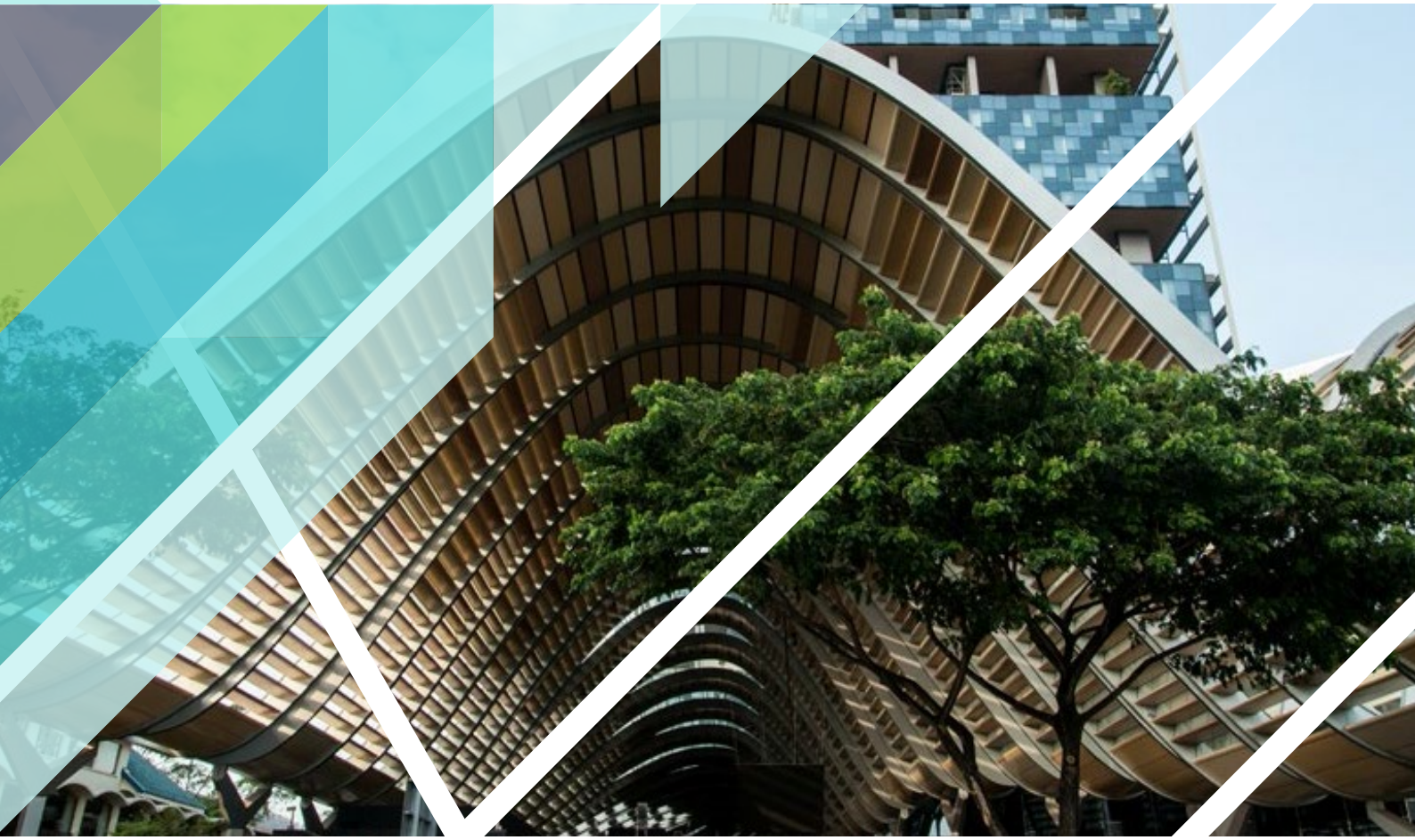
Global Alliance for Buildings and Construction

UN environment programme

2020 GLOBAL STATUS REPORT FOR BUILDINGS AND CONSTRUCTION

Towards a zero-emissions, efficient and resilient buildings and construction sector



EXECUTIVE SUMMARY

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The electronic copy of this report can be downloaded at ***www.globalabc.org***.

