Despite an increase in energy efficiency investment and lower energy intensity, the building and construction sector's energy consumption and CO2 emissions have rebounded from the COVID-19 pandemic to an all-time high, a new report finds.

Released at the latest round of climate talks in Egypt, COP27, the 2022 Global Status Report for Buildings and Construction by the United Nations Environmental Programme (UNEP) finds that the sector accounted for over 34 per cent of energy demand and around 37 per cent of energy and process-related CO2 emissions in 2021.

The sector's operational energy-related CO2 emissions reached ten gigatons of CO2 equivalent – five per cent over 2020 levels and two per cent over the pre-pandemic peak in 2019. In 2021, operational energy demand for heating, cooling, lighting and equipment in buildings increased by around four per cent from 2020 and three per cent from 2019.

This, according to the report from the Global Alliance for Buildings and Construction (GlobalABC), means that the gap between the climate performance of the sector and the 2050 decarbonization pathway is widening.

Reacting on the report, Inger Andersen, the Executive Director of the United Nations Environment Programme (UNEP) observed that years of warnings about the impacts of climate change have become a reality. "If we do not rapidly cut emissions in line with the Paris Agreement, we will be in deeper trouble," she said.

The Paris Agreement deals with GHG emissions mitigation, adaptation and finance, the headline principle being to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels. To put it in more relatable terms, the agreement aims to cut global emissions to zero by the end of this century.

Currently, real estate is in the sights of governments when forming new carbon reduction policy and will be particularly affected by new targets and the resulting regulatory impacts over time.

Energy efficiency

Decarbonizing the buildings sector by 2050 is critical to delivering these cuts. To reduce overall emissions, the sector must improve building energy performance, decrease building materials' carbon footprint, multiply policy commitments

alongside action and increase investment in energy efficiency.

The report says that investments in energy efficiency must be sustained in the face of growing crises – such as the war in Ukraine and the ensuing energy crisis, and the cost-of-living crisis – to reduce energy demand, avoiding CO2 emissions and dampen energy cost volatility. The buildings sector represents 40 per cent of Europe's energy demand, 80 per cent of it from fossil fuels. This makes the sector an area for immediate action, investment and policies to promote short and long-term energy security.

However, it shows that the sector can still change. For example, rising fossil fuel costs due to the war in Ukraine and the cost-of-living crisis are providing incentives to invest in energy efficiency – although the erosion of purchasing power and the impact of labor and materials may slow investment.

"The solution may lie in governments directing relief towards low and zero-carbon building investment activities through financial and non-financial incentives," said Andersen.

Also, critical to reducing the sector's emissions are including buildings in climate pledges under the Paris Agreement – known as Nationally Determined Contributions (NDCs) – and mandatory building energy codes.

In Africa, experts point out that raw resource use is predicted to double by 2060 – with steel, concrete and cement already major contributors to greenhouse gas emissions. Materials used in the construction of buildings already account for around nine per cent of overall energy-related CO2 emissions.

Embodied carbon in buildings – the emissions associated with materials and construction processes – needs to be tackled to avoid undermining energy-saving measures. However, the sector can reduce its impact by, for example, looking at alternative materials and decarbonizing conventional materials such as cement.

Use of alternative materials relevant for Africa.

The African population is expected to reach 2.4 billion people in 2050 and 80 per cent of this growth will occur in cities. An estimated 70 per of the African building stock expected for 2040 has yet to be built.

To avoid increasing emissions while building the stock necessary to move people

out of informal settlements, and to create buildings that are resilient to the impacts of climate change, experts recommend the African sector to look at sustainable construction materials and design techniques, in which the continent is rich.

Africa is also rich in renewable energy sources, solar and wind, which nations can use to power their buildings sustainably, the report said.

To mitigate these impacts, experts recommend to African Governments, especially cities, to implement policies that promote the shift to ‘circular material economies’.

The construction and real estate industries must implement zero-carbon strategies for new and existing buildings, it said.

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