

17th May 2022

Minimum energy performance standards for Europe's existing buildings

Renewable Energy Institute webinar, Tuesday 17 May 2022 15:30 - 17:00 (JST)

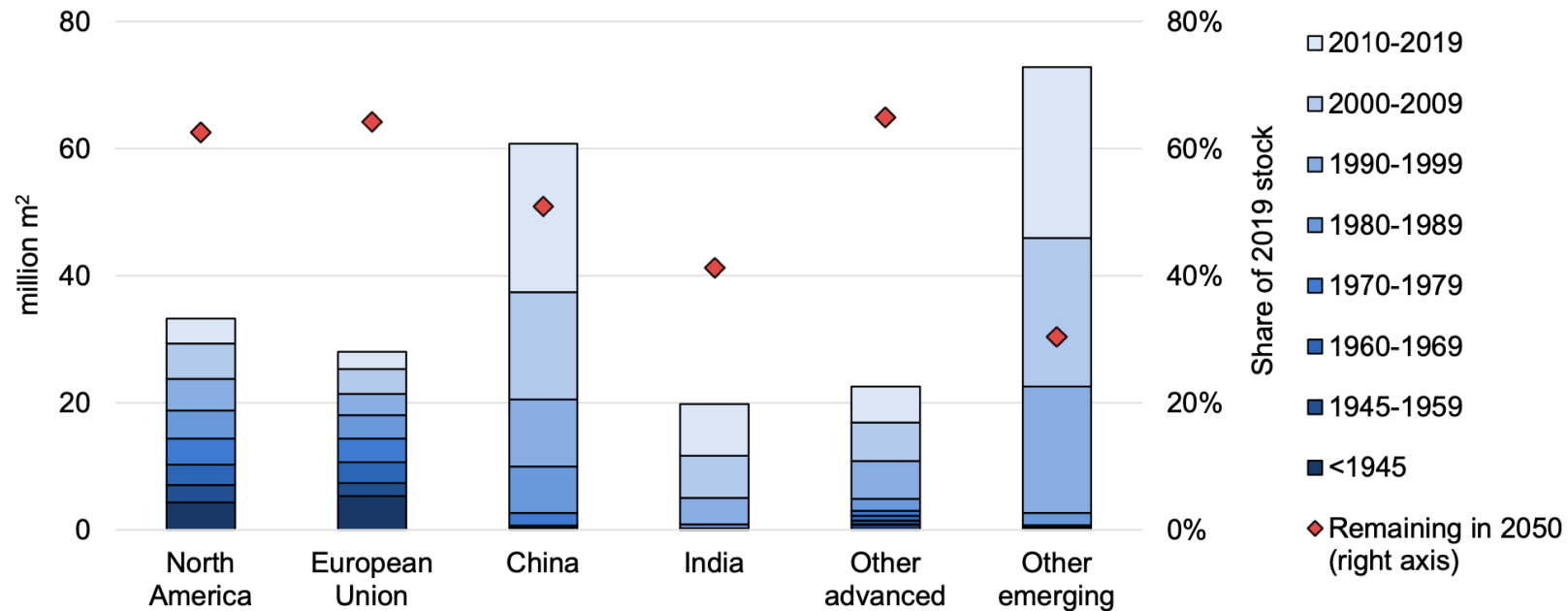
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The challenge of existing buildings globally

Figure 1.15 Building stock by year of construction and share of stock that remains in 2050



- About 50% today's buildings will be in use in 2050
- 60% was erected when there were no code requirements regarding energy performance

