



GLOBAL CLIMATE
& SDG SYNERGY
CONFERENCE ▶▶

TOKYO
20-21 JULY
2022

TECHNICAL BRIEF

The Importance of Building Decarbonization and Benefits for the SDGs

CONTRIBUTING ORGANIZATION

United Nations Environment Programme
Global Alliance for Buildings and Construction

This technical brief is developed with the support of the contributing organizations to inform the 3rd Global Conference on Strengthening Synergies between the Paris Agreement and the 2030 Agenda for Sustainable Development.

The findings, interpretations, and conclusions expressed in this document do not necessarily reflect the views of any of the contributing organizations or the conference coordinating organizations.

I. Abstract

In 2015, in response to the need to protect human lives and the environment, the 193 United Nations Member States adopted the 2030 Agenda for Sustainable Development, which provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart, the 17 Sustainable Development Goals (SDGs) recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests ([UN, Do You Know all SDGs?](#)). These strategies include improving buildings and construction processes, as the environment we build around ourselves is key to meeting global challenges.

Buildings and construction are a **heavyweight for climate action**. In 2020, the sector accounted for 37% of global energy-related CO₂ emissions, with over a quarter of these emissions coming from the production of building materials and construction activities, and 36% of final energy demand ([GlobalABC, 2021](#)). The sector must therefore be transformed and recognised as a critical solution provider to the climate emergency if we are to meet the SDGs and Paris Agreement objectives.

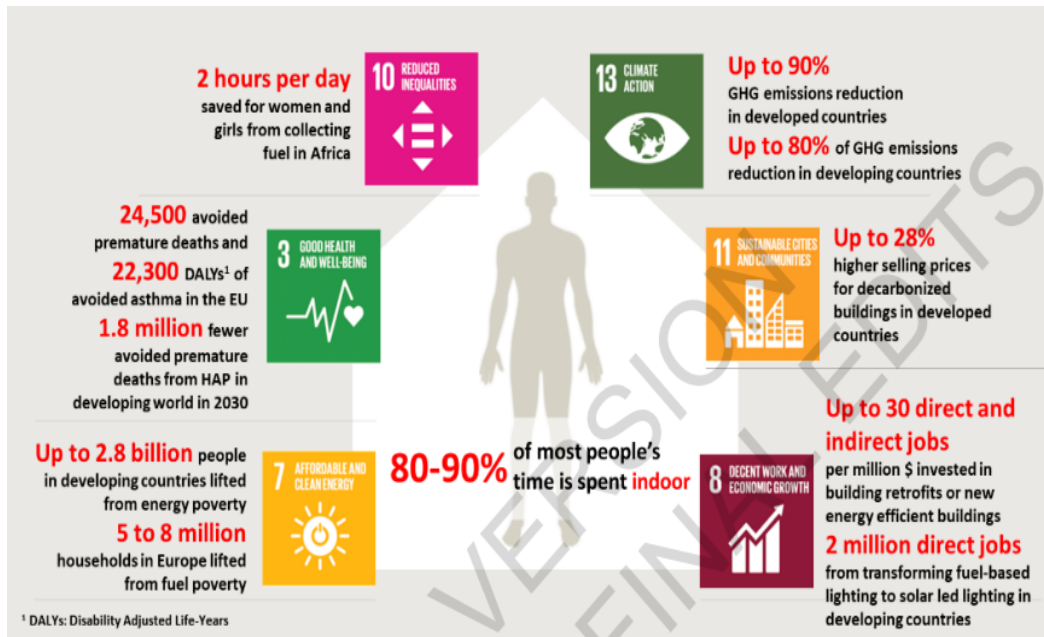
In addition, the sector is **critical for our economy and prosperity**. Efficient buildings are one of the biggest investment opportunities, worth an estimated \$24.7 trillion by 2030 in emerging market cities ([IFC, 2019](#)). The built environment is also responsible for ca. 7% of global employment or more than 200 million jobs, and accounts for 11-13% of global GDP ([Race to Zero, The construction sector can pave the way for a green economic recovery](#)), and between 9 and 30 jobs are created for every \$1 million invested in renovation and new construction, one of the highest rates across all sectors ([GlobalABC, 2020](#)).

