

# OECD Country profiles on buildings and climate guide note1

## Background

The Ministry of Ecological Transition and Territorial Cohesion of France commissioned the OECD to conduct a global survey on Buildings and Climate in preparation for the Buildings and Climate Global Forum on 7-8 March 2024. The global survey aims to gather insights from countries on challenges and opportunities related to building decarbonisation and climate change resilience, which also includes a multi-level governance section on how national governments are supporting local initiatives, monitoring local implementation. To facilitate knowledge exchange and comparative analysis, the OECD developed country profiles based on the global survey results.

## Participating countries

As of March 7, 2024, 28 countries around the world participated in the OECD Global Survey on Buildings and Climate. The 28 countries are: Belgium (Region of Flanders), Brazil, Canada, Colombia, Costa Rica, Finland, France, Germany, Greece Iceland, Israel, Italy, Ivory Coast, Japan, Korea, Lithuania, Mexico, the Netherlands, Norway, Philippines, Poland, Singapore, Spain, Sweden, Switzerland, Thailand, the United Kingdom and the United States.

## Acronyms

BEE	Building Energy Efficiency
CFP	Carbon Footprint of Products
EPC	Energy Performance Certificate
EPD	Environmental Product Declaration
GHG	Green House Gas
LCA	Life Cycle Assessment
LT-LEDS	Long-Term Low Emissions Development Strategies
LED	Light-Emitting Diode

MEPS	Minimum Energy Performance Standards
PV	Photovoltaic
NDC	Nationally Determined Contribution
ZEB	Zero Energy / Emissions Building

## Reference

### 1. Context of the built environment (page 1)

#### 1. Urban population

- Definition: The urban population in this country profile is the population living in Functional Urban Areas (FUAs) defined by the European Union and the OECD. By definition, a FUA is a cluster of local administrative units that are either located within a city or its commuter zones. For non-OECD countries, due to the lack of data, estimated FUA (eFUA) was used to determine urban population. The eFUA is determined in two steps: first, cities are identified based on densely populated clusters using specific criteria. Second, commuting zones are defined using a logistic regression model, considering factors like travel time and population size.
- Source: Schiavina M., Freire S., Carioli A., MacManus K. (2023): GHS-POP R2023A - GHS population grid multitemporal (1975-2030). European Commission, Joint Research Centre (JRC). PID: <http://data.europa.eu/89h/2ff68a52-5b5b-4a22-8f40-c41da8332cfe>, doi:10.2905/2FF68A52-5B5B-4A22-8F40-C41DA8332CFE
- Source of the FUA and eFUA: OECD/European Commission (2020), Cities in the World: A New Perspective on Urbanisation, OECD Urban Studies, OECD Publishing, Paris, <https://doi.org/10.1787/d0efcbda-en>.

#### 3. Energy & emissions data

- Data on residential buildings were taken from the IEA Energy End-uses and Efficiency Indicators Data Explorer
- Source: IEA (2023), Energy End-uses and Efficiency Indicators Data Explorer, IEA, Paris <https://www.iea.org/data-and-statistics/data-tools/energy-end-uses-and-efficiency-indicators-data-explorer>; <https://www.iea.org/data-and-statistics/data-product/energy-efficiency-indicators-highlights#data-sets>

#### 4. Heating & Cooling degree days

- Definition: Heating Degree Days (HDD) and Cooling Degree Days (CDD) are indices that measure the severity of cold and heat, respectively, in a specific time period by considering outdoor temperature and average room temperature. The base temperature, crucial in both calculations, represents the threshold for indoor heating (for HDD) or cooling (for CDD).

- Reference temperature: For Heating Degree Days (HDD) calculation, we used 18°C as a reference temperature. For Cooling Degree Days (CDD) calculation, we used 21°C as a reference temperature.
- Source: IEA (2023), Weather, Climate and Energy Tracker, IEA, Paris <https://www.iea.org/data-and-statistics/data-tools/weather-climate-and-energy-tracker>

The rest of data found on page 1 of the country profile were taken from the OECD Global Survey on Buildings and Climate.