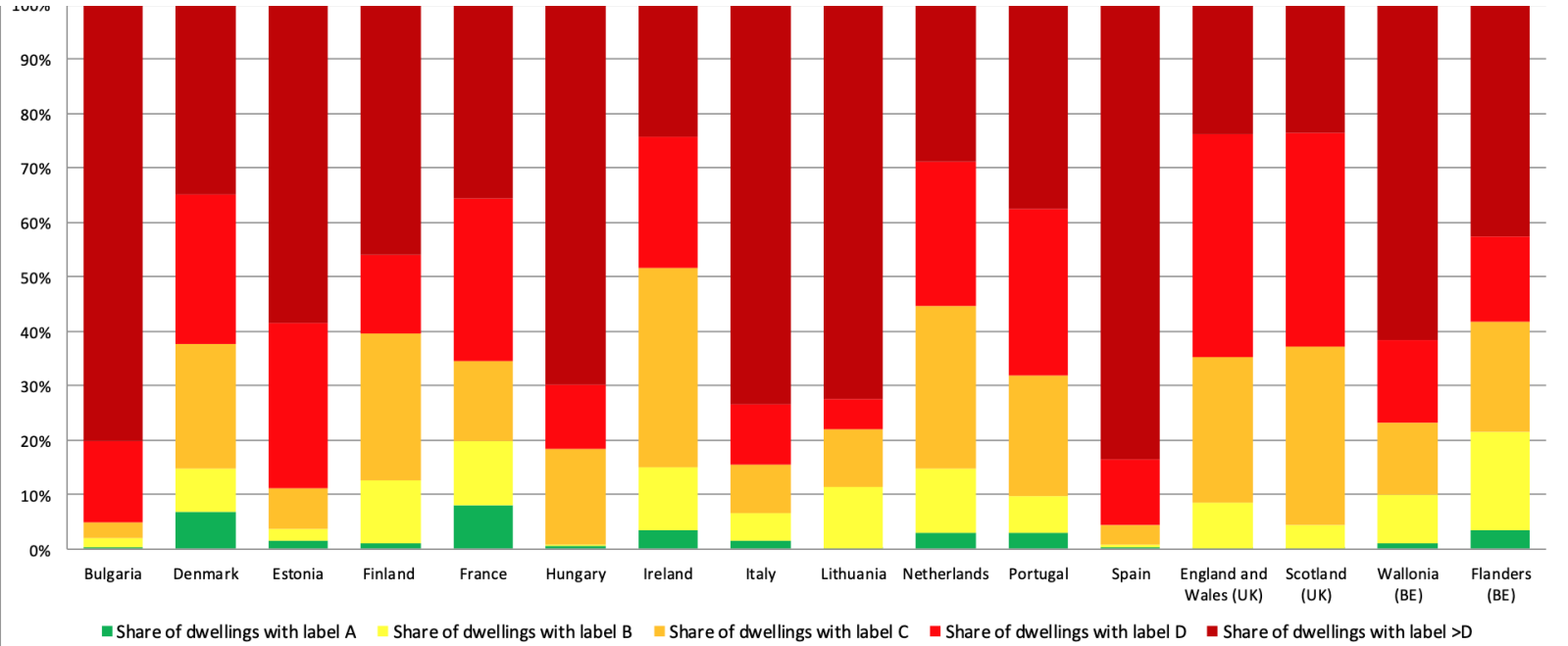
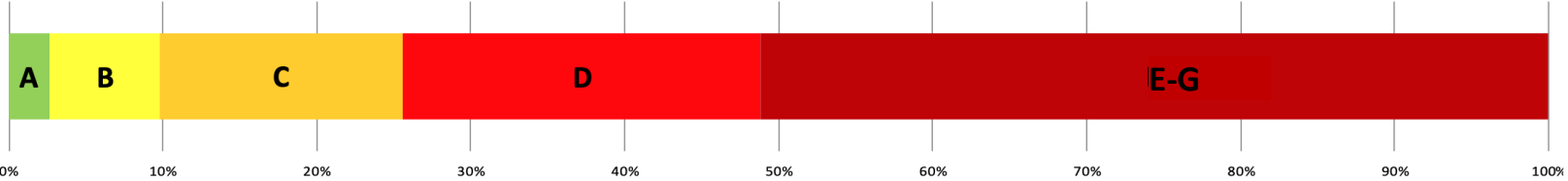
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Note: Building floor area covers residential, commercial, services, education, health, hospitality, public and other non-residential sectors but excludes industrial premises.

Sources: Informed by NRCan (2020), RECS (2020), CBECS (2020), and EU Commission (2020), NBS China (2020).

