

The World Is Running Out of River Sand, And That's a Massive Issue

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(Aperture X/Moment/Getty Images)

All over the world, industrial sand mining is extracting river sediment much, much faster than Earth's natural cycles can replenish it.

Our rivers are, quite literally, running out of sand.

Scientists have just [published a massive review](#) of 411 studies conducted since 1974, revealing that the global demand for river sand and gravel to create construction materials like concrete is unsustainable.

The Mekong Delta, which spills out across the southern tip of Vietnam after the river has traversed Cambodia and Laos, is a prime example.

There, a crane-equipped barge can extract 300 cubic meters (equivalent to 79,250 US gallons) of sand in just three hours.



A dredging boat pumps sand on the Mekong River in Phnom Penh, Cambodia. (Tang Chhin Sothy/AFP/Getty Images)

In Vietnam, current extraction rates are about 11.8 times above the rate of natural sediment replacement, which is about 6.18 megatons per year.

"Between 2015 and 2022, approximately 366 million cubic meters of sand was extracted there, causing a massive sediment deficit that resulted in a total mean riverbed incision of 0.48 meters (or 0.053 meters per year)," hydrologist and study author Dung Duc Tran of Nanyang Technological University (NTU) in Singapore told ScienceAlert.

The riverbed lost almost half a meter of depth across that period.

It may not seem like a big difference on the water's surface, but that amount of change can have major repercussions [for the way water flows](#), the health of that river system, and the structure of the banks on either side.

In Vietnam's section of the Mekong, more than 1,800 houses collapsed between 2018 and 2020 as a result of riverbank erosion.

By 2023, the Vietnamese Mekong was riddled with 585 major erosion hotspots, along 741 kilometers (460 miles) of river.

These changes to the riverbed also amplify what is known as the "backwater effect", in which [salty water](#) creeps further and further upstream.

If the current rate of sand mining in the Vietnamese Mekong continues, [experts say](#) there will be no more sand left by 2035.

But the Mekong is just one of many riparian victims of the international construction boom, which needs sand to make concrete and other building materials.

