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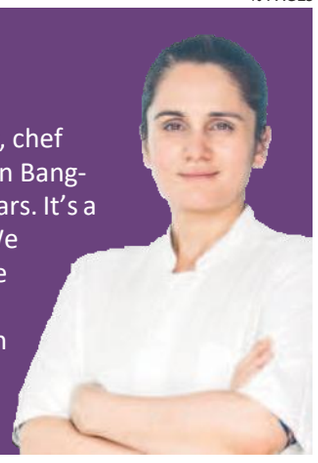
mint lounge

SATURDAY, DECEMBER 7 2024

GARIMA ARORA IS COUNTING STARS

For the second consecutive year, chef Garima Arora's Restaurant Gaa in Bangkok has received two Michelin stars. It's a first for a female Indian chef. "We don't recreate recipes, we create recipes from scratch," says the chef, who is opening a restobar in Gurugram later this month.

SEE PAGE 6



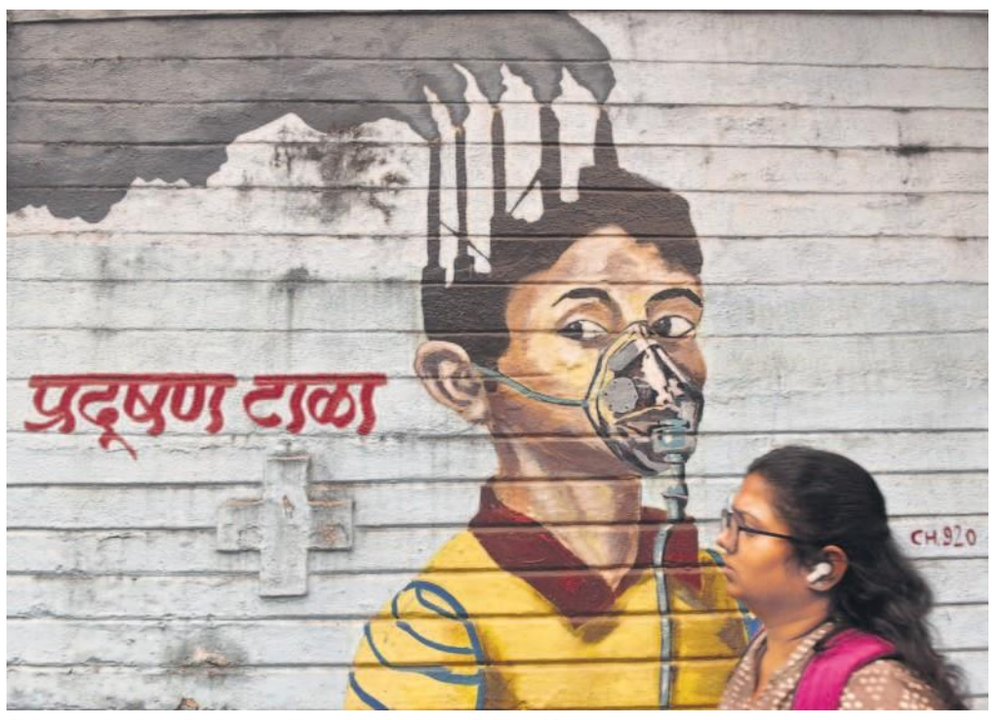
MPC OPENS ₹1.16 TRILLION CASH TAP AS GROWTH VIEW DIMS | PAGE 16

