

# Oceans struggling to absorb CO<sub>2</sub> amid microplastic pollution: Study

Biological carbon pumping is a natural process by which an ocean transfers carbon from the atmosphere into deep sea

## CHALLENGE FOR BLUE WATERS

- Microplastics interfere with this process
- Over 8.3 bn tonnes of plastic have been produced globally
- Toxins in microplastics ingested by living creatures
- Coordinated efforts needed to develop governance framework



ence of microplastics across varied environments from deep ocean waters to human bodies.

Over 8.3 billion tonnes of plastic have been produced globally to date, with 80 per cent ending up in landfills or the environment -- only nine per cent of the massive volume is recycled, the researchers said. Toxins in microplastics are ingested by living creatures, including humans, triggering a range of diseases, disrupting ecosystems, harming aquatic life, and reducing soil fertility, the researchers said. The team called for an integrated approach as microplastic pollution and climate change cannot be addressed in isolation, they said.

Coordinated efforts are needed to develop governance frameworks that tackle both microplastic pollution and climate change, particularly their links to ocean acidification and warming, they added.

Reducing single-use plastics and improving waste management are among the recommendations the researchers suggested to preserve oceans and their ability to absorb carbon dioxide.

**“The review highlights the close relationship between microplastic pollution and climate change, suggesting that MPs may significantly contribute to climate change and potentially further affect ocean health in the form of ocean warming and ocean acidification**

**– The authors**

contribute to climate change and potentially further affect ocean health in the form of ocean warming and ocean acidification,” the authors wrote. Microplastics are fragments of plastics sized under five millimetres. Studies have provided evidence of pres-

lah, associate professor of integrated water processing technologies, said, “Oceans are Earth’s largest carbon sink. Microplastics are undermining this natural shield against climate change. Tackling plastic pollution is now part of the fight against global warming.”

The research, published in the Journal of Hazardous Materials: Plastics, reviewed 89 studies published from 2010 to 2025. Peer-reviewed articles and reports from international organisations were among the content analysed to understand effects of microplastics on ocean health and climate change.

“The review highlights the close relationship between microplastic pollution and climate change, suggesting that MPs may significantly

MICROPLASTICS could be impacting the oceans’ ability to absorb carbon dioxide (CO<sub>2</sub>) which is critical for regulating Earth’s temperature, according to a research.

“Biological carbon pumping” is a natural process by which an ocean transfers carbon from the atmosphere into the deep sea layers. “Microplastics (MPs) interfere with this process by reducing phytoplankton photosynthesis and impairing zooplankton metabolism,” authors including those from the University of Sharjah in the United Arab Emirates said. Author Ihsanullah Obaidul-

## At-home blood tests can accurately detect key biomarkers of Alzheimer’s

Alzheimer's disease is usually confirmed through brain scans or spinal fluid tests, which are invasive and expensive

NEW DELHI

SIMPLE finger-prick blood samples that can be collected at home and mailed to laboratories without refrigeration or prior processing can help detect Alzheimer’s disease biomarkers accurately, according to an international study.

The research, published in the journal Nature Medicine, represents the first large-scale validation of the accessible testing approach that removes geographic barriers



and opens brain disease research to global populations without requiring specialised health care infrastructure.

Alzheimer’s disease is usually confirmed through brain scans or spinal fluid tests, which are invasive and expensive. Blood tests that measure biomarkers, such

as p-tau217, are emerging as accurate and accessible tools for detecting Alzheimer’s disease.

“This breakthrough could fundamentally change how we conduct Alzheimer’s research by proving that the same biomarkers doctors use to detect Alzheimer’s pathology can be measured from a simple finger prick collected at home or in more remote community settings,” said Professor Nicholas Ashton, senior director of US-based Banner Health.

## China failing to boost population after decade of ending one-child policy

BEIJING/NEW DELHI

CHINA is failing to boost its population even after a decade of ending the stringent, state-enforced birth control policy that skewed its demographics, according to a media report.

The one-child policy, officially enacted in 1980, was targeted at reining in China’s runaway population growth. As the country faced significant demographic challenges, the notorious policy was ended in 2016.

Even after the landmark change -- and several other measures to encourage couples to have more kids -- the country has failed to boost



the population rates, the KSLTV quoted CNN as saying.

Between 2022 and 2024, China’s headcount shrank. As per United Nations projections, people aged over 60 now account for more than 20 per cent of the population of 1.4 billion people. They could make up a staggering half of the population by 2100.

## Kerala’s 4.5 lakh Class 10 pupils plug into future with robotics

The programme, implemented by KITE - the technology arm of the General Education Department - is designed to familiarise students with robotics concepts

THIRUVANANTHAPURAM

KERALA’s public education system took a significant leap into the future on Tuesday as the Kerala Infrastructure and Technology for Education (KITE) launched a state-wide robotics training programme for all Class 10 students.

The ambitious initiative will cover around 4.5 lakh students studying in government and aided schools across the State, marking one



of the largest school-level robotics training drives in the country.

The programme, implemented by KITE - the technology arm of the General Education Department - is designed to familiarise students with robotics concepts

newly introduced in the revised Class 10 Information Technology textbook.

