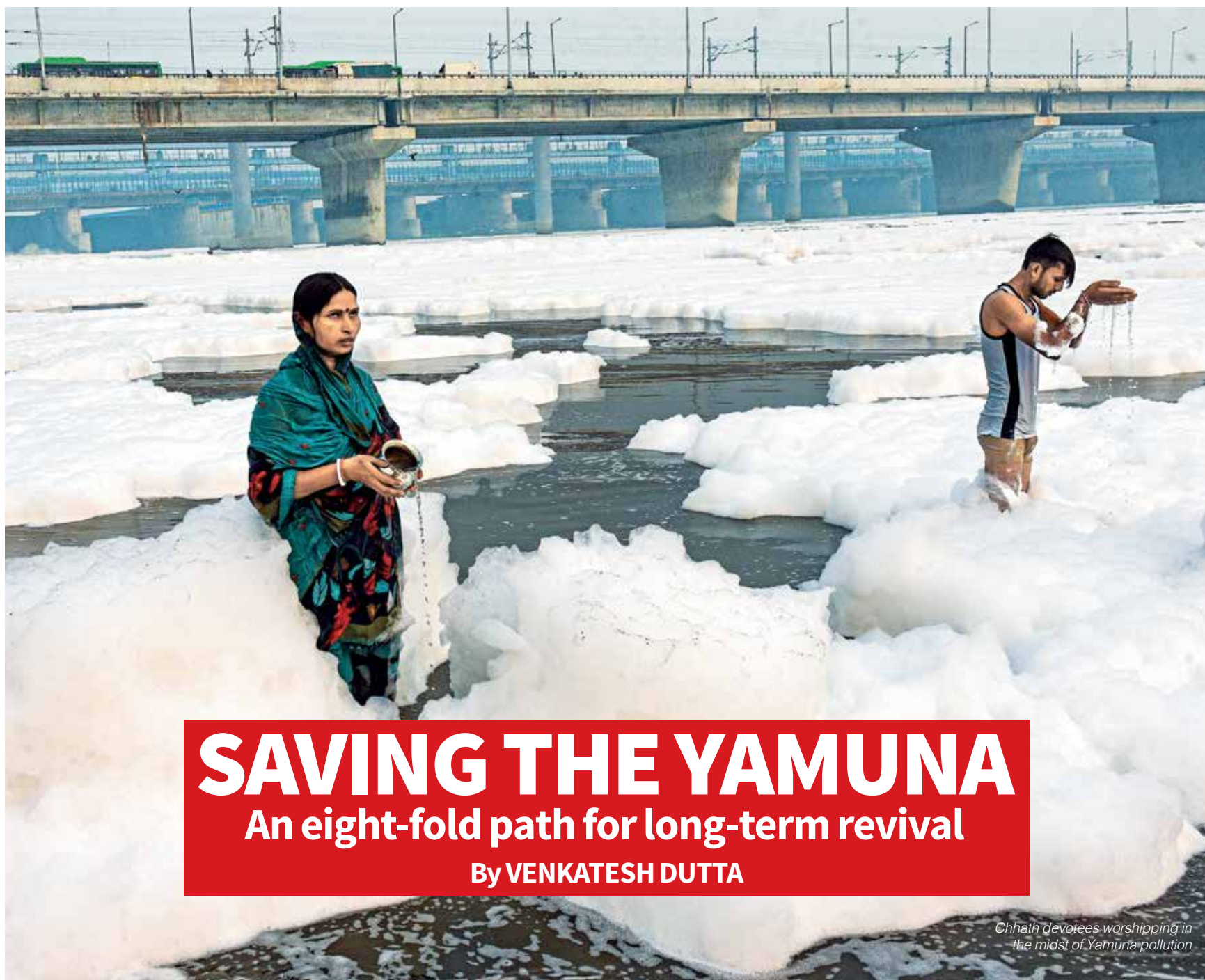


Civil Society



SAVING THE YAMUNA

An eight-fold path for long-term revival

By VENKATESH DUTTA

Chhath devotees worshipping in the midst of Yamuna pollution

A CLEAN AIR ROADMAP

Page 12.....

IRON IN SCHOOL TIFFIN

Page 9.....

DOON ECO RULE GOES

Page 16.....

INTERVIEW

'A BIG EARTHQUAKE IS DUE IN HIMALAYAS'

N. PURNACHANDRA RAO ON WHAT TO BE READY FOR

Page 6

THE MISSING MAYORS

Page 23.....

PALACE OF PLUNDER

Page 25.....

LIFE IN A GOAN VILLAGE

Page 34.....



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CONTENTS



A river's rights



COVER STORY

REVIVING THE YAMUNA

An eight-fold path can bring the Yamuna back to life in Delhi by recognizing the river's ecological needs and putting a stop to the dumping of wastes into it.

20

Low-cost clinics	10-11
Roadmap for clean air	12-13
The magic at Samvaad	14-15
Srinagar water metro	18
Stuck in a ditch	24
Fixing a drain in Noida	26
Kokum in a sweet spot	28-29
Fashion for the soul	29-30
Mysuru's history walks	32-33

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WE claim to worship rivers, but in practice we abuse them. The evidence is all around us. River after river has been turned into a drain — a receptacle for sewage and industrial wastes. Evolved societies treat their rivers with care. In the past Indian rivers got respect. They were the centrepieces around which life revolved. Stepwells, canals, tanks, ponds and aquifers connected rivers with the fabric of everyday life. Rivers had their identities and commanded their spaces. It was their right to flow as nature had devised.

Reviving the Yamuna has been a project undertaken by successive governments at great financial cost but with little success. Where has the money gone, one might ask. The present BJP government is said to be interested in developing parks and boulevards along the Yamuna's banks. While some investment in technology in the form of sewage treatment plants and so on would reduce wastes entering the river, the idea that cementing up its floodplains will pretty up the Yamuna is ill-conceived.

What is needed is an ecological revival of the Yamuna. Venkatesh Dutta suggests eight ways in which that is possible. Its flow needs to be augmented so that the Yamuna has enough water to regenerate itself and likewise it should be left free to occupy its natural spaces.

Our interview of the month with N. Purnachandra Rao, a seismologist of high standing, is meant to create awareness of the kind of development being pursued in the mountain states. Dr Rao tells us that scientists know there will be a major earthquake in the Himalayan region. The tectonic shifts taking place deep within the earth are unavoidable. But the construction activity and road-building taking place can certainly be tempered. The carrying capacity of hill towns and cities has been exceeded and invites disaster on a large scale. Fresh thinking is needed. An opportunity also presents itself to retrofit buildings and prepare for a disaster.

Even as Zohran Mamdani makes news from New York, we should spare a thought for Indian municipal administrations and the lowly status of mayors here. Indian cities are a crumbling mess. Fixing them will become possible when there are local solutions and accountability. You could add better expertise for the many complexities involved in urban systems. Our reportage on cities over the years has been on upscaling municipal governance. In this issue read Sanjaya Baru on missing mayors. Also read Shyam Bhatia on a fundraiser for the British Museum in London which drew many high-profile Indians despite the controversies over many of the museum's artefacts. Meghna Uniyal's column, Citizens in Court, shows how difficult it is to get a polluting drain fixed in Noida and how complicated litigation can become for the citizen.

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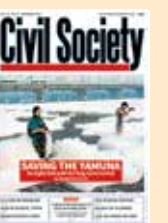
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LETTERS



Leaving home

As always, *Civil Society* examines issues with breadth and depth, as exemplified in your November cover story, 'The flight of a generation'. The statistics show a rapid growth in the number of Indians leaving the country to study and stay abroad, even in the last few years.

More importantly, Sanjaya Baru offers insightful commentary about the enduring implications of this trend for Indians who remain in India. Optimism about the future, a robust work ethic, and the desire to contribute to one's society are deeply tied to hope and confidence which, in turn, are connected to opportunities for social mobility and trust that our country's leaders are personally invested in its future.

As someone who was born in the US, got to live in India a few years as a young adult and now teaches at an American university, I am somewhat familiar with the ideas in this story.

Thanks to *Civil Society* for delving into this topic to go beyond numbers and explain their significance.

Also, your cover design was very creative and eye-catching!

Deepti Kharod

Your cover story, an extract from Sanjaya Baru's book, was quite fascinating. It gave me an opportunity to revisit a few events from my past. Between 1979 and 1982 I was a graduate student at the State University of New York or SUNY at Stonybrook which is on Long Island.

The university had a large number of Indian and Chinese students. A few weeks after I joined the chemistry department, an American student who became

IN PASSING DEAR DEPARTED



Cemeteries came alive on All Souls Day in Goa. Graphic artist Fabian Gonsalves sent us these pictures

Photo: Civil Society/Fabian Gonsalves

a good friend remarked that I seemed to fit into the department and the American university system with very little problems of adjustment: it seemed as though I had been preparing for this experience at home!

At that time I attributed my ease only to the fact that I was fluent in English, unlike many students from China in my class, and my familiarity with the US and the West in general, through my exposure to literature, magazines and movies.

I returned to India in 1982. I left the academic world and began pursuing other interests. I recall that around 1992 to 1993, there was a severe earthquake in Latur in Maharashtra and also in California in the US.

The earthquakes happened within a few months of each other. At that time, during an informal chat amongst a group of friends, mostly from IIT, Madras University, Anna University and The Institute of Mathematical Sciences, one person remarked that "we seem to be more affected by the earthquake in California than the one in Latur".

While this was said in jest, a quick factcheck revealed that while every one of us knew someone in California, maybe a

relative, a friend, a colleague, or a neighbour, none of us could name anyone known to us in Latur!

More recently, maybe a decade ago, one of my close friends had attended an orientation or inception meeting at one of the major IITs where his son had secured admission.

He related that the director of the institute in his welcome remarks stated, "Some of you have been concerned about the fact that you did not get admission in the department or the subject which was your first choice. Let me assure all of you that our IIT degree is very powerful and every one of you who graduates will be able to go abroad." This statement was greeted with an enthusiastic round of applause.

While our attention has been focused on those who have left India, it also made me think about how various systems here may indeed be gearing students for such a departure.

I look forward to reading the book. I'd like to thank the author for a powerful articulation of a situation that we all need to comprehend. Thanks to *Civil Society* for carrying this excerpt and for your editorial on this topic.

A.V. Balasubramanian

High-speed maths

Your interview with Vinayak Chatterjee: 'High-speed trains should be India's next big move' was useful.

In principle, I agree with Chatterjee's argument in favour of high-speed trains. We should have fast inter-city trains so that people don't have to travel by air for distances of up to, say, 400 to 500 km. The question is whether our people can afford such trains as of today.

Chatterjee's argument is that other countries at our level of income began investing in high-speed trains. I don't know how that is true. Japan in 1964, when it got its first bullet train, had per capita income (in constant 2015 dollars) of \$9,000 whereas ours today in the same 2015 constant dollars is about \$2,400. China in 2008 when it got its first bullet train had per capita income in the same 2015 dollars of \$4,800, i.e. twice our current figure. It is simply too early for us to look at such trains. Enough passengers won't be there to fill them, unless you offer big subsidies for premium rail travel (which one presumes is not the idea).

It is important to look at fares. In China, a train that reaches speeds up to 240 kmph, which is

what Chatterjee is talking about (as different from the ones that go at speeds of 300+ kmph) costs ₹3.50 and more per km. That is slightly cheaper than our low-cost airline fare, of about ₹5 and more per km.

That is why there is space for a fast inter-city train service.

But that is only in principle. The operative point is that the high-speed fare of a minimum of ₹3.50 per km is about 50 percent more expensive than the Vande Bharat chair car, which costs about ₹2.30 per km. That cost difference can't be wished away; there simply won't be enough passengers to fill entire high-speed trains at ₹3.50 per km.

Remember that a single train can accommodate three to four times the number of passengers that a plane can. And a high-speed train will run on a dedicated track, so you have to run several trains a day for it to make sense. Even with Vande Bharat we don't see the demand for several such inter-city trains every day. The comparison with the number of airline passengers is simply not valid; we are talking of different orders of magnitude when we talk of filling trains.

At our current economic and income level the Vande Bharat trains are what we need and what are affordable. The issue is that while the train sets can do 160-180 kmph, we don't have the tracks for trains to go at such speeds. So the average speed of a Vande Bharat is less than 100 kmph.

The solution is to have more regular tracks, which cost much less than special high-speed tracks. More regular tracks will also serve ordinary train passengers who go on cheaper mail-express trains, whereas a high-speed track will eat up so much money that ordinary rail passengers will suffer malign neglect.

With enough track capacity, the Vande Bharat will do the Delhi-Lucknow distance of 500 km in three-plus hours; a high-speed train will do it in two-plus hours. Living with that difference of one hour is better than investing prematurely in high-speed trains and getting white elephants. In 10

to 15 years, when our per capita income has hopefully doubled, we should invest in high-speed trains, not today.

A railway watcher

Instead of spending ₹1.25 lakh crore on the bullet train project linking Mumbai to Ahmedabad, the same amount could be used to upgrade the entire Indian Railways.

Manish Babulal (on Instagram)

I've been travelling around India since 2012 for five or six months every year. It's definitely not ready for this development. Of course, by building new tracks, all fenced off so no one can cross over along the route, with 24-hour surveillance cameras, new stations, bridges, viaducts, tunnels for animals to cross, everything green and clean, it would be possible to have high-speed trains. I think it's already too late. And will the domestic airlines agree?

Valentiprats (on Instagram)

You need a change in people's behaviour before you introduce high-speed trains. People lack basic civic sense. Service on trains is lousy. Railway stations are filthy. Lastly, safety. Our railway stations are full of anti-social elements.

Angul (on Instagram)

Ladakh's voice

There are two sides to your story, 'A wake-up call to save the dying Himalayas'. While no one would disagree with most of the latest set of post-Union Territory demands

related to the protection of Ladakh's future, or that the Central government should be even more responsive to the feelings of locals, one should be wary of highlighting individual personalities, including Sonam Wangchuk. You need a more cautious and critical approach in your analysis of his personal aspirations and his many-sided role as a social worker, activist and political person.

Viraf Mehta

Sonam Wangchuk is a true patriot who has worked for the country. His many innovations solve people's problems. They are a stark contrast to the lack of product development in the country. He has also invented solar-heated tents for the Army. Wangchuk is a popular leader who can influence public opinion. It is important to meet the aspirations of the people of Ladakh. You need him to mediate. Let's not burn our bridges.

Amita Choudhury

Dog divide

There are two sides to every story. Journalism is supposed to be neutral.

Everyone has their fears but generalization against the entire species because of some rogue ones is very unfair.

Civil Society seems to be highly focused on propaganda against stray animals for more than a year now. This bias is unprofessional. It is highly disappointing to see it

indulging in an us vs them manipulation and leaning more towards people against strays.

Fear mongering due to one's personal prejudices is not expected from a civil society organization. Topics on minorities, be it human or animal, need to give the whole scientific information, full facts and figures on both sides of the coin and not cherry-pick information because of one's personal fears and prejudices.

Christine

Citizens of India should collectively applaud and thank the Honourable Supreme Court for its recent stray dog related order that has ensured safety of children in their schools, youth in their colleges and universities, sick people in hospitals, sports people in the sports stadium and a large section of Indians who travel by bus and train.

Thanks also to *Civil Society* magazine for covering and highlighting the issue consistently for the last few years. I believe our government is capable of implementing the order and the citizens of our country should get together and support the government in the best possible way in implementing this order. Many thanks to the Honourable Supreme Court as well as the government.

Vineeta Srinandan

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N. PURNACHANDRA RAO ON WHAT TO BE READY FOR

‘Science shows a major quake is overdue in the Himalayas’

Civil Society News
Gurugram

FROM imploding glaciers to landslides, floods and torrential downpours, natural disasters have been happening one after the other in the Himalayas in recent times, making life in the mountains seem more vulnerable than ever before.

These unsettling episodes have made news by leaving a trail of destruction in their wake. But a yet bigger disaster is in the making — invisibly so because it involves a tectonic shifting of plates deep within the earth at 5cm a year. The outcome is expected to be a devastating earthquake on a scale the Himalayan region hasn't witnessed since 1950.

Earthquakes happen periodically as the earth releases pent-up energy. They can't be precisely predicted but they can be foretold. Scientists believe that a massive one is overdue in the Himalayan region and could happen anytime.

N. Purnachandra Rao spoke to *Civil Society* about what the scientific concerns are. Dr Rao is a seismologist of high standing who in his last job was chief scientist at the National Geophysical Research Institute (NGRI) in Hyderabad. He insists that as a scientist he is merely creating awareness — not spreading panic.

