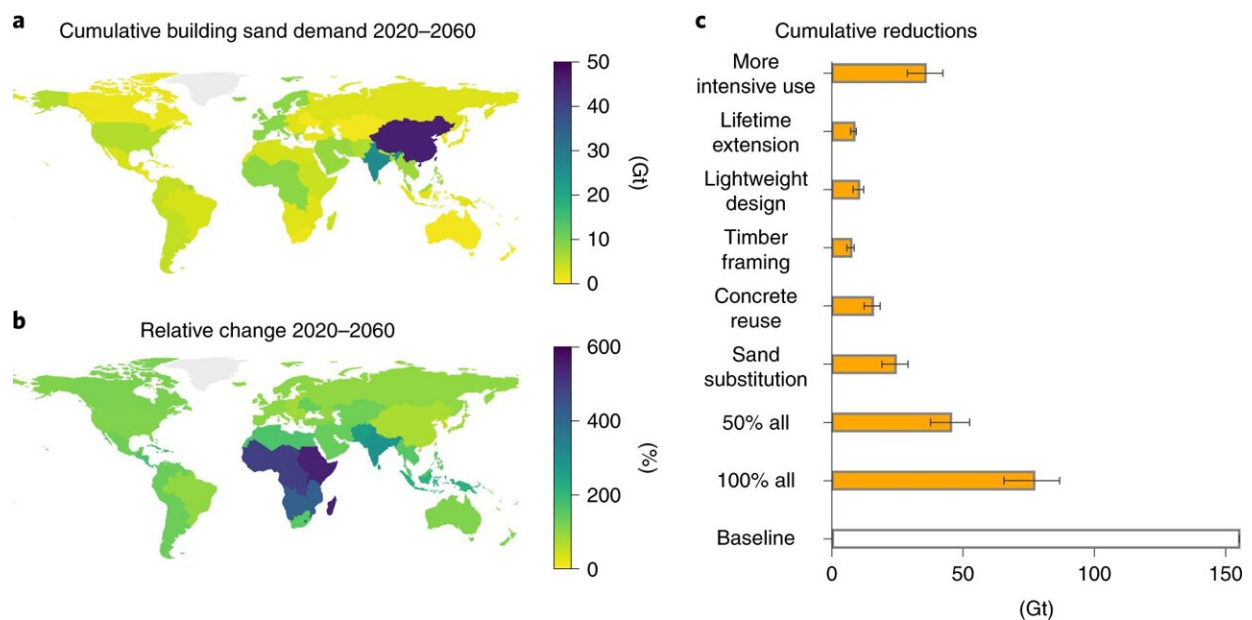


# Calculating global sand demand for the coming years and ways to avoid a demand crisis

March 25 2022, by Bob Yirka



Building sand use and reduction scenarios in world regions. Credit: *Nature Sustainability* (2022). DOI: 10.1038/s41893-022-00857-0

A team of researchers at Leiden University has attempted to measure the demand for sand in the coming decades and has also outlined ways to prevent a demand crisis. In their paper published in the journal *Nature Sustainability*, the group describes their approach to estimating sand demand and outlines ways to reduce it using material efficiency

strategies to avert a crisis. Zhi Cao and Eric Masanet with the University of Antwerp and the University of California, Santa Barbara, respectively, have published a News & Views piece in the same journal issue outlining the types of material efficiency strategies that can be used to reduce sand demand and the work done by the team in the Netherlands.

As the researchers note, there is a sand supply crisis developing as demand has begun to outstrip the amount that can be produced. Currently, sand is used to make asphalt, concrete, silicon chips, glass and a wide variety of other products. And while there is ample sand in the environment, such as the massive dunes in the Sahara Desert, most of it is unsuitable for [industrial use](#). Most usable sand is taken from river beds. Sadly, the supply crisis has developed to the point where sand pirates have begun destroying small islands in places like Indonesia as they excavate all of the available sand. And as the researchers note, the problem is going to get even worse if action is not taken very soon.

To find out how serious the sand supply crises might become, the researchers conducted a survey of buildings at 26 sites around the world—they are the largest source of sand use—including size and type. They used the data from their survey, along with data describing expected population increases and [economic growth](#), to create models for use in creating estimates for glass and concrete global demand for the years leading up to 2060. In so doing they found demand for sand is likely to jump from 3.2 billion metric tons a year in 2020 to 4.6 billion metric tons in 2060. They acknowledge that it is not known how much [sand](#) there is in natural reserves but suggest there is likely to be a major shortfall based on current supply and demand issues. But they also note that there are ways to avoid such a [crisis](#) by using material efficiency strategies, such as increasing building lifetimes, recycling concrete, using lighter materials in buildings where possible and designing buildings in ways that use less concrete.

**More information:** Xiaoyang Zhong, Increasing material efficiencies of buildings to address the global sand crisis, *Nature Sustainability* (2022). [DOI: 10.1038/s41893-022-00857-0](https://doi.org/10.1038/s41893-022-00857-0).  
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