Commercial buildings: creating strong demand signals for low-carbon, efficient and flexible buildings

ETC key message summaries which considered heating, cooling, cooking and appliances, covered both residential and commercial buildings. But commercial buildings have features which require a different set of actions.

The heterogeneity of commercial buildings means there is no one-size-fits-all solution:

- Commercial buildings account for 20% of global building stock, but 40% of total emissions from operating buildings. In total, operating commercial buildings accounts for 10% of global emissions.
- Global commercial floor space is set to expand by 55% by 2050.[1] Decarbonising commercial buildings and improving their energy efficiency is therefore essential.
- The category "commercial buildings" includes a huge variety of types of buildings, including offices, schools, hospitals, hotels, restaurants and warehouses, with very different energy needs and energy use per m².

The energy transition can move faster for commercial buildings compared to residential:

- There is a strong case for high-income countries to set early targets for the transition away from gas and oil heating in commercial buildings compared to residential, including immediate bans on the installation of new gas/oil boilers in new buildings and by 2030 in existing buildings. In many countries, these are already cost-effective on a total cost of ownership basis, but in some countries require additional policy support, for example, rebalancing gas and electricity prices. Efficient and low-carbon buildings will enable the private sector to realise cost savings from more efficient technologies, de-risk their assets against future carbon/energy regulation, and meet their own net-zero commitments.
- Sophisticated heating, ventilation and AC (HVAC) and energy management systems have a major role to play in achieving energy efficiency improvement with:
    - Significant potential for energy savings in buildings that have simultaneous heating and cooling needs, with sophisticated HVAC systems which can utilise waste heat from cooling and use it to heat other parts of a building.
    - A huge untapped opportunity is installing energy management systems, such as sensors, smart thermostats, and predictive AI to adjust energy needs in response to changes in occupancy, the weather and energy prices. These can deliver significant energy savings of 10-20%, often delivering greater returns than retrofitting.

Priority actions to tip the dial:

1. In existing buildings, the fact that many commercial buildings are occasionally subject to major retrofit for non-energy related reasons (e.g., to meet new tenant needs) creates an opportunity to set requirements to ensure that renovations improve the energy efficiency of buildings by a certain amount (e.g., percentage reduction in kWh/m²).
2. For new buildings, strong regulation of new building design and construction can deliver efficiency improvements, as well as reduce the use of high-carbon materials to lower embodied carbon. This requires reform of how energy performance is measured and assessed to use actual energy data (as opposed to modelled) and regulated minimum energy efficiency standards for different types of commercial buildings.
3. Voluntary commitments by real estate developers, property developers and financial institutions can also play a major role in driving progress towards zero emissions and will be most effective if informed by improvements to how energy efficiency is measured and assessed.

1 IEA (2023), *World Energy Outlook 2023.*