Awareness is important because, as with floods and landslides, the real danger to human beings is the form of development that has been foisted on the terrain of the Himalayas. Over-construction of buildings, thoughtless carving out of mountainsides for roads and deforestation have ushered in innumerable uncertainties.

While an earthquake cannot be avoided, it can be prepared for by retrofitting buildings and reducing congestion. A wake-up call is in order.

Q: You have been warning about a tectonic shift happening in the Himalayan region which could lead to a devastating earthquake. What exactly is this tectonic shift?

Tectonic activity in the Himalayas is an ongoing process. It has been happening for millions of years. It was the Indian continent that travelled from Antarctica and collided with a landmass called Eurasia. After this collision, the mountains started building.

When two plates constantly collide, there's a lot of stress built up. And earthquakes are nothing but release of this stress from time to time. Otherwise, the stress accumulates.

Now, the point of worry is that after 1950 we have not had a great earthquake. And according to our calculations, since these plates are converging, the Indian plate is actually going below the Eurasian plate, or subducting, at the rate of about 5 cm per year.

The Himalayan region has witnessed some of the world's greatest



Dr N. Purnachandra Rao: 'It is buildings, not earthquakes, that kill people'

earthquakes of magnitude 8 and above. We have already had four such great earthquakes in our recorded history: the 1897 Shillong earthquake, the 1904 Kangra earthquake, the 1937 Bihar-Nepal earthquake and, lastly, the 1950 Assam earthquake, also called the India-China or Assam-Tibet earthquake. These were all extremely devastating earthquakes.

It is a matter of huge concern that, since 1950, we have not had a great earthquake. Scientists believe that this earthquake is overdue. It can happen anytime. We know for sure from GPS readings that these two plates are converging. There is movement between these two plates. And each day the stress keeps building all along the Himalayan foothills.

I'm referring to the Jammu and Kashmir (J&K) sector on the western side, right up to the Arunachal sector on the eastern side, basically the Himalayan belt. The region of Uttarakhand and western Nepal has not experienced very great earthquakes. We therefore call it the seismic gap, which means that this is the potential region that might want to release the stress that is getting accumulated because the other regions have already released a lot of energy. Each 8-magnitude earthquake releases so much energy you can expect the next one to happen after several decades.

But that has not happened in Uttarakhand and western Nepal. It is a matter of concern. We expect a giant earthquake — it could be 8 or even 8.5 or more. The impact of such an earthquake can be devastating particularly since the Uttarakhand area is highly populated and is also a major spot for tourism and pilgrimage. Joshimath and Badrinath are very crowded and there is so much construction work going on. It's an environmental issue.

Q: There's no way of really predicting specific earthquakes, right? The standard, scientific response is to just be alert and aware?

Yes. What you said is right — earthquakes cannot be predicted. But let me define the meaning of a prediction. A prediction means you are able to give the exact date, time and location of a great earthquake. Small earthquakes happen every day. But when we talk about a very big earthquake, we cannot pinpoint the date and time but location is possible.

We can always pinpoint which areas are potential areas for future earthquakes.

However, recent advances in seismology indicate the possibility of detecting geohazards like rockslides, landslides, glacial avalanches, and associated floods as well as earthquakes using dense seismograph networks.

Also, real time monitoring and data transmission using satellite connectivity provides us an opportunity to put in place an Early Warning System (EWS), vital for the Himalayas which are vulnerable to a range of geohazards.

NGRI scientists demonstrated this after the February 7, 2021, catastrophic flood in Uttarakhand where a cascade of rockslide, debris and flooding events resulted in over 100 casualties at the Tapovan hydropower plant. The work was published in *Science*.

An artificial intelligence-based algorithm was developed for automatic identification and location of different geohazards from the continuous seismic data streaming in from all field stations. Accurate computation and quick dissemination of warning could certainly help minimize loss of life and property in the future.

Q: Currently, you do expect a major earthquake happening in this Himalayan belt?

I mean, I know for sure that Uttarakhand is going to have a great earthquake but I cannot say when exactly. Our calculations show that it's overdue and it has to happen sometime. I often hope that it will release energy in the form of several smaller earthquakes, but nature doesn't work like that.

Q: Does the building of infrastructure like big dams and massive highways have any impact on the tectonic plates? Does it result in earthquakes? Is there any correlation?

No, building of dams is not going to create great earthquakes. Big earthquakes happen at great depths of, say, 20 km or 30 to 40 km. Whereas anthropogenic activity, like the construction of dams and infrastructure projects, are just scratches on the surface.

Great earthquakes are caused only because of plate movements or tectonics. But, yes, dams can cause smaller earthquakes to happen. And this is called reservoir-triggered earthquakes. A classic example worldwide is the Koyna dam in Maharashtra. I was the project leader there for about ten years. We did a lot of studies there.

We noted that small earthquakes happen every day because of the loading and unloading of the dam on an annual basis. These small earthquakes can be related to the dam, its water levels and change of water levels, especially when you're releasing water or due to heavy monsoon rain when the dam suddenly gets filled up.

So, let's not say that dams are causing great earthquakes. That's not true. But, yes, they are capable of releasing some energy in the form of smaller earthquakes. That's possible.

Q: How can we be prepared for a great earthquake? What mitigation measures should we be looking at?

First, I would like to make it very clear that earthquakes don't kill. It is buildings that kill. Take the earthquake in Turkey recently. We saw some disturbing visuals.

Essentially, when buildings cannot withstand these great earthquakes, they tend to collapse. And that's how people die, by getting buried under the debris.

If you are standing in an open field with no buildings around, and if there's a great earthquake, the worst that can happen is you just sway and fall down. Nothing more. It's not a very dangerous situation. So please remember that earthquakes don't kill, it's the buildings that do. Especially the faulty ones.

The big problem is that people don't construct buildings as per norms. I'll give you another example, the 1993 Latur earthquake. The magnitude was just 6.3, which is not a very big earthquake. But almost 30,000 to

40,000 people were killed. People who visited the site will tell you that all the houses were made with mud and stone. In the monsoon season, the houses get wet and they simply fall like a pack of cards. The only building that stood in the village of Killari was the government school building, which was made with cement.

This is a big lesson for us: even a small earthquake can kill a lot of people if the buildings are not right.

Another example is the Muzaffarabad earthquake in Kashmir where again 30,000 to 40,000 people died. The point is we need to build as per norms. We have the Bureau of Indian Standards (BIS) which has issued clear guidelines on the kind of construction, construction codes, the engineering practices that need to be adopted for constructing various types of buildings. The guidelines are available and vary from region to region.

For example, you have four zones in India, depending on the severity of their earthquake hazard potential. The highest hazard zone is Zone 5. Here you can expect an earthquake of magnitude 8. It comprises the entire Himalayan belt, northeastern India, the Andaman Islands. It includes, in the west, Gujarat and the Kutch region. The guidelines for Zone 5 are more stringent.

If you take Zone 2, like Hyderabad, where I am right now, it is one of the safest places in India as far as the earthquake hazard is concerned. Therefore, construction guidelines are less stringent. We don't expect very big earthquakes here.

‘It is a matter of huge concern that, since 1950, we have not had a great earthquake. Scientists believe that this earthquake is overdue. It can happen anytime.’

There is complete understanding on how buildings need to be constructed, what are the precautions to be taken, the types of materials to be used and so on. They're all available but, unfortunately, nobody uses them.

It's only major government projects that are forced to use these guidelines because unless they have seismic certification, construction cannot proceed, whether these are dams or nuclear plants or bridges. In that sense, dams are actually built to withstand earthquakes. Dams follow BIS guidelines. No dam can be constructed just like that.

Q: People should be aware of such guidelines. Do we need an awareness campaign?

Absolutely. Basically, most people are either ignorant of such guidelines or they don't care. I have myself campaigned in various earthquake-prone areas and I find that people don't seem to be very interested because they feel that they end up paying a lot more money for safe construction.

This has been a problem because the guidelines are not mandatory for the public. They're only mandatory for government buildings and government constructions.

Q: What is the reason for this lack of regulatory will to implement these guidelines?

My personal opinion is that, you know, we are a democracy and we always talk about our rights. Maybe no government wants to, you know, make it mandatory and offend the people, perhaps.

But let me add that you can also opt for retrofitting. If your building is, let's say, 100 years old or whatever, you can consult a structural engineer and ask him to make certain modifications so that the building can be

Continued on page 8

Continued from page 7

strengthened without having to pull it down. I strongly recommend retrofitting to strengthen buildings. We need to make people aware of the importance of such things, especially in the Himalayan region.

In the Himalayas, you have another issue. The region is not on hard rock. A building in Hyderabad is very safe because the city is situated on a plateau. So, you don't have a lot of loose soil sediment sitting on the rock. We have a granitic basement. It's a stable continent.

Q: You mean a strong flat surface?

Yes. But in the Himalayas and some other areas, where you have thick piles of alluvium or loose soil or loose sediment, there is a process called seismic amplification that takes place. You're constructing tall buildings essentially on loose soil. So obviously the foundation is not strong. That's one problem. The second problem is that when seismic waves travel through the earth, they get amplified when they encounter a layer of loose soil.

This problem is not limited to the Himalayan region. Take Delhi, for example. You have the Yamuna river and all along it you have loose alluvial soil several metres thick. Now, even a small earthquake, when it travels through the earth and reaches this loose soil, gets amplified. This is called site amplification. When such loose soil encounters earthquake waves, the amplitude of the seismic wave can increase two or three times, or more, depending on several factors.

We have undertaken micro zonation studies, in various cities in the country. We have identified the alluvial thickness, its implications and the kind of amplification that is possible when there's an earthquake.

Our very first micro zonation study in India, of which I was the project leader, was carried out in Jabalpur in the 1990s. We could delineate 30-m-thick alluvium soil near the Narmada river. And we actually mapped the thickness of such soil in different places in Jabalpur city.

We submitted a report to the government stating what it meant, how waves could amplify, what were the precautions to be taken. For example, if you have a very thick layer of alluvium, then you are not supposed to make tall buildings because tall buildings resonate with thick alluvium and this resonance can cause the buildings to collapse.

If your alluvial thickness is less, then it is shorter buildings that are affected.

These studies have been done, reports have been submitted and valuable recommendations have come from the scientific community. An important issue is how best these results are utilized in future construction activity. You know what to expect. It is better to avoid disaster. Whether it's the government or the public, they are not very serious. They don't

seem to understand the gravity of the situation.

Q: Are you saying, given the nature, character of the Himalayan region, an earthquake would have far greater intensity because of this kind of loose soil? You also have deforestation in the Himalayas. And we have a legacy of poor construction. Does all that add up to a really huge disaster?

Let me first clarify that deforestation has a severe impact on the environment, but not on earthquakes. Big earthquakes are only caused by plate movements. None of these anthropogenic activities can influence the occurrence of a large earthquake. But deforestation has an impact on other forms of hazards, like landslides, floods, glacial melting and avalanches.

Now, if you have visited Joshimath, you will be shocked to see not only deforestation, but a lot of construction activity and road widening. For instance, you have a mountain slope on one side and you have a narrow road below. Just to widen the road, they try to chop off these mountain ranges. In the process, the mountainside which was slanting is made steep because you have eaten into the mountain to widen the road. That's dangerous because a vertical slope can easily collapse.

One of the reasons you are seeing landslides in the Himalayan region is road widening. The government is continuing construction activities and deforestation, just to support the tourism sector. I'm not against developmental activities. But we need to draw a line somewhere. It's a huge disaster waiting to happen.

You see the route from Joshimath to Badrinath, and the kind of landslides, avalanches that we have been seeing in recent times is really enormous. The government should stop further activities, in my opinion. We have an ongoing project there so I'm quite familiar with that region.

In Joshimath, land has been sinking. As a result, several buildings developed cracks, a serious situation. Places like Joshimath are constructed over the debris of previous landslides. We are not talking of stable ground at all. So, any tectonic movement or any disturbance to the environment, including a heavy monsoon, will cause the land to simply sink.

Climate change due to global warming has also completely disturbed existing monsoon patterns, resulting in erratic rainfall.

Another big disaster in the Himalayas is GLOF, or Glacial Lake Outburst Flood. You have hundreds of glacial lakes sitting on mountain tops in the Himalayas. Basically, a glacial lake is a lake body that's frozen. You have several craters in mountain regions, filled with water that gets frozen. In the past, that was never an issue because the lakes stayed frozen.

What's happening now is that due to temperature rise and global warming, more glacial lakes are bursting. And a glacial lake, remember, is a huge body of water. When the lake bursts, the entire water in the glacial lake starts flowing down and flooding nearby areas. If there is a river, flooding is compounded since the river travels through various places.

GLOF has become a serious problem now.

We never bothered about glacial lakes earlier but now we need to monitor them, see which lakes are likely to burst in the near future so that we can take precautionary measures or begin evacuation programmes for people. But that is faraway. Currently we have not even started analyzing or studying these lakes.

Adding to Himalayan woes is the so-called cloudburst phenomenon, which has been on the rise recently. That is also a direct consequence of global warming. Let me explain. A cloudburst occurs because what happens is orographic lifting. If you have a mountain slope, then warm air has nowhere to go except along the slope because there's an obstruction. It cannot travel horizontally. It's forced to take a path upwards.

In the process, it goes up very quickly where you have a much lower temperature. The entire mass of warm air suddenly cools and turns into droplets which merge into a huge water body. And that water body just falls down.

It is similar to the glacial lake outburst, except that we call it rainfall. Technically it's not rainfall but actually a cloudburst. A cloudburst is when a huge amount of water falls instantly at one place. This is also on the rise. Cloudburst is also due to global warming. We hadn't heard this term much earlier but now we hear it often.

Q: But what can be done about that?

Unfortunately, there is no mechanism to record a cloudburst till date. The India Meteorological Department (IMD) has various sensors to monitor weather across the country. But a cloudburst is a very local phenomenon. Unless you have an instrument right at that spot, you have no possibility of measuring changes in the weather and thereby predicting a cloudburst or even recording it. We have no such technology at the moment.

Q: It's a wake-up call for the entire Himalayan region.

Absolutely. It's not only the big earthquake due. You have a series of hazards that are building up. Landslides are also due because of deforestation which weakens slopes and detaches soil.

People are also making buildings on hill slopes, another big problem. When I visited Joshimath, I was shocked to see how people constructed houses along deforested hill slopes. One big earthquake, and their houses will just slide down. It is really dangerous. ■



Vidhya Parshuramkar in her workplace

Iron in the school tiffin

Rohini Nayar Prize for millet innovator

Civil Society News

New Delhi

WHEN her fatigue and general weakness were linked to a lack of iron, Vidhya Parshuramkar was just one among millions suffering from anaemia. It was easy enough to fix with a folic acid supplement and she was soon back to normal. But her interest in what could be a balanced and affordable diet was sparked.

Parshuramkar was at the time a master's student in food technology at the Indian Institute of Technology (IIT) in Kharagpur. What was essentially a personal health episode morphed into an academic pursuit and she began exploring the nutritional values of millets primarily because they are rich in iron.

An internship at Agrozee Organics, a start-up in Pune, further led Parshuramkar to an innovation that would increase the shelf life of pearl millet from a measly 10 days to six months without compromising its iron content. It involved deactivating the lipase enzyme in millet. This prevents it from turning rancid and gives it a longer shelf life.

Increasing the shelf life of pearl millet means that it can be used for products that can be distributed widely and stored and consumed over time. There are other advantages as well with millets. They are easier to grow than other crops, less demanding of water and generally healthier to consume.

With her innovation, Parshuramkar, all of 24, catapulted from intern to co-founder at Agrozee Organics. She has 51 percent of the equity and the founder, Mahesh Londhe, has 49 percent.

"The founder and I have the same vision for propagating millets and

so we teamed up," she explains.

She drives the outfit's Millets Now programme under which the Nutri Dabba or school tiffin specifically addresses iron deficiency among schoolchildren in rural Maharashtra.

She says the Nutri Dabba has reached 400,000 children. The model is to use Self-Help Groups (SHGs) of women who distribute the *dabbas* or tiffin boxes. That in itself creates a new level of rural awareness of the value of millets. It also emboldens farmers to grow millets more readily. There are some 7,000 farmers Agrozee Organics says it has been working with.

Parshuramkar was recently awarded the Rohini Nayar Prize for her contribution to transforming rural India through science and social entrepreneurship. Her work with millets links lab to field to market, making nutrition accessible and affordable. It goes beyond feeding people to promoting healthy eating and encouraging sustainable agriculture.

