

Annex A. Questionnaire of OECD Survey on Decarbonising Buildings in Cities and Regions

Subnational policies and challenges

Section 1. Subnational plans and strategies

1.1. Does your region/city have dedicated plans or strategies on energy efficiency in buildings?

- Energy efficiency in buildings as stand-alone plans or strategies
 - Yes
 - Ongoing, in development
 - No
- Energy efficiency in buildings as part of broader regional/municipal energy plans or strategies
 - Yes
 - Ongoing, in development
 - No
- Energy efficiency in buildings as part of broader regional/municipal climate plans or strategies
 - Yes
 - Ongoing, in development
 - No
- Energy efficiency in buildings as part of COVID-19 recovery plans or strategies
 - Yes
 - Ongoing, in development
 - No

If you answered “yes” to one of above choices, please provide the names of plans or strategies and the links to websites and documents, if available.

1.1.1. If you answered “Yes” to the previous question, do they have quantitative targets and monitoring indicators related to energy efficiency in the building?

- Yes, they have both quantitative targets and monitoring indicators.
- Yes, they only have quantitative targets.
- No, they do not have quantitative targets nor monitoring indicators.
- Other. Please specify: _____.

If you answered “Yes” or “Other”, please provide a description on specific policy targets/goals for improving energy efficiency in the building sector and whether your policies/strategies prioritise certain types of buildings (e.g. single-family homes, condominiums, social housing, office buildings, public buildings, etc.).

1.1.2. If you answered “Yes” to the previous question, are these targets incorporated in the municipal/regional investment planning process to support the identification/prioritisation of the municipal/regional investments?

- Yes
- No

If you answered “Yes”, please provide a description on what systems are in place to monitor progress in achieving these targets (e.g. monitoring how the annual investment plan is contributing to these targets).

1.2. What are the three key priorities in promoting energy efficiency in buildings for your city or region?

- Please select **three key priorities only** that need to be done to advance energy efficiency in buildings, including “Other”.
 - New or updated subnational plan or strategy on buildings
 - Stricter building energy codes / minimum legal requirement
 - Greater use of public building procurement
 - Greater support to innovative local projects and initiatives
 - Greater capacity building effort in subnational governments
 - Broader engagement of citizens and the private sector / greater awareness raising
 - Greater support to technology development
 - New or enhanced database on energy efficiency in buildings
 - Active co-operation to national policy implementation
 - Other

If you chose “Other”, please specify.

1.3. In your city/region, how would you assess the primary benefits of energy efficiency in buildings?

- Please assess each of the benefits by their level of importance in the view of your region/city. For instance, your region/city may consider all the benefits to be “very important” or only one of the benefits to be “very important” – please tick the boxes accordingly.

	Very important	Moderately important	Not important
Reduction of greenhouse gas emissions			
Decreased air pollution			
Job creation and economic competitiveness in green industries			
Reduction of energy consumption and increased energy independence			
More comfortable and productive working spaces			
More comfortable homes			
Reduced cost of paying the energy bill for low-income households			
Other			

If you chose “Other”, please specify.

Section 2. Local specificities

2. What are the major local specificities and/or unique contexts related to energy efficiency in buildings? Does your region/city recognise them as strengths/opportunities or weakness/threats?

Local specificities/Unique contexts	Strength/Opportunity	Weakness/Threat	N/A
Climate (heating/cooling degree days)			
Volume of old building stock			
Volume of social housing stock			
House price and housing affordability			
Energy price and energy affordability			
Volume of new construction/renovation			
Location of universities and research institutes			
Preparedness/skill of local construction firms			
Administrative capacity of local authorities			
Financing for energy efficiency retrofits			
Other			

If you chose “Other”, please specify.

Optional: Please provide a brief development on your above choices.

Section 3. Subnational policy measures

1) Building energy codes

3.1. Are building energy codes in place in your region/city?

- Yes, mandatory building energy codes in place
- Yes, voluntary building energy codes in place
- No, but codes in development
- No, no building energy codes in place

3.1.1. If you answered “Yes” to the previous question, to what types of buildings are the building energy codes applied in your region/city?

- Please tick all applicable boxes.
 - Only new buildings
 - Existing buildings when conducting a certain scale of renovation, in addition to new buildings
 - Existing buildings when rented or sold, in addition to new buildings
 - All existing buildings
 - Other

If you chose “Other”, please specify.