LIVING UNDER A CLOUD

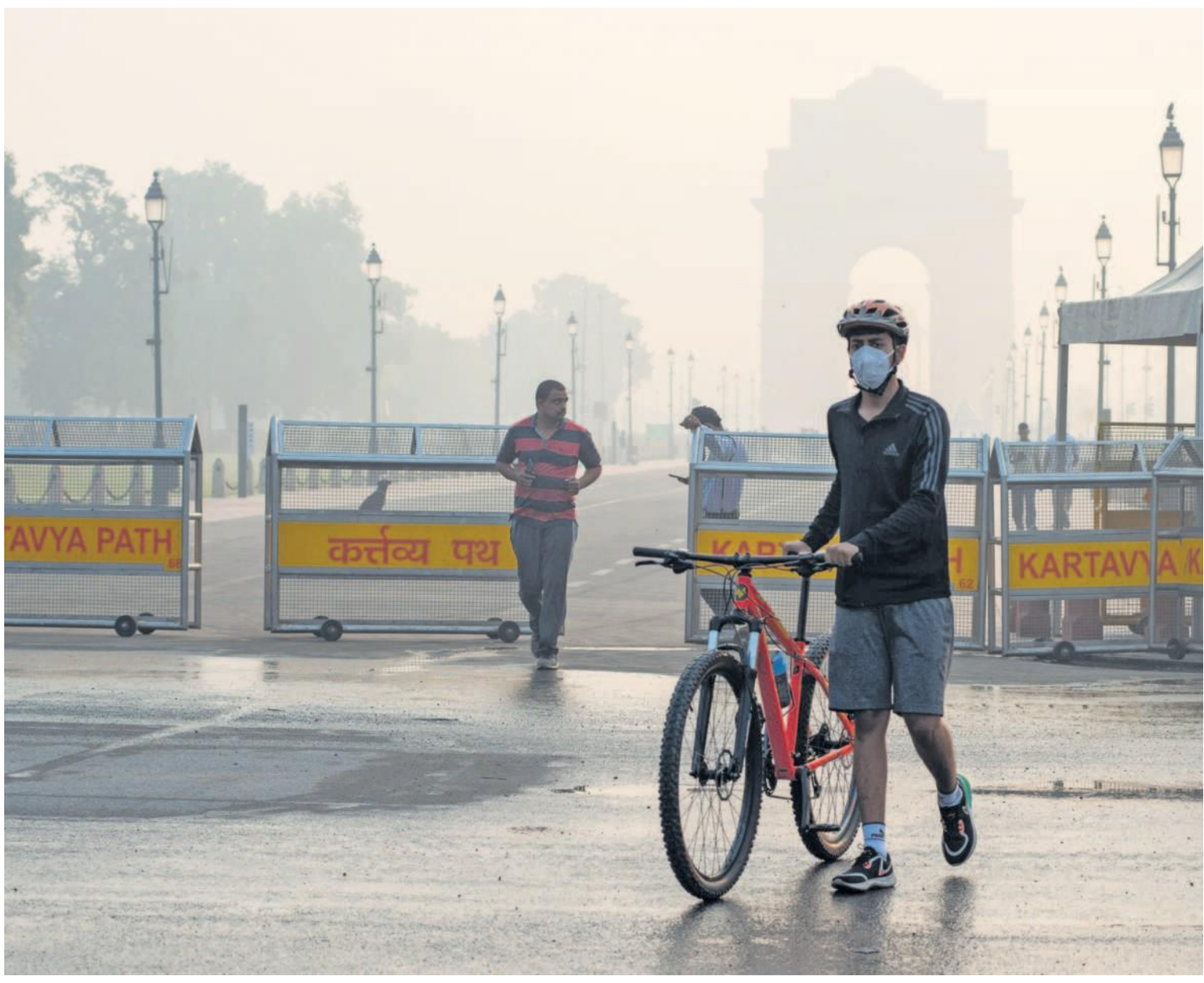
IT'S NOT JUST DELHI. AIR POLLUTION HAS BECOME A NATIONAL PROBLEM, AND PEOPLE ARE HAVING TO FIND DIFFERENT WAYS TO LIVE WITH BAD AIR

Rakshay Dhariwal

Living under a clo



Cities with the benefit of a coastline are recording AQI over 200. GETTY IMAGES



It's not just Delhi. Air pollution has become a national problem, and people are having to find different ways to live with bad air

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Living room, 6. Bedroom, 6. Children's bathroom, 5. Kitchen, 28. These numbers reflect the air quality levels in different corners of Parth Phiroze Mehrotra's house in a posh south Delhi neighbourhood. They are displayed on a smallhand-sized monitor he's carrying around to show me how clean the air inside is. "Below 50 is good, below 10 is fantastic," he says of the monitor that measures the air quality index (AQI), gauging the density of pollutants in a particular place. Readings of 100 or higher are bad news for health; the higher the number, the worse the air. It is a bright November morning, and outside, in Phiroze Mehrotra's veranda overlooking a lush park and a blue-grey sky, the AQI is 390.

