

Sand overextraction weakening riverbanks as concrete demand soars

Research finds demand has more than doubled since 2000 and 80% of current demand comes from Asia



📷 Sand dunes in the main channel of the Yellow River in Shanxi province, China. Photograph: Costfoto/NurPhoto/Shutterstock

Kate Ravilious

Wed 26 Aug 2026 06.00 BST

 Prefer the Guardian on Google

A booming demand for concrete has resulted in sand and gravel being extracted from riverbeds faster than nature can replenish it. A study published in [Reviews of Geophysics](#) shows that the demand for sand and gravel has more than doubled in the last two decades, with overextraction leading to weaker riverbanks, lower groundwater levels, coastal salt intrusion and poorer water quality.

In 2024, city-building and infrastructure projects around the world turned 28bn tonnes of sand and gravel into concrete. Researchers reviewed data on sand and gravel extraction going back to 1974 and have shown that since 2000 demand has more than doubled, with more than 80% of current demand coming from Asia, supporting urban development and road-building across China and India in particular. They found much of the material was being extracted from rivers across Asia and Africa. Data on extraction is scarce but where it does exist the researchers showed that extraction often exceeded natural sediment replacement severalfold.

The researchers suggest that satellite imaging and river mapping can be used to better manage sand and gravel mining, helping to minimise negative impacts. And demand can be reduced by using materials more efficiently, plus developing alternatives such as processed [construction waste](#), recycled glass and treated bottom ash from waste incineration.