The Nutri Dabba touches lives at an important formative stage in school-going children and also influences families to reassess their meal compositions.

Parshuramkar belongs to a farming family. She is the first among them to have a master's degree and that too from an IIT. The transition has been wondrous. It has been a long journey from her life in a conservative family. IIT came with a scholarship, but the really difficult part was to convince her parents to let her study further.

"I am the daughter of a farmer. All my relatives are farmers. Whatever we earn comes from farming. I thought I would complete my MTech from IIT and join a big company and do what I was told to. But then

Continued on page 10

Iron in the school tiffin

Continued from page 9

came my iron deficiency problem. It made me think. If I with my education and family background wasn't getting the right nutrition, what must it be for others. I began looking at pearl millet or *bajra* because it is rich in iron. It is an ancient grain grown in western Maharashtra but not widely eaten because of the lack of awareness and lack of shelf life," says Parshumkar.

The Nutri Dabba serves as a snack and nutrition boost for anyone. But the target audience right now is children and lactating mothers because it is among them that iron deficiency occurs most widely. Getting millets to the people who need them most is important.

Delivery to schools happens through local SHGs in rural areas. That in turn creates the awareness needed for consumption by young mothers and women in general. But Agrozee Organics is a business and there are costs involved in making thousands of Nutri Dabbas every day.

Support for the *dabba* initiative comes from HarvestPlus, a global NGO, which works to combat hidden hunger — or malnourishment caused by lack of micronutrients. People could be eating good food but not getting the nourishment they really need.

HarvestPlus biofortifies crops. More Vitamin A in rice, for instance. But there is no gene modification in the millet used for the Nutri Dabba. Parshumkar's innovation neutralizes the lipase enzyme in millet at the time of production, allowing it to be stored for six months.

"We have seven different products in Nutri Dabba. There is a cookie, a bar, *khakra*, a *laddu*, ready-to-cook *khichdi* and a malt energy drink," she says.

The Rohini Nayar Prize provides ₹10 lakh to a single winner annually. It celebrates rural innovators under the age of 40. Parshumkar is the fourth recipient of the prize and the youngest so far. She was brought to Delhi to be feted at the India International Centre. The award and citation were given by Prof. S. Mahendra Dev, chairman of the prime minister's Economic Advisory Council.

The prize is given in memory of Rohini Nayar by her husband, Deepak Nayar, the economist, and her sons, Dheeraj and Gaurav. Rohini served in government and was an academician of high standing. She was known for her keen interest in rural areas and worked tirelessly for their development.

An annual award is a whole lot of work right from seeking applications to vetting them and the award ceremony itself. It is a lot of heavy lifting that the Nayars do. They are supported by friends of Rohini who figure in the jury: Ashok Khosla, Rajesh Tandon, Renana Jhabvala and Seeta Prabhu. ■



A nurse notes down a patient's vitals

Low-cost clinics built on community trust

Kitchen gardens, poultry for nutrition

Bharat Dogra
Udaipur

MEDICAL help a few huts away was unthinkable in remote tribal villages of South Rajasthan. People here migrate to cities and return with silicosis and TB (tuberculosis). There's malnutrition, maternal and child ill health, cancer and other illnesses villagers grapple with. They used to turn to quacks or travel to indifferent district hospitals — until the AMRIT clinics came up.

Started in 2012 by Basic Health Services (BHS), a voluntary organization founded by Dr Pavitra Mohan and Dr Sanjana Mohan, the AMRIT clinics are catching the eye of health experts due to the earnest efficiency and impact of their operations.

BHS has six clinics in Udaipur and Salumber districts. Each clinic has experienced doctors on hand as well as nurses and village-based health workers, mostly women. Interestingly, the nurses and health workers are mostly from the tribal communities they serve.

Before starting BHS, Dr Pavitra Mohan led the child health programme of UNICEF in India. Explaining the philosophy underlying his mission, Dr Mohan says, "First the health needs of the poorest should be prioritized.

Second, we recognize the right to health of all people. Third, our initiative is highly participative so that the community's real needs are properly understood by all those involved in our health initiative."

Dr Sanjana Mohan underlines the importance of building trust and treating patients with dignity. "The success of any such initiative," she says, "should be seen in terms of their durable and lasting impact, and not just temporary gains."

The nurses stationed at the clinics attend to patients in the daytime. But they are also available for night-time emergencies. They can consult BHS doctors anytime on the phone or through video calls. Doctors visit the clinics one day in the week. On other days, nurses refer patients with more serious problems to hospitals in Udaipur where a BHS staffer is especially posted to provide help to such patients.

Nurses are assisted at the clinic and in villages by health workers called *swasthya kiran*. At village level there is an advisory committee, a peer group and partner organizations. AMRIT clinics also run *phulwaris* (creches) with nutrition support and play centres for small children in many villages.

The BHS head office ensures a ready supply

of medicines and other requirements. Three out of six clinics have portable X-ray machines so an X-ray can be provided on the same day. Efforts are on to set up X-ray machines in the remaining three clinics as well.

Most lab tests are available in the clinic. In the pipeline are sputum tests which will be made available soon. The clinics have also linked up with other labs for prompt testing.

The AMRIT clinic is a low-cost model. It can help patients even more if the government's free medicine schemes, maternity benefit schemes and other schemes are extended to them.

Currently, patients pay ₹50 for a weekly consultation which includes a supply of medicines for the week. This often has to be subsidized by the organization. But no one is turned away because of inability to pay. If the patient is too poor, charges are waived.

One AMRIT clinic, despite its remote location, is also accredited for safety and

Nurses play a big role in the clinics. They are available at night and can talk to a doctor at any hour if necessary over a video call.

quality by the National Accreditation Board of Hospitals and Health Care Providers.

Health workers speak frankly about the range of health issues they tackle. Ganga, who works in the Bagdunda AMRIT clinic, said that one day she got a call from a man saying that he had been walking to the clinic with his wife who was in a very late stage of pregnancy, when she began experiencing unbearable pain. She was now lying on the grass near the roadside, he said.

Leaving the clinic to the care of fellow nurses, Ganga rushed out with her bag on a health worker's motorcycle after obtaining the woman's exact location. She found her on the verge of delivering the baby. Fortunately, she could help the delivery take place safely.

On another occasion, says Ganga, a woman turned up for delivery in such a serious state that there was no time for referral to a bigger hospital. So, with a prayer, Ganga rang up BHS doctors for advice. Following their instructions, she performed the procedures and both mother and child were saved.

Himmat, which means courage, is another nurse of this clinic. She lives up to her name. A memorable case she relates is of a girl, Jivi, who had always been bedridden. Her parents



An antenatal checkup underway by the BHS team in a village



A nurse examines a child at the clinic

had resigned themselves to her fate. They hadn't even taken her for treatment. However, Himmat insisted on taking her to see a doctor and, according to the doctor's advice, arranged for physiotherapy. One day, the little girl started walking. The joy of the parents knew no bounds. She now goes to school.

Despite being struck by cancer twice, Chandrabhanu, a nurse in Salumber district, continued providing medical care to people. She also contributed to improving health services at a government primary health centre which was being helped by the BHS. She is now a mentor to nurses in three clinics.

Community health workers in villages have played a big role in combatting malnutrition and tackling TB.

At Rawach clinic, health workers cited several examples of how they dealt with cases of TB. Invariably, if one person is infected, it spreads within the family. A woman who had lost her husband to TB later found that she too

had developed similar symptoms. At the time her economic condition was precarious. She had to work as a labourer on daily wages to support her family. However, BHS workers encouraged her to continue treatment. She was finally cured. But her happiness was short-lived. Her 10-year-old son contracted the disease. BHS workers then encouraged her to get her son treated and finally he too was cured.

A migrant worker who was found to have TB on returning to his village, infected his wife and two brothers as well. The family confronted a full-blown crisis. However, all of them could complete their treatment successfully with the help of the AMRIT clinic.

The clinics also provide food and nutrition support to TB patients and malnourished children. BHS runs several *phulwaris* where children learn, play and are served nutritious food. Surveys reveal that the nutrition status of children has improved in such villages. The creches promote kitchen gardens and poultry units to improve nutrition among rural households.

Silicosis is another deadly disease which the clinics tackle. It takes a lot of effort to visit such patients in remote hamlets to do the best that can be done to provide relief.

The clinics also found that, due to the stigma attached to TB, people affected by the disease often hesitated to come to them. BHS then formed peer groups of patients who had recovered from TB to talk to those who had contracted the disease and encourage them to get treated.

This year excessive rain has ruined the *kharif* crop in many villages, leading to more nutrition problems and more pressure for migration. So BHS is faced with a need for more resources to help distressed people. ■

Time to take a deep breath

ROADMAP FOR CLEAN AIR

By Chandra Bhushan



For the first time protests broke out in Delhi on November 9

FOR more than a decade, Delhi has experimented with various pollution control measures — the ‘odd-even scheme’, smog towers, water cannon, tree plantation, the Graded Response Action Plan or GRAP, (which restricts industry, construction, and vehicular activity during winter), and now cloud seeding. Despite these efforts, the city continues to suffer. The root cause is simple: these reactive measures do not address the core pollution problem.

Delhi, which constitutes only 2.7 percent of the National Capital Region (NCR), sits at the heart of one of the most urbanized, industrialized, and agricultural regions in the world. Consequently, its air is heavily influenced by pollution from neighbouring districts. Studies reveal that only 30 to 50 percent of Delhi’s air pollution originates within the city, while the remaining 50 to 70 percent comes from outside. This means that a regional approach is essential to reduce air pollution in the city.

Further, the main sources of pollution in Delhi-NCR are the use of biomass for cooking, heating, and in micro and small industries, along with the burning of agricultural residue in surrounding states. These activities contribute over 50 percent of total PM2.5 pollution. Another 30 percent comes from industries and power plants that rely on coal and other fossil fuels. In other words, more than 80 percent of PM2.5 pollution in Delhi-NCR results from solid fuels — particularly biomass and coal burning — with vehicles contributing about 10 percent. This estimate does not include dust from roads, construction sites, and barren land, which are also significant sources of particulate pollution.

If Delhi is serious about improving air quality, it must stop relying on ineffective, superficial solutions. These quick fixes do more harm than good by hurting the economy without tackling the root cause. The real solution lies in collaboration between the Central government and the states — Delhi, Haryana, Punjab, Uttar Pradesh and Rajasthan — to confront pollution at its source. This collaborative effort can be operationalized through a new governance framework and institution to implement a coordinated clean air action plan. This would require all states to relinquish some powers for the common good. Here’s how this can be achieved:

1 POLLUTION CONTROL ZONE The Central government should declare Delhi and its surrounding areas an Air Pollution Control Zone. Within this zone, all air pollution-related measures should be implemented in a coordinated manner. Ideally, the zone should cover the entire airshed, spanning a 300-km radius around Delhi. However, considering the existing institutional set-up, this zone could include Delhi-NCR and four additional districts in Uttar Pradesh — Aligarh, Hathras, Mathura and Agra. This would encompass an area within a radius of about 150 km, with a population of around 80 million. Although this excludes key agricultural areas in Punjab and Haryana where stubble burning is rampant, that issue can be addressed through dedicated programmes aimed at eliminating crop residue burning.

2 EMPOWERED AGENCY To oversee and implement a coordinated clean air action plan, a new empowered agency should be established. This agency should include representatives from both the Central and state governments at the decision-making level. To ensure adequate authority, it should be headed by a senior secretary-level serving officer of the Central government. The agency should have district offices, its own technical and administrative staff, and act as the nodal agency for air pollution control in the zone — superseding other Central and state agencies.

Similar agencies exist elsewhere, such as the California Air Resources Board, established in 1967 to tackle severe pollution in cities like Los Angeles. China has also created the Beijing-Tianjin-Hebei Regional Coordination Council to reduce pollution levels in Beijing. While India’s Central government has set up the Commission for Air Quality Management (CAQM) in the National Capital Region and adjoining areas, it has not been very effective because it lacks resources, authority, and a proactive action plan.

3 REAL ACTION PLAN Delhi’s air quality — and India’s overall — cannot improve without a rapid transition to clean energy, along with a credible plan to reduce agricultural residue burning and control dust. The plan should consist of high-impact strategies that can significantly improve air quality within the next five years. Sample the following:

PM Ujjwala 3.0 The study we have done at iFOREST shows that the Pradhan Mantri Ujjwala Yojana has been the most impactful air pollution intervention in the past decade. Expanding access to clean cooking fuel across Delhi-NCR could reduce PM2.5 levels by 25 percent. Achieving this would require a new phase — PM Ujjwala 3.0 — to transition households to LPG or electricity for cooking. Research indicates that a 75 percent subsidy is necessary to enable exclusive LPG use in low-income households, costing about ₹5,000 to ₹6,000 per

household annually — similar to the PM Kisan Samman Nidhi. In Delhi-NCR, this would cost around ₹6,000 crore to ₹7,000 crore per year, a fraction of the annual healthcare costs associated with air pollution-related diseases. This would be a profoundly pro-poor and pro-women initiative, especially considering that nearly 600,000 Indians — primarily women — die prematurely each year from indoor air pollution.

Clean heating fuel Across India, over 90 percent of households rely on biomass and solid fuels for heating during winter, contributing to severe pollution spikes in December and January. One of China’s pivotal air quality initiatives was a national clean heating fuel policy. While developing a similar long-term plan is essential, in the short term the Delhi government could ensure that only electricity is used for winter heating and enforce a strict ban on open burning. This approach would yield swift improvements in Delhi’s air quality.

End stubble-burning A major contributor to pollution spikes in October and November is stubble-burning. Curbing this practice would significantly reduce the occurrence of severe pollution episodes. Both short- and long-term strategies are required.

In the long term, agriculture in Punjab, Haryana and parts of UP must transition from intensive rice-wheat farming to diversified cropping systems. In the short term, technology and incentives can play a key role. The simplest technological solution is to modify or mandate combine harvesters that cut closer to the ground — like manual harvesting — and attach balers to collect residue. The residue can then be sold to industries.

Governments can launch an entrepreneurship-cum-market scheme to promote residue collection, processing, and sale. An incentive of ₹1,000 per acre, coupled with penalties such as fines or exclusion from government schemes for farmers who continue burning residue would be effective. This scheme would cost approximately ₹2,500 crore annually.

Energy transition in industry Power plants and industry account for roughly one-third of annual PM2.5 emissions in Delhi-NCR. Reducing these emissions requires both technological upgrades and stricter enforcement. A scheme encouraging MSMEs to adopt cleaner fuel sources — especially electric boilers and furnaces — could significantly curb emissions. For larger industries, stricter compliance with pollution norms is essential. Shutting down older thermal power plants and enforcing the 2015 emission standards (still not fully implemented) will be critical.

Transition to EVs Scaling up electric vehicles is crucial for reducing urban air pollution. Initially, the focus should be on transitioning two- and three-wheelers and buses, since these are already economically viable. Achieving 100 percent electrification of new two- and three-wheeler sales by 2030, and converting all new buses to electric in Delhi-NCR, would significantly reduce vehicle emissions. Setting a 30 to 50 percent electrification target for cars and other vehicles would further accelerate the transition to cleaner urban transport.



Green belts Dust pollution from within Delhi and neighbouring areas, compounded by seasonal dust from the Thar desert, has a major impact on air quality. Creating a green belt around Delhi would serve as a natural barrier against incoming dust. Additionally, increasing green cover within the city — especially roadside and open-space greening — is essential to control local dust pollution.

Strengthen municipalities Local pollution sources — such as road dust, construction activities, open burning, traffic congestion, and poor waste management — are best managed by municipalities. Municipalities must be held accountable for addressing these issues year-round, not just during peak pollution seasons. Strengthening the National Clean Air Programme (NCAP) to support municipal efforts will be key to achieving sustainable air quality improvements.

If we implement these measures, air pollution can be reduced by 50 to 60 percent within five years. However, this will not be easy. We will need to work with millions of households to adopt clean cooking and heating fuels, millions of farmers to stop stubble burning, hundreds of thousands of industries to reduce emissions, and vehicle owners to shift to EVs.

There are no quick fixes to improving air quality. Systemic changes are essential if we are to breathe clean air. Everywhere in the world, environmental progress has come from systemic, scientific, accountable, and long-term solutions — not quick-fixes. Delhi must learn this lesson. ■

Chandra Bhushan is one of India’s foremost public policy experts and the Founder-CEO of the International Forum for Environment, Sustainability & Technology (iFOREST)



People from tribes across India dressed in their traditional ways and speaking different languages

At Samvaad, magic happens

Civil Society News

Jamshedpur

WHEN 2,500 people from 153 tribes gathered in Jamshedpur in November, there was a convergence of indigenous talents, aspirations, concerns and identities. They showed up from corners of India dressed in their traditional ways, speaking their own languages and looking completely apart, but yet one in their search for a place in a fast-changing world.