Over the past 11 months, while Delhi's AQI has oscillated between an unhealthy 106 and hazardous 1,100, the air inside Mehrotra's 3,000 sq. ft house has remained mostly under 50. He credits two "clean air bubbles"—created and installed by Gurugram-headquartered company YOGa—for keeping the indoor air in check. The installation, essentially an exhaust fan attached to a box (shaped like a bulky old air-conditioner), filters out pollutants and ensures good circulation. "Before this, I had 10 air purifiers in the house for over three years," says Phiroze Mehrotra, 38, editor-in-chief of publishing house Juggernaut Books. "Every morning, I would wake up with a slight headache and check the air (quality) levels. Eventually, I realised the headaches were because of the purifiers (lack of ventilation)."

He has air purifiers in his cars as well. The vehicle in which his children travel has one meant for homes, placed in the back seat. It can bring down the AQI to 10 from 320 within 2 minutes, going by the reading on the monitor Phiroze Mehrotra is carrying. He is now considering buying a similar air purifier for his car to replace the current smaller one attached to a headrest.

On the road outside Phiroze Mehrotra's house, Rajesh Kumar is standing next to his autorickshaw, with a handkerchief tied over his face as a makeshift mask. He's usually at this spot in Panchsheel Park by 7am, giving autorickshaw rides to officegoers and college students. Today, he's three hours late.

For the past month, Kumar has reduced his working hours. He says he's been waking up with burning eyes, an itchy throat and a pounding head. "It's the pollution; I smell it throughout the day while driving," says Kumar, 26, who earns ₹1,000 a day. Before October, he was making ₹2,500. "This same smell is in my house too. I can't escape it. I just keep my mouth covered and start work late; its less money but how else do I protect myself?"

Life in one of the most polluted cities in the world can be suffocating, especially when you realise that the air has an almost physical presence. You can see it in the form of a grey haze early in the morning, taste it like ash during the afternoon and smell it like a campfire all day.

This November was the worst time to be in Delhi. A 3 December report by the Centre for Research on Energy and Clean Air says the Capital was the most polluted region in the country this past month—it was the highest polluted November for the city since 2017, with AQI crossing 1,100 in some areas.

As the temperature dips, the pollutants concentrate more with the neighbouring Himalayan mountain range reducing air movement further. Add household fires, stubble burning, festive firecrackers, pollution from neighbouring countries of Pakistan and Bangladesh, and vehicular and industrial emissions to the mix and you will understand why Delhi makes international headlines every October and November.

While the past few days seem better because of the wind and the sky looks bright and blue, the AQI is still well over 200.

These dark tiny particles swimming in the air can affect every part of the human body. They can enter the bloodstream and increase the risk of clots, resulting in heart attacks; cause damage to lungs, liver, brain, skin, eyes, hair; and shorten a person's lifespan by close to two years, conclude several studies. There are people who have either left Delhi or are in the process of leaving. And then there are residents like Phiroze Mehrotra, who are finding ways to shield themselves—he's invested about ₹1 lakh to install one "clean air bubble" that runs 24x7.

Money can buy less exposure, but only to an extent. Restricting oneself to the boundaries of home at all times isn't exactly practical. Even well-sealed rooms with air purifiers can do only so much. Lesser so, when the air quality is deteriorating steadily across the country. Last year, of the world's 50 cities with the worst air pollution, 42 were in India, shows data by US-based real-time air quality monitoring platform IQAir. Delhi, Patna, Agartala and Vapi were on the list. Over 96% of the Indian population experienced PM 2.5 concentrations, or fine particulate matter that's 2.5 microns or less in diameter (30 times smaller than human hair), "more than seven times" than recommended by the World Health Organization (WHO). According to the *State of Global Air 2024*, over eight million deaths were caused by air pollution globally in 2021, of which 2.1 million were in India.

"Air pollution is not an issue only for Delhi. It's a matter of national emergency. The other big myth is that people believe pollution happens mostly during winters," says Dr Harsh Vardhan Puri, senior consultant (thoracic) and lung transplant surgeon at Medanta the Medicity, Gurugram. "We are breathing bad air 365 days around the country, and the air quality is declining every year." Dr Puri is a senior medical adviser for Lung Care Foundation, a non-profit started by doctors across India in 2015 to raise awareness about lung health. "During the 1980s, the lungs of a 15-year-old used to be pink. Now... they are black (carbon deposits), and these are non-smokers." Estimates by the All India Institute of Medical Sciences (AIIMS) show that close to 25% of lung cancer patients in the country are non-smokers.

