TATA TRUSTS

APRIL 2023

HORIZONS

FROM SOURCE TO RESOURCE

Rural communities are at the heart of the multifarious water-themed programmes undertaken by the Tata Trusts across India

SPINNING SUCCESS

Women weavers in Assam are tapping traditional skills to create products and revenue streams

LEARNING AFRESH

An early education effort in Karnataka is turning the page for tutors as much as the tutored

INTERVIEW

Poonam Muttreja on the social implications of India becoming the world's most populous country

EDITORIAL

For an elixir that makes human existence possible, water does not get the credit it deserves. Nor does this most precious of resources attract the sort of everyday attention that, say, oil does. That is to the detriment of everybody. On the global and country levels, two pieces of depressing data — from among a multitude of terrifying statistics and projections — illustrate why: more than two billion people around the world do not have access to clean water, and over 600 million Indians have to live with high-to-extreme water stress.

There is much uncertainty surrounding water, whether with availability or quality, but we can be certain about one reality: it is the poor and the marginalised who suffer the most from lack of access to clean water, and have the least in terms of the means to buy their way out of the crisis. This is an issue that the Union and state governments understand well enough, which explains the importance attached to water programmes such as the ambitious and far-reaching Jal Jeevan Mission (JJM).

Civil society organisations have pitched in with support for government efforts to ease India's water woes. The Tata Trusts, for their part, have contributed to the water cause with a range of initiatives that have reached some 4.5 million people in 7,000-plus villages in 15 states. Our cover story examines the minutiae of these multidimensional endeavours and the difference they make for village communities, particularly women.

This edition of *Horizons* also features interviews with personalities who stand out in their chosen fields. Bharat Lal, currently heading the National Centre for Good Governance and previously the founder director of JJM, expounds on the water issue and how the country is tackling it; Poonam Muttreja, executive director of the Population Foundation of India, explains the social, economic and political implications of India becoming the most populous nation in the world; and social activist Priti Patkar talks about the progress made on two critical subjects: human trafficking and child rights.

In Centre Stage, and in the accompanying Showcase section, we focus on women weavers from Assam who have been given a leg up by Antaran, the crafts-based livelihood programme. Our feature stories segment comprises a women-centric skilling project with cybersecurity on its mind; a study that has tracked Covid's impact on school education; an initiative to improve government health facilities in Madhya Pradesh; and an early-education programme in Karnataka that concentrates on childcare centres and the tutors there. Wrapping it up is Rahul Srivastava with a telling perspective on urban planning and design in India.

Chistabelle Noronha

We hope you will help us make Horizons *better with your valuable feedback. Please do write to us at horizons@tatatrusts.org.*

CONTENTS

VOL 6 | ISSUE 1 | APRIL 2023

COVER STORY

CENTRE STAGE

SHOWCASE

INTERVIEW

EDITOR

Christabelle Noronha
Email: cnoronha@tatatrusts.org

EDITORIAL TEAM

Philip Chacko
Gayatri Kamath
Labonita Ghosh
Shubha Madhukar

EDITORIAL COORDINATORS

Sonia Divyang
Nisha Swami

DESIGNED BY

The Information Company

FEATURE STORIES

INTERVIEW

PERSPECTIVE

Cover image: Sita Bai, treasurer of a water-user group in Bhadurpura village in Rajasthan's Sirohi district.

DESIGN
Shilpa Naresh
Abraham K John

PRINTED AT
Sahaya Print Services

CONTACT
Tata Trusts
World Trade Centre 1
26th Floor, Cuffe Parade
Mumbai 400 005
India

A villager quenches her thirst at a community tap, which works on solar power, in Bhadurpura in Rajasthan's Sirohi district

Solutions pave the water way

The multitude of troubles that envelop the subject of water in India point to an existential resource crisis that is getting ever more dire by the day. Be it with availability or access, usage or potability, water has increasingly become a concern that clouds the country's ambitions of achieving equitable development and securing improved living standards for all its people. This is a calamity unfolding in slow motion and those worst affected by it are India's poor and marginalised, for whom paying their way out of the predicament is not an option. There are silver linings, though — from a host of government initiatives to civil society support — that enable the country to better cope with the water challenge. The Tata Trusts have, over the years, played a full part in helping alleviate the problem, with a spread of water-themed solutions focused on disadvantaged rural communities.

By Philip Chacko, Nikhil Menon and Gayatri Kamath

COMMUNITY FIRST

THE TATA TRUSTS WORK TO...

- Reduce and reform water demand
- Restore and recharge water availability
- Get communities to operate and maintain water supply systems
- Preserve and enhance water quality
- Ensure better sanitation, hygiene and waste management

THROUGH PROJECTS THAT COVER...