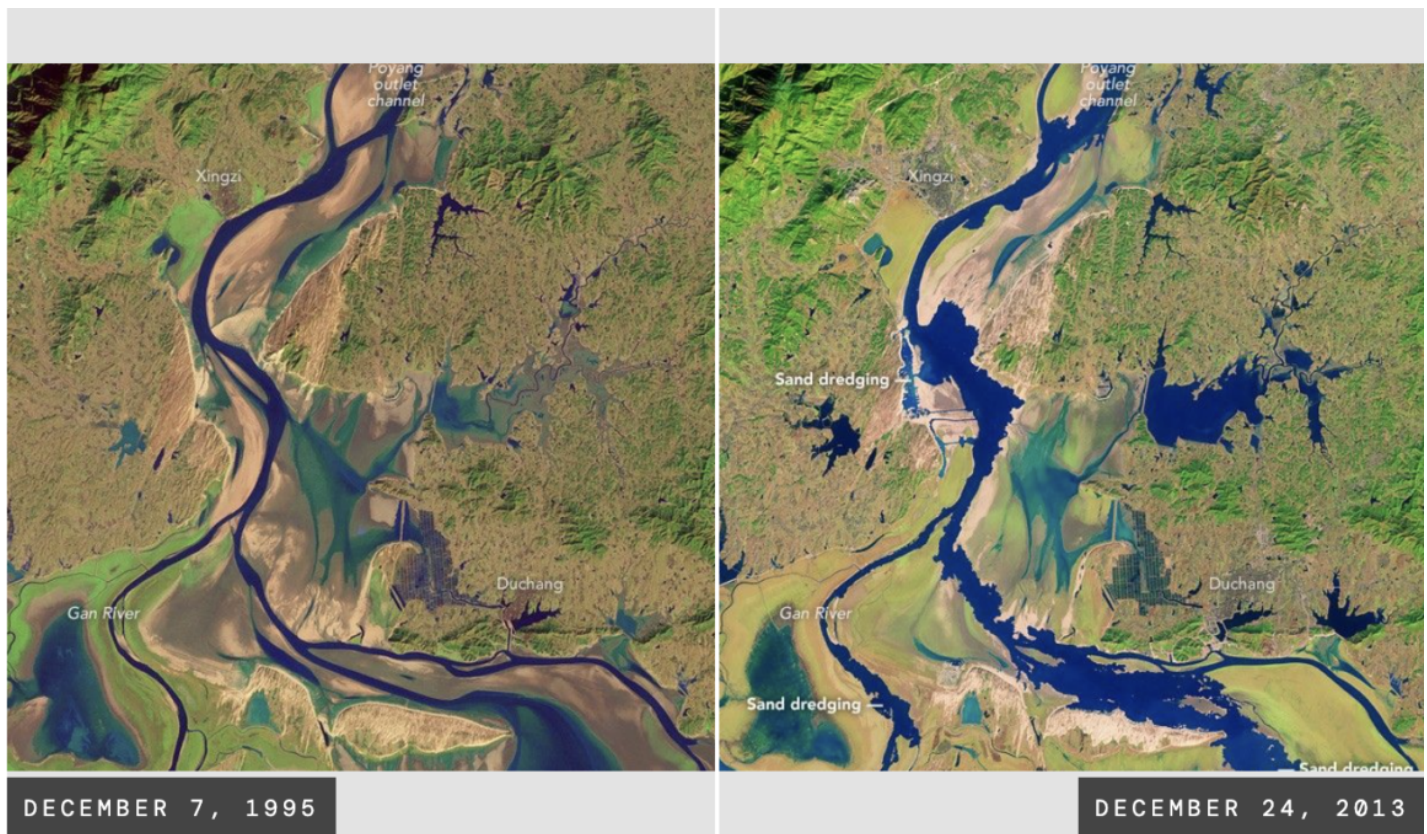


River sand is excavated in Qingdao, China. (Peng Song/Moment/Getty Images)

China's Poyang Lake has undergone such drastic changes they are visible from space.

Numerous Indian waterways have met the same fate, including the Mayurakshi, Kollidam, Subarnarekha, and Ajay Rivers.

Sand mining has progressively altered the Paraná and Tocantins Rivers in Brazil, which are part of the Amazon Basin.