If the air is bad across cities, how do people protect themselves? The solution depends on who you ask. Goa-based Siddharth Singh Gautam is planning to move with this wife and parents to Singapore, where the AQI rarely touches 100. "Goa's AQI reached 350 this year. It's becoming hazardous to live in this years away from retirement, but we are planning for his early retirement and will leave India next year."

Over 1,000km away in Udaipur, Ravi Gulati, 55, his wife and their daughter, 4, are settling into a new rented home, where the AQI is in the 150-170 range. This is their second move this year in the hope of better air for the child. From March to June, they were in Himachal Pradesh's Palampur but decided to relocate from the hills "because of lack of extra-curricular activities for my kid," says Gulati, co-founder of Delhi-based not-for-profit Manzil that works on education for children from low-income groups. Both parents workremotely. "Udaipur has better schooling and community. Plus, since I don't do air travel (to reduce carbon footprint), it's easier to get to Delhi (where his parents live) from Udaipur when required. Clean air is one of the basic things you can give your child. There are trade-offs but it's about whether you are willing to pay the price."

Unlike Phiroze Mehrotra, who started becoming aware about the dangers of air pollution in the 2010s

Surviving the smog

With air quality deteriorating in cities, the question of how to live healthily becomes urgent, especially for those who cannot pack up and leave. When the air quality index (AQI) rises, the immediate priority is protecting physical health. "First and foremost, wear a mask. High-quality N95 masks are designed to filter out up to 95% of pollutants," says Dr Nikhil Modi, senior consultant (respiratory critical care), Indraprastha Apollo Hospital, Delhi. When AQI crosses 400, it is best to stay indoors. If outdoor activities are unavoidable, schedule them for the afternoon when the sun's warmth helps disperse smog.

Dr Vivek Nangia, head of pulmonology, Max Super Speciality Hospital, Saket, Delhi, suggests improving household ventilation and installing exhaust fans. "Adopting better cleaning practices, such as using a HEPA-filter vacuum or a damp mop instead of sweeping, can reduce dust and allergens," he says. A diet rich in antioxidants can mitigate the damage caused by pollution. Doctors recommend incorporating nutrient-dense foods such as dry fruits, fish, guava and Indian gooseberry in meals for an abundance of vitamins A, C and E.

As people spend extended periods cooped up indoors, anxiety and stress can mount. Bengaluru-based therapist Arouba Kabir says people should try to focus on solutions rather than dwell on alarming reports. "Installing air filters and wearing masks can be actions that provide a sense of control, transforming fear into proactive adaptation." Kabir recommends brain-stimulating activities, such as reading, solving puzzles or learning skills to build cognitive resilience.

—Tanisha Saxena

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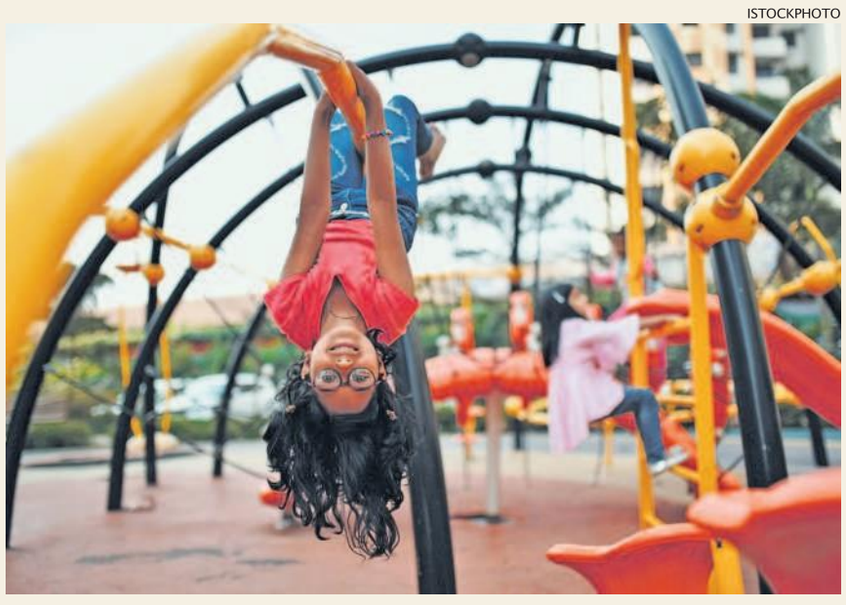

The Delhi-based Rise Foundation is trying to create mini-forests in urban spaces across the National Capital Region and beyond.

while working at the *Indian Express*, Gulati could smell the problem well before the term AQI became part of conversations. During the 1990s, while cycling 11km from Delhi's Khan Market to Patel Nagar for work, he would constantly inhale exhaust fumes from buses. "People used to laugh at me because I wore surgical masks then," says Gulati. "Nobody took it seriously three decades ago, and many are not taking it seriously now."

