3 What are cities and regions doing to decarbonise buildings?

This chapter analyses the four main roles and actions of cities and regions in decarbonising buildings: 1) regulations; 2) financing; 3) planning and co-ordination; and 4) engagement of local actors, based on the results from the OECD Survey on Decarbonising Cities and Regions. Cities and regions are undertaking ambitious policy measures on building energy codes and public buildings, which can be scaled up. Support for financing could be further diversified to meet the needs of property owners with locally available resources. Most cities and regions surveyed have their own plans, but face challenges in implementing them, such as incomplete monitoring and evaluation. Subnational governments already promote citizen engagement and can expand private sector engagement and support for local industry.

Decarbonising buildings, in particular existing buildings, requires a comprehensive set of policy measures. A single policy instrument cannot fully address the variety of barriers that building owners face in making the decision to invest in building decarbonisation. These include high upfront costs; lack of consumer awareness; and high transaction costs (e.g. lengthy negotiation processes with renters, co-owners and a wide array of service providers). A variety of policy instruments are available, including regulations (e.g. mandatory building energy codes); financial incentives (e.g. grants, tax exemptions, low-interest loans and mortgages, and small-scale financing); awareness raising and information provision (e.g. building energy performance certification); and stakeholder engagement. However, an individual policy instrument does not appear to create an incentive great enough for property owners to invest in building decarbonisation. A comprehensive policy mix that combines these measures is clearly needed, as well as planning and implementation that create larger impacts.

National policies play a key role in setting up a framework for energy efficiency investments and providing supporting policy instruments to incentivise property owners and developers. These include stricter building energy codes for both new and existing buildings, mandatory energy performance certificates for buildings for sale or rent, and tax incentives for renovations. On the other hand, cities and regions have a unique ability to promote the decarbonisation of building stock by devising their own regulatory and financial policy measures, as well as by promoting effective planning and stakeholder engagement that is tailored to local needs. This section analyses the key role of cities and regions and assesses cities and regions' progress on four key aspects of building decarbonisation that are particularly relevant for cities and regions: 1) regulatory tools and frameworks; 2) financing and business models; 3) planning and co-ordination; and 4) engagement and skill development of local actors.

Leveraging regulatory tools and frameworks for building decarbonisation

Regulations are the most fundamental policy tools for improving buildings' energy efficiency. A wide array of regulations can be used, including mandatory building energy codes, strict requirements for public buildings or buildings on public land, restrictions on the sale and rent of the worst-performing buildings and carbon emission caps for large buildings. The challenge is how to develop ambitious, effective regulatory measures that can drive energy efficiency improvements in existing buildings in order to achieve net-zero carbon building stock, while ensuring both housing affordability and effective enforcement of these regulations. The key step is to engage and support cities and regions in this process effectively, since they are familiar with local building stock and, in most cases, responsible for zoning and code enforcement. Some cities are even introducing their own original ambitious regulations. In addition, subnational governments own a large number of public buildings, for example public housing, government offices, public schools and community centres. It is cities and regions that can impose a higher standard of energy efficiency requirements for public buildings and that can encourage new technologies and business models for further renovations in private buildings.

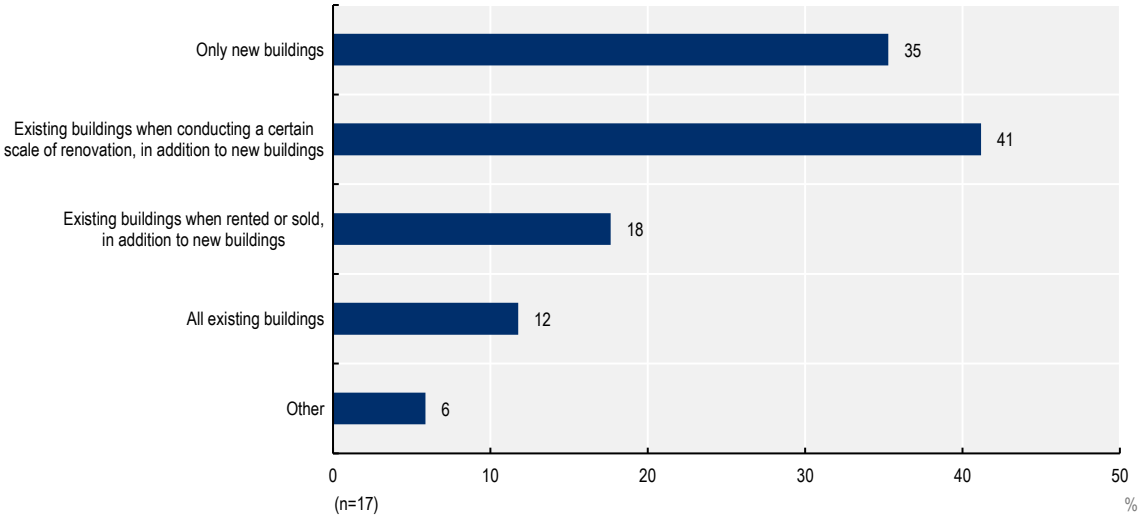
Building energy codes and other regulations

Building energy codes are a key instrument for ensuring the construction and maintenance of energy efficient buildings. However, the coverage of building energy codes is rarely uniformly applied and, where they are in place, the codes may not be aligned with the goal of net-zero carbon emissions by 2050. In November 2021, building energy codes were in place in 80 countries, of which only 54 countries had mandatory codes at the national level for both residential and non-residential buildings (IEA, 2021[1]). Sub-Saharan Africa and South and Central America have the least widespread coverage of mandatory codes. These codes are mandatory in most developed countries, although whether they are mandatory also varies by region in some countries. In addition, an increasing number of countries and regions have introduced building energy certification (UNEP, 2021[2]). Of the cities and regions that responded to the

OECD survey, 89% have building energy codes in place, of which 71% are mandatory. It can be assumed that the overall percentages are lower, given that those that responded to the OECD survey are likely to be more aware and engaged in the agenda for decarbonising buildings. A key challenge for policy makers is to broaden the coverage and enforcement of mandatory building energy codes across all local and regional governments, especially including those in developing economies. Enforcement of building energy codes is important, as the actual energy performance of buildings depends on their compliance with the building energy codes. It will fall to municipalities, which are often responsible for carrying out on-site inspections and issuing building permits, to check them effectively.