## 2. Governance and capacity building (page 2-3)

Questions from the OECD Global Survey on Buildings and Climate used for country profiles are presented below each section.

### 1. Who des what

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7.2. To what extent can local governments adjust energy efficiency standards?

- Yes, local governments can customise energy efficiency standards
- No, but national energy efficiency standards differ across regions depending on the local climate.
- No, all building codes, standards or requirements are uniform across the entire country.
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7.7. Do some of cities/local governments implement more ambitious policy instruments for decarbonising and climate resilience than national government which could be expanded to other regions/cities or nationwide?

- Yes
- No
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7.8. Does the national government gather information of the implementation/progress in each regions/municipalities on policy indicators for decarbonising buildings and climate resilience (e.g. the number of insulation retrofits/year for each region/city)?

- Yes
- No
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7.9. [Neighbourhood approach] Does your country have district or neighbourhood level approach or planning on building decarbonisation?

- Yes, national government is supporting district/neighbourhood approach
- Yes, but only sub-national governments are working on district/neighbourhood approach
- No
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### 2. Capacity building

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5.2.5. If you answered "Yes" to the previous question, please select all skills that receive government support for training. (Please select all applicable options.)

- Designing for ZEB (both (nearly) zero emission building and (nearly) zero energy buildings)
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- Calculation for energy performance of buildings
  - Calculation for life cycle CO2 of buildings
  - Insulation
  - Installation of energy efficient equipment (e.g. heat pumps/PVs)
  - Other:

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7.4. How do higher levels of government support capacity building and technical assistance for local governments to implement building energy efficiency policies? (Please select all applicable options.)

- Providing funding for training programmes and workshops.
  - Implementing local regulations
  - Offering grants to local governments for hiring energy efficiency consultants.
  - Developing online platforms for sharing best practices and resources.
  - Establishing mentorship programmes connecting experienced officials with local governments.
  - Collaborating with universities/research institutions to offer specialised courses on energy-efficient building practices.
  - Hosting annual conferences focused on energy efficiency policy implementation.
  - Distributing toolkits and guidelines tailored to local government needs.
  - Co-ordinating regional networks for knowledge exchange and mutual support.
  - Creating incentive programmes that reward local governments for achieving energy efficiency targets.
  - Other:
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### 3. Goals and Policy Focus (page 3-4)

#### 1. Policy areas covered in the goals and existing commitments

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2.1.2. In your country's governance and policy landscape, where do the following sustainability themes, including net-zero goals, renewable energy targets, upfront carbon reduction, and whole life-cycle carbon reductions, find inclusion or consideration? Please indicate the relevant institutional levels or mechanisms. Additionally, could you please provide information on the elements into your country's NDCs related to these themes? (Please select all applicable options.)

- 1) Zero-emission/energy goals for existing residential stock are included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
  - 2) Zero-emission/energy goals for existing non-residential stock are included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
  - 3) Zero-emission/energy goals for new residential buildings are included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
  - 4) Zero-emission/energy goals for new non-residential stock are included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
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- 5) Renewable energy target for existing buildings is included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
- 6) Renewable energy target for new buildings is included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
- 7) Upfront carbon reduction target for the construction of buildings is included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
- 8) Whole life-cycle carbon reduction target for buildings is included in NDCs, LT-LEDs, Inter-ministerial body such as council of ministers and cabinet, a ministry-level strategy.
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## 2. Quantitative targets included in long-term goals

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2.2.3. Does your country's long-term target include any quantitative targets of the following measures? (Please select all applicable options.)