The challenge of existing buildings in Europe

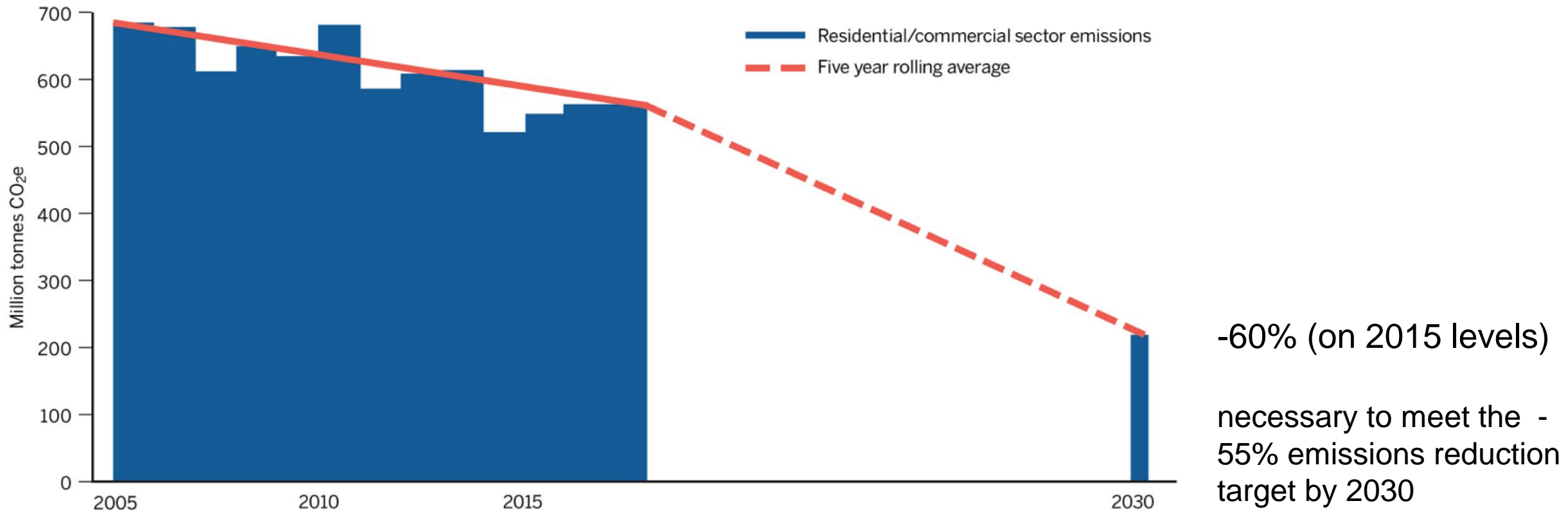
Distribution of the building stock in the EU per Energy Performance Certificate class (2017)



- Over 85% of 2050's buildings have already been built
- Over 75% of the stock needs some form of renovation

Buildings emissions reductions targets in Europe

Figure 1. Residential/tertiary sector greenhouse gas emissions (million tonnes CO₂e)