Another key challenge is how to apply the requisite level of energy efficiency requirements to existing buildings. Of the 17 cities and regions with building energy codes in place, whether mandatory or voluntary, 35% apply building energy codes only to new buildings (Figure 3.1). Given the very low rate of new construction (about 0.5-2% in developed economies), regulations have very small impacts on the energy performance of the overall building stock. Some cities and regions also apply building energy codes to existing buildings, including the region of Emilia-Romagna (Italy), Scania province (Sweden), Toronto (Canada) and Oakland (US). Most cities and regions apply building energy codes when building owners undertake renovations at a certain scale. Scania province applies them to all existing buildings and Emilia-Romagna applies them when buildings are rented or sold.

Figure 3.1. Primary targets for building energy codes applied in cities and regions



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

While many cities and regions apply national building energy codes or equivalent codes, 53% of cities and regions that responded to the survey have their own building energy codes. Most cities and regions (88%) require higher energy efficiency than national building energy codes and 25% require buildings to be net-zero energy level. For example, the cities of Stockholm and Toronto require a much higher level of energy efficiency than their national building energy codes do. In the case of Scania province, building energy codes require the level of net-zero-energy buildings for new buildings and part of existing buildings. This indicates that the potential subnational governments have to develop more ambitious building energy codes. Considering that a disproportionate percentage of population and buildings are concentrated in cities, large, high-income cities with more human and technical resources can play a key role in spearheading ambitious regulations. When applying ambitious building energy codes, such as net-zero energy level, cities and regions also need to provide a road map to allow lead time for the relevant industries to explore cost-optimal ways of achieving net zero. For instance, in Canada, the Province of

British Columbia has taken the initiative to bring multiple stakeholders and cities together and successfully introduced its innovative province-wide building energy codes, BC Step Code, to achieve zero-energy buildings by 2032 (Box 3.1). When applying these high-level building energy codes to renovations, cities and regions also need to define a timetable for buildings, to make sure that renovation work can be sequenced and bundled in order to minimise costs.

In addition to building energy codes, cities and regions have introduced a variety of regulatory measures capitalising on their jurisdiction over buildings and their interactions with property owners. These include zoning regulations, stricter energy efficiency requirements on public land, mandatory building certification, mandatory reporting of energy consumption or carbon emissions, and mandatory emissions caps. Some cities are introducing stricter and more ambitious standards for building energy efficiency than those at the national level. Stockholm, for example, has introduced a Passive House Standard (a maximum of 55 kWh/m^2) for new construction on city-owned land, higher than the national standard (80 kWh/m^2) (Eurocities, 2019[3]). New York City has introduced an ambitious regulation requiring existing buildings of more than 25 000 square feet to cap their greenhouse gas emissions starting in 2024. The city aims to reduce emissions from buildings in line with climate targets based on its past efforts, including mandatory disclosure of the energy demand of large buildings and advisory services for energy efficiency retrofits (New York City Mayor's Office of Sustainability, 2019[4]).

Box 3.1. Net-zero energy-ready buildings through shared leadership: British Columbia, Canada

Background and problem: To achieve net-zero carbon emission by 2050 at the least cost, all new buildings must be so-called net-zero energy buildings. Introducing ambitious building energy codes is not an easy task, however, since building value chains need to be prepared for the new modes of construction, and universal coverage in a region is needed to encourage a transformation of the market. In British Columbia, incremental revisions to the provincial building energy codes and fragmented applications of different local codes were holding back effective low-carbon transition in the building sector, as is often the case in other regions.

Innovative solutions: The province of British Columbia solved this problem by taking the initiative to bring multiple stakeholders and cities together and introduce innovative province-wide building energy codes. The Energy Step Code provides a roadmap for required levels of building energy performance, allowing gradual interim steps to reach net-zero energy level (20% improvement by 2022, 40% improvement by 2027 and net-zero energy ready by 2032). It clarifies goals for business planning and lead time for builders and manufacturers to explore more energy efficient technologies, practices and products. British Columbia has also created the Energy Step Code Council, a multi-stakeholder advisory body of representatives from provincial ministries, major industry and professional associations, covering more than 55 000 members in the province. The Council has developed implementation guidelines on the Energy Step Code and provided support for both local businesses and municipalities. It also helped small municipalities with less technical capacities to prepare for the next steps.

Impacts and benefits: The share of new residential construction subject to the Energy Step Code has increased to 70% in 2019, from 22% in 2018. In addition, preparedness in both municipalities and business sector has increased at a rapid rate. The percentage of local governments rated as having "moderate, good or excellent knowledge of the BC Step Code" increased to 88% in 2019 from 61% in 2017, while the share of businesses reporting "feeling prepared for BC Energy Step Code" exceeded 70% in 2019. It is estimated that Vancouver's green building policies and other local governments' implementation of the Energy Step Code will create a CAD 3.3 billion market for green building products and about 1 700 jobs each year for Metro Vancouver from 2019 to 2032. By 2030, including the impacts

by the Energy Step Code, the province of British Columbia aims to reduce greenhouse gas (GHG) emissions by 40% below 2007 levels.