After a Supreme Court directive, Delhi's buses switched from diesel to compressed natural gas (CNG)—the first such initiative in the country—in 2001, the same year US space agency Nasa set up an Aeronet station at the Indian Institute of Technology (IIT)-Kanpur to monitor pollution using robotic systems. "It was becoming clear that pollution in the country was slowly rising, with contributions coming from man-made sources like cooking, vehicles, industries and construction," says Sachchida Nand Tripathi, dean of Kotak School of Sustainability at IIT-Kanpur. He became the principal investigator of the Aeronet in 2003.

Still, air pollution wasn't making enough news until early November in 2012. While waiting to board a flight from Kolkata, Prof. Tripathi read a

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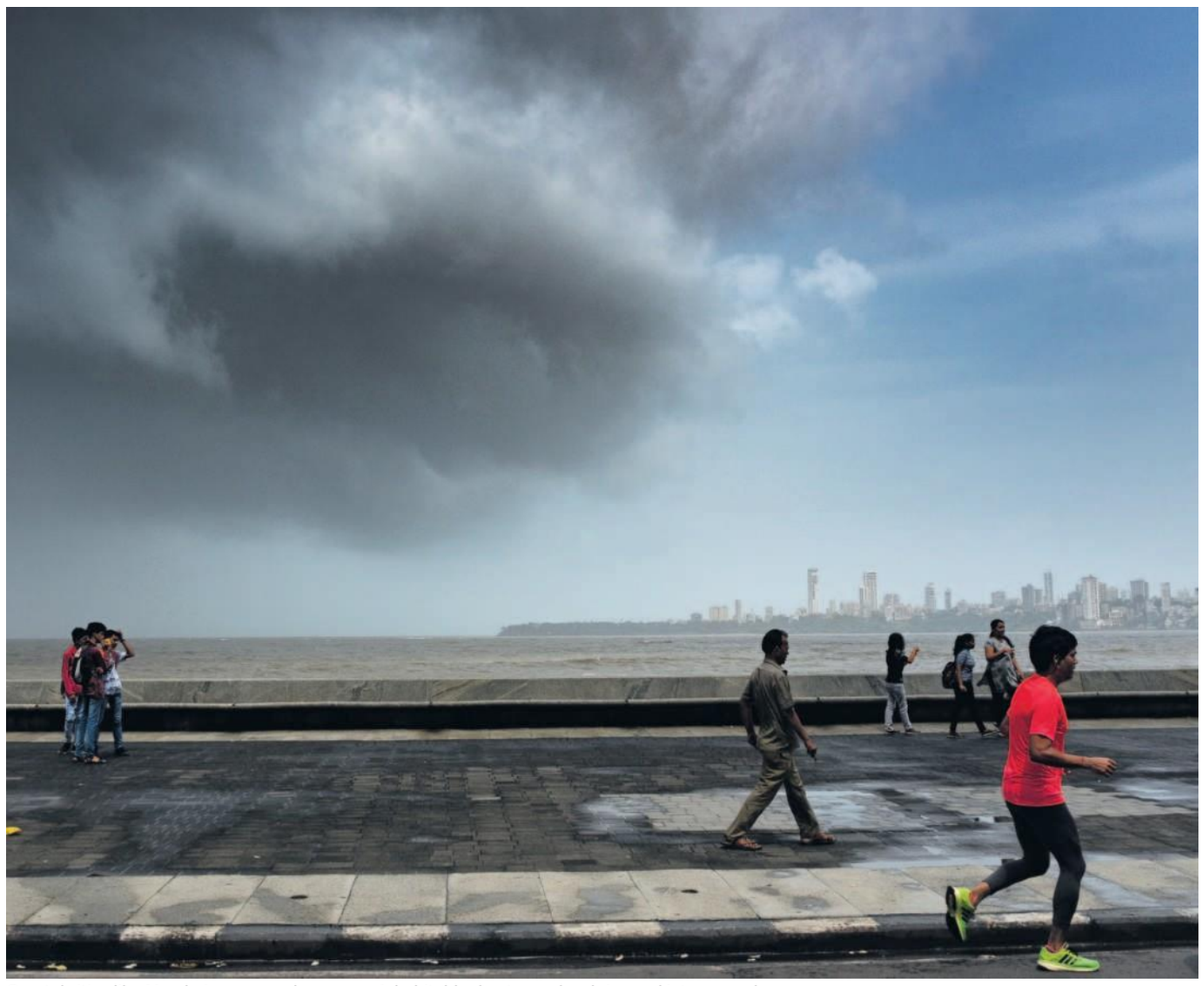