- Access for rural communities to safe, assured and adequate drinking water
- Water security through participatory watershed and springshed management
- Promoting technology innovations to address water-quality issues
- Water conservation and rainwater harvesting
- Building and strengthening village institutions to make water schemes sustainable
- Social and behavioural change communication to promote better water management
- Sharing of knowledge and best practices through policy and advocacy
- Convergence with government, like-minded foundations and civil society organisations

REACH AND EFFECT

4.5+	7,000+	85+	90	15
million people	villages	projects	districts	states

Feeling the flow

Enabling and empowering village communities to take charge in matters concerning their water has boosted the power of the idea driving the Jal Jeevan Mission

Twice a day, Champa Hansha Purty operates the water pipe in Ludemkel village in Jharkhand's Khunti district. She has been trained under a collaborative effort of the Tata Trusts and a government-supported programme as a pump operator to maintain the solar power-based water-supply system in her neck of the woods. Ms Purty installs and fixes wires. And she has an additional responsibility that's just as important — to spread the word on water conservation and optimal usage among her village folk.

Ludemkel's water system is part of the Government of India's Jal Jeevan Mission (JJM), an initiative launched in August 2019 to ensure that every rural household in the country has a functional household tap connection and regular supply of potable water. The goal is to cover 194 million rural households by 2024. It's an audacious target.

With a planned outlay of $50 billion, there is no lack of resources to get the water flowing. The paradigm shift under the JJM is to empower local communities to own, operate and maintain their water supply systems, with the government playing facilitator.

JJM and the vision driving it aligns just right with the efforts undertaken by the Trusts in the water, sanitation and hygiene sphere for 15 years. Joining hands with the Mission in April 2021, the Trusts are collaborating with several state governments. This is not new for the Trusts. Similar, and successful, associations were built during the Swachh Bharat Mission, where the Trusts partnered several state governments.

The JJM engagement follows a similar path. The Trusts are focused

Tsasushi, a 78-year-old from Vongva village in Nagaland's Kiphire district, now has water at her home

on supporting state governments by covering 3,100 villages in 31 districts across 14 states, with the target of ensuring *har ghar jal* (water in every house) in 250,000 households. The programme has achieved strong momentum. "We are currently engaging with some 90,000 households, about a third of our goal," says Divyang Waghela, head of the water, sanitation and hygiene (WaSH) thematic area at the Trusts.

A group of women from Uperbait village in the Kangra district of Himachal Pradesh at a meeting where the Jal Jeevan Mission is being explained

MISSION MODE

Ensuring potable tap water for **1 million+** people from **250,000+** households

The Tata Trusts programme will eventually cover **3,100+** villages in **31** districts in **14** states

Collaboration code

JJM can be described as a community-public-private-partnership endeavour, aiming for a sweet spot where scale, adoption and sustainability converge. Scale is what the state does best. "State governments have resources and the capacity to build the infrastructure," says Mr Waghela. "What we bring to the table is our experience in community-building and expertise in technology innovations. We believe that by complementing the state's efforts, we can benefit more communities in a sustainable way."

In helping realise the objectives of the Mission, the Trusts are putting to good use their long years of experience with community water projects. This means designing need- and demand-centric village action plans, supporting water quality treatment systems using advanced technologies, enabling innovation in the form of renewable energy sources and remote monitoring systems, supporting water-conservation efforts through rainwater harvesting, and driving endeavours in water-efficient agriculture. In all of these, community participation and context-specific technology solutions add to the long-term viability of water programmes.

The community forms the crux of the partnerships in JJM. "People need to be aware of how they can be self-reliant with regard to their drinking, agriculture and ecological water needs," adds Mr Waghela. A key lever for sustainability is social behaviour change, where the community steps up to take ownership of water assets and ensures responsible usage.

The Trusts engage with the community in multiple ways. These include interventions for participatory rural appraisals, where locals are made aware of local water sources and polluting factors, and there are discussions with households and community leaders to explain how investing in water can lead to benefits in income, hygiene and health. "People have to believe that water infrastructure is

not the government's; it is theirs," adds Mr Waghela.

Ownership and responsibility are critical in keeping pipes and taps shipshape. Ghanashyam Kalita, the village council head of Sattaluk in Assam's Kamrup district, has taken this message to heart. Trained by the Centre for Microfinance and Livelihood (an associate organisation of the Trusts), he regularly visits village homes to check the status of household tap connections and keeps a record of any maintenance required.

To get people on board, the Trusts employ behaviour change communication at three levels: individual, household and societal. After comprehensive ethnography research in multiple states, the Trusts designed their social behavioural change communication campaign around a central theme: '*samman* connection'. *Samman* means respect and that is a key trigger in behaviour change.

If women have more time to focus on their children's education or income generation, the quality of life of the household improves. If children consume clean water, the risk of getting ill reduces and they can attend school regularly. Opting for the water project earns the entire household more *samman* in the community.

Women, who stand to benefit the most, are the primary audience. Water taps are a pathway for women's empowerment. The Trusts ensure that all *pani samitis* (village-level water committees) have equal representation of women and that women play a key role in the decision-making process.

