

Report: Paving the Way to Zero-Carbon Cities Through Building Codes

(September 26) – The future of thriving, sustainable cities is anchored in building codes and standards, according to a new report by the Chicago Council on Global Affairs. Carbon emissions from heating, cooling, and operating buildings are directly responsible for 50 percent or more of an urban area's total carbon footprint. Codes and standards can lead the way to net zero buildings and thriving low-carbon cities.

“Buildings are the anchors of the economic, energy and transportation systems of cities,” says Karen Weigert, co-author of the report and senior fellow on Global Cities at the Chicago Council on Global Affairs. “Without widespread, urgent, and aggressive building codes and standards, it will be nearly impossible to meet the targets set in the Paris Agreement.”

Despite their importance, building codes are not consistently created or enforced. This challenge is even more significant in light of the global construction boom. In the next decades, the cities of the world will add as much building square footage as they have built in the hundreds of years leading up to today. Building square footage is projected to double by 2050, from 240 to 480 billion square meters.

The report was informed by a workshop titled, “Carbon Reduction in Thriving Cities Through Building Codes,” which was co-sponsored by USG Corporation and included contributions from business leaders at USG, Warsaw Mayor Hanna Gronkiewicz-Waltz, and Architecture 2030's Ed Mazria at the 2018 Chicago Forum on Global Cities.

“Global cities provide some of the most important catalysts for change related to sustainable built environments,” said Jennifer Scanlon, President and Chief Executive Officer of USG Corporation. “There are significant opportunities for cities to grow a sustainable footprint as well as improve building operations by using construction methods and building materials that reduce energy usage and emissions. Building codes serve a key role in ensuring cities seize these opportunities when constructing new buildings as well as when remodeling existing buildings.”

Drawing from case studies across 10 cities in three different types of markets, the report offers best practices and strategies for moving forward. For established markets such as Chicago, Warsaw, and Zurich, where the majority of buildings are already built, the base of actions includes faster retrofit cycles and zero-carbon energy codes. Currently, less than one percent of existing building stock undergoes renovation each year.

Of the expected new construction, two-thirds will be built in cities and regions without mandatory energy building codes. For middle-income markets such as in China, Mexico, and South Africa, the goal is to support growth while quickly developing and implementing codes for new construction. Developing markets, such as in Ghana and India, will see billions of meters of growth in floor space, the majority of which is not slated to be covered by building energy codes. In these areas, there is a need to establish initial energy codes linked to resilience and address appliances and plug loads outside of codes.

The report offers nine new principles that cities can adopt to shape and ensure a low carbon future. Recommendations include treating building energy codes as part of a larger transformation, implementing robust enforcement and tracking, and developing links in the code beyond efficiency such as with energy supply, location, and transportation.

The report was made possible by the generous support of the USG Corporation and through a grant from the Robert R. McCormick Foundation that supports the Council's research on global cities.

Read the full report to learn about the nine specific principles that can guide work toward building thriving, low-carbon cities.

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