**Amid Climate Uncertainty, Zero-Carbon Buildings Offer a Guiding North Star**

July 26, 2018 By Emma Stewart and Renilde Becqué

“Back in the good old days, the construction industry had to worry about a few keys things: Will it stand up, is it functional and does it look nice? Not so anymore.”

So began WRI President and CEO Andrew Steer as he officially opened Canada Green Building Council’s “[Building Lasting Change](https://www.cagbc.org/CAGBC/Events/BuildingLastingChange/2018/CAGBC/Conference/BLC2018/BLC2018.aspx)” conference, held in conjunction with the World Green Building Council Congress Canada in Toronto last month. As Steer noted, today’s developers, architects, engineers, contractors and city leaders must also consider what it takes to design and build in an environment that’s climatically and politically volatile. With [2017 the hottest non-El Niño year on record](https://public.wmo.int/en/our-mandate/climate/wmo-statement-state-of-global-climate) and the fracturing of long-standing geopolitical alliances roiling the markets, leaders in the building sector face some of the greatest uncertainty of their careers.

One point, however, is clear. Should global average temperatures exceed 2°C (3.6°F) by 2030, at least [$4 trillion in assets](https://b8f65cb373b1b7b15feb-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/000/638/original/CDP-global-cities-report-2014.pdf?1470316209) will be put at risk and an [additional 100 million people driven into poverty](https://www.thechicagocouncil.org/event/true-cost-climate-change-reinforcing-inequality). To avoid this, we must limit greenhouse gas emissions. Among other actions, that will require decarbonizing the building sector, one of the largest contributors of greenhouse gases but also the best in which to realize gains for both occupant and global health.

What’s been missing, though, are the market signals and political will to decarbonize the buildings sector. Our partners at the World Green Building Council (WorldGBC) are endeavoring to change the first, and WRI is working to change the latter. In Toronto, Steer announced WorldGBC’s [Net Zero Carbon Buildings Commitment](https://www.worldgbc.org/net-zero-carbon-buildings-commitment), the first global movement towards zero-carbon building delivery with energy-demand reduction as a core requirement. The commitment encourages cities, companies and states to reach net-zero emissions in their portfolios by 2030, and advocate for all buildings to be zero-carbon by 2050.

Even before its formal launch, which will take place this September at [Global Climate Action Summit](https://globalclimateactionsummit.org/), the Commitment had three signatories representing key pieces of the construction value chain: Majid Al Futtaim, a major developer, Integral Group, a global engineering firm and Signify (formerly Philips Lighting), a major building equipment manufacturer. Moreover, 15 of the world’s 70 green building councils are already leading the charge by participating in the Advancing Net Zero global project, signaling that change in the building sector is coming and that they stand ready to help deliver solutions.

Examples of zero-carbon buildings are emerging around the world, and not in the geographies one might expect. From Mexico to India to Kenya to China are numerous examples of net or nearly zero carbon building designs, many availing themselves of renewable power resources like sun and wind. In India, WRI is working on the ground in select cities to create pathways to zero-carbon buildings, while in Kenya, China and Mexico, we’re evaluating the national policies and municipal codes that encourage—or deter—growth of zero-carbon buildings projects.

We’re currently conducting research to explore zero-carbon building opportunities around the world. There is no one-size-fits-all solution. Different countries and projects are exploring a menu of options for achieving zero-carbon—such as getting green energy from the grid, embracing energy efficiency, installing rooftop solar panels and even purchasing carbon offsets. Whatever a jurisdiction’s current policy framework, there is almost always a zero-carbon building pathway that’s achievable.

Take for instance Bombay House, headquarters of the Tata Group in Mumbai, where the owners are applying efficiency measures to bring the existing building up to current standards and purchasing Renewable Energy Certificates (RECs) to cover most of its remaining energy demand. Or the TZED homes in Bangalore, an apartment complex using natural ventilation and daylighting, light sensors and LED lighting while tapping into cooling from renewable sources to cover refrigeration and air conditioning needs. The Infosys campuses around India are another example, using a mixture of PV panels, purchased green grid electricity, and offsite renewable energy generation to cover their energy needs.

Today’s building sector is charting its course in an increasingly complex world, where rapid urbanization, political shifts and climate change call for a regular recalibration of strategies. At least for climate, the end goal is increasingly clear: We must deliver buildings that at the individual or portfolio level are constructed and operate at a zero-carbon basis. Beyond that, the sector could potentially go even further – for instance, by generating excess renewable energy, which can be channeled to urban areas with less abundant renewable energy potential or with inefficient building stock that may not be feasibly retrofitted. By beginning now with sound and pragmatic approaches, we can ensure that a decarbonized building sector by 2050 becomes a goal within reach of every city in both the global north and south.

# Accelerating Building Decarbonization: Eight Attainable Policy Pathways to Net Zero Carbon Buildings For All

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## **SYNOPSIS**

Buildings that emit no greenhouse gas emissions during their operation are vital to meeting the SDGs and Paris Agreement targets. But in the past, zero carbon buildings have been assumed to be only attainable by technologically advanced or wealthy countries. New WRI research finds there are policy pathways to reach zero carbon buildings regardless of location or development status. The report identifies eight pathways countries can take to reach zero carbon buildings by reducing energy demand and cleaning energy supply.

## **EXECUTIVE SUMMARY**

* Cities will lead the shift to net zero carbon buildings (ZCBs) and will therefore play a major role in achieving the goal of a decarbonized world.
* ZCBs are more achievable when the definition is expanded beyond the boundary of the individual building to allow the use of off-site clean energy or consideration across a portfolio of district or municipal buildings.
* This working paper lays out a menu of pathways to achieve ZCBs, with a focus on operational carbon emissions. Each pathway is a combination of up to five components: basic energy efficiency, advanced energy efficiency,1 on-site carbon-free renewable energy, off-site carbon-free renewable energy, and carbon offsets only in cases where efficiency measures and renewables cannot meet 100 percent of energy demand.
* Policies shape a city’s ability to achieve ZCB pathways. This working paper draws on reviews of current policy frameworks and consultations with stakeholders in four countries—India, China, Mexico, and Kenya— to determine how policies at the national and subnational level enable or disable the different ZCB components and pathways.
* Even within these different policy contexts, we find ZCB pathways that are feasible today, making a decarbonized building stock a target increasingly within reach for urban policymakers.