Note: Direct sector GHG emissions not including related energy sector emissions

Introducing minimum energy performance standards

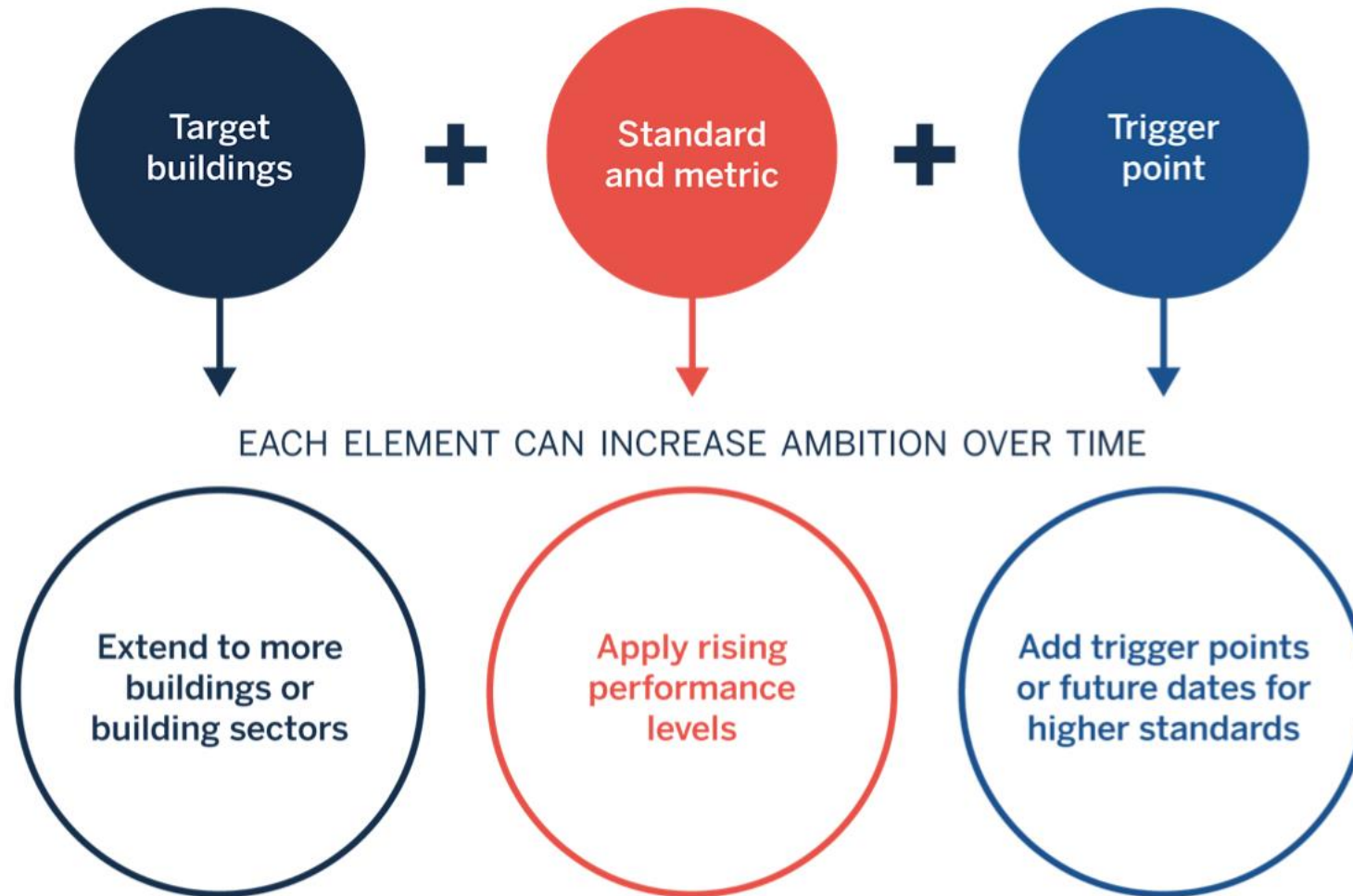
What are minimum energy performance standards?

Regulations that require existing buildings to meet a minimum performance standard at a chosen trigger point and/or date.

How are they different to building codes?

Apply to the whole building
Apply even when no building work triggers application of the building code

MEPS are made up of three design elements



European Countries implementing MEPS, examples



Jurisdiction	Target stock	Metric and standard	Introduced	Fully enforced
Netherlands	Office buildings	EPC C	2018	2023
France	Private homes	EPC E	2019	2028
France	Rented homes	Under 450 kWh/m ² /year PE	2019	2023
France	Tertiary sector buildings over 1,000m ²	Reduction in FE 40% in 2030, 50% in 2040, 60% in 2050	2019	2030 2040 2050
England and Wales	Privately rented homes	EPC E	2016	2020 (from 2018 at tenancy change)
England and Wales	Privately rented non-domestic buildings	EPC E EPB B	2016 (Regulation)	2023 (from 2018 at tenancy change) 2030
Scotland	Privately rented homes	EPC C	Pending	2028 (from 2025 at tenancy change)
Scotland	Owner occupied homes	EPC C	Pending	2033 (from 2025 at sale)
Flanders, Belgium	All homes	Roof insulation Double glazing	2015 2019	2020 2023
Brussels-Capital, Belgium	All domestic and non-domestic buildings	Measures specified by EPC	2019 (Announced)	2030, every 5years

Importance of stock data and building labelling



EU energy performance certificate framework:

- Building assessment and label
- Calculated primary energy use
- Letter relates to an energy performance band (kWh/m²/yr) (usually)
- Asset rating, not operational
- Assessment and label required at sale or rent
- Lifetime of 10 years
- Introduced in Energy Performance of Buildings Directive (2010), but stock coverage variable <3% to 40%
- Not harmonised, specific to national stock condition and climate

EPC scales are not harmonised across Europe

Table 4. Illustration of national residential EPC scales and energy performance bands (primary energy).

