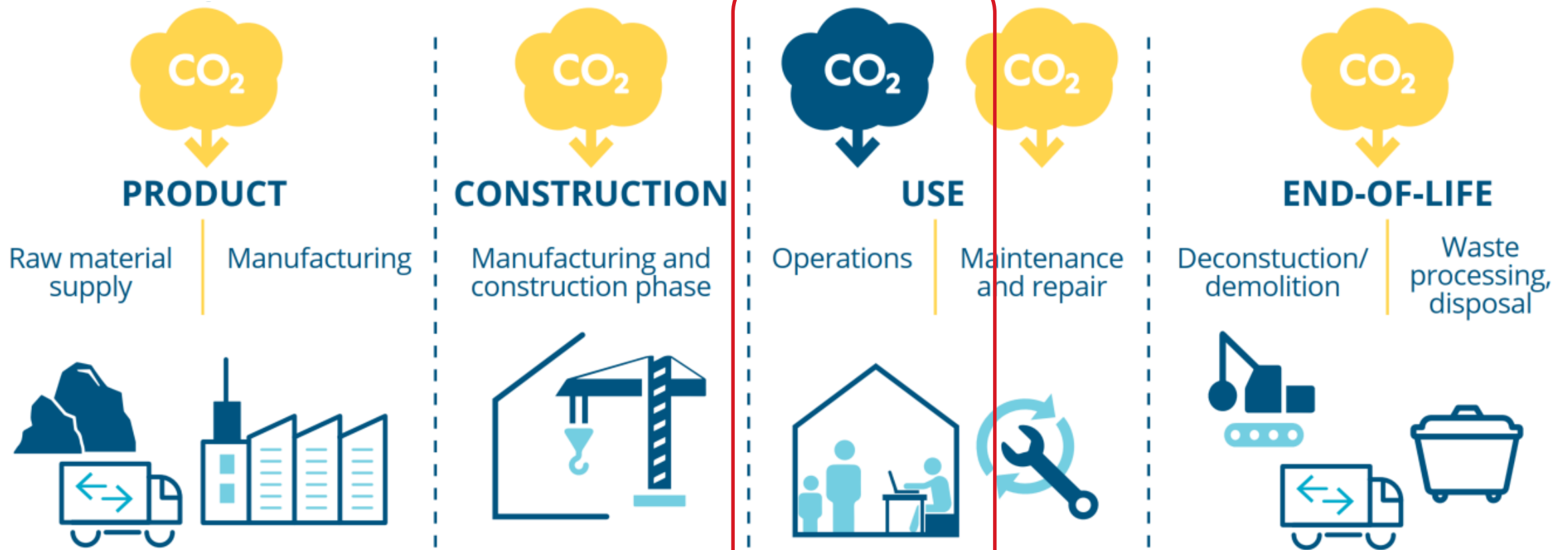
# EU initiative that joins up sustainable building thinking across the EU

- **Sustainable building certifications**, also known as green building rating tools, evaluate and acknowledge buildings meeting specific sustainability criteria
- **These certifications serve to reward companies and organizations** for constructing and operating environmentally friendly buildings





# Zero-emission buildings are a new aim for making buildings more climate friendly



**The current scope of Performance evaluations**

# Challenges at the level of practical application

## Achieving a more sustainable energy mix requires more smart technologies and solutions

- in promotion of the **use of RE** – smart grids and smart grid technologies (smart metering, demand response, smart appliances, etc.)



- in promotion of **EE in buildings** – **smart readiness indicators**, emerging technologies and approaches for decarbonization of the building stock, etc.

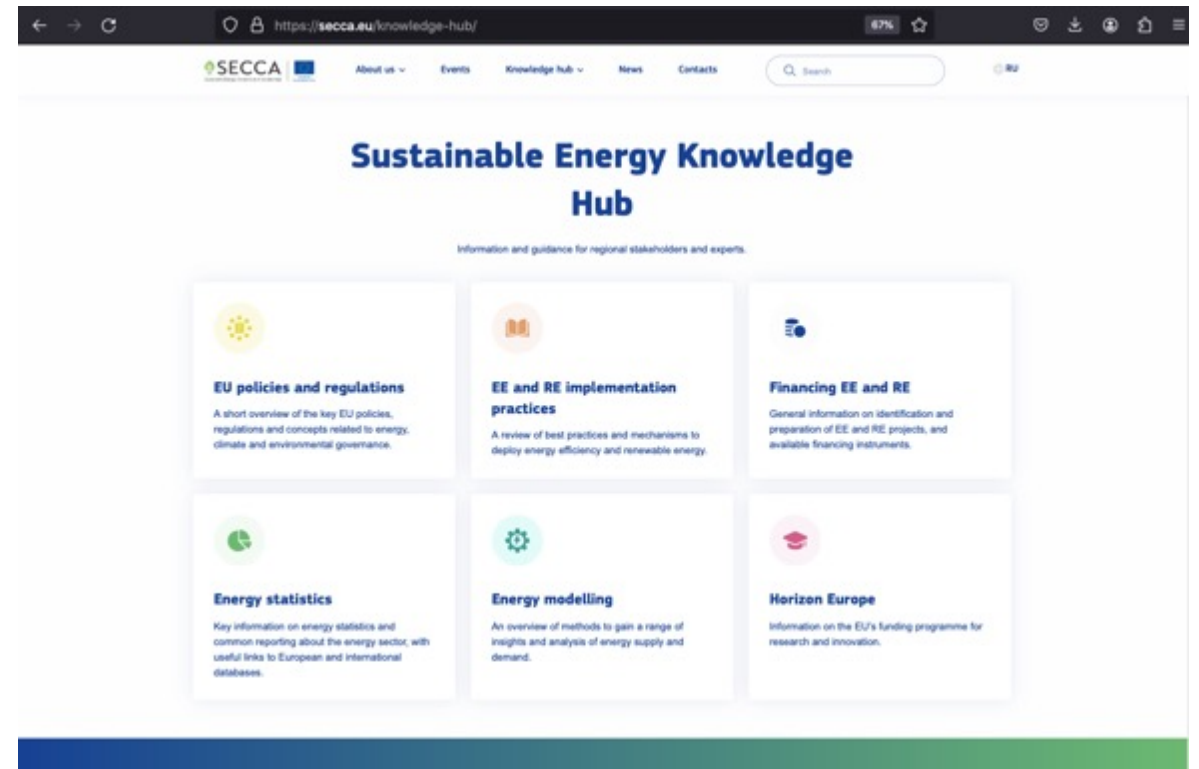
**This opens opportunities for collaboration between EU-CA research institutions**

# More information on SECCA website

## Latest News and Events

## Sustainable Energy Knowledge Hub - EE and RE implementation practices

[www.secca.eu](http://www.secca.eu)



**More information on SECCA website**

## Horizon Europe