United Nations Environment Programme (2020). 2020 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector. Nairobi.

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FOREWORD

The 2020 Buildings Global Status Report is being published during a time of great uncertainty; the global COVID-19 pandemic continues to affect lives and livelihoods across the world and has put a magnifying glass over the existing inequalities that have led to greater vulnerability. This global health crisis comes on top of a housing crisis and has precipitated an economic crisis. In addition to taking stock of progress in the buildings and construction sector in 2019, this report shines a light on the disruptions of COVID-19 and some of the responses in 2020.

This year's Buildings Global Status Report provides an update on the drivers of CO_2 emissions and energy demand globally since 2018, along with examples of policies, technologies, and investments that support low-carbon building stocks. Furthermore, it zooms in on some emerging issues that have started to receive greater attention in the sector: Materials and circular economy, highlighting the need for closed-loop systems, reduction of virgin materials, and potential of biobased materials; the potential of nature-based solutions for greening cities and buildings while lowering energy and cooling demand; the reciprocal relationship between housing and health and wellbeing; and the urgent need for sustainable cooling solutions for resilience and adaptation.

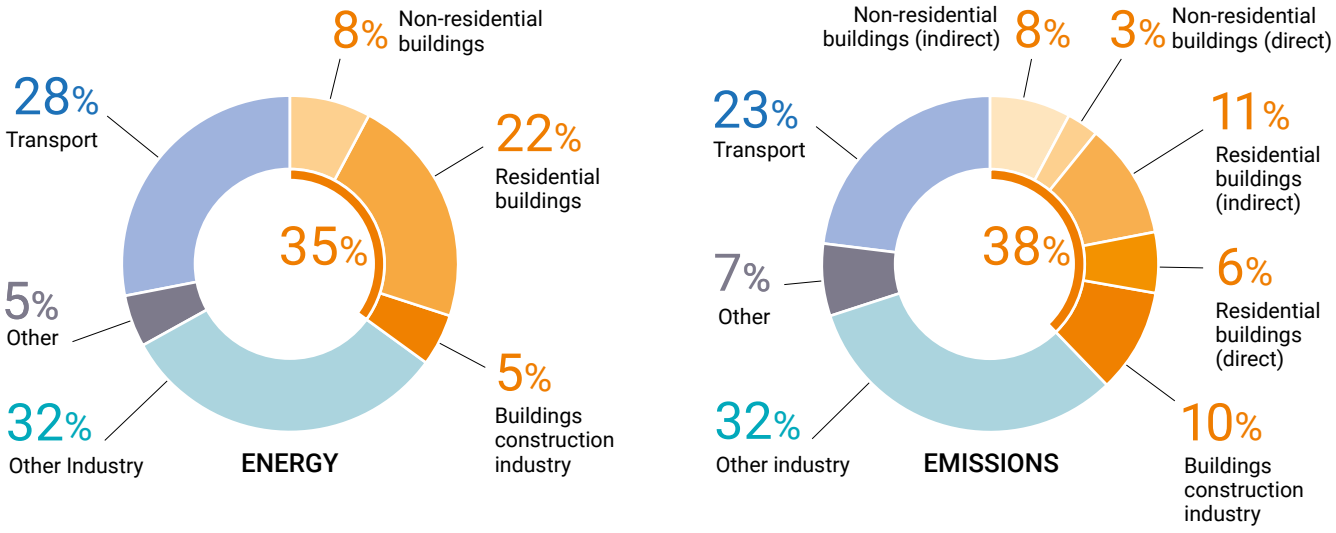
Overall, in 2019, the buildings and construction sector moved away and not towards the Paris Agreement goal of keeping the global mean temperature rise to well below 2 °C.