Experience and lessons: First, to create a momentum for a market transformation, regional governments can develop long-term roadmaps towards ambitious targets (e.g. net-zero energy level) for both industry and local communities, rather than taking the traditional, short-term approach of adding incremental improvements to the code. Second, regional governments can create a platform for a wide range of stakeholders, using their networks to provide technical support to businesses and communities in need. This will help to introduce an ambitious regional vision, despite the variations in preparedness and skill levels within a region.

Source: BC Housing (2020[5]), *2019 BC Energy Step Code Market Response Study*, https://energystepcode.ca/reports/ (accessed on 23 October 2021); BC Housing's Research Centre and the Community Energy Association (2019[6]), *2019 BC Energy Step Code Local Government Survey*, https://energystepcode.ca/app/uploads/sites/257/2019/07/FINAL-BC-Energy-Step-Code-Local-Government-Survey-Report-July-2019.pdf; Government of British Columbia (n.d.[7]), *Energy Step Code*, https://energystepcode.ca/; Glave, J. and R. Wark (Glave and Wark, 2019[8]), *Lessons from the BC Energy Step Code*, https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/reports/bcenergystepcode_lessons_learned_final.pdf (accessed on 23 October 2021); Vancouver Economic Commission (2019[9]), *Green Buildings Market Forecast: Demand for Building Products, Metro Vancouver 2019–2032*, https://www.vancouvereconomic.com/research/green-buildings-market-research/ (accessed on 23 October 2021); May, Z. (2020[10]), "Energy Step Code – Building Beyond the Standard", https://www.oecd.org/cfe/cities/energy-efficiency-cities.htm; Energy Step Code (n.d.[11]), *About the site and council*, https://energystepcode.ca/about/.

Public building policies

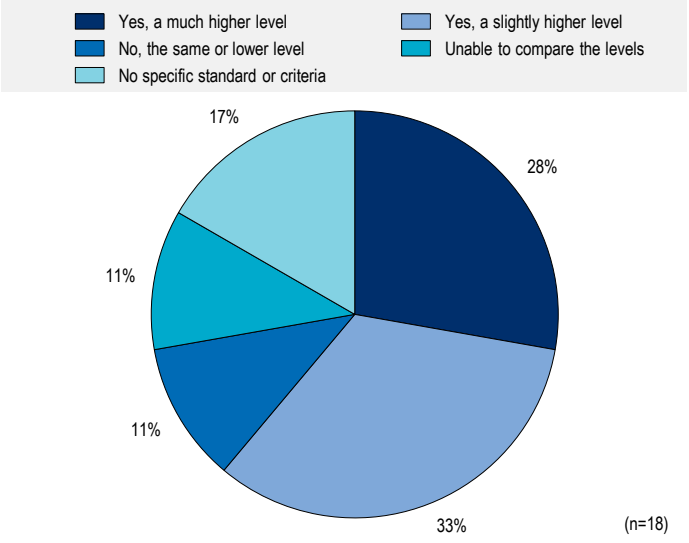
Subnational governments own a large number of public buildings, such as public housing, government offices, public schools and community centres. Cities and regions can impose a higher level of energy efficiency requirements for public buildings and encourage new technologies and business models for further renovations in private buildings.

No comprehensive and internationally comparable database exists with information on the volume and breakdown of non-residential building stock. However, from national renovation strategies or websites of national statistical offices, it appears that subnational buildings account for an extremely large portion of this building stock. For example, in the Czech Republic, public buildings account for 29% of the total non-residential building stock in terms of floor area and 19% in terms of the number of buildings. Because public buildings include relatively large facilities, such as libraries, museum and sports facilities, the cities' and regions' share in terms of floor area is higher than their share in terms of the number of buildings. Among public buildings, national government buildings account for only 4% in floor area and 2% in number, and subnational buildings account for remaining 24% in floor area and 17% in number. In particular, relatively small municipalities with populations of less than 50 000 account for 17% in floor area, while larger municipalities with populations of more than 50 000 account for 7% (Ministry of Industry and Trade, 2020[12]). Similarly, public buildings in France account for about 37% of non-residential building stock, of which the central government and its agencies own 10% (100 million square metres [m²]) and regional and local authorities own 20% (208 million m²) (Government of France, 2020[13]). In Japan, subnational buildings account for about 30% (600 million m²) of all non-residential building stock (2 billion m²), while the central government owns only 2% (44 million m²) (MLIT, 2018[14]). In sum, subnational buildings account for a very large portion of non-residential building stock, although this may vary across countries. Cities and regions should prioritise decarbonisation of their own building stock and use it as a catalyst for decarbonisation of buildings more broadly.

Almost all cities and regions (95%) that responded to the OECD survey promote energy efficiency measures for public buildings. In most cities and regions, the targeted buildings are offices and educational facilities. Some cities and regions, however, also target healthcare facilities, public housing, medical

facilities and other facilities such as libraries, community centres and sports facilities. The types of energy efficiency measures taken for public buildings are quite diverse. “Energy efficiency renovations/retrofits” and “Renewable energy use” were the most popular measures cited by the cities and regions participating the survey. On the other hand, “Digital technologies”, such as smart efficient buildings, grid-interactive buildings and smart meters, are only cited by a third of cities and regions that promote energy efficiency measures for public buildings. As for the level of energy efficiency required for public buildings, of the 18 cities and regions that responded to the question, 28% require a much higher level of energy efficiency for public buildings and 33% require slightly higher levels, while other cities and regions require the same or lower levels of energy efficiency or levels that cannot be compared with nationally required levels (Figure 3.2). 27% require the level of net-zero energy building for public buildings. In particular, Scania province requires it for part of existing buildings in addition to new buildings. On the other hand, the City of Toronto requires a net-zero feasibility study for all building retrofits and new constructions, including evaluation of renewable energy potential.