- Fossil fuel-free buildings (e.g. natural gas-free houses)
  - District heating (Heat network) / District cooling
  - Insulation
  - Heat pumps
  - Rooftop PVs
  - Solar heating of water
  - Other renewable energy installed buildings
  - Other: Reduction in emissions from public sector buildings by 75% by 2037. EPC targets.
  - No quantitative targets
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## 3. Policy focus for decarbonising buildings (TOP 3)

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2.3.1. Among the options below, which are the main targets/priorities on building policies? (Please select top THREE options for each category)

<Current policies>

- Passive design to reduce heating demand,
- Passive design to reduce cooling demand,
- Energy efficiency on heating,
- Energy efficiency on cooling,
- Switching energy to sustainable energy,
- Renewable energy,
- Embodied carbon,
- Circularity of building materials

<Future challenges >

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- Passive design to reduce heating demand,
  - Passive design to reduce cooling demand,
  - Energy efficiency on heating,
  - Energy efficiency on cooling,
  - Switching energy to sustainable energy,
  - Renewable energy,
  - Embodied carbon,
  - Circularity of building materials
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#### 4. Energy poverty

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2.2.4. Do you have strategies to reduce poverty and inequality via building decarbonisation measures?

- Yes
  - No
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2.2.5. If "Yes" to the previous question, please specify which strategies are currently in place (Please select all applicable options as well as the subsections)

- Stronger financial support for decarbonising public/social housing for low-income people compared with general private homes
  - Financial support for specific households to **buy** their homes as a zero-energy/emission buildings.  
(Specific households include:  low-income people,  elderly people,  households with more than 3 children,  Other)
  - Financial support for specific households to **renovate** their homes to zero-energy/emission buildings.  
(Specific households include:  low-income people,  elderly people,  households with more than 3 children,  Other)
  - Allowing partial retrofits to ease financial burden on upfront cost for specific households.  
(Specific households include:  low-income people,  elderly people,  households with more than 3 children,  Other)
  - Provide energy efficient appliances (e.g. LED) to specific households  
(Specific households include:  low-income people,  elderly people,  households with more than 3 children,  Other)
  - Energy bill coupon for specific households  
(Specific households include:  low-income people,  elderly people,  households with more than 3 children,  Other)
  - Energy coach/consultation for specific households  
(Specific households include:  low-income people,  elderly people,  households with more than 3 children,  Other)
  - Other (please specify):
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#### 4. Development of policy instruments (page 4-5)

##### 1. Standards and regulations for decarbonising buildings

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3.1.1. Does your country have a building code for obtaining a building permit?

- Yes, as a national building code
- Yes, as state building codes (e.g. state/prefecture/province)
- Yes, as local building codes (e.g. city/municipality)
- No

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3.1.2. Please select all elements that are included in the building codes which are applicable to **new construction**.

- Insulation/heat transmission coefficient (R-Value/ U-Value)
- Primary energy consumption (GJ or kWh/m<sup>2</sup>/y)
- Primary fossil-fuel energy consumption (GJ or kWh/m<sup>2</sup>/y)
- Energy efficiency of equipment (heating/cooling system, hot water supply, lighting etc.)
- Operational carbon reduction
- Upfront carbon reduction (A1 to A3 or A1 to A5 according to LCA system boundaries)
- Whole life cycle carbon (A to C or A to D according to LCA system boundaries)
- Comprehensive green building assessment (or building sustainability assessment)
- Other:

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3.1.3. Please select all the building types (in terms of use/size) for which the mandatory energy efficiency code is applicable.

- Larger non-residential buildings (e.g. above 2,000m<sup>2</sup>)
- Smaller non-residential buildings (e.g. below 2,000m<sup>2</sup>)
- Larger residential buildings (e.g. above 300m<sup>2</sup>)
- Smaller residential buildings (e.g. below 300m<sup>2</sup>)
- Renovation of residential buildings
- Renovation of non-residential buildings

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3.4.1. Does your government formally include sustainability criteria in government building procurement stricter than the standards for privately owned buildings? (Please select all applicable options.)

- Yes, there are stricter standards for the energy efficiency of buildings  
( only for new construction  for both new construction and renovation)
  - Yes, there are stricter standards for Zero Energy/Emission Building standards  
( only for new construction  for both new construction and renovation)
  - Yes, there are stricter standards for renewable energy standards  
( only for new construction  for both new construction and renovation)
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- Yes, there are stricter standards for the whole life cycle /embodied carbon  
( only for new construction  for both new construction and renovation)
  - Yes, there are stricter standards for using locally sourced and recycled materials  
( only for new construction  for both new construction and renovation)
  - No

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5.1.1. Does your country have an energy/environment labeling programme for buildings in place? (Please select all applicable options.)