TRENDS OF 2019

CO_2 emissions from the building sector are the highest ever recorded.

While the total final energy consumption of the global buildings sector remained at the same level in 2019 compared to the previous year, CO_2 emissions from the operation of buildings have increased to their highest level yet at around 10 $GtCO_2$, or 28% of total global energy-related CO_2 emissions. With the inclusion of emissions from the buildings construction industry, this share increases to 38% of total global energy-related CO_2 emissions. The slightly lower proportion of buildings emissions compared with the 39% seen in 2018 was due to the increases in transport and other industry emissions relative to buildings.

Global share of buildings and construction final energy and emissions, 2019



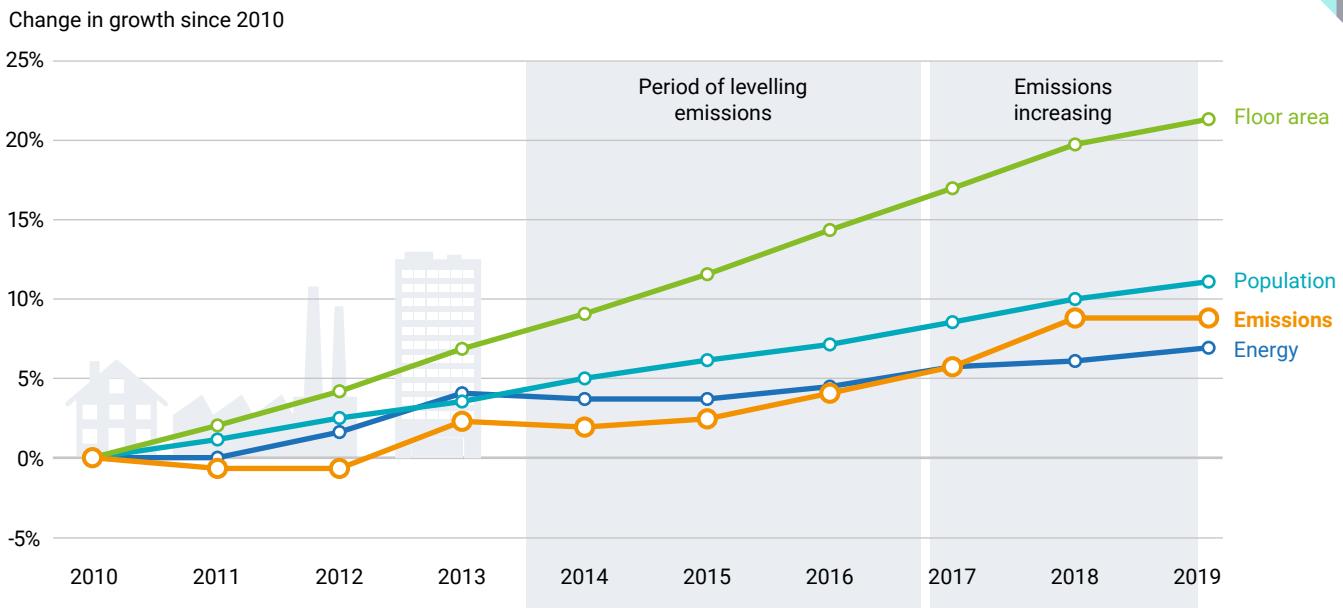
Notes: Buildings construction industry is the portion (estimated) of overall industry devoted to manufacturing building construction materials such as steel, cement and glass. Indirect emissions are emissions from power generation for electricity and commercial heat.

Sources: (IEA 2020d; IEA 2020b). All rights reserved. Adapted from "IEA World Energy Statistics and Balances" and "Energy Technology Perspectives".

The buildings sector emission increase is due to a continued use of coal, oil and natural gas for heating and cooking combined with higher activity levels in regions where electricity remains carbon-intensive, resulting in a steady level of direct emissions but growing indirect emissions (i.e. electricity). Electricity consumption in building operations represents nearly 55% of global electricity consumption.