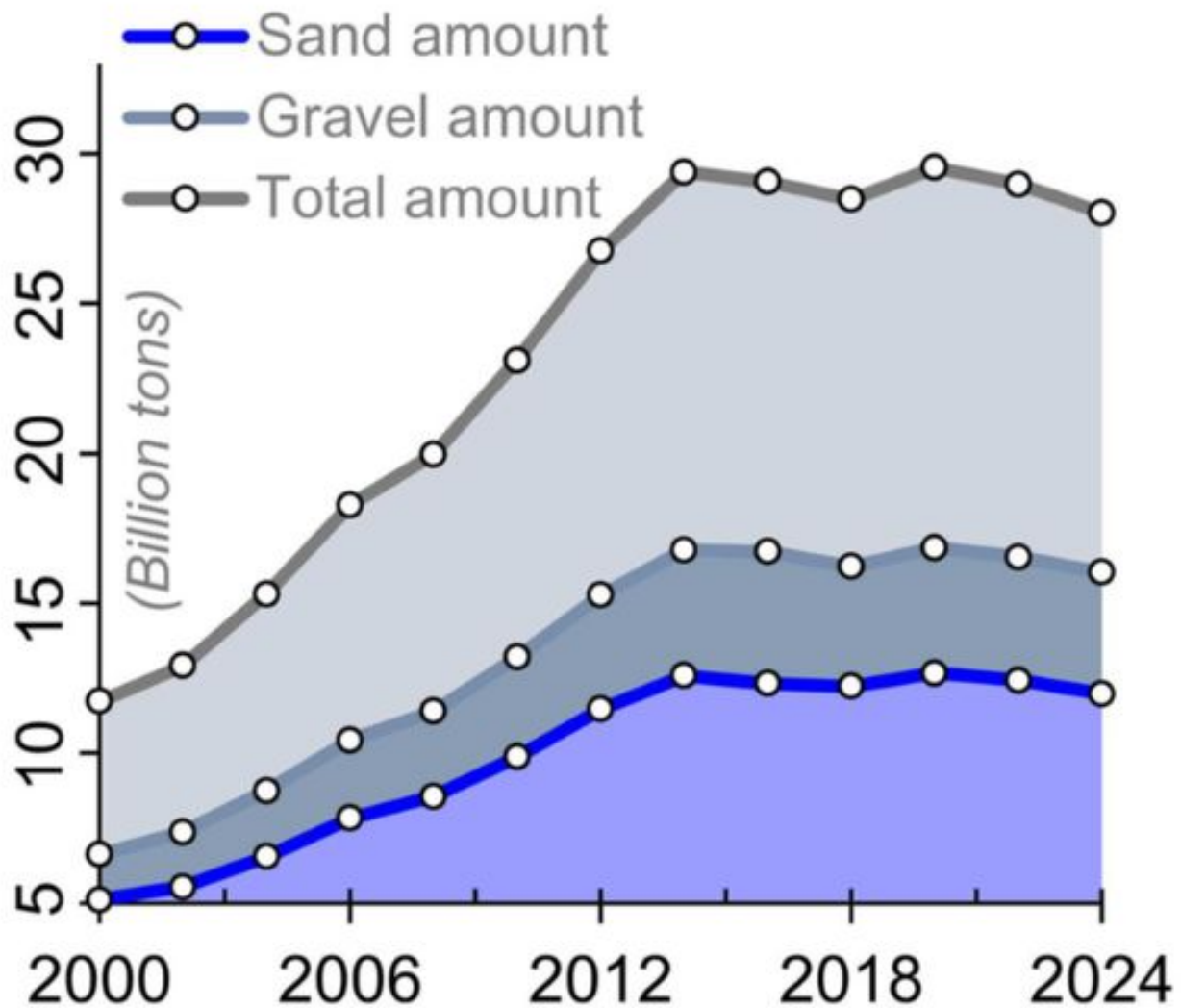


In just 18 years, China's Poyang Lake was drastically changed by sand mining. ([NASA Earth Observatory](#))

Mining pits in the Seine River in France, dredged in the early 20th century, persist as floodplain lakes to this day.

Yet international demand for river aggregates has grown drastically in the past two decades.

"Sand and gravel are the world's most heavily extracted solid materials and are fundamental to urbanization and infrastructure development," Edward Park, a geographer at NTU Singapore and the study's lead author, told ScienceAlert.



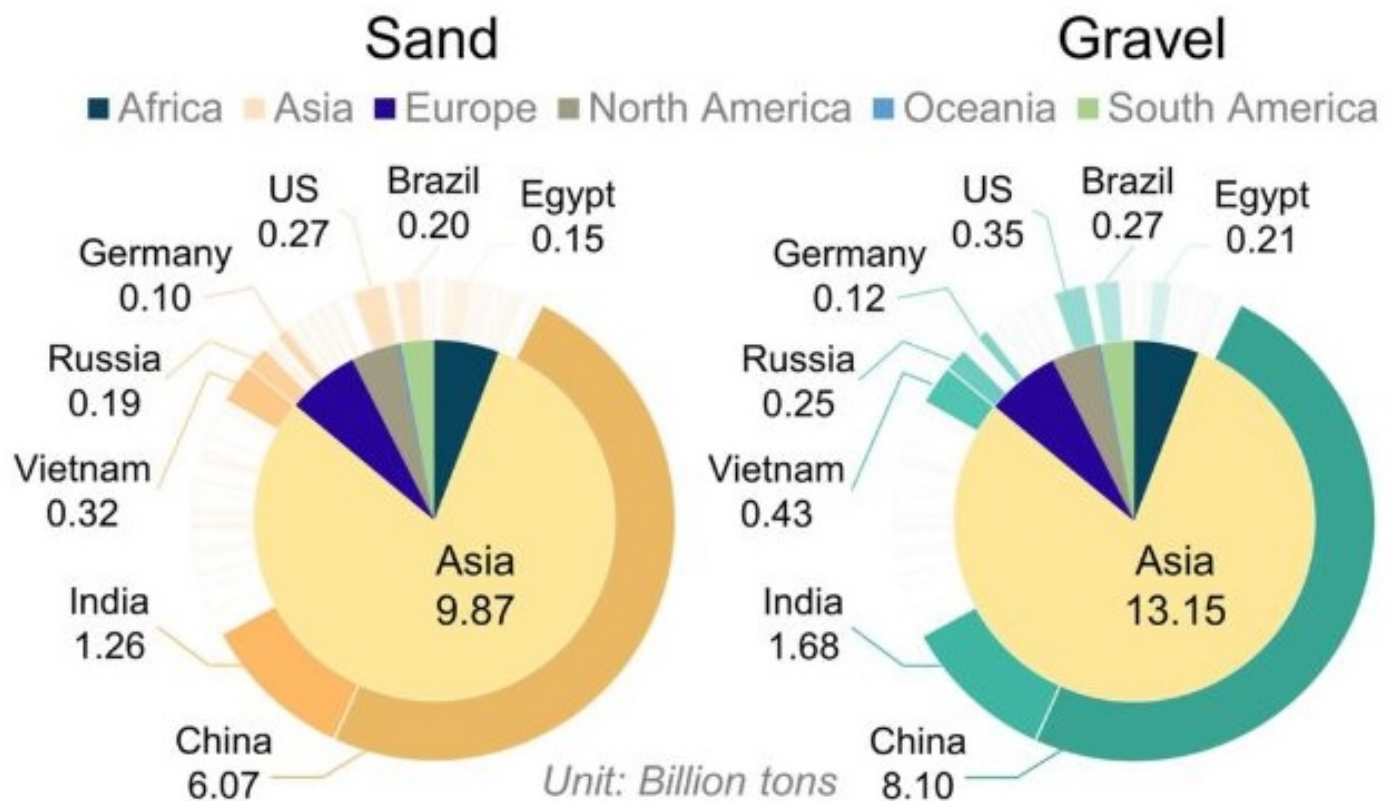
Annual global demand for river sand and gravel from 2000 to 2024. (Park et al., *Reviews of Geophysics*, 2026)

"Together, they account for more than 70 percent of concrete by volume and are widely used in concrete, asphalt, roads, buildings, and foundations," Park continued.

