

# Energy classification of buildings

Workshop on “Elaboration of active house concept for public buildings”

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# EU legislative

The building sector is crucial for achieving the EU's energy and environmental goals. At the same time, better and more energy efficient buildings improve the quality of citizens' life while bringing additional benefits to the economy and the society.

To boost energy performance of buildings, the EU has established a legislative framework that includes the Energy Performance of Buildings Directive 2010/31/EU (EPBD) and the Energy Efficiency Directive 2012/27/EU. Together, the directives promote policies that will help

- achieve a highly energy efficient and decarbonised building stock by 2050
- create a stable environment for investment decisions
- enable consumers and businesses to make more informed choices to save energy and money

Following the introduction of energy performance rules in national building codes, buildings today consume only half as much as typical buildings from the 1980s.

# EU legislative

In October 2020, the Commission presented its renovation wave strategy, as part of the European Green Deal.

The strategy contains an action plan with concrete regulatory, financing and enabling measures to boost building renovation.

Its objective is to at least double the annual energy renovation rate of buildings by 2030 and to foster deep renovation.

# EU legislative

Buildings are responsible for approximately 40% of EU energy consumption and 36% of the greenhouse gas emissions. Buildings are therefore the single largest energy consumer in Europe.

At present, about 35% of the EU's buildings are over 50 years old and almost 75% of the building stock is energy inefficient. At the same time, only about 1% of the building stock is renovated each year.

Renovation of existing buildings can lead to significant energy savings, as it could reduce the EU's total energy consumption by 5-6% and lower CO2 emissions by about 5%.

Investments in energy efficiency stimulates the economy, especially the construction industry, which generates about 9% of Europe's GDP and directly accounts for 18 million direct jobs.

SMEs in particular, benefit from a boosted renovation market, as they contribute more than 70% of the value-added in EU's building sector.

# Energy class of buildings

Global scale of indicators for the energy class of buildings - primary energy kWh/m<sup>2</sup>/year

Energy efficiency classes of buildings	A0	A1	B	C	D	E	F	G
<b>Households</b>	≤ 54	55–108	109–216	217–324	325–432	433–540	541–648	> 648
<b>Apartment houses</b>	≤ 32	33–63	64–126	127–189	190–252	253–315	316–378	> 378
<b>Administrative buildings</b>	≤ 61	62–122	123–255	256–383	384–511	512–639	640–766	> 766
<b>Schools</b>	≤ 34	35–68	69–136	137–204	205–272	273–340	341–408	> 408
<b>Hospitals</b>	≤ 98	99–197	198–393	394–590	591–786	787–982	983–1179	> 1179
<b>Hotels &amp; restaurants</b>	≤ 82	83–164	165–328	329–492	493–656	657–820	821–984	> 984
<b>Sport halls and buildings</b>	≤ 46	47–92	93–181	182–272	273–362	363–453	454–543	> 543
<b>Buildings for shopping</b>	≤ 107	108–213	214–425	426–638	639–850	851–1062	851–1275	> 1275

# New buildings

For new buildings, before construction starts, the technical, environmental and economic feasibility of high-efficiency alternative systems such as those listed below, if available, is considered and taken into account:

- a) decentralised energy supply systems based on energy from renewable sources;
- b) cogeneration;
- c) district or block heating or cooling, particularly where it is based entirely or partially on energy from renewable sources;
- d) heat pumps.

# Existing buildings

Next requirements shall be applied to the renovated building or building unit as a whole. Additionally or alternatively, requirements may be applied to the renovated building elements.

System requirements shall be set for new, replacement and upgrading of technical building systems and shall be applied in so far as they are technically, economically and functionally feasible.

The system requirements shall cover at least the following:

- a) heating systems;
- b) hot water systems;
- c) air-conditioning systems - recuperation;
- d) large ventilation systems - centralised;
- e) Insulation
- f) Lightning system
- g) Energy generation



Any Questions?



## Literature

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