3.1.2. If you answered “Yes” to Question 3.1, does your region/city have its own regional/local building energy codes?

- Yes, its own regional/local building energy codes
- No, utilising national building energy codes (or equivalent)

3.1.3. If you answered “Yes” to the previous question, do the regional/local building energy codes require a higher level of energy efficiency than the national building energy codes?

- Yes, a much higher level
- Yes, a slightly higher level
- No, the same or lower level
- Unable to compare the levels

3.1.4. If you answered “Yes” to Question 3.1.2, does the regional/local building energy codes require the level of net-zero energy buildings (or equivalent)?

- Yes, for part of new buildings
- Yes, for all new buildings
- Yes, for part of existing buildings in addition to new buildings
- Yes, for other sets of buildings
- No

If you chose “Yes, for part of new buildings”, “Yes, for part of existing buildings” or “Yes, for other sets of buildings”, please specify the types of buildings.

3.2. What other regional/local regulatory measures does your region/city take, related to energy efficiency in buildings?

- Please tick all applicable boxes.
 - Zoning regulations (e.g. energy efficient building zones)
 - Energy efficiency requirements for buildings built on lands owned by subnational governments
 - Mandatory reporting (e.g. energy consumption, carbon emissions)
 - Mandatory building certification (e.g. green building certifications)
 - Other

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected.

2) Public buildings

3.3. Does your region/city promote energy efficiency measures for public buildings?

- Yes
- No

3.3.1. *If you answered “Yes” to the previous question, what types of public buildings are targeted?*

- Please tick all applicable boxes.
 - Offices (e.g. subnational government offices)
 - Education (e.g. public schools and universities)
 - Healthcare
 - Medical
 - Public housing
 - Other (e.g. libraries, community centres, sports facilities)

3.3.2. *If you answered “Yes” to Question 3.3, what types of energy efficiency measures does your region/city promote for public buildings?*

- Please tick all applicable boxes.
 - Energy efficiency renovations/retrofits
 - Construction of energy efficient buildings
 - Energy efficient appliances and equipment
 - Digital technologies (e.g. smart efficient buildings, grid-interactive buildings, smart meters)
 - Renewable energy use (e.g. solar PV, solar heaters)
 - Other

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected.

3.3.3. *If you answered “Yes” to Question 3.3, does your region/city require higher level of energy efficiency for public buildings than the national building energy codes?*

- Yes, a much higher level
- Yes, a slightly higher level
- No, the same or lower level
- Unable to compare the levels
- No specific standard or criteria

3.3.4. *If you answered “Yes” to Question 3.3, does your region/city require the level of net-zero energy buildings (or equivalent) for public buildings?*

- Yes
- Yes, for part of new buildings
- Yes, for all new buildings
- Yes, for part of existing buildings in addition to new buildings
- Other
- No

If you chose “Yes, for part of new buildings”, “Yes, for part of existing buildings” or “Yes, for other sets of buildings”, please specify the types of buildings.

3) Financial incentives/financing mechanisms

3.4. Does your region/city provide its own financial incentives or financing mechanisms for energy efficiency measures in buildings?

- Yes, its own financial incentives or financial mechanisms
- No, utilising nationally provided financial incentives or financing mechanisms
- No, no financial incentives or financing mechanisms provided

3.4.1. If you answered “Yes” to the previous question, for what types of energy efficiency measures does your region/city provide financial incentives or financing mechanisms?

- Please tick all applicable boxes.
 - Energy efficiency renovations/retrofits in general
 - Energy efficiency renovations/retrofits for low-income households (e.g. energy poor)
 - Construction of energy efficient buildings
 - Energy efficient appliances and equipment
 - District-scale energy management system (e.g. district energy, energy storage facilities, co-generation systems and EV batteries)
 - Digital technologies (e.g. smart efficient buildings, grid-interactive buildings, smart meters)
 - Renewable energy use (e.g. solar photovoltaic, solar heaters)
 - Other

If you chose “Other”, please specify.

3.4.2. If you answered “Yes” to Question 3.4, what types of financial incentives or financial mechanisms does your region/city provide?