"River sand is particularly valued for construction because its grains commonly provide suitable friction and because it is generally non-saline."

It's the interlocking grains of river sand that make it particularly suitable for land reclamation. It's not shifty, like [desert sand](#), or salty, like marine sand.

"Construction companies, property developers, and infrastructure contractors benefit from access to an essential raw material for concrete, roads, housing, and land development," Park said.



Volume of sand and gravel consumed in 2023 by the eight largest-consuming countries across the six continents. (Park et al., *Reviews of Geophysics*, 2026)

"However, these benefits must be weighed against environmental and social costs, and in poorly governed areas, illegal operators and corrupt officials may capture a disproportionate share of the profits while river-dependent communities bear the damage."

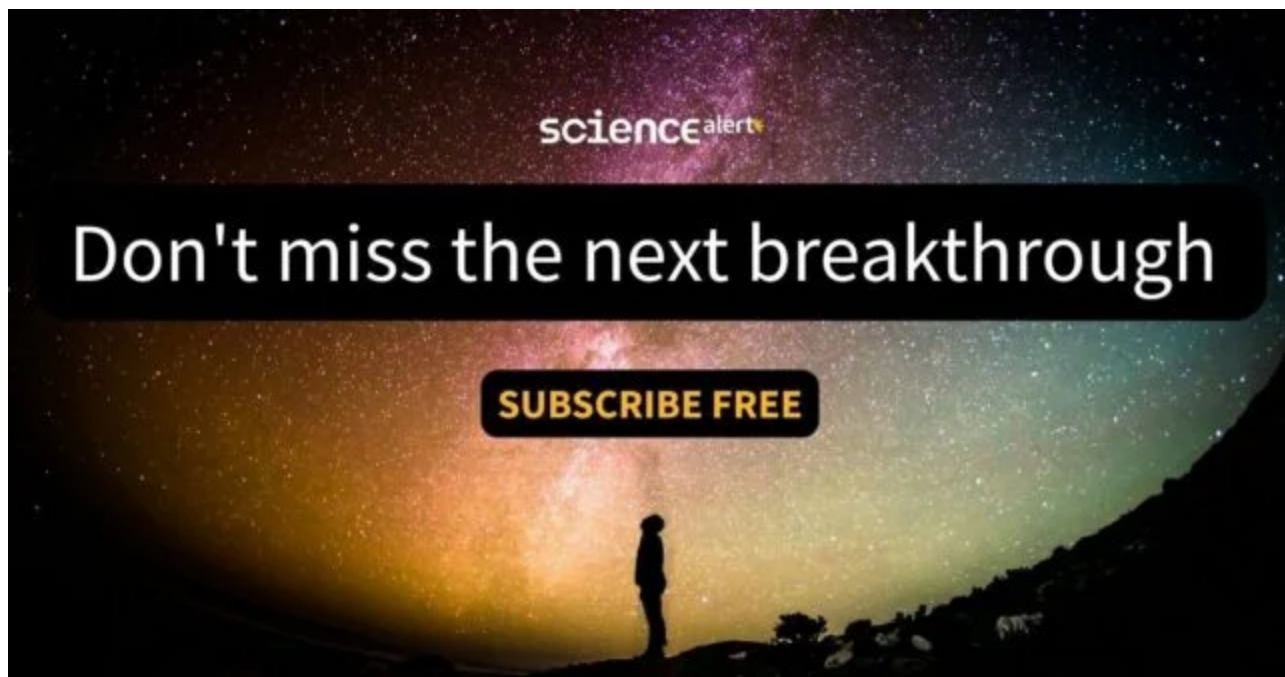
The review revealed that many countries don't even have access to the data they would need to balance their economic needs against the environmental and social impact.



A worker watches a sand excavator along the Mekong River in Laos, dredging sand to make cement. (Lillian Suwanrumpha/AFP/Getty Images)

"Extraction should be restricted to carefully selected locations and volumes based on river sediment budgets and natural replenishment rates," Tran said.

Of the studies reviewed, only 27 percent actually mapped the extent of the mining, and only 24 percent investigated the socioeconomic factors driving demand.



"Improved monitoring, stronger enforcement against illegal mining, seasonal extraction limits, and sustainable mining zones would further reduce environmental damage," Park told ScienceAlert.

Related: [80% of Earth's Rivers Are Quickly Losing Oxygen, Study Reveals](#)

"Meaningful reductions are achievable, but they will require coordinated technological, regulatory, and demand-management measures rather than relying on a single solution."

The research was published in [Reviews of Geophysics](#).