The workshops, to be completed in all schools by January 15, are aimed at equipping students with practical skills that will also help them prepare for the upcoming SSLC examinations. Training sessions are being conducted by Little KITES, India’s largest student-led IT network, under the supervision of trained mentors in each school.



**THE POLITICA**  
Nothing political about it

## POLITRICKS



**BN Kumar**

WHEN Prime Minister Narendra Modi launched the Swachh Bharat campaign from the Red Fort, he spoke of cleanliness as a civilisational duty. It was not, he said, merely about sweeping streets or building toilets, but about protecting public health, dignity and the future of the nation. Cleanliness, he argued, was foundational to a strong and healthy India.

That vision remains compelling. But more than a decade on, Swachh Bharat is confronting a fundamental contradiction that threatens to hollow out its promise. The campaign has focused overwhelmingly on what can be seen, counted and showcased, while what sustains life itself—clean air and clean water—remains dangerously sidelined.

Without clean water and breathable air, cleanliness is reduced to ceremony, offering spectacle without public health protection—an atrocity of governance that normalises preventable harm. The warning signs are no longer abstract. They are immediate, lived and, in some cases, tragic.

Indore, repeatedly crowned India’s cleanest city, became a symbol of this contradiction when a water contamination epi-

# SWACHH BHARAT’s FATAL BLIND SPOTS

A sweeping cleanliness drive collapses when toxic air, unsafe water and vanishing ecosystems are sidelined, turning sanitation into ceremony and allowing preventable illness, disasters and death to masquerade as development



**Prime Minister Narendra Modi called cleanliness a national duty tied to public health and dignity. That promise rings hollow when toxic air, unsafe water, collapsing hills and vanishing green cover are ignored, turning Swachh Bharat into ceremony while preventable disease, disasters and environmental decline quietly intensify across India**

symptoms of a deeper malaise: environmental systems are treated as peripheral even as they determine the success or failure of social interventions.

As air quality deteriorates and water sources degrade, India’s green cover continues to vanish. Urban forests are cleared in the name of development. Mangroves are reclaimed. Wetlands are filled. Hill systems are drilled, blasted and destabilised. Trees are promised as compensation—often on paper, rarely in survival rates. Ecological costs are postponed until disaster forces recognition.

This is not a baseless or generalised political claim. The consequences of these sustained, anti-nature interventions are too stark to dismiss.

Landslides, floods and struc-

tural collapses are routinely described as “natural”.

**They are not. They are policy outcomes.**

This reality is starkly illustrated by the government’s position on hill tunnelling. Through responses to Right to Information applications, it has emerged that tunnelling through hills for road projects does not require a separate environmental impact assessment under existing regulations. While highways attract scrutiny, the act of drilling and blasting through ecologically fragile hills does not automatically trigger environmental clearance.

In Navoi Mumbai, the ₹2,100-crore Kharghar-Turbhe Link Road cuts twin tunnels through the already stressed Kharghar-Parsik hill range near

Pandavkada. Forest land diversion has been approved. Environmental clearance specifically for hill tunnelling has not. Activists warn that such regulatory interpretations effectively throw hills open to unchecked exploitation, even allowing mining-like activity to masquerade as infrastructure development.

Blasting hills without environmental assessment is not a technical oversight. It is a calculated risk imposed on ecosystems and communities. Recent tunnel collapses and landslides across multiple states stand as grim reminders of what happens when geological and ecological safeguards are treated as inconveniences rather than necessities.

**We worship nature. We dismantle it administratively.**

India prides itself on revering the five elements—earth, water, fire, air and space. Rivers are worshipped as goddesses. Mountains are sacred in scripture. Yet untreated sewage flows into waterways, forests are fragmented, and air grows toxic with alarming regularity. The Ganga and Yamuna action plans have consumed thousands of crores with limited outcomes, while most other rivers—from the northeast to central and southern India—remain outside the national conversation altogether.

**Pollution does not disappear. It merely moves downstream.**

The tragedy is not a lack of knowledge or capacity. It is the absence of accountability.

India does not lack solutions. It lacks integration.

Cleanliness cannot be compartmentalised into departments or reduced to scorecards. It must

encompass air, water, land and ecosystems as a single, inter-linked system. Toilets need water. Clean fuel needs affordability. Roads need environmental scrutiny. Development without safeguards is not progress; it is deferred damage.

Above all, accountability must travel upward—from the panchayat that approves quarrying to the municipality that permits reckless construction, from state governments that ignore pollution data to Parliament that dilutes environmental protections. Elected representatives are not insulated from polluted air or contaminated water. They breathe the same air. Their families face the same risks.

**Public office does not confer ecological immunity.**

Swachh Bharat was never meant to be cosmetic. It was meant to be civilisational. Until clean air and clean water are treated as non-negotiable pillars of the mission, cleanliness will remain superficial and public health will continue to erode quietly.

The choice before India is clear. We can keep sweeping what is visible, or confront what is killing us silently. A truly clean India begins not with a ceremonial broom, but with the courage, commitment and accountability to protect the air we breathe and the water that sustains life—at the very core of the constitutional right to live with dignity under Article 21.

*(The columnist is a Mumbai-based author and independent media veteran, running websites and a youtube channel known for his thought-provoking messaging.)*