Coastal cities like Mumbai may soon become uninhabitable due to sea level rise and intense cyclones. DEBARSHI DUTTAGUPTA

How climate change impacts Indian cities

While Delhi is in the news for its soaring pollution levels, no big city in India is safe from the future impacts of climate change

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The National Capital Region (NCR) is beset by problems, with the unbearable amounts of atmospheric pollution being the most acute. But the crisis of livability that the city faces isn't just confined to this. There's the annual heatwaves, the severe monsoon flooding, the horribly polluted Yamuna, and a brewing groundwater crisis. Delhi isn't a pleasant place to live in—to put it mildly—for much of the year.

In some ways, however, Delhi is a microcosm of the threats facing India as a whole. As multiple studies have pointed out over the years, India faces multiple imminent threats due to the climate crisis. Heatwaves, supercharged storms, cloudbursts, drought, melting Himalayan glaciers, a falling water table, drying rivers, increasing aridity, sea level rise. There isn't a climate impact that India isn't already suffering from. And with every passing year, the magnitude of these impacts is only going to get more acute.

URBAN HEAT: DELHI, MUMBAI, KOLKATA, BENGALURU

Climate change places additional pressures on cities, especially since India is one of the fastest urbanising countries in the world. According to the *United Nations World Urbanization Prospects* report from a few years ago, the number of Indians living in cities is expected to grow to 871 million by 2050. In the next six years, Ahmedabad and Hyderabad are set to join Delhi, Mumbai, Kolkata, Chennai and Bengaluru as cities with populations of over 10 million.

While this massive rise in urban migration raises the spectre of basic infrastructure-related problems, what may actually be of greater worry is heat stress. Cities typically are hotter because of the extensive heat island effect, and good urban planning—which can alleviate some of the problems—is sorely lacking in India .

A study titled *Cities, Climate Change and* on land, the real story of global heating lies in the ocean. According to the World Meteorological Organization's *2024 State of the Climate* report that was released last month, over the past 50 years, 90% of the extra heat trapped by excessive greenhouse gases (GHGs) in the atmosphere has been absorbed by the ocean. Since 1960, the ocean has been heating up, and this process has only accelerated in the past 20 years. From -300 zettajoules (ZT) in 1960 to 133ZT in 2023 is a massive jump.

What is the effect of this overheated ocean? It's causing longer and more severe marine heatwaves that bleaches and kills coral reefs, which sustain 25% of the global ocean ecosystem. This, along with increased ocean acidification will put a greater strain on seafood catch. But for human beings, the biggest effect of excess ocean heats is that Indian Ocean cyclones are becoming stronger every year.

Megacities like Kolkata, Chennai and Mumbai lie in their path. The recent Cyclone Fengal may have missed Chennai by a whisker when it made landfall on 30 November, but it was neighbouring Puducherry that faced the brunt. As of the time of writing, some 19 people had lost their lives in India and Sri Lanka, while Puducherry experienced its heaviest rainfall in 24 hours in 30 years. When Cyclone Dana made landfall in Odisha in late October, Kolkata was paralysed with flooding. In each case—the most infamous being that of Cyclone Amphan in 2020—the storms became intensely strong in just a few hours because of high sea surface temperatures.