This underlines the importance of a triple strategy to aggressively reduce energy demand in the built environment while decarbonising the power sector and implementing materials strategies that reduce lifecycle carbon emissions, which together will drive down both energy demand and emissions.

Change in global drivers of trends in buildings energy and emissions 2010-2019



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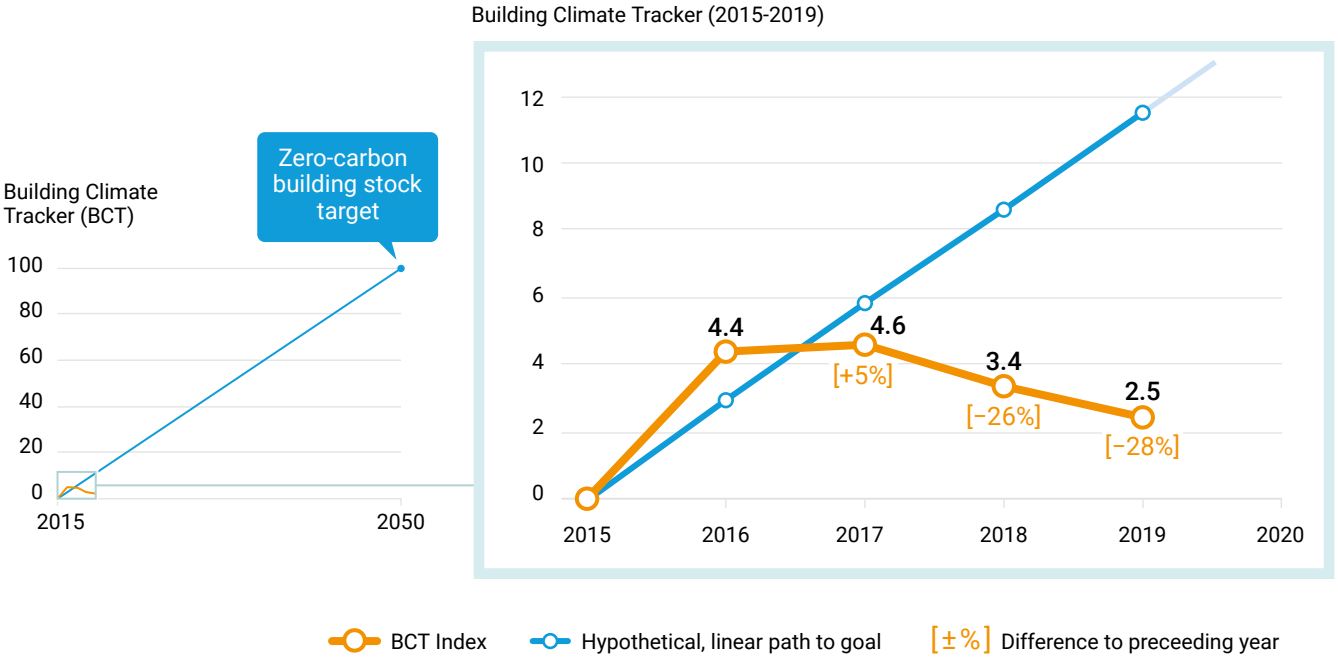
To be on track to achieving a net-zero carbon building stock by 2050, the IEA estimates that direct building CO_2 emissions would need to decrease by 50% and indirect building sector emissions decline through a reduction of 60% in power generation emissions by 2030. These efforts would need to see building sector emissions fall by around 6% per year from 2020 to 2030. For comparison, the global energy sector CO_2 emissions decreased by 7% during the pandemic.

New GlobalABC tracker finds sector is losing momentum towards decarbonisation.