A family matter

The second level of communication is with the members of the household. They have to commit to and ensure that they pay water-user charges regularly; this enables the financial viability of the system.

The third level relates to the community as a whole. The Trusts work to develop community awareness about how water-user groups function, the role of *pani samitis* and the need to take collective responsibility for operations and maintenance.

Take Khandepalli village in Andhra Pradesh's Anakapalli district. Its 595 households used to get their drinking water from street taps. When water connections came to the village through JJM, Vijayavahini Charitable Foundation, another associate organisation of the Trusts, helped the community understand the importance of the scheme.

The story is similar elsewhere. "The Tata Trusts have done their job well," says Satish Gadigennanvar, an executive engineer with the Karnataka government's rural drinking water supply and sanitation department in Yadgir district. "Community mobilisation, participation and contribution have been crucial here, particularly the training provided to Village Water and Sanitation

Kalachari's monitors

Tripura's Dhalai district is home to Kalachari village, which has 764 households and more than 2,700 residents, the majority of them dependent on agriculture and cattle-rearing. The village also has, unusually enough, a five-woman committee tasked with monitoring drinking water quality.

Trained by the Centre for Microfinance and Livelihood, an associate entity of the Tata Trusts, these women use field test kits to check their water on a host of parameters: pH level, turbidity, total hardness, iron, fluoride, chloride, nitrates, free residual chlorine, bacteria, etc.

The all-woman committee shares the responsibility of collecting samples, analysing water quality data, tracking vulnerable areas and alerting concerned authorities when remedial action is required.

The five women, otherwise typical housewives, are now the torchbearers of water quality in Kalachari. They came up with the idea of displaying the water quality test data on a handmade board in the building that houses the village council. The board has helped focus the attention of people on topics relating to water quality and good health. ■

Local women from Kalachari in Tripura's Dhalai district being trained on how to test water quality

Committee (VWSC) members."

Community ownership is crucial as it pertains to water quality, which has to be monitored regularly. Pushpa Bhatt, a housewife from Futsil village in Uttarakhand's Pithoragarh district, is part of a project implemented by Himmotthan Society (also a Trusts associate organisation). She and a few other women from her village have been taught to use test kits to check the quality of the water they get. "I felt empowered after becoming a member of the *pani samiti*," says Ms Bhatt, "and I take pride that I can teach other women about water."

Technology, the second pillar of the Trusts' engagement with JJM, can enable democratisation of information. It empowers the community to take informed and appropriate decisions, such as how to ensure equitable supply or deal with polluted water.

The Trusts, in partnership with Tata group companies, have designed smart-water systems with sensors to measure and monitor supply. The system, which has been piloted in villages in the states of Uttarakhand, Rajasthan, Gujarat, Maharashtra, Jharkhand and Himachal Pradesh, offers the community and the government data on the quantity, quality and regularity of water availability.

Disinfection push

To tackle water pollution, the Trusts have pioneered affordable disinfection systems. These systems have been used in about 80 villages in different states and the Trusts work with the community to demystify the disinfection process, while demonstrating how it prevents water-borne diseases.

Solar-powered pumps are another technology input that the Trusts have brought to the field. In remote villages that have scant or irregular power, solar power offers reliability. Take Gharat, a remote village in Rajasthan's Sirohi district, where solar energy powers water pumps. The Trusts have trained a water user group whose members are women from the village.

Beyond community and technology, the Trusts have one more vital role to play in JJM: knowledge transfer. What's learned from the sustainable models built by the Trusts is shared with state governments and other stakeholders to ensure that community institutions take charge of the financial and operational aspects of water projects.

The significance of JJM goes far beyond the number of flowing taps. Potable water can help improve India's health parameters. Michael Kremer, who shared the Nobel prize in economics in 2019, has quantified the positive impact of JJM over time. In a study, he estimates that infant mortality will fall drastically, preventing 136,000 deaths of children aged under five every year. And that's just one worthwhile aspect. ■

Residents of Dhaulakuan village in Himachal Pradesh's Sirmaur district dig a contour trench to improve natural groundwater recharge

Hope springs high

Community-led springshed programmes with women at the helm are restoring water security in scores of villages in Himachal Pradesh and Uttarakhand

The women of Belwali, a mountain village in Himachal Pradesh's Sirmaur district, dreaded the arrival of summer. The dry season meant local springs getting reduced to a trickle, borewells running dry and — as is almost always the sorry reality in India's water-stressed regions — women having to trudge miles every day to fetch the precious liquid from whatever source is available.

Freedom from such drudgery has finally come to Belwali, in the form of a community-led springshed rejuvenation programme backed by Himmotthan Society, an associate organisation of the Tata Trusts. Himmotthan has provided technical and field support to an army of women led by local resident Dharmo Devi. These women, under the aegis of the Forest Development Committee (FDC) and in coordination with the forest department, have constructed hundreds of groundwater recharge structures — trenches, plantations, recharge ponds and check dams — in the adjoining Naurangabad reserve forest.