- Please tick all applicable boxes.
 - Support to administrative costs (e.g. monitoring actual energy savings)
 - Tax exemptions
 - Grants
 - Loans and loan guarantees
 - Auctions and obligations (e.g. obligations imposed on energy retailers or distributors to achieve specific energy efficiency outcomes)
 - Mortgages (e.g. preferential interest rates for energy efficient homes)
 - Small scale financing (e.g. on-bill financing, on-tax financing)
 - Green bonds
 - Promotion of new business models (e.g. cooling as a service, heating as a service, energy service company, or ESCO)
 - Other

If you chose “Other”, please specify.

In the open-response box below, elaborate on the option(s) you selected in Question 3.4.1 and 3.4.2.

4) Other policy measures

3.5. What other types of policy measures does your region/city take to enhance energy efficiency in buildings?

- Please tick all applicable boxes.
 - Citizen engagement (e.g. campaigns, “one-stop shop” technical assistance)
 - Support to local industry (e.g. skill development for small and medium-sized local businesses)
 - Private sector engagement (e.g. platform for local businesses related to energy efficiency in buildings)
 - Capacity building in subnational governments (e.g. code enforcement, public procurement)
 - Pilot and demonstration projects (e.g. low-carbon district developments)
 - Locally tailored analysis and planning (e.g. local database on building energy performance)
 - None
 - Other

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected.

Section 4. Obstacles

4.1. What are the three greatest obstacles to enhancing energy efficiency in buildings in your region/city?

- Please select **three key obstacles only**, including “Other”.
 - Lack of political momentum
 - Insufficient budget
 - Insufficient human resources and technical expertise
 - Lack of financial incentives for property owners
 - Lack of motivation for property owners (e.g. “split incentives”, difficulty of reaching co-investment decision in multifamily residences)
 - Institutional fragmentation across relevant departments and agencies
 - Insufficient local market size to bring in private investment
 - Lack of incentives from national regulations for developing new business models
 - Insufficient speed of industry (e.g. contractors, professionals) in responding to needed innovations and new technologies
 - Insufficient data and analysis on local building stock and policy measures
 - Other

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected.

4.2. What are the current data and information gaps that prevent the understanding of where your city and region stand in terms of energy efficiency in buildings?

- Please rate the following statements, according to your level of agreement: “strongly agree” / “agree” / “disagree” / “strongly disagree” / “unsure or no opinion

	Strongly agree	Agree	Disagree	Strongly disagree	Unsure or no opinion
Your city/region has data/information gaps on monitoring current status and outcomes on energy efficiency in buildings (e.g. lack of data on energy consumption from buildings or energy performance of buildings in your city/region)					
Your city/region has data/information gaps on providing a clear rationale for citizens to invest in energy efficiency measures in buildings (e.g. benefits of energy efficiency in buildings for individuals or local communities are unclear)					
Your city/region has data/information gaps on developing a clearly defined local plan or strategy related to energy efficiency in buildings (e.g. a lack of building stock data, unclear which buildings to target)					
Your city/region has data/information gaps on assessing its policies compared to peer city/region (e.g. a lack of comparable data on policy framework condition or energy efficiency outcomes)					

Optional: In the open-response box, please provide any additional information: for instance, information on specific data/information gaps or how your region/city is going to address them. (Where possible, please also outline any ongoing efforts to utilise digital technologies for data collection, analysis and management, e.g. accessing smart meter data, environmental data, advanced analytics, data-driven spatial planning, digital twins, aerial data.)

Section 5. Policy co-ordination and stakeholder engagement

5.1. To which ministry is the local authority with power of mandate on energy efficiency in buildings linked?

- Please tick all applicable boxes.
 - Ministry of Energy (or equivalent)
 - Ministry of Housing and Urban Development (or equivalent)
 - Ministry of Environment (or equivalent)
 - Other

If you chose “Other”, please specify.

5.2. How well are energy efficiency policies in buildings co-ordinated across and between levels of government in your country?

- Please rate the following statements, according to your level of agreement: “strongly agree” / “agree” / “unsure or no opinion” / “disagree” / “strongly disagree”

	Strongly agree	Agree	Disagree	Strongly disagree	Unsure or no opinion
There is good horizontal policy co-ordination on energy efficiency in buildings across sectoral agencies/department within your region/city					
There is good horizontal policy co-ordination on energy efficiency in buildings, between your region/city and other regions/cities (e.g. multiple local administrative entities spread across/beyond a large urban area)					
There is good vertical policy co-ordination on energy efficiency in buildings, between your region/city and the national government					

In the open-response box, please provide any additional information: for instance, if you can elaborate on specific vertical and horizontal policy co-ordination challenges and how your region/city/country is addressing them.