Figure 3.2. Percentage of cities and regions whose public buildings require greater energy efficiency than national levels



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

Cities can utilise their investment in public buildings (and subsidized housing) to achieve better energy performance in buildings. In 2006, Geneva (Switzerland) adopted the strategy “100% renewable by 2050”, in response to increasing oil prices and its energy dependence on fossil fuels. By identifying buildings that would benefit from renovation from an energy and environmental perspective, the energy performance of municipal buildings has increased (Energycities, 2016[15]). In Austria, the city of Vienna launched a competition among developers making tenders for construction of subsidized residential housing, to develop affordable and energy efficient timber housing (Energycities, 2020[16]). Investment in public buildings can be used to require a higher standard of energy performance, as well as to explore new technologies and offer learning opportunities for local construction firms.

Supporting financing and business models for energy renovation

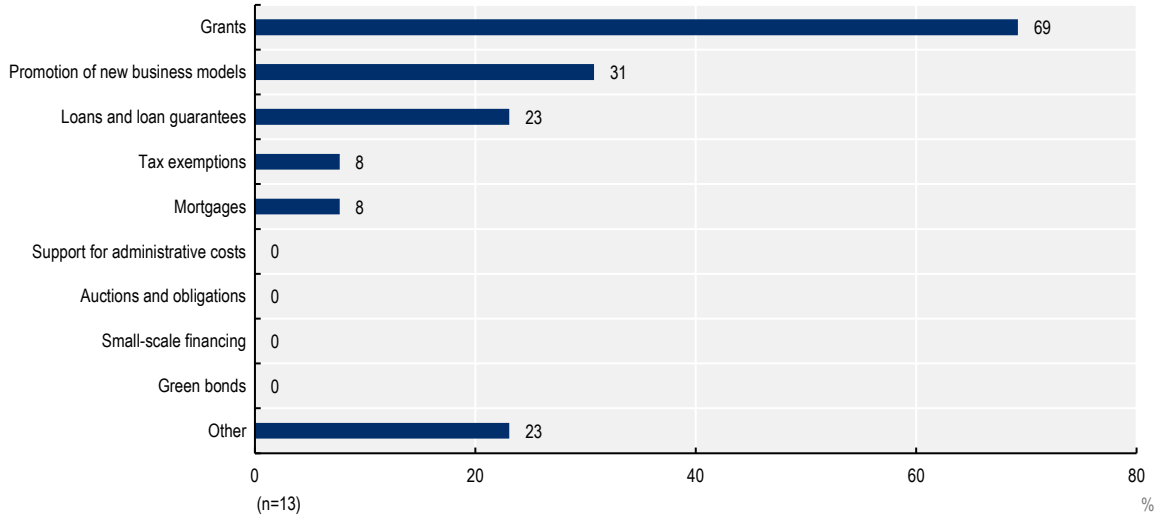
Financing is another key element in scaling up energy efficiency investment in buildings, since it requires a significant amount of costs upfront. A variety of financial incentives can be used, including tax breaks, low-interest rate mortgages and grants. It appears, however, that these incentives are not enough to persuade individual property owners to invest in energy efficiency renovations at the required pace to achieve net-zero carbon building stock by 2050. Together with stricter regulations, effective financing schemes are urgently needed to fully incentivise property owners to invest in deep energy retrofits as well as to reduce the burden of these regulations, especially on vulnerable households. In the context of green recovery from COVID-19, many cities and regions plan to invest in energy efficiency in both new and existing buildings, which will generate local jobs.

National recovery packages and supranational initiatives, including the European Renovation Wave, present vast opportunities for subnational governments to promote decarbonisation of their own public buildings as well as private building stocks in their areas. The European Commission (EC) estimated that the Renovation Wave initiative will renovate up to 35 million buildings and create 160 000 additional jobs in the construction sector in Europe by 2030 (EC, 2020[17]). Cities and regions can take the lead in deep energy renovations of public buildings, promote and aggregate local renovation needs and bring in key stakeholders to develop financing schemes and business models. In Canada, British Columbia has a financing mechanism, the Clean BC Better Homes Low-Interest Financing Program, to provide loans at a promotional interest rate of 0% for switching from a heating system with fossil fuel (oil, propane or natural gas) to a heat pump (Clean BC, n.d.[18]). British Columbia's Energy Conservation Assistance Program targets low-income households and provides an in-home visit with free energy-saving product installation, including energy-saving LED light bulbs, high-efficiency showerheads and weather-stripping to reduce drafts. Similarly, in 2022, the city of Toronto is expected to launch an enhanced Home Energy Loan Program to offer loans of up to CAD 125 000, with interest rates as low as 0%, to homeowners who are planning to cover the cost of home energy improvements (City of Toronto, n.d.[19]). Of 20 cities and regions that responded to the questions in the OECD survey on financing, 65% reported having their own financial incentives or financing mechanisms. This percentage is quite high, considering that energy efficiency policies have usually been conceived of as a national policy. "Renewable energy use", "Energy efficiency renovations/retrofits in general" and "Energy efficiency renovations/retrofits for low-income households" are the most popular measures that cities and regions support (69%, 62% and 54% respectively), before "Energy efficiency appliances and equipment", "District-scale energy management system", "Construction of energy efficient buildings" and "Digital technologies". High percentages for renewables and renovations reflect the limited opportunities for taking a wide array of measures, such as in new construction and the focus of these cities and regions on existing buildings. The most popular financial tools among cities and regions are "Grants" (69% of cities and regions that have their own financial incentives or financing mechanisms), "Promotion of new business models" (31%) and "Loans and loan guarantees" (23%). Other forms of financing, such as "Auctions and (energy company) obligations" and "Small-scale financing" are not used in the cities and regions that responded to the survey (Figure 3.3).