The effort has led to around 180 million litres of rainwater being channelled into the underground aquifers feeding local springs. With the springs coming back to life, Belwali's women no longer have to fetch water from distant sources. "Wise water management has greatly reduced our water problems and will also

benefit our coming generations," says Ms Devi, who won an award from the Indian president recently for her work (under the theme 'catch the rain').

Natural springs account for over 90% of rural water supply in Himalayan states like Himachal Pradesh and Uttarakhand. But climate change, changes in land-use patterns, rising populations, haphazard construction and other factors have caused many of these springs to dry up or turn seasonal. Himmotthan's community-led interventions are aimed at dealing with the problem.

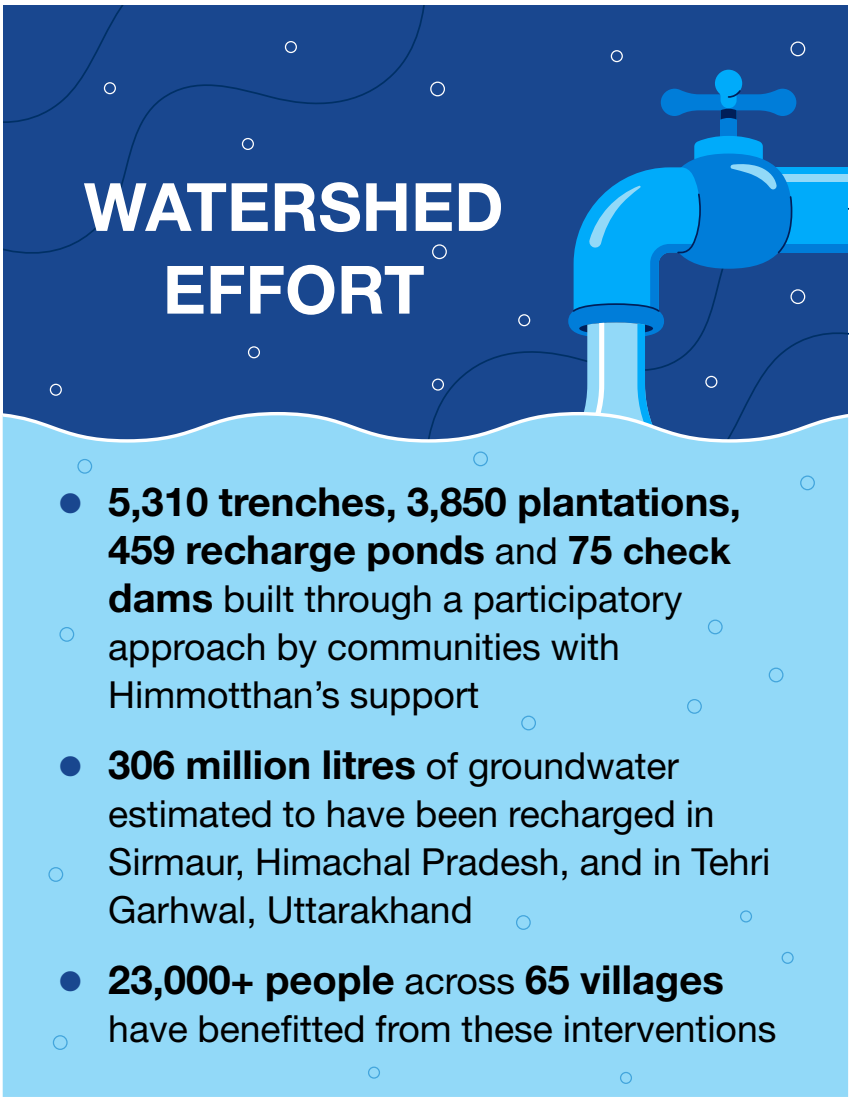
Deficit to surplus

The springshed projects in Sirmaur in Himachal Pradesh and Tehri Garhwal in Uttarakhand have helped increase lean-season water discharge by 40-60%, and restored water security to more than 23,000 residents. "By bridging the gap between local demand and available supply of water, we are enabling villages to undertake water audits, and gradually go from water-deficit to neutral, and eventually to water-surplus," says Vinod Kothari, theme lead for the water portfolio at Himmotthan, which implements these projects in partnership with Tata Consumer Products and Titan.

"We have learned that building trenches and planting trees stops rainwater from running off and helps the soil retain moisture," says Bindi Pundir, a member of the all-woman team that constructed recharge structures in Majyad gaon, a village in Tehri. Himmotthan's interventions across the Tehri Garhwal region have resulted in the recharging of 126 million litres of groundwater thus far, transforming the lives of residents in 35 villages.