5.3. Beyond governments, which types of stakeholders in the private and utilities sectors are engaged in policy making and implementation related to energy efficiency in buildings?

- Please tick all applicable boxes.
 - Construction
 - Architecture
 - Building inspection
 - Real estate
 - Utilities (electricity, gas, etc.)
 - Energy service company (ESCO)
 - Equipment manufacturing (heating, air conditioning, ventilation, lighting, etc.)
 - Financial service
 - Local business in general
 - Other
 - None

If you chose “Other”, please specify.

5.4. Beyond governments, which types of stakeholders in civil society and non-profit organisations are engaged in policy making and implementation related to energy efficiency in buildings?

- Please tick all applicable boxes.
 - Public housing authorities
 - Social housing owners
 - Building/homeowners associations
 - Landlords associations

- Non-profit organisations
- Academia/research institutes/universities
- Citizens
- Other
- None

If you chose “Other”, please specify.

5.5. Which mechanisms are used to engage these stakeholders?

- Please tick all applicable boxes.
 - Consultation (meetings, workshops, forums, etc.)
 - Multimedia communication strategy to inform the public and stakeholders on the policy-making process
 - Open access to policy documents and data
 - Co-drafting, partnership (where input has been actively taken into account to shape the policy)
 - Official public hearings and discussions
 - Other
 - None

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected in Question 5.3, 5.4 and 5.5.

Section 6. Support from national government and supranational and international donors

6.1. Do you think your region/city has enough support (e.g. financial, technical, human resources) from the national government to enhance energy efficiency in buildings?

- Yes
- No

6.2. Which types of support from the national government does your region/city need further?

- Please tick all applicable boxes.
 - Removing barriers in national regulations that inhibit innovative local actions
 - Technical support for developing local plans, strategies or building energy codes
 - Capacity-building support (e.g. code enforcement, public building procurement)
 - Financial support to advance pilot projects in cities and regions
 - Territorial considerations in national plan, strategy or regulations (e.g. differentiated supports/building codes for different types of cities/regions)
 - Database on energy efficiency in buildings with localised indicators and benchmarks
 - Knowledge sharing of best technologies and practices
 - Platform for public private partnership (e.g. between subnational governments and relevant national private sectors)

- Awareness raising among general public
- Other

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected.

6.3. To what extent does your region/city utilise funding or support from multilateral development banks, supranational or other international donors, with regard to energy efficiency in buildings?

- Please rate the extent to which your region/city utilise funding/support from the following organisations, according to the level of utilisation: “extensively” / “moderately” / “not at all” and provide corresponding names of organisations.

	Extensively	Moderately	Not at all	
Multilateral development banks				
Supranational organisations (e.g. European Union)				
Other international donors				

In the open-response box below, please provide additional information (e.g. names of organisations, fund/facilities and projects, year, and amount of funding) on your above choices.

Section 7. Challenges and opportunities related to COVID-19 and recovery packages

7.1. How has the COVID-19 crisis affected your city’s or region’s actions on energy efficiency improvement in buildings?

- Please tick all applicable boxes.
 - Slowdown due to declining construction activity
 - Less public expenditure for energy efficiency in buildings due to rising public deficit
 - Greater public expenditure for energy efficiency in buildings from COVID-19 recovery packages
 - Less demand for private energy efficiency investment in buildings due to economic downturn
 - Greater demand for home retrofits or renovations (including energy efficiency) as a place to telework
 - Greater needs for energy efficiency retrofits or renovations for low-income households to ensure energy affordability
 - Other

If you chose “Other”, please specify.

Optional: In the open-response box below, please elaborate on the option(s) you selected.

7.2. Does your region/city think that energy efficiency measures in buildings will contribute to the COVID-19 recovery?

- Yes
- No

7.3. Does the COVID-19 recovery plan/strategy of your region/city include energy efficiency measures in buildings?

- Yes
- No

7.4. If you answered “Yes” to the previous question, which types of energy efficiency measures are they?

- Please tick all applicable boxes.
 - Construction of energy efficient public housing
 - Energy efficient renovations of public housing
 - Provide financial incentives for construction of energy efficient private/social housing
 - Provide financial incentives for energy efficient renovations of private/social housing
 - Promote investment in digitalised energy management
 - Other

If you chose “Other”, please specify.