> The biggest effect of excess ocean heat is that Indian Ocean cyclones are becoming stronger every year. And cities like Kolkata, Chennai and Mumbai lie in their path

Connected to this annual hazard is the fact that with the gradual collapse of the Arctic permafrost and summer sea ice, along with rapidly melting Greenland and Antarctic ice sheets, global sea levels are rising in an alarming manner. Since 1993, satellites have been monitoring this rise, and in the past 30 years, global sea level has risen by over 110mm, and rose twice as fast in the past decade than it had in the first decade. In certain coastal regions, like around India, the rate of sea level rise is higher than the global rate. Not only does this spell trouble for coastal cities in the long term, even in the short term, higher sea levels can spell disaster when cyclones make landfall. Whenever the latter happens, there's something called a storm surge, where the force of the storm carries sea water inland in huge waves. During Cyclone Amphan, there was a storm surge of about 14ft. It was the Sunderbans mangroves that prevented the storm surge of being even higher, as much as 25ft. If the time a cyclone makes landfall coincides with high tide and higher sea levels, storm surges would be higher and lead to greater flooding. As cities like Mumbai, Kolkata and Chennai systematically destroy their mangroves and wetlands, they are increasingly without defences for the climate change future.

So while Delhi has been in the news recently due to its unmanageable pollution levels, there's hardly any city in the country that isn't facing environmental or climate-related threats of some kind or the other. And as India continues to urbanise at a rapid pace, the pressure is going to only increase.

newsflash on TV: PM2.5 monitors had "broken" in Delhi. "The air quality index had hit 999 (micrograms per cubic metre), the highest limit, for the first time ever. This was around the time the yearly stubble burning had started in Punjab."

Farmers in Punjab and Haryana have long burnt crop stubble, but starting 2009, groundwater-conservation policies in Punjab mandated a delay of rice transplantation to mid-late June to coincide with the advent of the monsoon, for groundwater replenishment. Consequently, the harvest period moved to early November, shrinking the time they had before planting the next crop.

"This compelled the farmers to practise widespread stubble burning in early November for the quick and easy disposal of crop residue. Unfortunately, this short window coincides with the change of seasons over northern India," says a 2023 research paper co-authored by Prof. Tripathi and published in the journal *Environmental Science & Technology Letters*. This is when the air turns denser and chillier over northern India.

In 2012, Nasa released a satellite image of stubble-burning fires that caught the world's attention—the crop fires resembled forest fires that had raged in the US and Australia. Various studies by Indian scientists followed, stating the crop burning was exposing people in the densely populated plains to high levels of air pollution.

Air pollution finally garnered enough attention for the Central Pollution Control Board to start regular monitoring of air quality levels in 2016. At present, Delhi has about 44 air quality monitoring stations; in 2016, there were 20. Over 550 similar stations exist across the country.

Kartiki Negi, lead (climate impacts), at research-based consulting and capacity building initiative Climate Trends, has been studying the pollution levels across the country since 2016. "We are making new records every year," she says. "The pollution levels peaked from 2016-19. During covid, there was a steady decline between 2020-21 (since most activity had stopped), but 2022 onwards it started rising again. 2023 was worse than 2022." With Delhi AQI crossing 1,100 past month, the 2024 readings have already made a record.

When it comes to the causes, the culprits are vehi- cle exhaust, construction, crop burning, household fires, industrial emissions, among others. The other big but lesser talked about factor is climate change. IQAir's 2023 World Air Quality Report makes it clear: "Climate change, primarily driven by green- house gas emissions, plays a pivotal role in influenc- ing concentrations of PM2.5 air pollutants through various pathways, including the impact of wildfire smoke and pollen-based aeroallergens. Fossil fuel emissions account for 65% of global CO2 emissions and are the primary cause of majority of PM2.5-related deaths, highlighting the interconnected rela- tionship between air quality and climate change." The climate change impact is also visible in the lack of rainfall during winter months in northern India. Usually, by the end of the year, the Indo-Gan- getic Plain, spread across the northern and north- eastern part of the subcontinent, gets a few spells of winter rain and snowfall. "But due to the absence of any strong western disturbance in the Himalayas (owing to rising temperature), rains have been evading the plains," explains Negi. "There has been almost no winter rain so far this year."

Given the way climate change is hampering the environment, Negi predicts days with 1,000 AQI to become more common in the future unless strict measures are taken.

BEYOND THE CITIES

Even in hilly places like Himachal Pradesh or Uttarakhand, the air is not what it used to be. Delhi-based Madhukar Varshney, founder of Rise Foundation, which is working towards building a zero waste society in the country, was recently in his hometown of Rishikesh. "The AQI there is reaching 200," he says. "It was unthinkable five years ago, but tourism, city dwellers settling here, increasing population, construction work, the whole concretisation has impacted Rishikesh."