Although they can be ambitious, ongoing policy actions, including financial incentives, cannot by themselves promote energy efficiency investment to achieve net-zero carbon emissions by 2050 in the building sector. Experimental pilot projects are also needed to promote innovative business models encouraging property owners to alleviate the distributional impacts of climate policies, particularly on low-income households. Energy efficiency retrofits for these families need to be supported. As for pilot projects, the Netherlands has launched its Programme for Natural Gas-Free Neighbourhoods, a district-oriented approach aiming to help 1.5 million homes transition from gas to low-carbon heating by 2030 (IEA, 2020[20]). The programme promotes knowledge sharing between municipalities and selects pilot areas for districts free of natural gas. The selected pilot projects receive around EUR 4 million from the national

government to help cover the financing gap for the full investment. The goal is to have 100 pilot areas by 2028 (PAW, n.d.[21]).

Figure 3.3. Financing tools used in cities and regions



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

To promote new business models, cities and regions can take advantage of public building investment and bundle dispersed renovation needs, to create markets of sufficient size for private investment. This may lead to mass application of low-cost production technologies and increased financial opportunities for renovations. The *Energiesprong* programme in the Netherlands is an innovative example that consolidated social housing renovation needs and achieved net-zero energy renovations in more than 5 000 homes (Energiesprong Foundation, n.d.[22]) (Box 3.2). Similarly, cities and regions can partner with companies that deploy innovative technologies. For instance, energy solutions promoted by Knauf, a European energy solution company, have contributed to social housing renovation in Belgium, with its technology measuring, hour by hour, the real energy and CO_2 savings of a retrofitted house. Using its negaWatt hour meter – which measures each unit of energy saved per hour as a direct result of energy conservation measures – it has documented energy-saving benefits that enable governments and private investors to monetise long-term energy savings and invest in renovation measures upfront (Knauf Insulation, 2021[23]).

Box 3.2. Energiesprong programme: Net-zero energy housing through energy renovations

The *Energiesprong* programme in the Netherlands is an innovative example that consolidated dispersed renovation needs and achieved net-zero energy renovations in more than 5 000 homes. It has also been tested in France, the United Kingdom and the state of New York. By bundling renovation needs in social housing and creating sufficient market size for private investment, it led to mass application of low-cost production technologies and increased financial opportunities. Using new technologies, such as prefabricated facades, insulated roofs with solar panels, smart heating and ventilation, it aims to complete renovation within 10 days and to ensure a long-term performance warranty on energy performance. These renovations, moreover, do not incur extra costs for residents, since they are financed by future energy cost savings and the budget for planned maintenance and repair costs for 30 years.

The key lesson of this initiative is that the programme has brought together multiple stakeholders (e.g. the construction industry, housing authorities, financial institutions and energy utilities) and provided a comprehensive policy package for deep energy efficiency renovations of existing buildings. It includes negotiation between these key stakeholders and regulators on how to create enabling environments to start pilot projects and invest in off-site mass production, such as reviewing necessary legislative changes to allow new types of business models. A recent study noted the critical role of the market development team in the *Energiesprong* initiative as an intermediary promoting innovation to rethink the established systems of construction and contract design in energy efficiency retrofits. Innovations include helping to create standard processes for energy performance contracts, influencing procurement policies and volume agreements with public housing providers, and negotiating changes in regulations to allow placement of energy service charges on rents (Brown, Kivimaa and Sorrell, 2019[24]).

The results of the *Energiesprong* programme have yet to be evaluated. After the initial government funding, the intention was that the programme should find market solutions to finance itself. The investment costs still range from about EUR 70 000 to more than EUR 100 000 per residential unit, while the estimated cost for a feasible business case would be about EUR 40 000 (Visscher, 2020[25]). The initiative is currently supported by the EU, national governments and local authorities, and is not yet viable without public subsidies. In addition, the model would face greater challenges in the owner-occupied housing market, since the diversity of building types would make mass production solutions more difficult. However, this innovative initiative can be instructive in encouraging systemic innovation in the built environment.

Source: Brown, D., P. Kivimaa and S. Sorrell (2019[24]), "An energy leap? Business model innovation and intermediation in the 'Energiesprong' retrofit initiative", https://doi.org/10.1016/j.erss.2019.101253 (accessed on 23 October 2021); Energiesprong Foundation (n.d.[22]), *Energiesprong*, https://energiesprong.org/ (accessed on 30 November 2020; Visscher, H. (2020[25]), "Innovations for a carbon free Dutch housing stock in 2050", http://dx.doi.org/10.1088/1755-1315/588/3/032050; EC (2017[26]), "Netherlands, Energiesprong (Energy Leap)", https://ec.europa.eu/docsroom/documents/30290/attachments/3/translations/en/renditions/pdf (accessed on 23 October 2021).

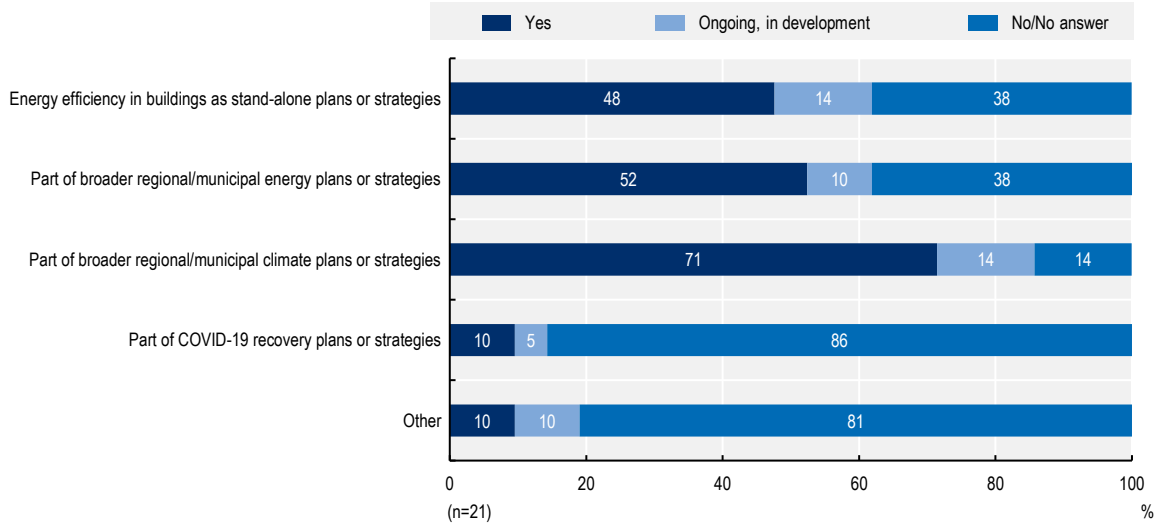
Creating locally plans and strategies tailored to local needs

