

# Energy intensity per square metre of buildings needs to improve 30% by 2030

The buildings and construction sector needs to step up its efforts in terms of energy performance in order to keep the Paris Agreement on track. New research shows that the energy intensity per square metre of buildings needs to improve 30% by 2030.



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The *Global Status Report 2017*, from the Global Alliance for Buildings and Construction, found that total floor area reached an estimated 235-billion square metres in 2016. This figure is set to almost double over the next 40 years: 230-billion square metres of additional buildings will be constructed – the equivalent of adding the floor area of Japan to the planet every single year to 2060.

Buildings and construction account for 39% of energy-related CO<sub>2</sub> emissions, when upstream power generation is included. Between 2010 and 2016 population growth, rising floor area per person and greater demand for energy services contributed to an increase in new energy demand in buildings equivalent to all the final energy consumed by Germany during the same period.

## Clock is ticking

According to the report, the clock is ticking in part because more than half of construction expected to 2060 will take place in the next 20 years – two-thirds of them in countries that do not have mandatory building energy codes in place.

However, the report – prepared by the International Energy Agency and coordinated by UN Environment – highlights many opportunities to deploy energy-efficient and low-carbon solutions, and points to many examples across the globe that show the goals can be met with clear and concerted efforts.

“Over the next 40 years, the world is expected to add the equivalent floor area of Paris to the planet every single week,” said Fatih Birol, executive director of the International Energy Agency, at the international conference “Energy efficiency in buildings: how to accelerate investments” on the fringe of the One Planet Summit in Paris. “This rapid growth is not without consequences.”

“While the energy intensity of the building sector has improved, this has not been enough to offset rising energy demand. Ambitious action is needed without delay to avoid locking in long-lived, inefficient building assets for decades to come,” Birol said.

## **Annual emissions reduction potential**

The Paris Agreement pledges to date still fall short of hitting the 4.9 gigatonnes of carbon dioxide (GtCO<sub>2</sub>) annual emissions reduction that could be achieved if countries were to pursue strategic low-carbon and energy-efficient buildings technology deployment. CO<sub>2</sub> emissions from buildings and construction rose by nearly 1% per year between 2010 and 2016, releasing 76 GtCO<sub>2</sub> in cumulative emissions.

The 30% improvement in the sector’s energy intensity would require a near-doubling of current buildings’ energy performance improvements to more than 2% each year to 2030, the report says. This means near-zero energy, zero-emissions buildings need to become the construction standard globally within the next decade.

The rate of building energy renovations also needs to improve from 1-2% per year to over 2-3% in the coming decade. Such retrofits are particularly important in Organisation for Economic Co-operation and Development (OECD) countries, where roughly 65% of the total expected 2060 buildings stock is already built today.

“Similar to many areas linked to the Paris Agreement, the building sector is seeing some progress in cutting its emissions, but it is too little, too slowly,” said Erik Solheim, head of UN Environment. “Realising the potential savings of the buildings and construction sector requires an all hands-on deck approach – in particular to address rapid growth in inefficient and carbon-intensive building investments.”

The energy savings potential from improved building envelope performance improvements is huge: globally, high-performance buildings construction and deep energy renovations of existing building envelopes represent a savings potential more than all the final energy consumed by the G20 countries in 2015.

## **Buildings that work**

The report points to many examples of buildings that work, such as the zero-energy Edge building in Amsterdam. The building maximises natural light intake and solar electricity production, and uses smart technologies such as intelligent ventilation systems that are responsive to sensor data or user commands. Additional examples include best practice management, such as a waste sharing service that recycles construction and demolition waste in France.

CEO of the Green Building Council South Africa (GBCSA) Dorah Modise says that this report emphasises the urgent need to rapidly transform the built environment in Africa. “The GBCSA is one of 14 green building councils participating in the World Green Building Council’s Advancing Net Zero project, which aims to promote and support the acceleration of net zero carbon buildings to 100% by 2050. Net zero or net positive is a practice that can accelerate the GBCSA’s end goal of complete market transformation. It is not about slowly pushing the built environment industry towards betterment, but rather about inspiring the end goal now.”

Regional chair of the Africa Regional Network of Green Building Councils Thulani Kuzwayo adds that these findings are particularly pertinent for Africa. “Not only is Africa one of the continents most acutely feeling the effects of climate change today, by 2050 Africa will be home to an estimated 1.3-billion more people than it is today. That’s more than half of the world’s projected population growth of 2.4-billion people – with 80% of buildings that will exist in 2050 yet to be built. This presents an opportunity to build right from today, and create green jobs, skills and training, and sustainable growth through widespread green building.”

The report identifies ways to unlock the potential benefits, including:

- **Ambitious and transparent commitment.** Effort is needed to bring forward strategic policies and market incentives that signal the vital role of buildings and construction in meeting the sustainable development goals.
- **Building energy codes and certification.** Deployment of improved building energy codes and policies, including certification, labelling and incentive programmes, are needed in all countries.
- **Energy-efficient, low-carbon and affordable technologies.** Wide-scale adoption and investment in high-performance, low-carbon solutions are key to sustainable buildings and construction.
- **Investments and finance.** Transforming buildings and construction will require a major shift in financing and investments. This includes building the business case for investors, while providing information and financing tools that remove risks and uncertainties for decision makers.

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