

Building a sustainable future: Urgent action needed

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Credit: Cambridge University Press

We need to act urgently to increase the energy efficiency of our buildings as the world's emerging middle classes put increasing demands on our planet's energy resources. These are the findings of a new report, published in *MRS Energy & Sustainability* by authors Matthias M. Koebel, Jannis Wernery and Wim J. Malfait.

The scientists from the Swiss Federal Laboratories for Materials Science and Technology argue that increasing demands for "thermal comfort" from the flourishing middle classes in countries like China, Brazil and India could pose an enormous global challenge - unless efficient and sustainable solutions for existing and new building stock are implemented as a matter of urgency.

Buildings already account for up to 40% of our global [energy](#) demands. New solutions are continually being developed to help homes and workplaces become more energy efficient - from airtight envelopes and superinsulation materials to integrated photovoltaic panels. When combined with user behavior, these solutions can help to reduce the [energy consumption](#) of our buildings by a factor of three.

However, the authors argue that huge variations in climate, economic power, building traditions and - perhaps most importantly - public perception and attitude towards climate change, have resulted in vastly different adoption rates of new building materials and technologies in countries around the world.

For example, energy consumption and greenhouse gas emissions per square meter of new buildings in Europe have been reduced dramatically as a result of a coherent energy policy, the enforcement of strict building codes and the adoption of more energy-efficient technologies, they argue.

In contrast, different perceptions of the risks and consequences of climate change in the United States have resulted in a less coherent energy policy and less stringent building codes, the authors write. This means that the adoption of energy-saving materials across the Atlantic is lagging behind the [building](#) sector in Europe - an inertia that is magnified in other countries around the globe, according to the authors.

They argue that the growth in population and economic status in developing countries will place a particular strain on the successes gained by current [energy efficiency](#) efforts, as economic gain and energy demands to fuel continued economic growth will likely take center stage for developing countries in the future.

"The growth of a middle class in countries like China, Brazil and India, and their increasing demand for [thermal comfort](#), will precipitate a strong increase in cooling energy demands, unless efficient and sustainable solutions can be implemented readily and quickly," the authors conclude.

More information: Matthias M. Koebel et al. Energy in buildings—Policy, materials and solutions, *MRS Energy & Sustainability* (2017). [DOI: 10.1557/mre.2017.14](https://doi.org/10.1557/mre.2017.14)

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