Tribal people are prisoners of their remoteness. They aren't visible because they aren't easily found. Their slow way of life, rooted in nature, is outpaced. Along with forests and water bodies, their cultures and traditions, too, vanish over time.

Samvaad, held once a year over four days in Jamshedpur, brings them together. It gives them the opportunity to flaunt their identities. On display are their diversity and charisma.

Samvaad literally means dialogue and as an event it provides tribal people with a platform to interact and tell their stories so that they don't feel alone and also the world at large can know they exist. Food, arts and crafts, song and dance, dress, worship, folk medicine — Samvaad brings forth all that makes up the tribal way of life.

Now in its 11th year, the event is the outcome of a passionate effort put in by the Tata Steel Foundation. Year round, the foundation's teams reach tribal communities and nurture connections which culminate in the steel city being awash in tribal colours and enthusiasm. Some 43,500 tribal people from 333 tribes have come to Samvaad since the first edition in 2014.

Samvaad fosters with intensity bonds between tribal groups from Kashmir to Kanyakumari, Bengal to Gujarat, Bodoland to Kerala. These are people who didn't know one another until they came to Jamshedpur. A good many of them remain connected long after.

Each of the four days begins with a sombre prayer session at the Akhra, the shared venue to meet and interact. It is an amphitheatre at the Tribal Culture Centre run by the foundation. The daily prayer is conducted by a different group every day in their own style but is essentially an invocation

to nature. Following the prayer, there is an opportunity for different groups to take the stage and talk about their communities and the challenges they face. There is a sharing of ideas and an assertion of their rights.

The Akhra is a sacred space which is purified with mango leaves and the sprinkling of water. It is a 'safe place' where people can open up about what matters to them. Samvaad's hallmark is a coming together in good faith and the Akhra, which fosters trust, intimacy and belief, is in this sense at the heart of the event.

A public stage at Gopal Maidan is where bigger events happen and craftspeople and folk healers set up their stalls. Samvaad opens here to the mesmerizing beating of 301 *nagaras* and *dhols*, which are ancient drums of various sizes, for more than an hour. It is a pulsating experience like no other. The *nagaras* are supported by *bhers* which are traditional horns whose high-pitched notes are meant to reach far and wide, chase away animals and collect the community.

It is around the memory of Birsa Munda, the tribal hero, that Samvaad is held. He is worshipped. When the *nagara* beats end and the event is to be declared open, T.V. Narendran, the MD of Tata Steel, with shoes off, first pays obeisance to the image of Birsa Munda.

But for all its serious moments, Samvaad is essentially a celebration — a joyous coming together of different tribes. The journeying to Jamshedpur from remote parts of the country is in itself a liberating experience for many who travel there from remote villages, several perhaps for the first time in their lives.

The exuberance of the occasion is perhaps nowhere more in evidence than in the singing and dancing that takes place with abandon during Samvaad. People are seen enjoying themselves with a skip in their steps. It is selfie time all around.

A highlight of Samvaad is the bands that it has spawned and their performances. The renditions by these bands represent an interesting fusion between folk and rock as also the use of traditional instruments along with modern electric ones. Tiny tribes such as the Totos in Alipurduar in West Bengal have been encouraged to come out and perform. The recent Samvaad saw performances by bands from

Photos: Civil Society/Ashoke Chakrabarty



The inauguration of Samvaad to the sound of nagaras and bhers



Morning prayer ceremony



One of the bands performing

Bodoland, Gujarat, Kerala, Tamil Nadu, Sikkim and Ladakh, among others.

Natural musical talents from different tribes have been mentored and developed and their songs have been showcased in two albums called *Rhythms of the Earth* produced by the Tata Steel Foundation. When the bands perform it is with enthusiasm and the mood is infectious with the audience breaking out into dance.

As participants settle in, the effervescence of the tribal spirit floods Samvaad. So irresistible is it that at the inaugural ceremony the corporate leadership of Tata Steel joins in, linking arms and swaying to the beat of the *nagaras*. Such is the flow that everyone goes with it.

Despite the years, the energy at Samvaad hasn't diminished. It remains fresh as though each Samvaad is the first. The enduring newness and excitement are palpable.

That undoubtedly is the result of the seriousness with which the foundation takes its outreach to tribes over the year. A large team gets personally engaged with the CEO of the foundation, Sourav Roy, leading by example.

There have also been regional Samvaads that are smaller and localized. The idea is to reach tribes on a sustained basis, understand them better and encourage them to come out. To this end the Tribal Leadership Programme and a Tribal Fellowship develop individuals who can articulate a vision for themselves and their communities that places them as equals in a modern world.

A fellow could be devising a script for a tribe, documenting lullabies or setting up community museums. The list of interesting initiatives is a

long one. Five fellows are chosen every year and in all there have been 35 fellows since the fellowships were instituted.

Samvaad has grown by word of mouth. Those who come to it tell others and so the word spreads. But beyond the pulsating event that Samvaad is, the Tata Steel Foundation's effort under Roy's leadership is to give tribal people the confidence to discover their dreams and shore up the vanishing communities to which they belong. They are both custodians and ambassadors of their cultures. Some may like to be village-level leaders, others may want to develop a skill or grow a social enterprise.

The foundation, which is the CSR arm of Tata Steel, is behind efforts to prevent the dying out of tribal music and instruments and art. It is also encouraging tribal youngsters to learn to use their traditional languages.

As a CSR initiative formal goals have been set. Over 11 years, the foundation has managed to reach 378 tribes. The plan is to get to connect with twice the number of tribes by 2030, says Roy. Its elaborate vision of helping tribal communities find the confidence to navigate a technological world isn't the typical CSR initiative that companies take up.

But Roy says there is much learning from getting off the beaten path. First, Samvaad shows collaborations are possible with patience and they result in learnings that don't get expressed in PowerPoint and Excel sheets. Second, it is important to reach out to the underserved and silent because it teaches you to find the real stories and be a patient listener. Third, not all outcomes can be measured. So, says Roy: "It is important not to be too quantifiably outcome driven because the magic happens." ■

Doon's green zoning is now much weaker

Rakesh Agrawal
Dehradun

AFTER protesting against felling of trees and widening of roads, the people of Dehradun are now protesting over the 2025 Amendment to the Doon Valley Notification of 1989, issued on May 13. Environmentalists, NGOs and citizen groups say that the notification is a death warrant for the city. A spate of legal cases has been filed in various courts.

"It will degrade the Doon Valley's air, soil, water and forests and turn Dehradun into a polluted urban sprawl like Delhi," says Anil Joshi, director of HESCO (Himalayan Environmental Studies and Conservation), a local NGO. Apart from urban youth, farmer groups, fearful of losing their land, are keen to join the protesters.

Angry citizens say the dilution of the original notification is a 'joint venture' by the state and Central governments. "This strengthens the NDA government's policy of pursuing economic growth at any cost, without caring for the environment," says Ravi Chopra, former director of the People's Science Institute in the city. "The amendment will hamper Doon Valley's status as an environmentally sensitive area. Along with a dysfunctional state government and municipal corporation, the remaining greenery of the valley will be destroyed, its air and water poisoned."

The Doon Valley Notification of 1989 was issued by the then Ministry of Environment and Forests (MoEF) in response to a 1988 Supreme Court order in the *Rural Litigation and Entitlement (RLEK) vs State of UP* case, the first environment case to be heard by the Apex court. RLEK took the legal route against uncontrolled limestone mining and quarrying in the Doon Valley which was causing landslides, water scarcity and devastation of biodiversity.

The 1989 notification declared the Doon Valley an eco-sensitive zone and banned mining or quarrying in the valley. It classified the valley into three categories: green, orange and red. Under the green category, low polluting industries were permitted without restriction — for instance, assembly of electronic items. The orange category permitted moderately polluting industries such as food processing units with certain



Doon's residents are a worried lot

environmental controls and in locations based on the latter's pollution carrying capacity.

Marked in red were highly polluting industries like cement plants, chemical industries, and large-scale mining which were prohibited. Existing red industries were required to obtain environmental impact assessments (EIAs) and Central government approval. There were other restrictions as well on change in land use, deforestation, construction, and so on. All these required Central government approval.

The aim of the notification was sustainable development and protection of the valley's geology, forests and aquifers. Dehradun was a small city then, clean and green, without even traffic lights.

However, the new notification undermines the old one. It permits expansion of industries under the orange category subject to conditions framed by the Uttarakhand Pollution Control Board (UKPCB), bypassing EIAs in some cases. Also, unlike in the earlier notification, approval powers for tourism, land use, grazing and zonal master plans have been transferred from the Union Ministry of Environment, Forests and Climate Change (MoEF & CC) to a 'competent authority' within the Uttarakhand government.

Some restrictions have been retained for mining but enforcement has been relaxed for existing units. New activities in the red category need approval from the UKPCB but with fewer ecological assessments. Pollution has been treated as minor collateral damage, say critics. Emission caps remain but there is state discretion in monitoring. The priority is economic growth, tourism, and infrastructure.

Critics point out that the valley's carrying capacity should have been assessed first. The area sits on an earthquake-prone zone. Climate change is another vulnerability. There is a ban on new red-category units coming up but critics fear the amendment opens the valley to polluting industries.

Renu Paul, a human rights lawyer and founder of Rajpur Community Initiative, says, "All checks and balances and monitoring by experts will be bypassed if the state government gains absolute authority. It shifts the approving authority from the Central to the state government. Obviously this is an attempt to bypass the 1989 notification."

"Basically this notification ignores the valley's ecological frailty. It sits on a seismically active and flood-prone region. No fresh carrying capacity study has been done since 1989," say members of the Dev Bhoomi Manav Sansadhan Vikas Samiti, an NGO. "The 1989 notification was framed such that it gave room for locals to block hazardous units like cement plants."

Himanshu Arora of Citizen for Green Doon filed a writ petition in the Uttarakhand High Court in June 2025. "The amendment destroys the very essence of the 1989 notification by overlooking ecological sensitivity. Besides, the valley is a water recharge zone for the Ganga basin," he says. He has sought quashing of the new notification. A PIL has also been filed by Abhinav Thapar, a Congress leader. "My PIL focuses on environmental conservation. We are asking the court to restore the original notification," he says.

The High Court has directed the MoEF & CC to respond, emphasizing the importance of balancing development with sustainability.

A case has also been filed in the National Green Tribunal (NGT) by Prem Prakash Thapliyal, a well-known local environmentalist. The NGT has taken note and on August 5 asked the Uttarakhand government, the UKPCB and the MoEF & CC to respond.

However, none of this has moved the state government. It blithely carries on with its dream projects, indifferent to people's concerns. Despite protests against the 26-km Rispana-Bindal Elevated Road project on the riverbed of the two rivers to ease traffic congestion, the government has given its green signal to begin work on the project. ■

Stampede after stampede after...

Aiema Tauheed
Kolkata

THERE have been at least 14 significant public events resulting in stampedes and other forms of crowd chaos in just two years in India between January 1, 2024 and November 6 this year.

The stampedes have resulted in 237 deaths. The victims are mostly women and children. The number of injuries is only roughly known and no account is kept of impairment. Someone may not have died but could have lost the use of a limb.

There is, of course, no account of the mental anguish experienced by people caught in these incidents. How do survivors deal with post-trauma stress disorder? Also unknown is the impact on the families of the dead and injured. Were family incomes disrupted? Have children been orphaned? Are there elderly parents who have lost the only support they had?

Many of these stampedes could have been prevented by timely crowd management and rigorous standards for holding public events. But despite the regularity with which they happen there has been no cross-learning or a national effort to put protocols in place.

We offer a bareboned record for just two years based on news reports. It is an indication of what a wider time frame would reveal.

2025

November 1: Nine people died and 25 were injured in Srikakulam district, Andhra Pradesh. Eight of the dead were women, one a boy. A huge number of devotees had gathered at the Venkateswara Swamy temple on the occasion of Ekadashi. Survivors blamed the lack of proper crowd management and the use of a narrow path for both entry and exit for triggering the stampede.

October 7: An undetermined number of people were injured at Huligi, Koppal, in Karnataka. Shigi Hunnime or full moon saw some 300,000 devotees turning up at the Huligemma Devi temple from Maharashtra, Tamil Nadu, Andhra Pradesh and Telangana. Any semblance of order went awry as crowd control failed. Children and women were seen wailing amid the crush. Narrow access routes couldn't handle the crowd.

September 27: There were 40 dead and 124 injured at Veluchampuram, Karur, Tamil Nadu. A rally had been organized for Vijay, actor-turned-politician and chief of the Tamilaga Vettri Kazhagam. He arrived hours late and the waiting crowd surged towards his vehicle.

August 5: At least seven devotees died at Kubreshwar Dham, Sehore district, Madhya Pradesh. The deaths took place over three days at an event led by Hindu mythology storyteller Pandit Pradip Mishra. A stampede occurred on August 5 during *rudraksha* distribution, resulting in the deaths of two women. Three more men over the age of 50 died later during a *yatra* due to health reasons, and on the morning of August 7, two more devotees aged 40 and 22 died allegedly of heart attacks.

July 27: Eight people died, and about 30 were injured in a stampede at the Mansa Devi temple, Haridwar, Uttarakhand. A massive crowd had gathered along the stairway route of the shrine when a rumour that an electric line had snapped triggered panic among devotees.

June 29: Three devotees, including two women, were killed and at least 50 injured in a stampede near the Gundicha temple in Puri, Odisha, during the Rath Yatra. The incident occurred in the early hours when thousands of devotees surged towards the chariots carrying Lord Jagannath, Lord Balabhadra and Devi Subhadra for a closer glimpse. On June 27, more than 700 devotees had been hospitalized due to a stampede-like situation and heat exhaustion.

June 4: Eleven fans died and 71 were injured near the M. Chinnaswamy Stadium, Bengaluru. Thousands of fans had gathered near the stadium gates to celebrate the Royal Challengers Bengaluru's historic first title

win in 18 years. Overcrowding and narrow passageways led to a deadly rush. While the stadium could hold around 32,000 people, over 200,000 had gathered.

May 3: Six people died and over 80 were injured in a stampede in North Goa. Around 100,000 devotees had gathered for the annual Lairai Jatra procession in Shirgao village and were heading to the Shree Lairai Devi temple. A rope barricade broke on the steep hill, triggering chaos.

February 15: Eighteen people died and 15 were injured at New Delhi Railway Station. A stampede was triggered by a falling headload on the stairs of the overbridge leading to Platforms 14 and 15. Among the dead, 14 were women and five were children. A large number of passengers were heading to Prayagraj for the Mahakumbh.



The aftermath at the Mahakumbh

January 29: Eighty-two people died at the Mahakumbh in Prayagraj as hundreds of thousands of pilgrims jostled for space to take a holy dip on the occasion of Mauni Amavasya.

January 9: Six devotees, including three women, died and several others were injured at Tirupati, Andhra Pradesh. There was a surge of devotees during the distribution of tokens for Vaikunta Dwara Darshanam at the Lord Venkateswara temple.

2024

December 4: A 35-year-old woman died and her eight-year-old son was severely injured at Sandhya Theatre, Hyderabad. A crowd went out of control when actor Allu Arjun suddenly showed up during a screening of *Pushpa 2: The Rule*.

October 27: Ten people, including two teenagers, were injured, and one later died, in a surge of passengers trying to get onto an unreserved train at Bandra Station, Mumbai.

August 12: Seven people, including six women, died and 16 were injured at the Baba Sidhanath temple, Jehanabad. A stampede was triggered by a dispute involving a flower-seller.

July 2: There were 121 deaths, 112 of them women and seven children, at a prayer meeting in Hathras, Uttar Pradesh. The event, by self-styled godman Bhole Baba (also known as Suraj Pal), drew over 200,000 devotees despite permission for only 80,000. Chaos ensued when Bhole Baba left the stage and people exited the tent, surging towards him to touch his feet or the ground he walked on.

July 4: At least 11 persons were rushed to hospitals with minor injuries or giddiness on Marine Drive, Mumbai. An estimated 300,000 fans had showed up for the victory parade of the Indian cricket team after the World Cup. ■

Srinagar to get a water metro

Jehangir Rashid
Srinagar

WITH cars crowding roads in Srinagar and traffic jams becoming routine, old-time residents recall how an alternative mode of commuting, through water transport, once helped people navigate the city. Shikaras and boats glided smoothly down the Jhelum river to reach different destinations. Most important areas, especially in downtown Srinagar, were located along the banks of the Jhelum.