There are challenges on the ground, of course. Getting governments on board are among them and so is earning the trust and commitment of village communities. Himmotthan implements extensive behaviour-change campaigns and trains community water-user groups (variously called *pani samitis*, forest development committees or *van samitis*) to build and manage rainwater catchment structures. It also enrols proactive and progressive women such as Ms Devi and Ms Pundir to mobilise locals and drive change.

The water programmes have in their fold a swathe of livelihood and health-related activities: crop advisories, sanitation, vermicomposting, biogas plants and many more. "Our goal is to make villages better aware of their water challenges so that they can take corrective steps to store and utilise water sustainably," says Mr Kothari. "Ultimately, it is the community that has to save its springs." ■



Women from Jubang village in Kalahandi district help to make space for the laying of pipelines for the irrigation project

Gushing good

A diversion-based irrigation scheme in Odisha's Kalahandi district is bringing succour to tribal communities united in their quest for water to meet their farming and household needs

Dabriguda, a village in the tribal heartland of Odisha's Kalahandi district, was once a place with loads of barren land around. Being located on the top of a hill was part of the reason why, and the problem had all to do with water or, rather, the lack of it.

For Dabriguda's residents — more than 100 people from about 30 families — water even for drinking and household consumption was never enough. The village had a borewell but this would not suffice to meet everyday needs in the summer months, when severe water scarcity forced residents to fetch the precious elixir from a nearby stream.

Farming, in the circumstances, was difficult and that explained the widespread desolateness of Dabriguda and its neighbouring areas. Things started to change when, in late 2020, a diversion-based irrigation (DBI) scheme began to take shape.

The organisation driving this change — the Livolink Foundation, an associate organisation of the Tata Trusts — may have been from the outside, but it had inside knowledge on how to tap, store and distribute water through the gravity method. That would prove to be of immense benefit to Dabriguda and its beleaguered villagers.

The stream that the village depended on was, naturally, the designated source. Then followed a process that would, ultimately, deliver what the village was seeking so desperately. This process began with rallying the community around the idea, followed by a technical survey, feasibility report and cost estimates, getting the villagers to contribute with labour towards construction work, procuring building material, digging trenches

and laying pipelines, fixing outlets and testing the water.

A water-user group (WUG), with members drawn from among the villagers, was formed to operate and maintain the DBI structure. Water reached the village through the DBI way in a period of three months, remarkably quick time for a project of this nature.

There were additional touches: a water filter to ensure Dabriguda was receiving clean and safe water, a corpus fund for current and future use, and rain pipes — a flexible pipe with a pattern of drip holes — to cover irrigation needs.

Impressing visitors

The DBI project in Dabriguda has been implemented so well the village gets visitors wanting to know how the process unfolded. The crux was community participation, contribution and ownership, with steadfast support from the Livolink team in matters technical and otherwise.

This is the blueprint Livolink has played by while developing DBI systems in more than 40 villages in Kalahandi and Kandhamal districts. Livolink's initiatives, which began in 2017, have helped nearly 1,750 villagers get their share of water, mostly round the clock, and has resulted in a boost for farming.

Sundarmati Majhi of Puiguda village has a not uncommon story of what the programme has wrought. "Agriculture is our mainstay and we were totally dependent on rainwater. It was never enough. My son, Rudra, used to migrate to Kerala in search of employment during the lean farming period. But now, with the DBI system in place, we are able to undertake year-round vegetable cultivation. Rudra didn't have to go to Kerala this time out; he worked in our field and we grew cauliflower. We earned ₹62,000 from it."

With the DBI systems in place, Livolink encourages the community to take up year-round cultivation. Inputs like seeds, irrigation technology and a package of practices are also provided. The sustainability of these systems depends mainly on WUGs, which explains the criticality of getting villagers committed to the DBI concept and its execution.

"Water is the most precious of resources for tribal and rural communities," says Ganesh Neelam, the Tata Trusts' zonal head, central and east, programme implementation. "The crucial challenge is conserving water and enabling its utilisation to meet drinking water needs and enhance livelihood options."

Many tribal communities, a core constituency for the DBI programme, live in undulating terrain and, therefore, face considerable difficulties with water availability and quality. "That creates problems of poverty," says Mr Neelam. "The DBI programme has a unique approach. It uses gravity-based mechanisms to bring water from the hills to the lowlands. Furthermore, this does not need energy. All of which points to the huge opportunity available to ensure water for small and marginal communities." ■

Members of the water-user group in Vishnora village in Amravati district at the completion of work on a structure to hold and harvest water

Storing is saving

Water conservation is at the core of two projects that are benefitting farmers in four districts of Maharashtra

Dependent on rain-fed agriculture in an area where monsoons are far from dependable, and with a family of five to take care of even as his income from farming dwindled year by year, Dinkar Vitthalrao Pund was at a crossroads. "The water situation was very bad and I was constantly faced with the question of whether to continue with farming," says this resident of Porgavhan village in Maharashtra's Amravati district.