Since starting Rise, Varshney and team have planted, in collaboration with corporates and other organisations, over 50,000 native trees in Delhi and neighbouring cities, and in Bengaluru, using the Japanese system of mini-forests in urban spaces, commonly known as Miyawaki forests, to help in carbon sequestration, reduce temperatures within urban heat islands and support local wildlife. "You can't just blame winter months, firecrackers or stubble burning for the air pollution rise," he says. "Clearly, we are doing something very wrong that the air is bad everywhere throughout the year."

Even cities like Mumbai with the benefit of a coastline, where the sea breeze helps disperse pollutants, are recording AQI over 200.

Writer Akriti Muddaiah, 26, finds herself in a bit of a bind. She's moved to Mumbai from Delhi this October, but the construction work in her locality is making the air unbreathable. "It's not as bad as Delhi," she says, "but Ikeep my windows closed most of the time to avoid breathing in the dust."

So does Rutuja Pardeshi, a 22-year-old journalist. Since moving to Mumbai from Nashik in June, she's almost stopped going out unless it's related to work. "The first month, I had a severe cough," says Pardeshi, who suffers from bronchitis. "If I don't wear mask during peak traffic hours, I immediately have breathing and throat issues." Her monthly spend on cabs is ₹5,000-6,000, which she says, "is too high on a journalist's salary".

Life in the garden city of Bengaluru isn't much better. For the past six months, Sameer Rathod, 24, a software engineer, has been trying to grow plants in his balcony in the hope of surrounding himself with some fresh air.

Three months ago, he was coughing non-stop for a week. The doctor told him that bad air was affecting his health—he lives in an area with heavy traffic and multiple construction sites.

"I can't change my house; I don't make enough money to move to a greener area. So, this is my solution," he says over a video call, showing the 15 plants he's trying to grow in his veranda. "I am known to be a plant killer among my friends," he laughs. "But now, for sake of my health, I am trying to be a good plant parent."

While there are no specific numbers, such air pollution-related health cases are rising in Bengaluru, says Dr Rajani Surendar Bhat, consultant (interventional pulmonology and palliative medicine), at SPARSH hospitals in Rajarajeshwari Nagar, Bengaluru. "There's definitely a spike in respiratory problems," she says. "We have seen more people come with airway diseases in the past five years. Our general advice is not to step out too much in highly polluted areas and wear a mask as much as possible."

These are stop-gap solutions, though. As is Rathod's decision to grow plants, Phiroze Mehrotra's "air bubble", Kumar's handkerchief, or Gulati's plan to relocate. Ditto for the government's decision to shift school classes online, or demand offices to shift to work from home, and halt construction work for short periods of time.

> Air pollution is not an issue only for Delhi. It's a matter of national emergency. We are breathing bad air 365 days around the country, and the quality is declining every year.
>
> **DR HARSH VARDHAN PURI**
> SENIOR CONSULTANT (THORACIC) AND LUNG TRANSPLANT SURGEON AT MEDANTA THE MEDICITY

Phiroze Mehrotra understands that his isn't a solution. "I have the hope that my children are breathing clean air. That gives me some peace of mind." What is really needed, however, are drastic steps. For starters, there needs to be more awareness. "People still think if the sky is blue and sun is bright and shiny, the air is clear, when it actually is about 200-300. High AQI has become normalised in metros," says Varshney. "Why can't we have AQI readings as alerts by authorities on mobile phones and newspapers every day like stocks?"

The change has to happen at the policy level, believes Dr Tripathi. "Cities like Beijing and San Francisco have also dealt with high pollution levels, but managed to limit it after imposing strict restric- tions, and it happened after enough pushing by the NGOs and citizen groups."

The onus is as much on citizens. "People continue to burn waste during winter. Greenhouse gas emis- sions is rising. We are still not using clean energy as much as we should. Vehicular traffic is increasing. Buildings continue to be constructed without the mandatory green cover," says Dr Puri. "For any change to happen, the effort has to be made from both sides; you can't blame the government and then sit in your room with air filters on, which is, in many cases, not running on clean energy."

It is a reminder, if one were needed, that not everyone is breathing the same air—but then again, they are. While Phiroze Mehrotra does his commute to office in his air-purified car, autorickshaw driver Kumar, with his handkerchief-mask, uses the same Ring Road to drop customers. At some point, both are absorbing more

Choppy seas in Chennai before the landfall of Cyclone Fengal.