Portugal		Germany		France		Ireland		Estonia	
EPC class	kWh/m ² /yr	EPC class	kWh/m ² /yr	EPC class	kWh/m ² /yr	Building Energy Rating	kWh/m ² /yr	EPC class	kWh/m ² /yr
A+	≤ 25	A+	≤ 30	A	≤ 70	A	<75	A	≤ 120
A	26-50	A	≤ 50			(A1, A2, A3)			
B	51-75	B	≤75	B	71-110	B	75-150	B	121-140
B-	76-100					(B1, B2, B3)			
C	101-150	C	≤100	C	111-180	C	150-225	C	141-160
						(C1, C2, C3)			
D	151-200	D	≤130	D	181-250	D	225-300	D	161-210
						(D1, D2)			
E	201-250	E	≤160	E	251-330	E	300-380	E	211-260
						(E1, E2)			
F	≥251	F	≤200	F	331-420	F	380-450	F	261-330
		G	≤250	G	>420	G	>450	G	331-400
		H	>250					H	≥ 401

Resources on improving energy performance certificate design



<https://ibroad-project.eu/results/reports/>



<https://x-tendo.eu>



<https://qualdeepc.eu>



<https://epc-recast.eu>

Non-domestic sector example: The Netherlands

- **Standard:** All offices must be EPC C by 2023
- **Purpose:** Carbon reduction
- **Buildings covered:** More than half of Dutch offices need to take action – either register an EPC or undertake renovation work and register an EPC
- **Enforcement:** The ‘competent authority’ - usually the local municipality.
- **Compliance:** Proved through registering a compliant A-C EPC
- **Non-compliance:** Periodic penalty payments, fines and closure of the building.
- **Support:** Netherlands Enterprise Agency technical support and nationally registered energy advisors, tax incentives, green loans with preferential interest rates.

Domestic sector example: England and Wales

- **Standard:** All privately-rented homes must be EPC E by 2020
- **Purpose:** housing standards, fuel poverty, energy demand reduction
- **Buildings covered:** Private rented sector is about 20% of English homes, 7% of private rented homes were in F and G classes before the regulation.
- **Enforcement:** Local authority
- **Compliance:** Reliant on local authority to check
- **Non-compliance:** Fines not exceeding £5,000 for each tenancy
- **Support:** Regulation introduced alongside renovation finance linked to the property, repaid through reduced energy bills. This promised no upfront cost to the landlord. Finance failed. Replaced with a £3,500 cost threshold.

Proposal for MEPS for all European Union states

European Energy Performance of Buildings Directive recast proposal, December 2021.