Then, beginning in 2018, Mr Pund's circumstances began taking a turn for the better. That happened after he and other farmers in his village got into the flow of Jalyukt Shivar Abhiyan (JSA), the Maharashtra government's ambitious water-conservation initiative. Eliminating water scarcity is the business of the Abhiyan (or campaign), which aims to benefit more than 25,000 drought-prone villages in the state.

JSA is all about instilling in farmers the belief that "every drop of rainwater is owned by me and it should percolate in my land". Mr Pund and his farmer compatriots embraced this belief, contributing in spades to the building of a cement *nala bund* — simply put, a structure that holds and harvests water — adjoining the Kasi River, which runs near Porgavhan.

The Tata Trusts, through their Sukhi Baliraja (happy farmer) initiative, joined hands with the Maharashtra government to support JSA from 2017 to 2020 in three districts of the state: Akola, Amravati and Yavatmal. "The Tata Trusts official came to our village in 2018 and spoke to us about sustainable farming and about soil

and water conservation," says Mr Pund. "They brought us farmers together."

The Trusts team helped form a 'green revolution' water-user group and the cement *nala bund* was constructed shortly thereafter. "We could now store rainwater and this led to an increase in our agricultural output and an improvement in our financial condition," adds Mr Pund.

The intervention has resulted in more than 22,500 acres of farmland being cropped through water-harvesting and allied methods – including better irrigation, increasing groundwater levels and minimising flood damage – in 21 villages in the project districts, enabling some 700 farmers to enhance their incomes by an average of ₹17,500 a year.

Securing sustainability

"Water streams were rejuvenated to enhance water availability for the community and the water-user groups created under the programme helped farmers access government benefits," says Kiran Petare, a regional manager with the Trusts. "Consequently, local village councils now have funds for the operation and maintenance of built infrastructure. This should ensure the sustainability of the initiative."

Community participation has been crucial to the wellbeing of the Trusts' water effort in Maharashtra. In Kolvihir village, also in Amravati district, water-user groups were formed and trained in water conservation. The community has contributed resources to the programme, creating a sense of ownership for running and maintaining shared water infrastructure. "The productivity of the crops I grow – cotton, red gram and sesame seeds – is much better than before," says Devidas Tayde, a Kolvihir villager.

A second programme in water conservation that the Trusts have been involved with in Maharashtra concerns the rejuvenation of what are called Malgujari tanks, water-harvesting ponds in the eastern Vidarbha region that date back 300 years to the time of the Gond kings. There are about 1,000 such tanks and the majority of them are in a state of disrepair and disuse.

The Trusts, in partnership with the public sector undertaking, Bharat Petroleum Corporation, have repaired and desilted 74 Malgujari tanks in Gadchiroli district. Desilting is the big deal in this project, which was kickstarted in 2019. The soil excavated from the tanks is deposited on their banks and this boosts the soil fertility of surrounding agricultural land.

"Nearly 4,100 households have benefitted from the revival and desilting work and, as a result, farmer incomes are expected to increase by ₹15,000 per year on average," says Mr Petare. "This project also opens up other livelihood possibilities, multiple cropping and fisheries among them. The key is having strong community institutions and that's why we have concentrated on forming and nurturing village water-user groups." ■

Residents of Changlung village in Ladakh's Nubra valley work on their artificial glacier, which was built at an altitude of 3,470 metres and now supplies water to six households in the village

Cold comfort

Artificial glaciers, and the water they store, are providing respite to thousands of ecologically vulnerable farmers across Ladakh

Arguments over water sharing are common in Ayee, a water-stressed village in Ladakh's Nubra valley. It's not the only one; with average annual rainfall of just around 10cm, most of Ladakh is dependent on glacier meltwater to irrigate crops. This flow of meltwater has drastically fallen as glaciers shrink due to the effects of climate change.

To try and end the crisis, Ayee's residents took an unusual route. In 2017, they built a small artificial glacier outside the village. Artificial glaciers are manufactured structures where stream or spring water freezes in winter and melts in spring to generate meltwater that can be used for irrigation. But Ayee's glacier was a rudimentary one, and it has not solved the water problem its people face. "We barely have water for two hours a day," says local farmer Tundup Dorjey.

Ayee may now have a better solution. In late 2022, Himmotthan Society, an associate organisation of Tata Trusts, used its technical expertise to build a 150ft-tall artificial glacier-cum-ice mountain outside the village. The superior design and capacity of the new glacier has instilled hope in the residents. "With the extra water, I plan to sow my wheat and vegetable crops earlier than usual this year," says Mr Dorjey.

Over the last seven years, Himmotthan has tackled the mountain region's water woes by partnering communities to build 14 artificial glaciers. The glaciers today benefit nearly 1,300 households and cover 2,000 acres of cropland in 13 villages.