“The boats not only ferried people from one place to the next, they also transported essential items. It was due to this that ration depots in the old city of Srinagar were placed along the banks of the Jhelum. Water transport was affordable and people would love using it once again,” says Ghulam Mohammad, a resident of Dalgate.

That wish is going to become a reality. On October 31, a Memorandum of Understanding (MoU) was signed between the Regional Transport Officer (RTO), Government of Jammu & Kashmir, and the Inland Waterways Authority of India (IWAI) to develop and operate an urban water transport system in Srinagar along the lines of the Kochi water metro.

“The initiative aims to ease traffic congestion, enhance intra-city connectivity and promote sustainable and eco-friendly mobility within Srinagar,” said an official of the Regional Transport Office.

The Kochi water metro, the first of its kind in India, was launched in December 2021. It consists of 23 battery-powered electric boats which ferry people on its numerous waterways to important destinations in the city. Eventually it will take people along 15 routes, connect 10 islands and traverse 75 km on 78 electrically propelled hybrid ferries.

The J&K MoU was formally presented to Chief Minister Omar Abdullah in the presence of Satish Sharma, Union minister for transport, Avny Lavasa, secretary, Transport Department, and Qazi Irfan, the RTO, Kashmir.

The proposed ₹900-crore project plans to begin water transport connectivity through electric-hybrid boats for local passenger movement. There will be five routes with 10 terminals on the Dal lake and two routes with eight terminals on the Jhelum. This network will complement existing road infrastructure and offer an alternative and green mode of urban transit.

“Both parties have agreed to work jointly to obtain statutory clearances and address environmental, forest and local considerations related to project execution. The funding structure will be finalized through mutual



The Kochi water taxi (above) will be replicated on the Dal lake and the Jhelum

There will be five routes with 10 terminals on the Dal lake and two routes with eight terminals on the Jhelum.

consultation, while a detailed implementation roadmap will be prepared in the coming months,” said the official of the Regional Transport Office.

The collaboration is being viewed as a major step in developing a reliable, efficient, and environmentally responsible public transport system in Srinagar. The project is expected to enhance urban mobility, boost tourism and create new livelihood opportunities by introducing a modern and sustainable mode of transport.

Under the agreement, the J&K government will provide administrative and logistical support, including clearances, land acquisition and the development of allied infrastructure. It will also ensure efficient first- and last-mile connectivity, integrating the water metro into the broader urban transport ecosystem of the Union Territory.

“The IWAI will provide technical expertise and guidance for the project, oversee maintenance of navigational channels and facilitate capacity-building programmes for inland water transport personnel. It will also ensure navigation safety and the adoption of modern operational systems,” said the official.

Residents of Srinagar hope the project will be completed in the set time frame so that

there is some relief from traffic congestion. They point out that unnecessary delay would defeat the very purpose of the project and people would continue to suffer.

“Any project developed for easing our commuting problems is welcome. There has been very little development of roads in Srinagar over the past few decades while the number of vehicles has increased manifold. More and more cars are being put on the road,” said Rameez Ahmad, a resident of Sanat Nagar.

The RTO reassured people that both the state government and the IWAI will get all clearances for the project, address environment and forest issues, and tackle funding structures in the coming months.

“More than a decade ago the then government of J&K had drawn up a plan to introduce cruise rides on the Jhelum. Initially, it was to run the service in Srinagar and then extend it to other districts of the Kashmir Valley. The idea was dropped, much to the dismay of the common people,” remarked Abdul Razaq, a resident of Fateh Kadal.

According to officials, a similar inland water transport model is being explored for Jammu, reflecting the government’s broader vision to harness the potential of the region’s waterways for integrated urban transport development.

“Once urban water transport becomes a reality in Srinagar and Jammu, the people will find it easier to commute. But it is important that a timeline be set for completion of this prestigious project. The deadline should be met and there should not be any extension,” said Mohammad Younis, a resident of Abi Guzar.

People are keeping their fingers crossed. They are keen the government and the Centre keep their word and that the water metro becomes a reality within a stipulated time frame. ■

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CAN THE YAMUNA BE REVIVED?

An eight-fold path to breathe life back into the dying river

By Venkatesh Dutta

THE Yamuna is one of India's most sacred rivers. But on its 22-km stretch through Delhi, the Yamuna gets reduced to being a polluted drain. Four decades of efforts to restore the river have mostly ended in failure. Delhi, one of India's richest cities, does to the Yamuna what Indian cities generally do to their rivers — which is to swamp them with wastes, diminish their natural flow, occupy precious floodplains and destroy wetlands and aquifers.

Rivers thrive much beyond their courses. To be in health and serve cities well, they need the freedom to flow. Those marshes, tanks, ponds, canals and water-filled layers underground all make up a river's being. To take them away through urbanization is to suck the life out of a river.

A time there was when turtles used to bask in the sun on the banks of the Yamuna in Delhi — so we are told by Kapila Vatsyayan, the scholar. Fish were abundant in the river during the 1960s. There were sightings of crocodiles. The Yamuna gave to Delhi vast scenic beauty, rich vegetation. The clean water offered a thriving riverine economy with cultural festivals, fairs and swimming competitions.

The Yamuna of those times is no longer visible even in part. Instead, some 30 million people make up its stressed catchment as it flows from Wazirabad to Okhla. The decline has been relentless and especially noticeable since 1990. The Yamuna's water became stagnant, black, and polluted. Many drains carrying sewage emptied into the river untreated. Delhi expanded and attracted people from all over. Many colonies came up without sewerage systems. The natural drains became sewage-carrying canals.

The river ecosystem and floodplain dynamics along the Delhi stretch have already been significantly impaired by extensive infrastructure development and construction activities. It is therefore essential to initiate measures to mitigate, to the extent possible, the adverse hydromorphological and ecological impacts of these interventions.

A comprehensive policy framework is needed to enhance the flood passage capacity of the Yamuna by restoring its lateral (river-floodplain exchange), vertical (surface-groundwater interactions), and longitudinal (upstream-downstream continuity) connectivity, thereby reinstating key ecohydrological functions of the river-floodplain system.

It is also very important to learn from past mistakes and put in place a strategy that works on the ground. Can we impose a moratorium on new projects that dissect the floodplain and constrict the river channel? Can we prioritize ecological restoration over 'cosmetic interventions' that further concretize and privatize the floodplain? A lot of money has gone into meeting compliances and 'administering' court directives — a reactive approach that muddles through ad hoc measures.

Instead, an eight-fold path of revival should be adopted with sincerity after due introspection to restore the river to its earlier splendour and



Infrastructure has impaired the floodplains

greatly enhance the quality of life in Delhi and its nearby areas. Here is what can be done:

- 1 STATUTORY PROTECTION** Legally designate river zones and floodplains as protected ecological spaces to prevent encroachment and degradation.
- 2 STRICT RIVER ZONING** Implement clear zoning rules that respect natural river dynamics and maintain connectivity with wetlands and aquifers.
- 3 ENSURING FLOWS** Restore minimum flows by revising water release schedules and modifying barrages to mimic natural hydrological patterns.
- 4 UPGRADING SYSTEMS** Upgrade and maintain the urban sewerage infrastructure (drains, pumping stations, pipes) to prevent leakages, backflows, and untreated discharges.
- 5 BETTER SEWAGE TREATMENT** Expand and optimize infrastructure to match or exceed actual sewage load across all urban zones.
- 6 REUSE OF TREATED SEWAGE** Deploy advanced treatment technologies to ensure treated water meets reuse standards and reduces nutrient loads.

fourths of which flowed into stormwater drains and ultimately into the Yamuna untreated. In late 2004, a committee was set up under the direction of the Supreme Court to prepare an action plan for the Yamuna under the chairmanship of Anil Bajjal, then secretary, Union ministry of urban development.

This committee recommended expansion of sewage treatment capacity from 2,880 MLD in 2008 to 3,758 MLD by 2015. According to the Delhi Pollution Control Committee (DPCC) data of June 2025, sewage flowing untreated into the Yamuna is about 30 percent of the sewage that Delhi generates. The Yamuna Action Plan (YAP) was launched in April 1993.

Anil Agarwal, founder of the Centre for Science and Environment (CSE) in New Delhi, called it the 'sanitary engineer's dream' that lacked a comprehensive ecological, economic, technological and social dimension.

TURNING TO THE COURTS The first major legal case on the Yamuna river was initiated in 1985 by noted environmental lawyer M.C. Mehta. His petition reached the Supreme Court, marking a turning point in laws related to river pollution in India. The petition reported serious ecological degradation in Delhi's stretch of the Yamuna river, including discharge from hazardous industries.

The Supreme Court, after a decade in 1996, ordered installation of 15 STPs and CETPs in industrial areas to control factory effluents. This case

A time there was when turtles used to bask in the sun on the banks of the Yamuna in Delhi. Fish were abundant. There were sightings of crocodiles. The Yamuna gave to Delhi vast scenic beauty.

led to decades of follow-up action on the Yamuna. In 1992, Cdr Sureshwar Sinha, heading a Delhi-based NGO, Paani Morcha, filed a petition stressing the need to stop the high rate of pollution in the river and maintain free flow, furthering the legal push (the 'minimum flow' case, ensuring at least 10 cubic metres per second of water flow in Delhi).

In 1994, an article headlined "And Quiet Flows the Mailee Yamuna" appeared in a newspaper in Delhi. The Supreme Court, taking suo moto cognizance, filed a case against the CPCB and others for failing to fulfil their duties in cleaning up the Yamuna. In this case, the Supreme Court ordered in April 2001 that it was "imperative that at least by March 31, 2003, the minimum desired water quality of the river is achieved..." This landmark case is still going on and has delivered several directions and orders.

After 2007, landmark litigation like *Baldev Singh Dhillon vs. Union of India* and *Manoj Mishra vs. Union of India* led to stricter directives on sewage treatment, industrial discharge, and protection of the floodplains. The National Green Tribunal (NGT) vide judgment dated January 13, 2015, in the matter of *Manoj Mishra vs. Union of India & Ors*, issued various directions, including directions to the Delhi Jal Board (DJB) to operationalize existing STPs, construct new STPs, maintain and upgrade existing STPs and other directions for prevention and control of pollution and rejuvenation of the Yamuna in Delhi. Since then, various orders have been passed by the NGT from time to time.

In 2018, the Yamuna Monitoring Committee (YMC) was constituted by the NGT in response to the case filed by Manoj Mishra, popularly called the 'Mailee Se Nirmal Yamuna' Revitalization case. Mishra's case brought unprecedented transparency and urgency to Yamuna restoration. Unfortunately, he passed away in 2023.

The YMC reported that 23 major drains in Delhi were still discharging

7 IDENTIFY HOTSPOTS Focus clean-up efforts on critical stretches by removing sludge, desilting beds, and rehabilitating flow channels.

8 INVOLVE EXPERTS, ACTIVISTS Make them part of the solution. Institutionalize inclusive governance by involving local stakeholders in planning, monitoring, and awareness efforts.

All are doable and require not just infrastructure and enforcement, but a paradigm shift in our action, towards river space, ecological sensitivity and a long-term commitment.

Today 22 drains outfall into the Yamuna in Delhi. Ten drains have been tapped, two are partially tapped and almost 10 are yet to be tapped. The Najafgarh drain itself contributes 70 percent of the wastewater discharge in the Yamuna. This drain is actually a tributary to the Yamuna known as the Sahibi river, but now carries wastewater and filth. The next and bigger source of pollutants is the Shahdara drain that contributes 16 percent of wastewater discharge. These two drains are very difficult to tap and manage. Although the city has 37 Sewage Treatment Plants (STPs) to treat the wastewater, many of them do not meet prescribed water quality standards post-treatment. There are 13 Common Effluent Treatment Plants (CETPs) specifically designed for collective treatment of effluents from industrial facilities. The utilization capacity of these CETPs was merely 30.7 percent in February 2005.

In 1999, the CPCB (Central Pollution Control Board) estimated that Delhi produced over 2,550 MLD (million litres per day) of sewage, three-

untreated or partially treated sewage and construction debris. Also, illegal encroachment was rampant on the floodplains, STPs were often underutilized or non-functional, and inter-agency coordination was severely lacking. As a result of the YMC report, the NGT ordered the Delhi Development Authority (DDA) to erect fencing, demarcate floodplains, and establish biodiversity parks by April 2020 — or face ₹5 lakh per month as fine.

The tribunal also banned new construction on the floodplains and imposed fines for illegal dumping. In January 2021, the NGT disbanded the YMC, stating that most of the work had been transferred to the National Mission for Clean Ganga (NMCG), and the Delhi government's framework.

A High-Level Committee (HLC) was constituted by the NGT vide order dated January 9, 2023 in the matter of *Ashwani Yadav vs. Govt. of NCT of Delhi* with the chief secretary, Delhi as convener and the secretaries/heads of departments of various ministries/departments of the governments of India/Delhi as members for prevention and control of pollution and rejuvenation of the Yamuna in Delhi.

An NGT order on July 11, 2024 directed the Ministry of Jal Shakti (MoJS) and the Central Water Commission (CWC) to pay ₹50,000 each for the non-demarcation of the floodplains in Agra. Unfortunately, the execution of this direction has not happened. In Delhi, the DDA has taken no action against levelling of around 19 ha of the floodplain near Shastri Park. Sadly, the river floodplain is yet to be mapped and demarcated in Delhi despite NGT orders and the River Ganga Authorities Order, 2016.

WATER FLOWS The river needs a minimum quantum of flow for self-rejuvenation and healing. This flow of water that a river must have in order to preserve its own ecosystem and for dilution of polluted water is called environmental flow (e-flow in short). A study was assigned by the NMCG to the National Institute of Hydrology (NIH), Roorkee, in December 2018 to assess the e-flow of the Yamuna between Hathni Kund and Okhla. According to the NIH report, an e-flow of 23 cumecs (437 million gallons per day) in the lean season (May) has been recommended. The flow in the lean season drops to less than 10 cumecs. Even the release of the deficit amount (13 cumecs) will not make the Yamuna fit to bathe in as the current load of wastewater requires a large volumetric discharge of freshwater, which is not possible in the current scenario.

REGULATING FLOODPLAINS The continuous abuse of the Yamuna floodplains is part of the larger problem of river pollution and neglect of the river. Many court decisions have pointed out that land development and regulatory agencies have not done much in their mandated role to protect the river's floodplains. By changing the land use of the river's

natural floodplains, its periodic inundation is badly impacted which further hinders the crucial process of groundwater recharge and other ecosystem functions.

In September 2025, the Yamuna repeated the 2023 flood-like situation. In July 2023, the river breached its Highest Flood Level (HFL) of 1978 by a huge margin of 1.17 metres and set a record of 208.66 metres as its new HFL. In September 2025 too, its flood level was short by a mere 0.01 metre of the 1978 HFL. With each passing day, the flood pathway of the river is getting reduced, making the region even more vulnerable to flooding in the future.

There are 26 bridges and three barrages in the 22-km stretch of the river in Delhi, and some more bridges are under construction. Even new roads have been built and widened along the floodplains. The embankments and guide bunds have further fragmented the floodplains. Throughout the year, large quantities of silt and sediments enter the Yamuna system through the river and multiple drains. However, due to inadequate flow, these materials accumulate behind barrages and around bridges in Delhi, leading to a gradual rise in the riverbed level.

The restoration of floodplains by the DDA includes landscaping, wetland construction, public utilities — such as pedestrian pathways, cycling tracks, bio-toilets, entrance plaza, and signages. Many projects are underway for the creation of biodiversity parks inside the floodplains. These projects also came under submergence during some of the recent floods.

The South Asia Network on Dams, Rivers and People (SANDRP) extensively documents and advocates the protection of the Yamuna floodplains from encroachment, illegal levelling, and dumping of construction and demolition wastes. SANDRP has raised

concerns about the DDA and Forest Department raising and levelling Yamuna floodplain land for projects like compensatory plantation, which is a permanent loss of floodplain area. The levelling of floodplains reduces the natural space available for river water to spread during floods, which can worsen the situation in urban areas like Delhi.

The DDA has been proposing changes to the 'O Zone' status — designated floodplains where no construction is permitted — in order to regularize unauthorized colonies within the floodplain. However, despite a High Court order, it has failed to remove construction waste scattered across the riverscape in Delhi. Further, despite recommendations from a Parliamentary Committee, neither the DDA nor concerned agencies have developed guidelines or rules for dumping of construction and other waste into the Yamuna, nor have they created a common portal to record and update data on sand mining, floodplain and wetland encroachments. ■

Venkatesh Dutta is a Gomti River Waterkeeper and a professor of environmental sciences at Ambedkar University, Lucknow



The Najafgarh drain

There are concerns about the DDA and Forest Department raising and levelling the floodplain for projects like compensatory plantations, which are a permanent loss of floodplain area.