In the open-response box below, please elaborate on the option(s) you selected.

Section 8. Other

8. Optional: Please provide additional information, if there are any particular examples or more information with regard to building energy efficiency policies that you did not mention in the previous questions.

Data and indicators relating to energy efficiency in buildings (OPTIONAL)

Please provide the available data on the following indicators of your region/city for the year 2010 and 2019 (or the most recent available year before 2019) by filling in the following tables. Please also indicate the data sources and the hyperlinks (if public).

Section 9. Basic data

Demographic and socioeconomic data

Indicator	2010	2019	Data source (hyperlinks or contact details)
Population [persons]			
Population density [persons/km ²]			
GDP per capita [local currency/capita]			
Share of household expenditures on energy (electricity, gas and other housing fuels) [%]			
Excess winter deaths index [%] <i>(the excess of average daily deaths in winter (December to March) compared with non-winter months from the preceding August to November and the following April to July, expressed as a percentage)</i>			

Energy consumption and renewable energy

Indicator	2010	2019	Data source (hyperlinks or contact details)
Total energy consumption [PJ]			
Energy consumption in Residential Sector [PJ] <i>(Residential sector may be described differently depending on the country, for example, "Household sector" or "Housing sector".)</i>			
Energy consumption in Non-residential Sector [PJ] <i>(Non-residential sector may be described differently depending on the country, such as "Commercial sector" or "Tertiary sector".)</i>			
Renewable energy consumption [in petajoules, or PJ] <i>(Consumption of energy from renewable sources such as hydropower, wind and solar.)</i>			
Distributed solar PV capacity [GW]			

Section 10. Data on building stock

Residential building stock

Indicator	2019 [# of dwellings]	2019 [m ²]	Data source (hyperlinks or contact details)
Total dwellings (stock)			
Dwellings built before 1970			
Single-family dwellings (<i>dwellings such as detached houses and semi-detached houses</i>)			
Multifamily dwellings (<i>dwellings such as apartments, flats and condominiums</i>)			
Public housing (<i>rental housing provided by public authorities</i>)			
Social housing other than public housing (<i>rental housing provided at sub-market prices, excluding public housing</i>)			
Dwellings annually constructed			

Non-residential building stock

Indicator	2019 [# of buildings]	2019 [m ²]	Data source (hyperlinks or contact details)
Total non-residential buildings (stock)			
Non-residential buildings built before 1970			
Public buildings owned by national government or relevant agencies			
Public buildings owned by regional/local governments or relevant agencies			
Non-residential buildings annually constructed			

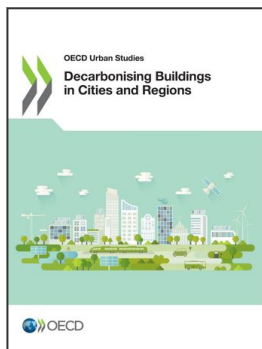
Section 11. Data on building energy performance

Residential buildings

Indicator	2010	2019	Data source (hyperlinks or contact details)
Average U-value of residential buildings [W/m ² K] (average thermal transmittance of residential buildings, which indicates the level of insulation)			
Share of dwellings compliant with local building energy codes [%]			
Share of dwellings that have taken energy performance certification or other voluntary certifications [%]			
Number of dwellings certified as zero-energy buildings or equivalent [# of dwellings]			
Number of dwellings annually undergoing energy efficient renovations [# of dwellings]			
Residential energy consumption per floor space in single-family dwellings [kWh/m ² /year]			
Residential energy consumption per floor space in multifamily dwellings [kWh/m ² /year]			

Non-residential buildings

Indicator	2010	2019	Data source (hyperlinks or contact details)
Share of non-residential buildings compliant with local building energy codes [%]			
Share of non-residential buildings that have taken energy performance certification or other voluntary certifications [%]			
Number of non-residential buildings certified as zero-energy buildings or equivalent [# of buildings]			
Number of non-residential buildings annually undergoing energy efficient renovations [# of buildings]			



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