The GlobalABC's new Buildings Climate Tracker (BCT) tracks the sector's progress in decarbonisation worldwide. It uses data from seven global indicators (including incremental energy efficiency investment in buildings and Nationally Determined Contributions (NDCs) with building sector actions) to show progress since 2015 in an index, comprising indicators on actions and impact. The index finds that annual decarbonisation progress is slowing down and has, in fact, almost halved from 2016 to 2019. While the number of building sector CO_2 emissions reduction actions are growing, the rate of annual improvement is decreasing. To get the buildings sector on track to achieving net-zero carbon by 2050, all actors across the buildings value chain need to contribute to the effort to reverse this trend and increase decarbonization actions and their impact by a factor of 5.

Buildings Climate Tracker (BCT): Decarbonisation index trend for buildings and construction



This Buildings Climate Tracker (BCT) is comprised of the following seven indicators: Incremental energy efficiency investment in buildings (global, $bn); Building Energy Codes (number of countries); Green Building Certifications (cumulative growth); NDCs with building sector action (Number of Countries); Renewable Energy Share in Final Energy in Global Buildings (%); Building Sector Energy unit Intensity (kWh/m²); CO_2 emissions.

Nationally Determined Contributions, countries' long-term strategies and key regulatory measures are needed to spur faster and more ambitious action at scale.

Most countries have yet to submit their second NDC, and buildings remain a major area that lacks specific mitigation policies despite its importance to global CO_2 emissions. Of those who have submitted an NDC, 136 countries mention buildings, 53 countries mention building energy efficiency, and 38 specifically call out building energy codes, indicating the importance of building energy efficiency to our climate future. More buildings than ever are being constructed using building codes and sustainable certification standards. However, these need to be strengthened and expanded to increase action towards a zero-carbon building stock. Of surveyed countries, four are planning new or strengthened codes from 2021. There is significant opportunity to make use of codes, standards, and certification that drive towards zero-carbon emissions across the sector.

Investment in energy efficiency in buildings is picking up again but the speed of change lags behind overall building construction investment.

Spending for energy efficient buildings has shown an increase in 2019 for the first time in the past three years, with investment in building energy efficiency across global markets increasing to USD $152 billion in 2019, an increase of 3% from 2018. However, this remains a small proportion of the USD $5.8 trillion spent in the building and construction sector. Investment in energy efficiency hence lags behind investment in the sector as a whole and therefore more effort is needed to decarbonize buildings. Indeed, in the buildings sector, for every $1 spent on energy efficiency, $37 is spent on conventional construction approaches.

Yet, there are positive signs across the investment sector that building decarbonization and energy efficiency are taking hold in investment strategies. Finance institutions and property companies are realizing the strong growth potential and investment opportunities available with sustainable building investment. For example, of the 1,005 real estate companies, developers, REITS, and funds representing more than $4.1 trillion in assets under management that reported to The Global ESG Benchmark for Real Assets (GRESB) in 2019, 90 percent align their projects with green building rating standards for construction and operations. Indeed, green buildings represent one of the biggest global investment opportunities of the next decade, estimated by the International Finance Corporation (IFC) to be $24.7 trillion by 2030.

Governments play an important role in unlocking this opportunity, especially now. While the global pandemic brings many challenges, it also presents a moment for a paradigm shift: i.e. by systematically including building decarbonization measures into recovery packages, they can dramatically increase renovation rates, channel investment into zero-carbon buildings, provide jobs, and increase real estate value.

Buildings decarbonization commitments are growing. But they need to rapidly increase in scale and pace to achieve the Paris Agreement Goals.

Strategies to make buildings net-zero energy and zero-carbon are a key part of the global decarbonisation strategy and must become the primary form of building construction across all economies to achieve net zero emissions by 2050. Such initiatives include the World Green Building Council's Net Zero Carbon Buildings Commitment (Six sub-national states, 27 cities, and 79 businesses have committed to net zero buildings operations by 2050 or earlier); the World Business Council for Sustainable Development's Building System Carbon Framework; the C40's Clean Construction Forum; Architecture 2030's Achieving Zero; the Science-based target initiative for business (with 1000 companies having signed up to reduce carbon emissions beyond their own operations by including other indirect carbon emission in their carbon reduction action plans); and many more.