Manoj Mishra



M.C. Mehta



Sureshwar Sinha

India's missing mayors

DELHI DARBAR

SANJAYA BARU

In the excitement generated in urban India by the election of Zohran Mamdani as the mayor of New York, few have asked where the mayors in India are. Many cities do have mayors but few know of them given their limited powers. Most in the nation's capital would know that Rekha Gupta is the chief minister of Delhi but few would be aware that Raja Iqbal Singh is the mayor.

The visibility of public officials is a function of their real power — administrative and financial. India's chief ministers have been able to retain considerable power, despite the growing centralization of power within the Central government, but none of them has been willing to share that power with heads of local government.

There was a time when cities like Mumbai and Kolkata had powerful and visible mayors but state-level political leaders ensured the systematic disempowerment of urban government. This was largely motivated by the desire of chief ministers to secure control over urban real estate. The growth of cities opened up a new avenue for personal enrichment of politicians in power at the state level. Every chief minister and members of his family and caste have become millionaires from control over real estate.

This easy access to money power through the control of political power has systematically discouraged state-level political functionaries from empowering urban local bodies. It was with the objective of, in fact, ensuring such empowerment that the 73rd and 74th Constitutional amendments were legislated. The 74th amendment, enacted in 1992 and coming into effect in 1993, granted Constitutional status to urban local bodies. It provided a framework for the structure and functioning of municipalities that included their democratic functioning. However, chief ministers across India effectively defanged these institutions.

It was a recognition of this reality that

prompted the government of the United Progressive Alliance (UPA) to launch the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005. The mission aimed to encourage reform of urban governance and fast-track the planned development of various cities. However, given its primary focus on "efficiency in urban infrastructure and service delivery mechanisms", adequate attention was not paid to the objective of "community participation" and the establishment of "accountable" municipalities.

The JNNURM's priorities were listed thus: "(1) Modern and transparent budgeting, accounting, financial management systems, designed and adopted for all urban service and

declining quality of public service.

Few municipalities are in fact "accountable to citizens". In every major city everyone expects the state government to deal with problems ranging from air and water pollution to potholes on roads. When chief ministers like getting photographed sweeping streets as part of a Swachh Bharat campaign, who would ask who the mayor is?

The irony is that in giving statehood to the Union Territory of Delhi, yielding to local political pressure, the Central government ensured that the chief minister was no more than a mayor. In fact, many mayors across the world have more powers than the chief minister of Delhi. If one accepts that the Delhi CM is no more than a mayor then one could say that India's "Mamdani Moment" was when Arvind Kejriwal was elected CM of Delhi.

Just as Mamdani is viewed as challenging President Donald Trump, Kejriwal used his Delhi platform to challenge Narendra Modi. Not surprisingly, the prime minister was intent on ending Kejriwal's career and did so with determination, adopting all manner of questionable tactics. It remains to be seen if Trump will similarly disempower Mamdani.

It is, of course, debatable whether decentralization of political and administrative power as envisaged in the 74th Constitutional amendment would help improve the quality of life in cities or would, in fact, make matters worse. Some members of the Aam Aadmi Party government in Delhi set a good example by taking responsibility for urban governance within their constituencies. The member of the state legislature from my locality in Delhi, Saurabh Bharadwaj, was one such who took active interest in issues ranging from supply of drinking water to drainage and roads.

It is clear from Mamdani's victory that even in New York urban governance has been corrupt and weak and unable to address the needs of the majority even though the mayor is a powerful administrative functionary. Even the New York mayor is dependent on funding from the federal government and President Trump had threatened to withdraw federal funds if Mamdani won. In India chief ministers have used their financial powers to keep urban governance in check. Clearly, we need much better urban governance than we are getting today. ■

Sanjaya Baru is an economist, former newspaper editor and author. His most recent book is 'Secession of the Successful: The Flight out of New India' (Penguin, 2025).



Excited about Mamdani? But where are India's mayors?

governance functions (2) City-wide framework for planning and governance will be established and become operational (3) All urban residents will be able to obtain access to a basic level of urban services (4) Financially self-sustaining agencies for urban governance and service delivery will be established, through reforms to major revenue instruments (5) Local services and governance will be conducted in a manner that is transparent and accountable to citizens (6) E-governance applications will be introduced in core functions."

Weak or absent urban governance has contributed to the decline of most Indian cities. Even as urbanization has proceeded rapidly, with growing migration from rural areas to urban areas, the quality of life in most cities and towns has rapidly declined. The very rich have moved into farmhouses and high-rise apartments in gated communities, using private security, private water and power supply, and private facilities for sanitation and garbage disposal, leaving the rest to live with the rapidly

Stuck in a ditch



LOOKING AHEAD

KIRAN KARNIK

I MAY lose a battle but I will never lose a minute, said Napoleon Bonaparte. Nowhere should his aphorism resonate more than in developing countries like India, where every moment lost counts for a great deal because we have so far to go to reach the goals of development: not just economic, but particularly in health, livelihoods and education, amongst others. Echoing the thought is the line from Chilean poet and Nobel laureate Gabriela Mistral: “To him we cannot answer ‘Tomorrow’. His name is ‘Today’”

Yet, so much work and so many crucial projects are delayed, deadlines are missed, and there is little sense of urgency. In every city across the country, the one common sight is roads and footpaths dug up for repairs for months on end, endless dust and traffic jams due to road-broadening projects, perpetually under-construction foot overbridges (FOBs) and subways, and inexplicable delays in approvals for badly needed infrastructure.

For instance, in the much-hyped Millenium City, Gurugram — with its glass-fronted towers hosting top global companies, and apartments costing well over a hundred crore — the glitter and glamour co-exist with potholed roads that turn into rivers with an inch of rainfall, crumbling or non-existent pavements, and people darting across four lanes of traffic on signal-free roads for want of pedestrian crossings. Simple solutions like signal-controlled crossings, foot overbridges or subways take years to execute. One example is a desperately needed pedestrian subway under an extremely busy road (4,000 vehicles every 15 minutes in peak hours, and 25,000 footfalls a day). Initially planned in 2017, it received approval only in 2022; construction began in February 2023 with a completion target of 12 months. That, with the technology now available, may seem inordinately slow for a 100-metre structure, but the leisurely 12-month target has finally taken 32 months: a full eight years after it was first planned! This, in a city with a 24x7 corporate work culture, where companies sell speed of work

completion to global clients as a distinctive “India advantage”.

Similar examples abound in every city. Yet, recognizing that in today’s competitive world efficiency and speed are essential core elements, governments — state and Central — promote ease of doing business (EoDB), Gati Shakti, single-window clearances, etc. Where, amidst this, are reforms in urban governance which accelerate approvals, processes and execution; end buck-passing and finger-pointing amongst multiple agencies; pinpoint responsibility after delegating authority and funds? The Delhi Metro Rail Corporation (DMRC), responsible for the Delhi Metro, has a reputation for efficiency, smooth and quick execution. How long might it have taken them to make a 100-metre tunnel for the subway



Potholed roads turn into rivers

crossing in Gurugram, using a boring machine? Or some other efficient agency with technological capability? One reads with unabashed envy about the speed with which China executes major public works. The high-speed rail link from Shanghai to Beijing, about 1,300 km, was completed in three years, back in 2011. The Ahmedabad to Mumbai (about half that distance) ‘bullet train’ project began in 2021 (a decade later). With the advances in technology and Japanese assistance, it should have been at least as quick. However, it is scheduled for completion only in six years — in 2027.

In moving faster, technology can be a great enabler. At a basic level, it facilitates coordination amongst multiple agencies so that roads are not dug up (and then badly repaired) every few weeks by one or the other agency for water or sewage pipes, electric or optical-fibre cable ducts, etc. Technology can ensure that repairs are both quick and well executed — for example, by measuring the smoothness of the road surface. It can also speed up construction in a major way. Data

analysis and modelling can determine the optimum location for a pedestrian crossing and find the most cost-effective solution (traffic signal, human control, FOB, subway). Of course, this will require a policy about priority between vehicles and pedestrians. It must also consider the effect on accidents, air pollution, and the consumption of fuel/energy.

Newer technologies, using sensors, cameras, and AI can monitor traffic flows and predict points of congestion. It can find alternative routes and GenAI can be integrated with this to automatically send out messages suggesting these well before people get stuck in jams. Tech can also be used to develop optimal bus routes, using data about roads, traffic patterns, number and points of origin/destination of bus commuters, fuel consumption, carbon footprint, and economics.

Use of imagery — from drones, aircraft, or satellites — and geographical information systems can collect and integrate this data about terrain, natural flows, buildings and obstructions with drainage capacity, expected rainfall amount and intensity, to develop models for predicting which areas/roads will be flooded. This can be used to facilitate preventive action and forewarn people. The future will be shaped by how well we can integrate various elements — data collected from sensors on the ground and in drones, aircraft or satellites — with other data to evolve models that can be used for prediction, and advance actions for mitigation.

Through all this, tech can be a major force in specifically hastening the completion of projects at optimal cost and, more broadly, in improving the quality of life. However, the two crucial starting points need to be a review and redesign of processes and organizational structure. The latter must look also at the macro issue of delegation and devolution to local bodies, so that the functions, functionaries and finances are made available, in keeping with the Constitutional provision identifying this as the third tier of governance (beyond Centre and states).

These are essential initiatives to reverse the rapid decay we see around us. The good news is that far greater citizen awareness and media attention (including individual posts on social media) are bound to drive political leaders in the direction of decentralization and devolution, a necessary first step towards making our cities liveable. ■

Kiran Karnik is a public policy analyst, author, and columnist. His most recent book is ‘Decisive Decade: India 2030, Gazelle or Hippo?’

A gala in a palace of plunder



WORLD VIEW

SHYAM BHATIA

TWO nations at the ends of Asia — India and Greece — are now bound by a common quest: to reclaim the soul of their civilizations. Both are demanding the return of treasures taken in the age of empire and still displayed in London’s marble halls. The Chola bronzes, the Amaravati sculptures, the Parthenon Marbles, all plundered, all praised, all imprisoned behind glass.

In New Delhi, curators, diplomats and civil society groups are pressing for the return of Ashokan relics and Chola bronzes that left India under imperial rule. Their campaign finds an echo in Athens, where Greece continues its long fight to recover the Parthenon Marbles. Both nations, heirs to ancient civilizations, face the same polite deflections from the same British institution.

That institution is the British Museum, the world’s grandest trophy room. Earlier this year it hosted a £2,000-a-ticket “Pink Ball”, billed as London’s answer to New York’s Met Gala. Beneath the Great Court’s glass dome, celebrities sipped champagne within sight of the Parthenon sculptures, the Benin Bronzes and the Amaravati friezes, fragments of three continents bound by one history of removal.

Among the star guests were India’s Isha Ambani and Anoushka Shankar, their presence widely photographed and dissected in London’s society columns. Some claimed Isha outshone Anoushka; others insisted it was the other way around. It hardly mattered. Both women — symbols of modern Indian success and artistry — found themselves drawn into a spectacle that sought to raise money, and legitimacy, for an institution built on stolen heritage.

Outside, protesters called for restitution. Inside, trustees toasted ‘diversity through culture’. The contrast was grotesque: Nero fiddled while Rome burned; Marie Antoinette ate cake while the French starved; and the British Museum dined while India and Greece watched their heritage paraded as decoration.

Only months earlier came one of the Museum’s worst scandals. A senior curator from its Greek and Roman Department, Peter Higgs, was dismissed after allegedly stealing and selling small antiquities online over many years. For Greece, it was injury after insult: the same institution that refuses to return the

Parthenon Marbles was revealed to have been looted from within and from the Greek section itself. The plunderer, plundered.

Hartwig Fischer, then director, resigned, admitting the Museum “did not respond as comprehensively as it should have” to early warnings. The episode shattered the claim that London alone could be the unimpeachable guardian of the world’s heritage.

India’s cultural establishment has followed the saga closely. New Delhi’s National Museum and Tamil Nadu’s heritage department have quietly documented dozens of sacred bronzes traced to London dealers or British institutions. For Indian officials, the theft scandal merely confirmed what history had already shown: that colonial guardianship was never about protection, only possession.

The Greek minister of culture, Lina Mendoni, condemned the Pink Ball as “offensive to cultural assets and endangering the exhibits themselves”, adding that “the safety, integrity and ethics of the monuments should be the

Protesters called for restitution. Trustees toasted ‘diversity through culture’. The contrast was grotesque.

primary concern of the British Museum”. Her words could easily have been spoken in Delhi.

Nicholas Cullinan, the current director, told *The Times* that guests “want to walk in on a pink carpet”. He defended the event as inclusive and cosmopolitan. The contradiction was glaring: pink carpets and colonial ghosts beneath the same roof.

Cullinan speaks of a “third way” — reciprocal loans rather than permanent returns — calling the Museum “a forum where we are all brought together and confronted with different histories”. Yet that rhetoric conceals a familiar hierarchy. The British Museum still decides who borrows, who visits, who interprets. It is the broker of history, not its penitent.

A recent disclosure under Britain’s Freedom of Information law showed the Museum spends £13 million annually on security and £1.2 million on communications. Its director earns £215,000 — more than the British Prime Minister — while gallery guards take home a fraction of that. The symbolism is stark: the guardians of the Empire’s spoils live among

them on public expense, housed like viceroys within the palace of plunder.

For both Delhi and Athens, the battle is about moral vision, not just legal ownership. The British Museum Act of 1963, forbidding disposal of any object, has become a shield against ethical repair. Critics say it converts guardianship into possession by another name.

India’s position is clear: artefacts removed under colonial coercion belong morally, if not legally, to the communities that created them. Greece argues the same for its marbles: sculptures carved for a single temple, mutilated by removal. Both nations see restitution as restoration, not revenge.

Each has built modern museums — the new galleries in Chennai and Delhi, and the Acropolis Museum in Athens — ready to receive their heritage. Both view return as an act of friendship, not hostility. As Melina Mercouri told UNESCO in 1982, “the Parthenon Marbles are a tribute to the democratic philosophy... They are the essence of our Greekness.” Her appeal for Greece now resonates in India’s own call for the return of its sacred bronzes and relics.

The British Museum’s predicament mirrors earlier hypocrisies. In the 1970s, British companies justified staying in apartheid South Africa as “reform from within”. Today, trustees talk of “dialogue” while halls remain filled with trophies. The language of reform again masks the practice of retention.

Beyond Bloomsbury — the central London district that houses the British Museum and once symbolized the literary heart of empire — Britain still hesitates to confront its imperial past. India and Greece, by contrast, have learned that dignity requires persistence.

When Willy Brandt, then Chancellor of West Germany, knelt before the Warsaw Ghetto memorial in 1970, he offered a wordless act of atonement that transformed Europe’s conscience. It was a gesture of humility from a leader who personally bore no guilt but accepted moral responsibility on behalf of his nation. No British leader — or British Museum official — has yet bowed before the victims of colonial plunder. The silence has itself become part of the national heritage.

For India, restitution is not about erasing history but completing it. Each act of return — a bronze, a relic, a marble — chips away at the myth that empire was a civilizing gift. When the British Museum finally finds the courage to return what it took, it will not diminish Britain. It will dignify it and affirm that the guardianship of history belongs equally to those from whom history was once taken. ■

Shyam Bhatia is the London correspondent of *The Tribune*

The struggle to fix a drain



CITIZENS IN COURT

MEGHNA UNIYAL

IN early 2018, a group of residents noticed large amounts of sewage water flowing into a stormwater drain near their residential area in Noida. The stormwater drain, meant to ensure that excess rainwater was directed into the Yamuna rather than flooding the area, was being severely polluted, causing numerous health issues to local people and adversely affecting their quality of life. Despite the fact that the Water Pollution Control Act prohibits sewage from being discharged into water bodies like lakes and rivers, the same was taking place unchecked and unreported.

Led by a public-spirited citizen, Abhisht Gupta, the residents took up the issue with the CEO of the Noida Authority. They were told that the matter was apparently “beyond the official capacity of Noida Authority” to address and that they were free to approach the courts.