Finally, the **impact of the sector on health** must also be taken into account if we are to overcome the global challenges. In certain regions, people spend around 90% of their time indoors - the way we build and use our homes is therefore essential for our wellbeing, and efficient buildings powered by clean energy deliver better air circulation, reduced pollution, more comfort for homes and businesses, and greater access to electricity. However, in 2016 and according to the WHO, household air pollution from burning solid fuels caused 3.8 million deaths or 7.7% of global mortality ([WHO, Household air pollution and health](#)).

Building decarbonisation throughout its lifecycle is thus a prerequisite for achieving the Paris Agreement objectives and UN SDGs. The interlinkages and synergies between the buildings and construction sector, climate action and sustainable development must be seized and optimised, while trade-offs must be limited.

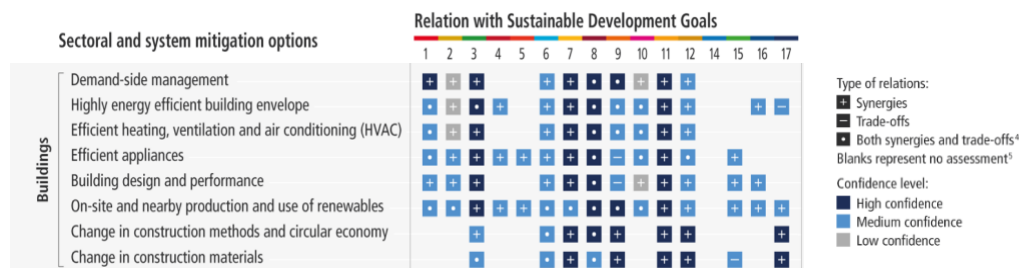
II. Interlinkages, synergies and trade-offs

According to the IPCC, well-designed and effectively implemented mitigation actions in the buildings sector have significant potential to help achieve the SDGs, as they relate to 15 of the 17 UN SDGs ([IPCC, 2022](#)), and in particular to 8 of them, namely good health and well-being (SDG 3), affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), reduced inequalities (SDG 10), sustainable cities and communities (SDG 11), responsible consumption and production (SDG12), climate action (SDG 13) and partnerships for the goals (SDG 17) ([IPCC, 2022 & DGNB, 2020](#)). Buildings can bring health gains through improved indoor air quality and thermal comfort, positive macro- and micro-economic effects, such as increased productivity of labour, job creation, reduced poverty, especially energy poverty, and improved energy security. Building sector mitigation policies can reduce greenhouse gas (GHG) emissions by up to 90% in developed countries and up to 80% in developing countries and lift up to 2.8 billion people in developing countries out of energy poverty. ([IPCC, 2022](#)).



Source: IPCC (2022), Sixth Assessment Report, “Climate Change 2022: Mitigation of Climate Change”

Whilst contributing to the synergies with most of the SDGs, climate change mitigation actions in the buildings and construction sector may also have trade-offs. For example, improving building design and performance can result in synergies with SDGs 1, 2, 3, 6, 7, 8, 10, 11, 12, 15 & 16, while also having trade-offs with SDGs 8 & 9; Changing construction materials can bring synergies with SDGs 3, 6, 7, 8, 9, 11, 12 & 17, but paradoxically also have trade-offs with SDGs 3, 8, 6 & 14 (IPCC, 2022).