Each glacier provides 60-70 days of additional water a year, ensuring

better income security for locals. "We have identified 40 villages where we can build artificial glaciers," says Samten Choephel, area manager (Ladakh) with Himmotthan.

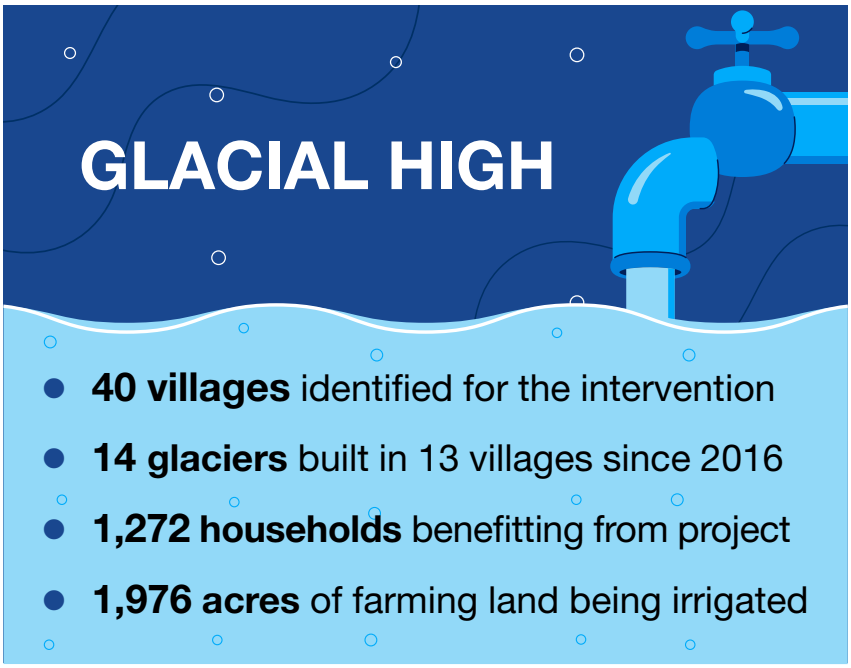
Artificial glaciers were first developed by Ladakhi engineer Chewang Norphel in the 1980s. His idea was to use lower-altitude manmade glaciers – which melt earlier than high-altitude natural glaciers – as supplementary sources of water for remote Ladakhi villages. In 2016, Mr Norphel became a consultant at Himmotthan and the Trusts' Ladakh Livelihood Initiative.

Once was fallow

Using Mr Norphel's design, Himmotthan's team guides the construction of artificial glaciers, which are built by the villagers themselves. Sonam Angchuk, a village council member from Murgi in Nubra village, recalls how, in 2019, water was so scanty that many farmers left their fields fallow.

"Families only had enough food for their own consumption that year. There wasn't much left to sell," says Mr Angchuk. Murgi built an artificial glacier in 2021 and that has boosted its water supply by over 20%. "It suffices for our wheat crops and our drinking water needs."

While artificial glaciers cannot hold enough ice to be a primary source of water, they are able to make a difference in supporting agricultural communities when needed. By making every drop of water count, Himmotthan is accelerating climate resilience for thousands of farmers in the cold desert of Ladakh. ■



The 150ft-high Ayee 'artificial icefall glacier', thus called because water is sprayed down the cliffside to form a sheet of ice that resembles a frozen waterfall

A training session, organised for residents of Chhuanthar Tlangnuam village in Mizoram's Serchhip district, at the recharge area of a local spring

Revival in the hills

Springshed development projects in Nagaland and Mizoram are enabling villagers to get their fill of water and improve their daily lives

Years of living with water scarcity has made communities in India's Himalayan regions see natural springs drying up in summer as an inevitable fact of life. Consider Enhulumi village in Nagaland's Phek district. When the Tata Trusts and Nagaland government began efforts in 2018 to revive Enhulumi's local spring, called Mewi Dzukhou, the villager's reaction was lukewarm. "We didn't believe that it was possible to recharge the spring," says resident Kotele Lohe.

But something marvellous happened. The building of rainwater-recharge structures in Mewi's catchment area brought the spring back to life, and also led to two new springs emerging from below it. Says Ms Lohe, who would earlier spend an hour every day fetching water: "We have additional water to irrigate our crops."

Mewi Dzukhou is one of the 106 springs revived by the North East Initiative Development Agency (NEIDA), an associate organisation of the Trusts, across Nagaland. The initiative was implemented in partnership with the Nagaland government's Land Resources Department and Rural Development Department. At the project's conclusion in 2021, it had benefitted nearly 12,000 households in 100 villages.