Further, in 2020, GlobalABC published the Regional Roadmaps for Africa, Asia, and Latin America for Buildings and Construction which outline targets, timelines, and key actions needed to achieve a zeroemission, efficient, and resilient building stock between now and 2050 across the globe. These, alongside the above commitments, need to be implemented as part of the effort to a net-zero carbon building sector.

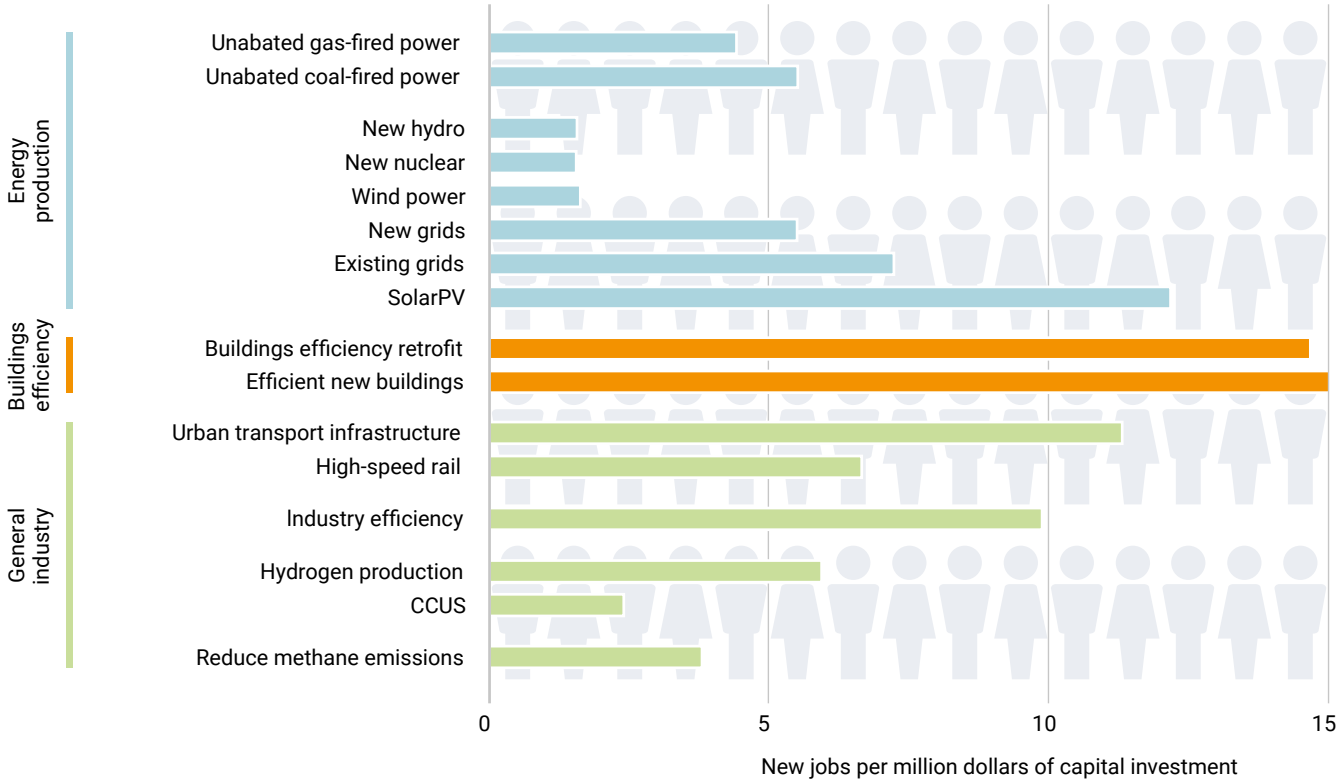
IMPACTS OF COVID-19 IN 2020

The impact of COVID-19 on the global construction industry has been severe and construction activities have dropped by 10–25% compared to 2019.