Planning and co-ordination are critical for energy efficiency policies in buildings. They need a comprehensive set of policy tools, engagement of a broad array of stakeholders and consideration of the local building stock. National governments in EU countries usually offer a country-wide vision and targets in their national climate and energy or building-specific plans, such as national long-term renovation strategies. However, the degree to which national plans take into account territorial disparities and subnational policy actions varies. In addition, policy coherence across levels of government is required to drive decarbonisation. Considering locally varying building stocks and policy environments, and their respective success in factoring in local elements and engaging citizens and local businesses, it is vital to engage subnational governments and integrate their policy actions into national plans. For example, in the United States, a myriad actions are taken across levels of government. At a federal level, Section 432 of the Energy Independence and Security Act of 2007 (EISA 432) requires energy evaluation of each covered facility every four years, to identify potential energy efficiency measures. To explore this potential, federal agencies are required to report annual building benchmarking requirements (EERE, n.d.[27]). Local governments adjust local conditions to tackle climate change and decarbonising buildings. On a city level, the city of San Francisco has passed its Existing Commercial Buildings Energy Performance Ordinance to benchmark and disclose building energy performance annually. The city and county of San Francisco began by benchmarking its municipal building energy use (SFWPS, n.d.[28]). Under the San Francisco Climate Action Plan 2021 (CAP), this energy benchmarking law motivated 3 114 large commercial and multifamily buildings to improve energy efficiency performance, reducing commercial energy use by 10%

between 2013 and 2017 (SF Environment, 2021[29]). Similarly, Paris has made city-specific building data publicly available to facilitate building renovation. Its digital map, known as EnerSIG, gives citizens building-related information at the neighbourhood level, including the number of residential units and buildings, when buildings were built, energy performance and heating systems (APUR, 2021[30]).

The OECD survey enquired whether subnational governments have their own plans or strategies for energy efficiency in buildings. Of the 21 cities and regions that responded, 86% have plans or strategies for energy efficiency in buildings, whether stand-alone, part of energy plans or part of climate plans. A majority have stand-alone plans or strategies on energy efficiency in buildings and have some components of energy efficiency in buildings in energy and climate plans. On the other hand, only 10% of the cities and regions surveyed included energy efficiency in buildings as part of their COVID-19 recovery plans or strategies (Figure 3.4). Of the cities and regions that have any kind of plans or strategies on energy efficiency in buildings, 82% have both quantitative targets and monitoring indicators. The targets vary in types, from the amount or percentage of buildings that should meet some sustainability standards to actual savings or reductions in energy consumption or CO_2 emissions.

Figure 3.4. Plans and strategies for energy efficiency in buildings



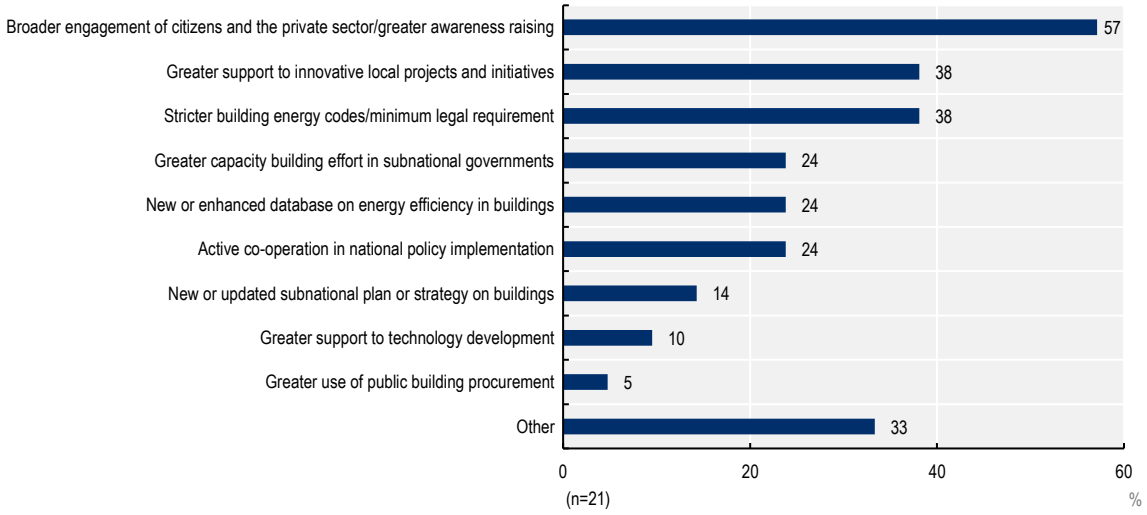
Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