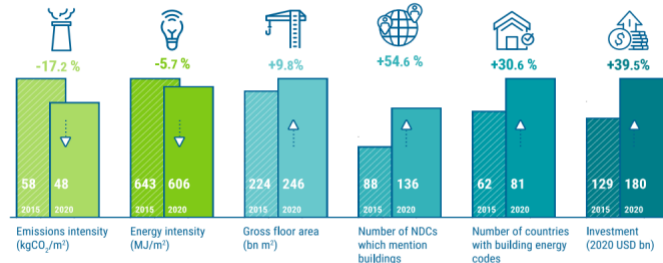
Source: *ibid*

The 2030 Agenda sets out ambitious goals for the achievement of a better and more sustainable future for all. Transforming buildings and the built environment can generate multiple benefits, from climate to resources, to improved quality of life, health, shelter and access to basic services. **It is critical for the buildings and construction sector to harness the synergies between climate and SDGs while minimising the negative trade-offs. It is also important to note that there exists no one-size-fits-all solution: Synergies and trade-offs vary depending on the national contexts.**

III. Lessons learned on opportunities and challenges

The sector is not on track to achieve complete decarbonisation by 2050, undermining the chances of reaching the 2030 Agenda for Sustainable Development. While CO₂ emissions from buildings have decreased by 10% in 2020, this decline appears to be only temporary as largely due to reduced energy demand as a result of the COVID-19 pandemic. Some progress is nevertheless being made, albeit at a pace that is insufficient to achieve our SDGs: the emissions and energy intensity from buildings have decreased between 2015 and 2020, while the number of NDCs which mentions buildings, the number of countries with building energy codes and the investments in buildings have increased - although only less than \$3 of every \$100 spent on new construction goes to efficient buildings. (GlobalABC, 2021).

Figure 7 - Key changes in buildings sector between 2015 and 2020



Sources: UNFCCC, 2021; Buildings-GSR, 2021; IEA, 2020. All rights reserved.
Notes: Emissions intensity is total buildings construction and operations emissions over total floor area, energy intensity is total building operational energy over

Source: United Nations Environment Programme (2021). 2021 Global Status Report for Buildings and Construction. Nairobi

It is now necessary to turn the challenge of intensive urbanisation into an opportunity to build better, especially in Africa and Asia where the building stock is expected to double by 2050. Similarly, the challenge of energy inefficiency must also be tackled in developed economies. In Europe, 90% of existing buildings were still inefficient in 2017 (BPIE, 2017) - given that a typical building constructed today will still be in use in 2070 and beyond, the pace of retrofit needs to more than triple to reach targets put forward in NDCs, yet it is slowing (GlobalABC, 2021). As highlighted by the IPCC, “integrated design approaches to the construction and retrofit of buildings have led to increasing examples of zero energy or zero carbon buildings in several regions. However, the low renovation rates and low ambition of retrofitted buildings have hindered the decrease of emissions.” (IPCC, 2022)

In addition, by 2050, 1.6 billion urban dwellers will be regularly exposed to extreme high temperatures and over 800 million people living in more than 570 cities will be vulnerable to sea level rise and coastal flooding. There is therefore a clear need to implement **effective, low-carbon policies and to enable cost-effective investments in a net zero building stock to decarbonize buildings along their life cycle while addressing resilience** if we are to meet our climate objectives and the SDGs globally (GlobalABC, 2021).

IV. Recommendations for action: means of implementation and partnerships to accelerate progress

The [Global Alliance for Buildings and Construction](#) (GlobalABC), founded at COP21 and hosted by UNEP, aims to mobilise all actors in the highly fragmented buildings and construction value chain to raise ambitions within the sector to meet the Paris Agreement goals. This global partnership gathers 246 members including 36 countries as well as the private sector, civil society, research and intergovernmental organisations committed to a common vision: A zero-emission, efficient and resilient buildings and construction sector.