This marks a significant impact on construction with 10% of overall jobs being lost or at risk across the building construction sector. The latest estimates anticipate a drop of 6% in construction market value from 2019 levels. The IEA estimates that global energy demand and CO_2 emissions will have decreased by 5% and 7% respectively as a result of the global COVID-19 pandemic.

The global health crisis comes on top of a housing crisis, which it risks further destabilizing. While COVID-19 has impacted construction, healthy, adequate, and affordable buildings in their turn are essential for responding to the pandemic and for people's overall health. In 2018, it was estimated by the UNDP that 1.8 billion people live in inadequate housing including slums and informal and/or overcrowded settlements, making adequate hygiene, lockdowns, and social distancing challenging, thus exacerbating the crisis. Indeed, as many people around the world are forced to spend an increasing amount of time indoors, well-ventilated, energy efficient buildings are critical for public health, air quality, affordable homes, and economic recovery. The slowdown of global construction will have a knock-on effect on sustainable building development but will also offer a moment for governments and private organisations to reset and re-align commitments to higher levels of sustainability going forward. Indeed, sustainable construction is essential for an economic recovery after the COVID-19 crisis. Under its Sustainable Recovery Plan, the IEA estimates that between 9–30 jobs in manufacturing and construction would be created for every million dollars invested in retrofits or efficiency measures in new builds. Stimulus programmes for the building and construction sector are a proven tool respond to economic crises, as they create jobs, boost economic activity, and activate local value chains.

Jobs created per million dollars of capital investment and spending by measure



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Adapted from "IEA Sustainable Recovery, 2020"

In September 2020, the GlobalABC issued a call to include building renovation and modernization in COVID-19 recovery plans in the form of a massive renovation wave, spurred by tailored support mechanisms, designed with national and local stakeholders, for making the existing building stock more energy-efficient. The Platform for REDESIGN 2020, an Online Platform on Sustainable and Resilient Recovery from COVID-19 by the Japanese Ministry of the Environment, the UNFCCC, and the Institute for Global Environmental Strategies (IGES) highlights examples of such actions including the commitments by the European Union in the Renovation Wave, the United Kingdom in its Public Sector and Social Housing Decarbonisation schemes, and France in its support of public housing and public buildings.

OUTLOOK FOR 2021

The time for action to decarbonise the existing and future global building stock is now.

The coming year presents a pivotal moment:

First, as COVID-19 recovery packages to rebuild our economies are being adopted, they provide a unique opportunity to include deep building renovation and performance standards for newly constructed buildings.

Second, as the second round of NDCs is being formulated and submitted in the lead up to the COP26, they present an opportunity to sharpen measures and include more explicit measures in a sector that is responsible for 38% of total CO_2 emissions.

Time for radical collaboration, between public and private actors, across the entire value chain and across mitigation, adaptation and health agendas.

Governments along with public and private organisations must undertake evaluations of their contributions to carbon emissions and develop detailed strategies from which to support the transition to a sustainable, net-zero carbon global building stock. For building owners and businesses, this means using science-based targets to guide actions, engage with stakeholders across the building design, construction, operation and users to develop partnerships and build capacity.

For investors, this means re-evaluating all real estate investment under an energy-efficiency and carbon reduction lens.

For national governments, this means stepping up commitments in countries' NDCs, in longer-term climate strategies and supporting regulation to spur uptake of net-zero emissions buildings. It also means prioritizing performance-based, mandatory building energy codes alongside wide-spread certification measures and working closely with sub-national governments to facilitate adoption and implementation.

For all other actors along the value chain, it means adopting concepts around circular economy to reduce the demand for construction materials and lower embodied carbon and adopting nature-based solutions that enhance building resilience. It means embedding principles of health into the development of new buildings and refurbishment of existing homes to protect occupants. Only then will we fully align with the Sustainable Development Goals; only then will we achieve a zero-emission, efficient, and resilient buildings and construction sector, ensuring our livelihoods are protected now and in the future.

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