Energy efficiency plans or strategies developed at the local or regional level still face many challenges. One is that most quantitative targets are output-based, such as the number of housing units considered to be sustainable, or the percentage of buildings that conform to certain sustainability standards. It is easy for cities and regions to follow these quantitative targets and monitor progress. However, it is not so clear how much impact achieving these targets will have on reducing energy consumption or carbon emissions from buildings. On the other hand, when cities develop outcome-based indicators, for example, for the percentage of energy savings, they do not usually have monitoring indicators specifically connected to energy efficiency in buildings. Energy outcomes depend not only on energy efficiency policies but on such factors as weather conditions, energy prices and total floor area. Energy and carbon outcomes (e.g. energy consumption and carbon emissions from buildings) need to be tracked to evaluate policy outcomes against their targets. At the same time, cities and regions also need to monitor energy and carbon intensity (e.g. energy consumption and carbon emissions from buildings per m²) and the energy performance of buildings (e.g. a grade based on energy performance certification) to evaluate how policies have affected the energy performance of building stock. Of the survey respondents that have plans in place, 54% incorporate these targets in the municipal/regional investment planning process to identify or prioritise the

municipal/regional investments. This is done in a variety of ways, including 1) monitoring policy progress (e.g. the number of housing units that a local programme supports, and the resulting GHG emissions), and 2) reflecting targets or failure to reach targets and present status in subnational budgets or strategic plans. This process is critical. Simply setting targets and a list of policy instruments does not ensure that the targets are achieved. Annual or biannual evaluation of policy progress and achievement of targets, and adjusting policy instruments and investment planning, appear to be an equally important condition for success.

In planning and implementing energy efficiency policies in buildings, most cities and regions recognise "Broader engagement of citizens and the private sector/greater awareness raising" (57%), "Greater support to innovative local projects and initiatives" (38%) and "Stricter building energy codes/minimum legal requirement" (38%) as their key priorities (Figure 3.5). About a quarter of cities and regions recognised "Greater capacity-building effort in subnational governments" (24%), "New or enhanced database on energy efficiency in buildings" (24%) and "Active co-operation to national policy implementation" (24%) as their key priorities. In particular, most mid-sized cities surveyed stress greater capacity building as one of their key priorities. National governments should better understand which types of cities and regions need particular support in capacity building to tailor their measures to place-based needs.

Figure 3.5. Key priorities of cities and regions on energy efficiency in buildings



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

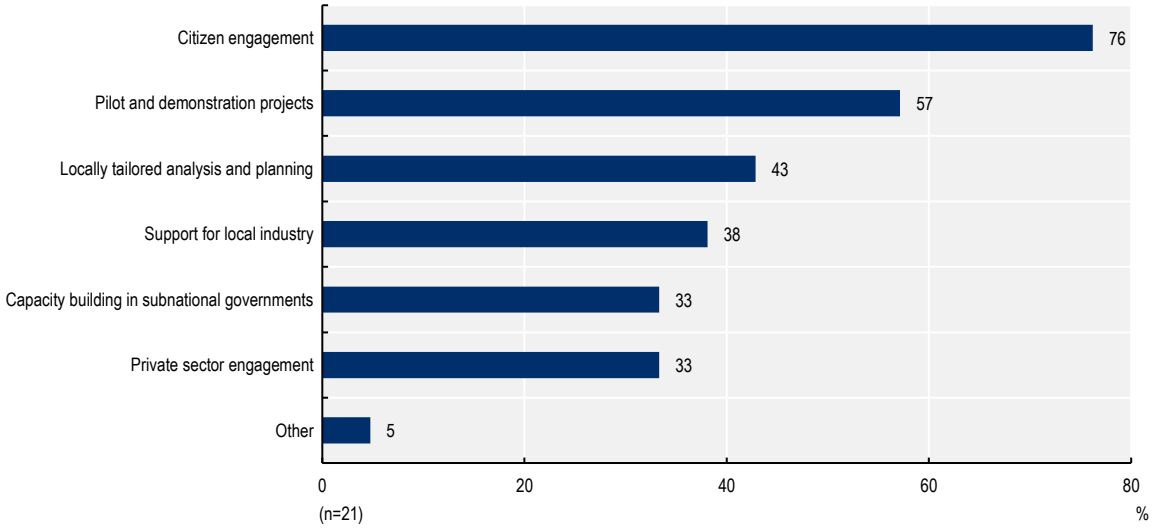
Engaging and training local actors

Energy efficient buildings generate multiple benefits, including job creation, improved health and energy affordability. While experts and policy makers recognise these benefits and have designed their COVID-19 recovery packages accordingly, a series of policy implementation challenges persist. These include 1) stakeholder engagement; 2) skill development and capacity building; and 3) monitoring and evaluation of policy progress. First, individual and corporate property owners need to recognise the benefits of energy efficient buildings as well as supporting schemes, and subnational actions can raise their awareness through further engagement. Second, energy efficiency renovations require skill training and development, in insulation, calculating energy savings, and performance contracts, engaging a broad array of workers across the building value chain. Capacity building in subnational governments is also important. Third, both national and subnational governments need to monitor and evaluate policy progress towards their targets to improve effectiveness of their policies.

The most popular policy implementation measures cited by cities and regions are “Citizen engagement” (76%) and “Pilot and demonstration projects” (57%) (Figure 3.6). In addition, roughly 30% to 40% of cities and regions promote “Locally tailored analysis and planning”, “Support to local industry”, “Private sector engagement” and “Capacity building in subnational governments”. Given how close cities and regions are to citizens and local businesses and how familiar they are with local conditions, these percentages may be considered low.