The GlobalABC channels visibility for the sector and is recognized as a key influencer at international gatherings aimed at addressing urbanisation challenges and climate change, such as the G20 and the UN Climate Change Conferences (COP). In the [G7 Climate, Energy and Environment Ministers’ Communiqué](#), the GlobalABC is recognised as “a critical international forum to advance the sector’s transition towards climate neutrality globally and engage with national governments”. As such, **the GlobalABC is a key player when it comes to accelerating efforts to decarbonise the sector and build sustainably**. In particular, the [GlobalABC global and regional roadmaps](#) present a comprehensive approach to emission reductions from the built environment along the full life cycle, with aspirational short and medium term and longer-term targets and timelines towards achieving zero-emission, efficient and resilient buildings and construction between 2020 and 2050. These roadmaps are being cascaded at the national level and support governments in establishing pathways for building decarbonisation, and local and national governments are encouraged to follow suit. They can contact global.abc@un.org in case of interest in developing a building decarbonization roadmap. The GlobalABC community’s work follows the common vision established by the [MPGCA Human Settlements Pathway](#), co-led by the GlobalABC, and according to which:

- By 2030, the built environment should halve its emissions whereby 100% of new buildings must be net-zero carbon in operation.
- By 2050, all new and existing assets must be net zero across the whole life cycle, including operational and embodied emissions.

Based on these roadmaps, the GlobalABC has developed [10 key measures for decarbonizing the building sector](#), highlighting a set of essential measures and successful examples like the adoption of ambitious building codes, the promotion of energy renovation, the

integration of resilience strategies and plans for the built environment, the use of integrated design based on green building standards, certification schemes, rating tools. In addition, the GlobalABC has launched “[10 principles for effective action](#)” to encourage policymakers and practitioners to join forces and spread climate change adaptation actions in the building sector.

Organisations like the GlobalABC can help maximise synergies and identify solutions to mitigate trade-offs, thus accelerating the deployment of decarbonisation solutions globally and increasing our chances of achieving both the Paris Agreement objectives and the SDGs. According to the IPCC, “*The 2020-2030 decade is critical for accelerating the learning of know-how, building the technical and institutional capacity, setting the appropriate governance structures, ensuring the flow of finance, and in developing the skills needed to fully capture the mitigation potential of buildings.*” (IPCC, 2022)

Other networks within the GlobalABC community such as the WRI and its [Zero Carbon Building Accelerator](#) which helps governments eliminate building sector CO₂ emissions, the World Green Building Council, which recently launched the [EU Policy Whole Life Carbon Roadmap for buildings](#) or the [World Business Council for Sustainable Development](#) are also important platforms for increasing efforts towards building decarbonisation and sustainable development.

V. Guiding questions

- Which trade-offs are acceptable and which ones are not when it comes to the buildings and construction sector and sustainable development?
- How to measure the synergies and trade-offs in different national contexts?
- How to maximise synergies and limit trade-offs to ensure effective building decarbonization and ensure compliance with the SDGs?
- How to close the finance gap such that building roadmap decarbonization measures can be implemented?

References and additional reading list

- German Sustainable Building Council (2020). [Building for a better world: How buildings contribute to the UN Sustainable Development Goals \(SDGs\)](#).
- UNEP (2021). [2021 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector](#). Nairobi.
- GlobalABC (2021). [Global and regional roadmaps for buildings and construction](#).
- GlobalABC (2021). [Decarbonizing the Building Sector: 10 Key Measures](#).
- IPCC (2022). [Climate Change 2022: Mitigation of Climate Change](#).
- IFC (2019). [Green Buildings: A Financial and Policy Blueprint for Emerging Markets](#).
- Iyer-Raniga, U., Huovila, P., Erasmus, P. (2021). [Sustainable Buildings and Construction: Responding to the SDGs](#). In: Leal Filho, W., Azul, A.M., Brandli, L., Özuyar, P.G., Wall, T. (eds) Sustainable Cities and Communities. Encyclopedia of the UN Sustainable Development Goals. Springer, Cham.

For further information, please contact:
Secretariat of the Climate and SDGs Synergies Conference

Email: climate-sdgs-synergies@un.org

Website: <https://www.un.org/en/climate-sdgs-conference-2022>