The residents first petitioned the National Human Rights Commission, leading to notices being issued to the government. However, the matter remained unaddressed. They then approached the Central Pollution Control Board (CPCB) only to be disappointed yet again as nothing came out of that approach either. This is quite concerning as the CPCB is a statutory organization under the Ministry of Environment, Forest and Climate Change, whose primary objectives are to monitor, control and promote cleanliness of streams and wells in different areas of the country through the implementation of environmental standards and regulations.

Later that year the residents decided to file a petition in the Supreme Court. All this was done with citizens pooling their own money, running from pillar to post, just to try and get some authority to at least take cognizance of the problem.

Despite the fact that the Apex court regularly hears matters related to the environment, it directed the petitioners to go to the “appropriate forum”, which in this case was the National Green Tribunal (NGT). In November 2018, Gupta approached the NGT as directed by the

Supreme Court, asking for directions to relevant government bodies and departments to ensure that discharge of sewage into the stormwater drain was stopped with immediate effect.

The NGT directed the Uttar Pradesh Pollution Control Board (UPPCB) to submit its report on this matter. The report shocked even the NGT in its revelation. It revealed that due to sewage flowing into the stormwater drain, 215 MLD (million litres per day) of sewage was being discharged into the Yamuna. Even more appalling was the fact that the Yamuna Monitoring Committee, despite its explicit and stated objectives to oversee and ensure the effective implementation of



The NGT issued several directions which have been ignored

measures to clean and rejuvenate the Yamuna river, monitor wastewater treatment plants and check illegal discharge into the river, particularly within the National Capital Territory of Delhi, seemingly had no idea about this massive and continuing pollution of the river.

The report further stated that the pollution of the Yamuna from the stormwater drain was an inter-state issue that affected both UP and Delhi and that relevant authorities from both states must be involved in addressing the issue. Under the direction of the NGT, a committee was formed comprising the Noida Authority, Delhi Jal Board (DJB), UPPCB, Delhi Pollution Control Board and the East Delhi Municipal Corporation.

The Noida Authority had initially claimed that the source of the pollution/sewage was in Delhi and not any stormwater drains in Noida. The committee found that not only was this claim false but that 30 sewage drains under the Noida Authority were in fact discharging sewage into the stormwater drain. It also found that the Khoda Vikas Parishad, a small municipality in Ghaziabad, was responsible for

the drainage of sewage from the entire municipal area under it, into the 20-km stormwater drain flowing into the Yamuna.

Between 2020 and 2022, the NGT issued several directions to all relevant authorities to ensure the immediate stopping of sewage flow into the stormwater drain. It also directed that the sewage must instead be directed into an STP (sewage treatment plant) and not even treated water must be allowed to enter the stormwater drain.

Subsequently, due to lack of compliance with the tribunal’s orders, a fine of ₹100 crore was imposed on the Noida Authority and another of ₹50 crore on the DJB. The NGT additionally directed criminal prosecution of all entities responsible for allowing this severe pollution of the stormwater drain. The Delhi Jal Board stopped all three of its sewage drains from causing any further pollution.

In 2023, the Noida Authority approached the Supreme Court against the NGT order and the Apex court stayed the financial penalties. Although the case continues, residents are disappointed that despite NGT orders and directions, they are still waiting for authorities to carry out their most basic and statutory duties towards citizens and the environment. As Abhisht Gupta puts it, “The situation is pathetic. We demand that the pollution be stopped immediately. Compliance with the NGT orders has to be full, not partial, not ad hoc, not half-done.”

These citizen-led cases reveal more than just the struggle of citizens. One, there is only so much citizens can do on their own time and dime, after which they are understandably left dejected with nowhere to turn to. Two, a lack of prosecution of and penalties on government officials and bodies for violating statutory provisions, encourages non-compliance. Surely, this is obvious to our courts? Most important perhaps is the glaring fact that despite the existence of numerous Central and state bodies, supposedly set up with the stated objective of addressing precisely such issues, they seem to be either non-functional or disinterested.

By conservative estimates, approximately ₹10,000 crore has been spent by the Central and state governments combined on cleaning the Yamuna over the past decade. Seven years later, the case continues for these citizens, in not one but two courts, and still without being resolved. ■

Meghna Uniyal is Director, Humane Foundation for People and Animals



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Kokum in a sweet spot Pintos closed the family liquor shop

SHREE PADRE

FOR over a hundred years the Pinto family ran a wine shop in Hubli, simply called Pintos. It was profitable. Yet, recently, they closed down their business and opted to start a venture in making a healthy, sugar-free drink from kokum or *Garcinia indica*.

Since 2016, they had been offering customers a complimentary glass of *sol kadi*, an unfamiliar drink at that time. It was made in-house. The recipe belonged to 52-year-old Mohan Joseph Pinto's mother, Julia Malcolm. A few customers who had heard of kokum had tasted only kokum sherbet, a sweet drink.

The first question they asked was: "Why is this drink salty?" A few took to it and suggested they charge for the drink. And a small minority asked why they didn't produce it commercially.

The Pinto family mulled it over and concluded it was a good idea, though at that time bottling *sol kadi*, a traditional drink, was unheard of. Mohan Pinto looked around for machines. His mother finetuned her recipe. In 2018, with three manual machines and a staff of eight, the Pintos began bottling *sol kadi*. Their initial investment was ₹75,000.

Under the brand name of Kokum Pani, the Pintos now sell two types of sugar-free, bottled drinks. One is Sol Kadi, which they launched in 2018; the other, released two years later, is Pani Puri. They are now all set to launch their latest drink, a sweet but sugar-free kokum drink. The drinks have become popular in Hubli-Dharwad, where the Pintos are settled.

But why did they shut down their profitable wine shop? "It was a family decision," explains Lona, Mohan's wife. "We had been discussing it for some time. College students, teenagers, would come in to buy liquor and say it's for their daddy or grandfather. Very touching. We never knew whether they were telling the truth. Beside there were so many irritating procedures we were told to follow by the administration. So, we



Mohan and Lona Pinto: 'Ninety-eight percent of people didn't know what kokum was'

closed the shop and opted to nurture a healthy drinks industry instead."

Kokum is a wonderful fruit, endemic to the Western Ghats and rich in antioxidants. The biggest producer of this crop is Ratnagiri district in Maharashtra. It's also grown in Goa and in Uttara Kannada and Dakshina Kannada districts of Karnataka. Since it is a forest crop, it is not cultivated on a large scale. At best kokum is grown in homesteads.

Sol kadi is made from kokum and is a customary drink with meals in Konkan and Goa. The only difference is that in Konkan and Pune, coconut milk is added to the drink, unlike the Goan version.

Back in 2018, the Pintos produced 250 ml bottles priced at ₹25. They now make bottles of 600 ml, one litre, 2.25 litres and even five-litre cans for bulk buyers.



"When we started marketing the drink, we realized how tough it was going to be," recalls Mohan. "Ninety-eight percent of people didn't know what kokum was. A few of them criticized us, saying Pinto has started selling coloured water as a drink."

Sol kadi is virtually unknown in Karnataka. The Pintos began a campaign making people aware of kokum and its health benefits. They took part in many exhibitions. The biggest was the Dharwad University of Agriculture's annual Krishi Mela that draws millions of visitors. Slowly, by word of mouth, people began to understand what the Pintos were selling.

Their *sol kadi* doesn't contain sugar. A little salt was added along with garlic, chilli and coriander leaves. "It's not a soft drink nor is it a sherbet. It is a healthy drink. We highlighted three health benefits: it removes acidity, helps digestion and promotes weight reduction," says Lona.

Kokum has hydroxy citric acid which, it is said, counters obesity and cholesterol. It reduces appetite, is cooling and regulates

bile secretion effectively.

Making sugar-free drinks was a conscious decision, says Lona. They tried sugarcane juice but decided against using it because that's sugar too, she says. "Finally, we settled on stevia and that was successful."

Sales began picking up slowly. Mohan, meanwhile, noted that *chaat* was very popular in Hubli-Dharwad. Also, the Jains and Marwaris avoided the drink since it contained garlic. Some Lingayats too stayed away. Youngsters seemed to prefer a spicier drink.

The Pintos went back to the drawing board. In 2020, they launched a Pani Puri kokum drink with pepper, cumin, *pudina*, mango powder, but no garlic. The Jains liked it. So did youngsters. "Customers say they feel they are eating *pani puri* when they sip this drink," says Lona.

Though kokum is a summer crop, Kokum Pani's drinks are available throughout the year. A concentrate is prepared from kokum when it is in season. Mohan has taught a few farmers how to make kokum concentrate after harvesting the fruit. The Pintos buy kokum concentrate from a single source in Malvan so that there is no variation in taste.

Kokum Pani now sells, on average, 5,000 litres of Sol Kadi per month and 1,500 litres of Pani Puri. They have a network of distributors in towns like Gadag, Harihar, Naragund, Hospet, Haveri, Bellary, and so on. Consignments go to shops in Mangalore, Goa, Pune, Hyderabad and a few cities in the north. In some places, pharma shops stock it.

The drink is regularly produced in summer. During the off-season, production is according to demand, roughly for 20 days in a month.

In 2021, they invested ₹15 lakh and bought a set of automatic machines, reducing their need for labour and increasing production. Their installed capacity is now 4,000 bottles per day. Earlier they could produce only 200 bottles per day.

Their major barrier to scaling up their business is lack of awareness about kokum among consumers and lack of knowledge about post-harvesting processes among farmers. It is said that only 30 to 40 percent of the crop finally gets used. The rest is wasted. The crop also requires staggered harvesting so more labour is needed.

"Every kokum season we see articles in the media outlining the numerous health benefits of kokum. Its yield is also abundant. But very few use this wonder fruit for their health," says Lona.

In Hubli-Dharwad there are dozens of shops selling dry cranberries imported from the US. It's a minor fruit, sold for its antioxidant properties. It attracts hundreds of customers. But local kokum, with its rich antioxidants, is akin to an alien in its own home! ■

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Photos: Civil Society/Ashoke Chakrabarty



An unusual line-up of models sashaying down the ramp: 'I've never felt so happy'

Fashion for the soul

AIEMA TAUHEED

BEHALA Keertika, an NGO, and the Kolkata Centre for Creativity (KCC) organized a fashion show that broke the rules. An unusual line-up of models sashayed down the ramp. They wore clothes with wild prints and eye-catching colours.

Among the models was an acid attack survivor, an elder from the transgender community, a social activist, a writer, actress, and even a few employees from KCC.

Prasanta Sarkar, a fashion designer from the LGBTQIA+ community, walked the ramp wearing a saree with prints of *sandesh*, a famed Bengali sweet. He paired his saree with a shimmering black blouse. Why should only women wear sarees!

Sarkar works with cotton and focuses on sustainable fashion. "I take up modelling gigs whenever I get the chance," he said. "There are fewer opportunities for people like us to find jobs or good positions. I'm really happy I got a chance to walk the ramp today."

Acid attack survivor Pinky Mondol, her face lit up with a smile, said, "I've never felt this happy." She first wore a salwar suit, her dupatta draped over her head, and later reappeared in a playful papaya-printed dress for the finale.

"We have created a shared space of empathy and immense possibilities," said Priyadarshinee Guha, associate vice-president of KCC, standing against a white wall onto which the words 'ALL ACCESS' and a rainbow — symbolizing pride — were projected. "Among us today are individuals whose journeys have been marked by struggle, pain, and at times,

society's cruel indifference. We are honoured by the presence of domestic abuse survivors, acid attack survivors, and our transgender brothers and sisters."

Behala Keertika, established in 2001, works for child rights, women's rights, and the transgender community. The organization runs a Child Protection Home that currently shelters 25 children. KCC, which hosted the event, promotes a range of art from visual and performing arts to art in education. Inclusion is at the heart of its work.

People filled the seats on either side of a carpeted floor about 25 feet wide — the runway for the evening. After a brief lamp-lighting ceremony, Guha announced, "We begin this evening with the Pride Walk."

The room glowed as the lights brightened and "I Want to Break Free" by Queen filled the room. The models displayed sarees with whimsical, unique prints — crabs, watermelons, snails — on natural fabrics. Alongside were kurtas in solid tones and brilliant prints. Another noteworthy track that participants walked to was "Amar Hath Bandhibi," a Bengali folk song on freedom sung by Sahana Bajpaie.

The models walked nervously at first and then with insouciance. They smiled, waved and even interacted with the audience. In the finale, all participants walked the ramp once more, forming two lines as they moved gracefully forward and back in unison, joined by the choreographers.

The choreographers for the evening were Sayantani Mukherjee, director of Ikonik

Continued on page 30

Fashion for the soul

Continued from page 29

Fitness and Dance, and Rubena Chatterjee, a dancer who has been performing since the age of five. “This was a fashion walk, so they were more conscious,” she said, smiling. “But they have rhythm, every human being does.”

Two well-known fashion designers came on board, generously contributing garments for the show. One was Kakali Biswas, whose women-led label, Dora by Phoenix, is known for its fun prints and designs that challenge conventional ideas of the saree.

The other was House of Swapna by Robin Mallick, a menswear label merging traditional craftsmanship with modern flair to create elegant, affordable designs.



Prasanta Sarkar: 'Why should only women wear sarees?'

“The basic concept of our prints is to have fun — and that fun cannot be restricted to the typical,” said Biswas. “The fabric is all handmade. Our block prints and spray prints are crafted by artisans in Kolkata. After that, we create the designs.”

Among the standout pieces was a mul cotton saree listed as ‘Social Media Sensation’. It was draped with a shimmering silver blouse. The saree had hand block printed polka dots, while its pallu was adorned with icons of Facebook and Instagram, a witty nod to the digital age. Another signature piece had prints of Snowy, the beloved dog from *Tintin*, evoking the nostalgia of a timeless comic classic.

Biswas’ daughter, Medha Nandi, who heads the brand’s creative division, said, “We want to ensure that everyone gets their chance to wear our garments and look fabulous in them.”

“The *damru* print, for instance, reminded me of Shiva. Since Shiva himself is Ardhnarishwar (half-male and half-female), why shouldn’t anyone wear it? Why must a saree be bound by gender-specific roles?” asked Nandi. ■

In search of birdsong

AIEMA TAUHEED

ON a sultry morning a small group of people gathered near the Prinsep Ghat Memorial at 7.30 am. As instructed, they were dressed in muted, earthy tones, melding into the landscape. Many carried long-lens cameras and some held binoculars.

They were on a bird walk organized by the ATAABI Bird Foundation, a Mumbai-based non-profit, which is trying, under its Birding Bharat campaign, to bring people and the avian world closer. Kolkata was one of many pitstops on their nationwide campaign of bird walks. A registration fee of ₹200 was paid to the guide beforehand.

In Kolkata, ATAABI partnered Kolkata Nature Walks. The guide was Tirthankar Roy Chowdhury, an IT engineer. For the past two years, he has led many walks, including for underprivileged and differently-abled children.

Roy Chowdhury began by asking our group of 16 to form a circle, introduce ourselves and name our favourite bird. The group included a surgeon, a veterinary student, a writer, a five-year-old boy clutching his parents’ hands, some photographers and others. Each participant named their favourite bird: crow, owl, scarlet minivet, and more.

Next, we were asked to close our eyes and try to identify bird calls amidst the rising hum of traffic. A chorus of uncertain answers followed. “Parakeet?” someone guessed. “I think I heard a jungle babbler.” Roy Chowdhury nodded. “Yes, a rose-ringed parakeet. Jungle babblers, okay. And that ‘kingfisher’ you heard — that was actually a woodpecker,” he corrected gently. “There were mynahs too,” he added.

The first bird we spotted was, fittingly, the one gracing the cover of our pocket guide — the black-hooded oriole. Perched high on a tree, its bright yellow plumage stood out, offset by a black hood and black markings on the wings and tail. Binoculars were passed around. Cameras clicked.

At that moment, several rose-ringed parakeets came into view, perched high on the pillars and half-hidden in the shade. “That one’s a female rose-ringed parakeet,” Roy Chowdhury pointed out. “You can tell because she doesn’t have the red ring around the neck. The males have a distinct red ring, hence the name.”

He then spoke of the Alexandrine parakeet,

distinguished by a red patch on the wings. “When Alexander the Great came to India, he took a few back with him, that’s how it got its name,” he said.

“Are parakeets and parrots the same?” a participant asked. Roy Chowdhury explained that parrot is more an umbrella term which includes macaws, parakeets, and others. It refers to birds of the Family Psittacidae, and more broadly to all birds belonging to the Order Psittaciformes.

The day warmed, and we were soon sweaty. A few rock pigeons were spotted drinking water from a clay pot. Roy Chowdhury pointed out a subtle sheen around their necks, visible only from certain angles, mostly in males. This phenomenon, known as iridescence, occurs because the feathers in that area are crystalline. When sunlight hits them just right, it creates a prism-like effect, which helps the pigeons attract mates.