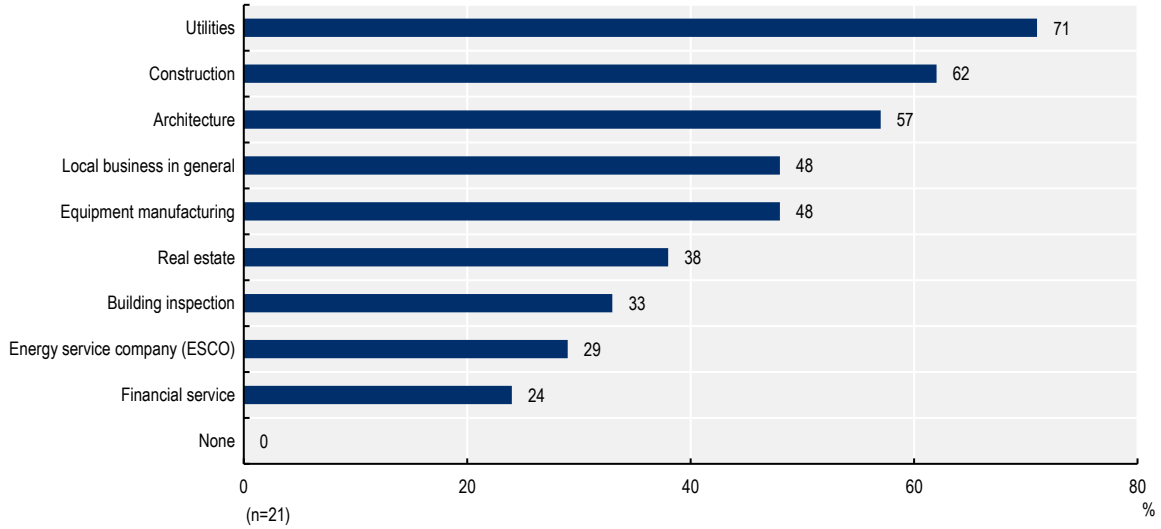
Cities and regions are also well placed to engage local stakeholders in the business and non-profit sectors. In the business sector, most engage “Utilities” (71%), “Construction” (62%) and “Architecture” (57%) in policy making and implementation associated with energy efficiency in buildings. More than a third of cities and regions engage other types of businesses, including “Equipment manufacturing” (48%), “Local building businesses in general” (48%) and “Real estate” (38%) (Figure 3.7). It is important to engage businesses of whatever size and to engage not only large corporations but also small- and medium-sized enterprises (SMEs). SMEs are key actors, both as major providers of construction and renovation and as energy consumers with limited resources for energy-saving measures.

Figure 3.6. Measures taken by cities and regions to decarbonise buildings



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

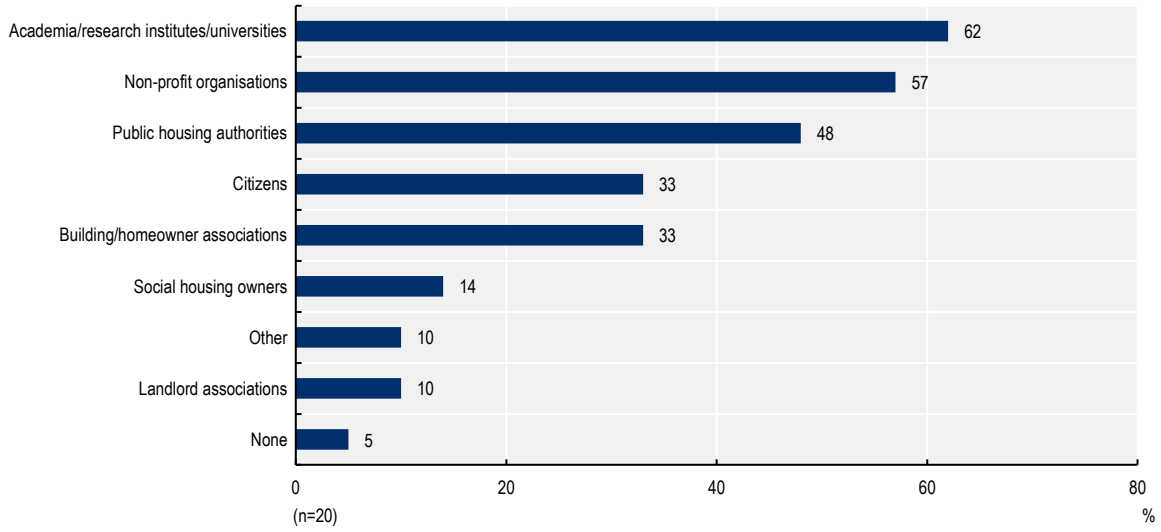
Figure 3.7. Stakeholder engagement (business and utilities sector)



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

As for the non-profit sector, most cities and regions report that they engage "Academia/ research institutes/ universities" (62%), non-profit organisations (57%) and public housing authorities (48%). Few cities and regions engage owners of social housing and landlords' associations, important stakeholders through which they could raise public support and aggregate the need for mass renovations (Figure 3.8). Cities and regions use a variety of ways to engage stakeholders. A large number use "Consultation (meetings, workshops, forums, etc.)" (81%), "Open access to policy documents and data" (48%), and "Co-drafting or partnership (where input has been actively taken into account to shape the policy)" (48%).

Figure 3.8. Stakeholder engagement (non-profit sector)



Source: OECD Survey on Decarbonising Buildings in Cities and Regions.

Cities and regions are well placed to engage citizens and local businesses. One popular policy is to set up a "one-stop-shop" for energy efficiency renovation. The Brussels Capital Region in Belgium provides "Sustainable building facilitator" services to citizens for renovation of condominiums, in co-operation with

a broad array of stakeholders along the building value chain (EnEffect, n.d.[31]). The City of Tampere in Finland encourages citizens to reduce their energy use by equipping all homes with smart meters and offering free energy advice and a web-based tool for planning energy efficient home renovations (Holm, 2020[32]).

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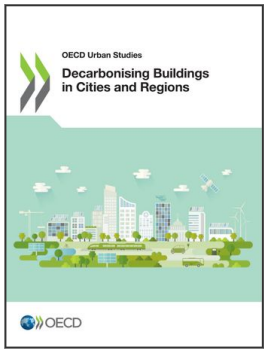

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