- Yes, Energy Performance Certificate (EPC)
- Yes, Energy labelling on passive house
- Yes, Energy labelling on annual energy consumption
- Yes, built environment certification that is more comprehensive (e.g. LEED (Leadership in Energy and Environmental Design), BREEAM (Building Research Establishment Environmental Assessment Methodology))
- Yes, a labeling system that encompasses the whole life carbon emissions
- No

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5.1.2. Does your country have a **mandatory** energy performance certificate (EPC) or **mandatory** energy labeling programme for buildings in place? (Please choose all applicable options.)

- Yes, for all new buildings
- Partially yes, only for all new non-residential buildings
- Partially yes, only for all new residential buildings
- Yes, for all existing buildings
- Partially yes, only for buildings for renovation
- Partially yes, only for buildings for sales/rent
- No

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3.3.1. Does your country have standardised methods and tools for calculating and reporting embodied carbon or life cycle GHG emissions of buildings?

- Yes
- No

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3.3.2. Does your country have a national database of CFP (Carbon Footprint) / EPD (Environmental Product Declaration) for building materials/equipment?

- Yes, owned/managed by the national government/a governmental agency
  - Yes, owned/managed by a non-governmental agency/the private sector
  - No
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3.3.5. Does your country offer incentives to promote the use of the low-carbon materials or the reuse of construction materials at new construction or retrofitting buildings?

- Grant for using low-carbon materials in new buildings or retrofits
- Grant for using bio-based materials in new buildings or retrofits
- Grant for using reused materials in new buildings or retrofits
- Other:

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- No incentive for new construction or retrofits, but only for material companies to develop low- carbon materials
- No incentive

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3.3.6. Does your country have policy tools (standards, certificates, regulation or incentives) to promote re-use of building materials? Does the government actively collect and maintain data related to the reuse of construction materials? If so, please specify:

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3.3.3. Which building regulation does your national government have for addressing embodied carbon / life cycle CO2 emissions? (Please select all applicable options.)

- Life cycle CO2 emissions declaration (calculation) for public buildings
- Life cycle CO2 emissions declaration for residential buildings
- Life cycle CO2 emissions declaration for non-residential buildings
- Life cycle CO2 emissions limit value regulation for public buildings
- Life cycle CO2 emissions limit value regulation for residential buildings
- Life cycle CO2 emissions limit value regulation for non-residential buildings
- Other
- No policy instruments for embodied carbon / life cycle CO2 emissions

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3.2.1. Does your country have Minimum Energy Performance Standards (MEPS) regulation for existing buildings? (Note: This is not a question for MEPS for appliances.)

- Yes
- No

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## 2. Climate resilience

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6.1. [Heat wave] What kind of measures (regulation, financial incentives, etc.) are put in place in the building sector to tackle extreme heat? (Please choose all applicable options.)

- Orientation of main building façades away from direct sunlight to minimise solar gains ( regulation  financial incentives)
  - Light-coloured and reflective materials ( regulation  financial incentives)
  - Green roof ( regulation  financial incentives)
  - Green façades ( regulation  financial incentives)
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Other:

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6.2. [Storm / Flood] What kind of measures (regulation, financial incentives, etc.) are put in place to protect buildings from storms/floods? (Please choose all applicable options)

Lowest liveable floor elevated above ground level ( regulation  financial incentives)

Effective roof drainage system ( regulation  financial incentives)

Hip-roof (with slopes of 30 degree) ( regulation  financial incentives)

Hurricane straps to fasten the roof to the walls ( regulation  financial incentives)

Impact-resistant glass for windows and doors ( regulation  financial incentives)

Installation of backup generators ( regulation  financial incentives)

Installation of microgrids ( regulation  financial incentives)

Other:

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6.3. Have there been any instances of **climate-related** disasters that prompted revisions to building regulations?

Yes

No

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6.5. Does your government have a building certification system on climate resilience? (Please choose all applicable options)

Resilience to flood risk

Resilience to heat wave

Other

None

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