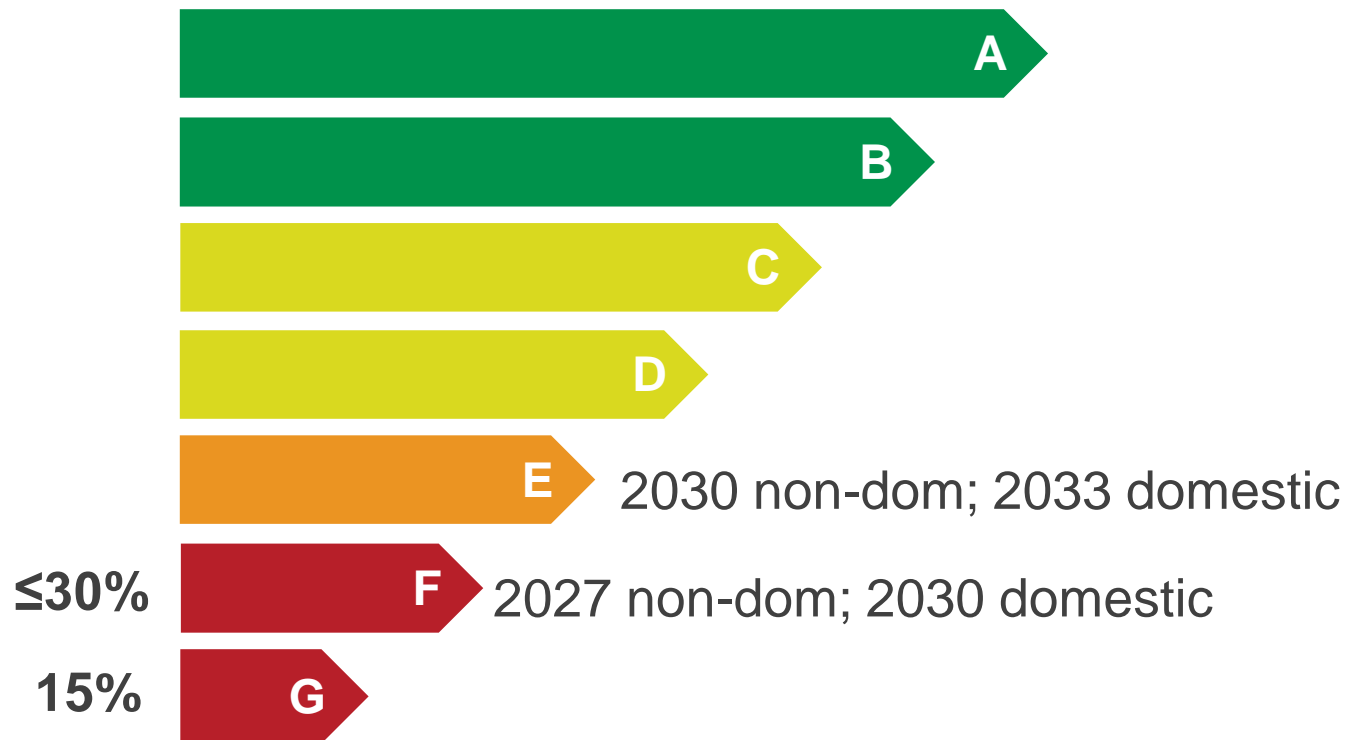
Currently under negotiation

Article 9

Minimum energy performance standards

1. Member States shall ensure that
 - (a) buildings and building units owned by public bodies achieve at the latest
 - (i) after 1 January 2027, at least energy performance class F; and
 - (ii) after 1 January 2030, at least energy performance class E;
 - (b) non-residential buildings and building units, other than those owned by public bodies, achieve at the latest
 - (i) after 1 January 2027, at least energy performance class F; and
 - (ii) after 1 January 2030, at least energy performance class E;
 - (c) residential buildings and building units achieve at the latest
 - (i) after 1 January 2030, at least energy performance class F; and
 - (ii) after 1 January 2033, at least energy performance class E;

Proposal for MEPS for all European Union states



Proposed Energy Performance of Buildings Directive, Article 9:

- Public and non-residential buildings must be:
 - EPC F by 2027
 - EPC E by 2030
- Residential buildings must be:
 - EPC F by 2030
 - EPC E by 2033
- Based on a harmonised EPC scale

Summary points

- Building stock data, building assessments and labeling underpin standards
- Standards must be clear and communicable to millions of private building owners
- Standards are introduced with a lead time before compliance deadlines
- Standards are introduced alongside practical and financial support to comply – particularly important when addressing housing
- Regulations are only effective if enforceable
- Current question in Europe: how do minimum building energy performance standards interact with policies to fully phaseout fossil fuels in heat for buildings?

Contact



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Further resources

- Sunderland, L., and M. Santini. 2021. Next Steps for MEPS: Designing minimum energy performance standards for European buildings. June 2021. Regulatory Assistance Project. <https://www.raonline.org/knowledge-center/next-steps-for-meps-designing-minimum-energy-performance-standards-for-european-buildings/>
- Sunderland, L., and M. Santini. 2020. Filling the Policy Gap: Minimum Energy Performance Standards *for European Buildings*. Regulatory Assistance Project. June 2020. <https://www.raonline.org/knowledge-center/filling-the-policy-gap-minimum-energy-performance-standards-for-european-buildings/>
- Sunderland, L., and M. Santini. 2020. *Case Studies: Minimum Energy Performance Standards for European Buildings*. Regulatory Assistance Project. July 2020. <https://www.raonline.org/knowledge-center/case-studies-minimum-energy-performance-standards-for-european-buildings/>
- Mab, C. and Sunderland, L. (2022) *Owning the Future*. A framework of regulations for decarbonising owner-occupied homes in Scotland. Existing Homes Alliance. <https://www.raonline.org/knowledge-center/owning-future-framework-regulations-decarbonising-owner-occupied-homes-scotland/>

About RAP

The Regulatory Assistance Project (RAP)[®] is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

Effective enforcement in Boulder, CO

Designed with stakeholders

Practical and financial support

Uses existing inspection regime



Rental license withheld for non-compliance

Escalating penalties for renting without license

Public data disclosure via accessible map

Source: Petersen, Alisa and Radhika Lalit. Better Rentals, Better City: Policies to Improve Your City's Rental Housing Energy Performance. Rocky Mountain Institute, 2018. info.rmi.org/better_rentals_report
Boulder City Council, SmartRegs programme <https://bouldercolorado.gov/plan-develop/smartregst>