The Common Myna

As we approached the Hooghly river, the conversation turned to kingfishers. Roy Chowdhury pointed out how the pied kingfisher is the only one that hovers before diving for its catch, unlike others that strike directly from a perch. The white-throated kingfisher came up next. It is West Bengal’s state bird, known for its bright plumage and adaptability. Unlike its pied cousin, it isn’t bound to water bodies and feeds on small birds, lizards, snakes, and insects, thriving anywhere.

After crossing rail lines, we spotted an oriental magpie-robin, its long whistles cutting through the morning air. On an overhead branch, tiny purple sunbirds darted about. These are often mistaken for hummingbirds. “Actually, there are no hummingbirds in India. We have only sunbirds,” Chowdhury clarified. “Just keep a hibiscus on your balcony,” said a participant. “Purple sunbirds will visit every day for its nectar.”

India is home to about 1,358 species of birds. We must protect our environment better. The two-hour walk ended on that note with a message of empathy. Participants wound down with *adda*, *chai*, and a little more bird-watching. ■



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Students in Mysuru are keeping its past alive with walks

RASHMI GOPAL RAO

IF you find yourself in Mysuru with its wondrous palaces and buildings, take a walk through the city with a bunch of smart students from the Wadiyar Centre for Architecture (WCFA). The students offer two walks, Memories of the Land and Bazaars of Mysore as well as a cycling tour, Pedal and Prestige.

Pore over old maps, get regaled by stories of yore and go to all the right places. This group of 30 students has deep knowledge of architecture, history and the city's hotspots.

After all, the best way to explore a city is by strolling through its lanes and *mohallas*, its historic structures and markets, its local hotspots and landmarks. Or you could cycle past, dexterously dodging traffic and absorbing the city's sights and sounds.

Mysore aka Mysuru is just 150 km from Bengaluru, India's IT capital. It's called the City of Palaces because it has seven of them. The famed Mysore palace, residence of the Wadiyar dynasty, is located here. The grand Dasara festival is held here too. Informally, Mysuru is regarded as the cultural capital of Karnataka.

Julie Ann Tharakan, associate professor at WCFA, says she got the idea of organizing walks while researching Mysuru's iconic buildings as part of the syllabus she was teaching.

"Over time I discovered several interesting aspects and stories closely linked to the city's urban and social life and integral to its identity and unique character. It was then that we decided to share this knowledge not just in the classroom but with people who would be interested. That's how we got this idea of curating heritage walks in October 2022."

Tharakan and her students took almost a year to turn their idea into reality. They undertook research, picking up references, did visual mapping, dry runs and finetuned marketing techniques. In October 2023 they launched their first walk.

The heritage walks are part of the college's outreach programme, coordinated and conducted solely by the students with guidance from the faculty. What started with three



A student guide holds up a visual from the past for participants



A team of 30 students researched, mapped and ideated the walks

students has today grown into a team of about 30 students who manage the entire exercise end-to-end. This includes advertising, promotion, registration, coordination with the participants, actual execution, social media updates and the like.

WALK, TALK, SHOP "Memories of the Land was the first walk we launched during the Dasara season of 2023. It is extremely popular with tourists and people who aren't really familiar with Mysuru," says Aparna Acharya, a fourth-year student of WCFA.

"During this walk we take you to the most iconic buildings of the city, starting from the Jaya Marthanda gate of the palace. Visitors get a glimpse of Mysore's glorious heritage which can be seen right on the streets in its ornate roundabouts and squares."

From squares and circles you are walked up to the clock tower, the Jagannohan Palace and then to Parakala Mutt, to help you experience the native vibe of the city. The walk ends at the renowned Guru Sweets in Devaraja market.

Founded in 1935, the shop is famous for Mysore Pak and other sweets made in ghee.

Bazaars of Mysore is another interesting walk curated by the team. It takes visitors on a journey back in time to old historic markets. "We take participants to streets which were once bustling markets and where hawkers traded in commodities like metals and coins. While most people are familiar with the Devaraja market, it is a revelation to note that the city was home to several other inter-related markets. Many of them have disappeared over time while some, surprisingly, exist even today," says Sukhi Kumaran, a third-year student of WCFA.

Pedal and Prestige was introduced by the team in early 2024. This is a cycling tour that takes participants on a colonial trail in the city. Conducted in collaboration with Decathlon Mysuru, Pedal and Prestige covers some renowned colonial buildings, focusing on design and architectural aspects.

"We also curate our walks depending on the background of the participants. For example, if

we have practising architects or architecture students we focus in detail on, say, the building methodology, design features, materials used and so on. If we have tourists, we try to give information that will appeal to them," says Lakshitha Mohan, a third-year student of WCFA. Research is an on-going activity and the team is constantly working to keep itself updated and curate new walks. "We are almost ready to launch Pedal and Prestige Part II. This will cover new areas of interest," says Tharakan.

AN ENRICHING EXPERIENCE Both participants and students have benefitted from the walks. Participants learn about the city while students learn from their interactions, especially if those signing up are locals.

"Recently, members from three generations of the same family, long-time residents of Mysuru, came for a walk. The most senior gentleman gave us a lot of information about the Lansdowne building, now almost dilapidated. He had seen the building during its heydays. His talk was really fascinating for all of us. We also had two architects from Thailand taking the walk and it was an interesting exchange of perspectives," says Acharya.

In fact, the walks have been well-received by locals, which speaks volumes of the value addition and quality of information provided by the students. "We took the Memories of the Land walk earlier this year. Although we are both familiar with Mysuru, the walk gave us a lot of information on heritage and linked it wonderfully to history," say Poorna and Anup Mysoor, residents of the city.

"The tour started at an early hour, giving us the added benefit of experiencing the city as it was waking up. We were most impressed with the interiors of the Parakala Mutt, a building we would have never entered had it not been for this walk. We enjoyed every minute of this tour," they added.

Hemamalini Jairam, another local, joined the heritage walk for the second time. "A walk around the palace and the old markets of Mysuru was lovely. But the interesting nuggets of history and architecture that were enthusiastically shared by the young students was the highlight. They had come equipped with facts, old photographs and anecdotes," says Jairam.

Hitesh Kataria, a mountaineer and also a local, says, "The heritage walks are indeed a great way to explore Mysore. The students who lead them do it with such passion that you really feel connected to the stories."

The students have done around 50 walks so far. They've also taken part in citizen-led initiatives, including a "Save Devaraja Market" campaign.

It costs just ₹300 to join these walks. You can get in touch through their website or connect on Instagram. ■

Crunchy, healthy, low-fat snacks

Sempulam Sustainable Solutions has put together wholesome savoury snacks perfect for that craving for munchies at any time of the day. Indigenous rice varieties have been melded with nutritious ingredients to make crisps, biscuits and snacks which are vegan, gluten-free, and not calorie dense.

There's *kachori papdi*, thin baked crisps made from Thanga Samba rice. Dip it into hung curd, mint chutney or tangy salsa. Or try Moringa Bites — a mix of Seeraga Samba rice, moringa leaves and yellow split lentils flavoured with smoky *paneer tikka* spices.

Gongura Lavash is a happy blend of gongura leaves and Seeraga Samba, an aromatic rice, topped with sesame seeds. This crisp goes well with classic hummus, pesto hummus, or a refreshing tzatziki.

Nutty Aval Mixture is a crunchy *bhujia* made with beaten rice with cashews, groundnuts, raisins, curry leaves, spices and a hint of citrus. It's a burst of flavours and hard to put down until the very last bit is polished off.

And how about a spiced curry leaf biscuit dipped into tea or munched with your favourite coffee blend? The leaf biscuit contains fragrant Seeraga Samba rice flour. It's a delicate blend of sweet and salty with the tang of fresh green chillies, the subtle nuttiness of toasted coconut and the aromatic earthiness of curry leaves.

The hamper is priced at ₹799.

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Award-winning Aari work

Haseena Akhtar wields the needle like a magic wand, creating embroidery that is intricate and attractive. A master craftswoman, she is famous for Aari work, crewel and chain stitch. Her embroidery, etched on kurta sets, pherans, stoles, coats, curtains, wall hangings and bed covers, catches the attention of discerning buyers.

Founder of The Sozni and Staple Industrial Cooperative Society, Akhtar has over the past 30 years trained 10,000 to 12,000 girls and women in embroidery. She markets her products at different exhibitions held from time to time. You can also order a garment to be embroidered and stitched. She has files and folders with different designs so that buyers can pick what catches their fancy. Since embroidery is handmade, it takes a little time. Akhtar has also been awarded for her exemplary work for the preservation of art and craft.

Contact: Haseena Akhtar, The Sozni and Staple Industrial Cooperative Society, Lal Bazar, Srinagar (J&K); Mobile: 9149813406



In a Goan village, happily

VALERIE D'SILVA

WHEN I first moved from the cemented chaos of Mumbai to a tiny red mud house in the Goan village of Benaulim, I signed up for peace, palm trees, and the slow, poetic hum of the sea. My house, on rent with the lease renewed recently, has a storybook aura to it. It is nestled between a row of cheerful, colourful Goan homes, each brighter than the next. Blue, yellow, green — and mine fiery red.

Together, we stand under a cathedral of swaying palms, like crayons forgotten in a tropical jungle. Fisherfolk live next door, their laughter rising with the smell of fried mackerel at dawn. It's a postcard come alive, with a soundtrack of roosters, radio Konkani hits, and the distant caw of crows eyeing breakfast scraps.

Inside, the living room is simple: cane chairs that creak when the humidity rises, and a sofa that my dog, Kay, has long claimed as her personal throne. The bedroom opens to a small kitchen that smells permanently of filter coffee and wet earth. Behind it, a little storeroom that I've turned into my art and music nook, where paintbrushes, guitar strings, and sea air mingle like old friends.

The bathroom, though, deserves its own story. It's attached to the house, but not entirely convinced it wants to be. Gaps between the tiled roof and the mud walls serve as an open invitation to frogs, geckos, and occasionally, the guest of honour — snakes.

My first encounter with a snake was almost poetic. I was rinsing a plate one afternoon, the monsoon whispering outside, when I noticed a curve, too elegant to be a wire, behind the metal drying rack. There she was: a sleek, glistening coil of nature, watching me with the calm of a creature who knows the house is hers as much as mine. I froze, plate mid-air, caught between awe and alarm.

The next time was less dignified. Picture this: morning shower, facewash in hand, lather ready, when my fingers brushed against something cool and smooth. A snake. Right there, beside the soap dish. She looked at me as if to say, "Well, you're the one in my bathroom." I screamed, of course. Kay, my loyal dog and partner in chaos, ran to the doorway, took one look, and plonked herself on the sofa with that familiar "Not my circus, not my monkeys" expression. Well, it's funny — until it's venomous.

Thankfully, every village has a hero, and



It is a postcard come alive, under a cathedral of swaying palms

My first encounter with a snake was almost poetic. I was rinsing a plate when I noticed a curve, too elegant to be a wire, behind the metal drying rack.

ours is Franco. The man is part auto-rickshaw driver, part snake-catcher, part carnival organizer, and full-time problem solver. You'll find him rescuing stranded tourists one day and removing cobras from kitchens the next, all with a grin that says, "Soglem zalea, baba, it's all sorted." Village life has a cadence that grows on you. Gossip travels faster than wi-fi, but so does kindness. Someone is always there when you need them.

Kay, meanwhile, has her own Goan routine. Breakfast at home, a quick trot in the garden, and then off she goes to Marie's house next door. Every morning, without fail, Marie feeds her a pav. Only after devouring it, tail wagging like a metronome, does Kay saunter back home, proud and butter-breathed, to nap on

her sofa. It's their little ritual, their cross-species love story, sealed with bread.

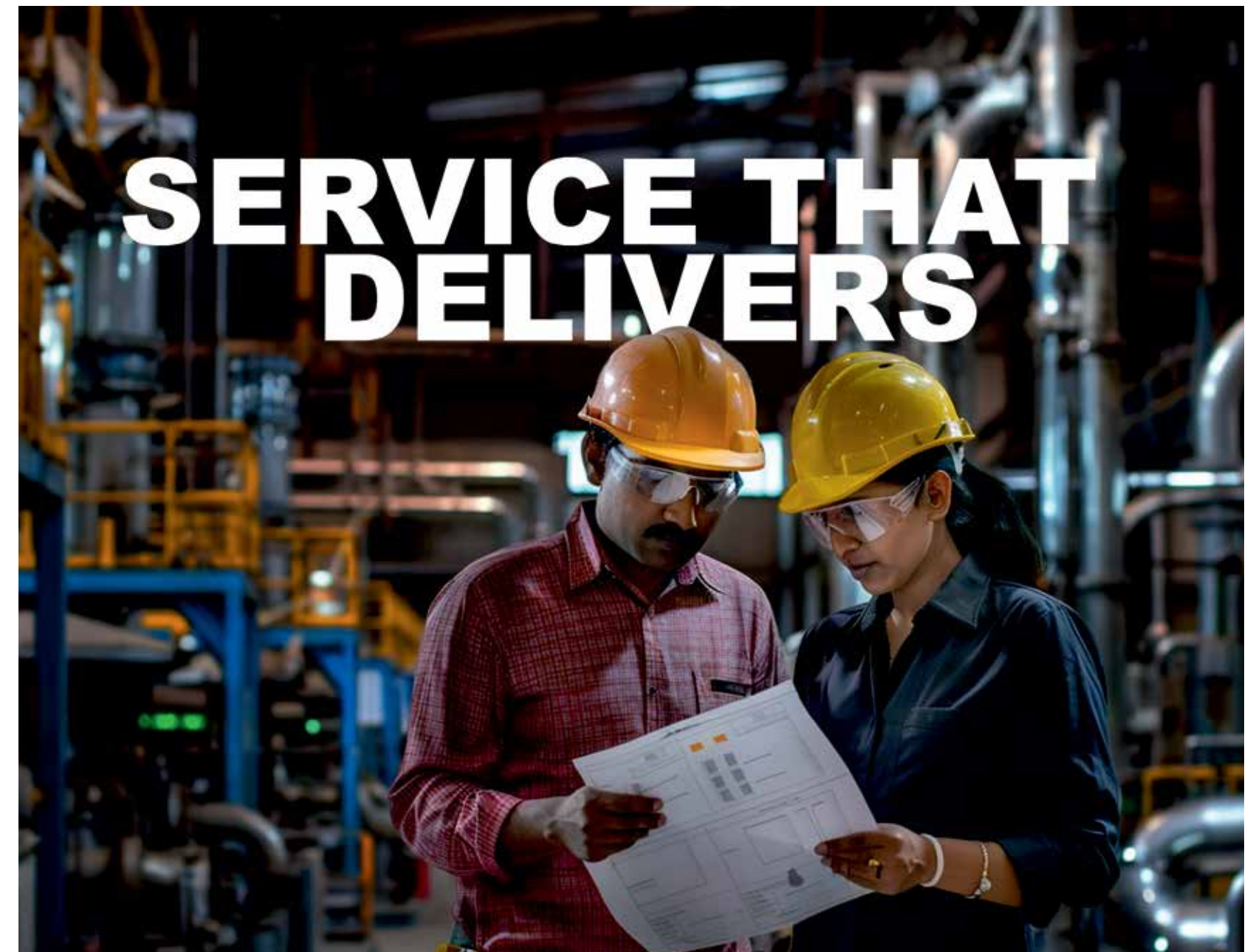
Even the landscape around me is alive with purpose. My landlord collects fallen palm fronds to sell for shack roofs. The coconuts become oil, milk, and sometimes, cups for toddy. Nothing here goes to waste. It's like living in a treasure chest, each day unwrapping a new reminder of how self-sustained life can be.

The sea is a short walk away, its scent carried by the morning breeze. Fisherfolk haul their nets as the sun stretches awake. Hens and pigs wander lazily through backyards, cows blink at passers-by, and somewhere, a radio hums an old Lorna tune. Wet waste goes to the neighbour's animals, and what comes from the land goes back to it.

There's a calm here, a kind of gentle surrender to the rhythm of life. You stop fighting for control and start listening to the world breathing around you. Yes, sometimes that breath hisses from under the bathroom door, but even that becomes part of the charm.

So, from a city girl who once shrieked at cockroaches to a village woman who showers with snakes and sips coffee under coconut palms, I can only say this: Goa doesn't just change your pace. It changes your pulse.

And if you listen closely, between the rustle of palms and the ripple of scales, you'll hear it — life, laughing softly, as it always does in Goa. ■



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