A similar NEIDA project in Mizoram, implemented in association with the National Bank

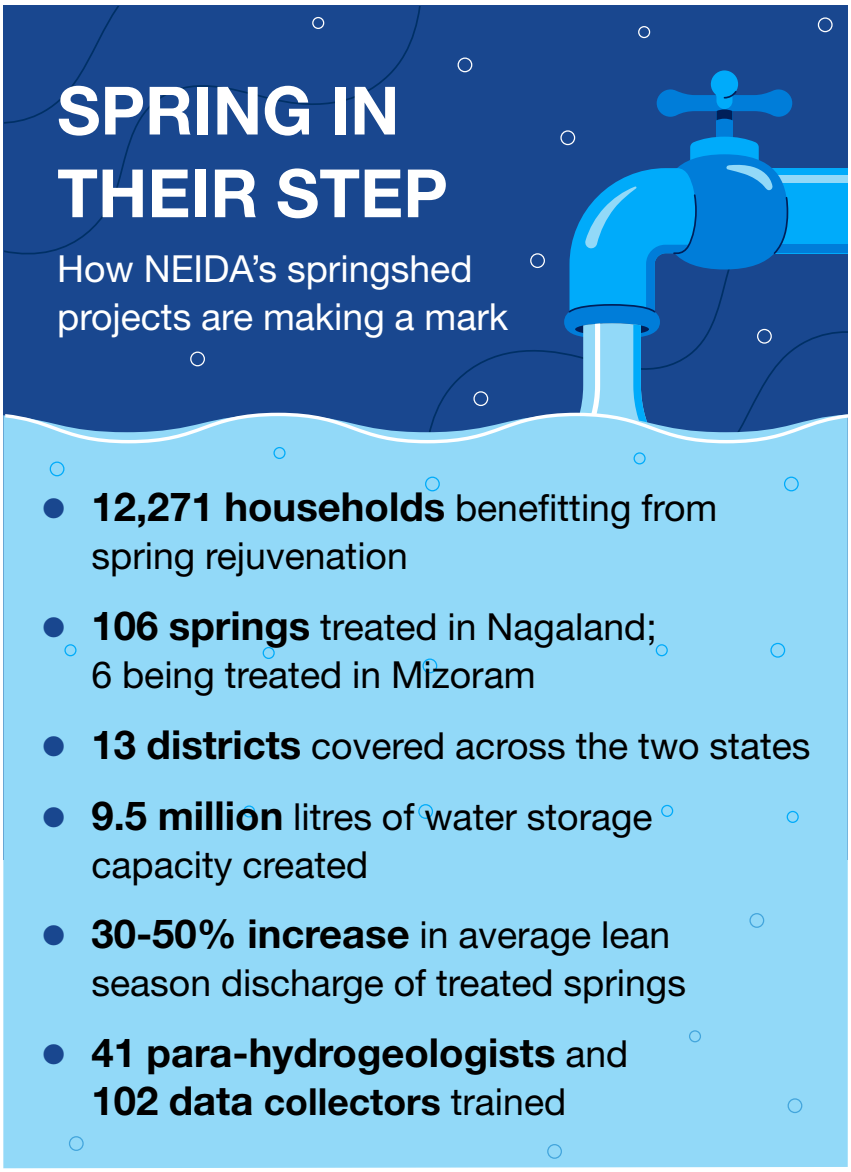
for Agriculture and Rural Development, has revitalised six springs in Serchhip and Lunglei districts and currently benefits more than 350 households.

NEIDA's goal is to head off a serious water crisis in the Northeast, where nearly half of the extended region's three million springs have reportedly dried up. The crisis has been especially hard on communities in Nagaland and Mizoram, where people get 80-90% of their water from natural springs. "Our survey showed that communities were spending up to three hours daily on fetching water during the lean seasons," says Khrolhiwe-u Tsuhah, a Nagaland-based senior project associate with NEIDA.

Dire effect

The seemingly perennial water crises in the two states have had a dire effect, not only on the availability of drinking water during the winter months but also on agricultural productivity and, consequently, household earnings. "People are forced to buy water at high rates and many locals end up migrating to other villages," says Samuel Lalthazuala, a senior project associate with NEIDA in Mizoram.

NEIDA's spring-rejuvenation programme involves supporting communities in building recharge structures such as trenches and ponds, and in promoting tree plantations that replenish the springs' aquifers. While NEIDA oversees the technical aspects of the work, monitoring and management of the springs is done by village water and sanitation committees.



The agency also trains para-hydrogeologists and local data collectors to sustain the intervention's impact.

These efforts have met with success, with the lean-season discharge of treated springs in the two states increasing by 30-50%. In Nagaland, where NEIDA's springshed project was the first fruitful multi-stakeholder partnership of the kind, the number of days of water shortage reduced by 24% within a single year.

In Chhuanthar Tlangnuam village in Mizoram's Serchhip district, local farmer Lalngaihsanga says that the availability of water allows farmers to grow a wider range of crops. "People now earn more from farming," he says. "Waterborne diseases have also gone down since we no longer have to rely on contaminated sources." An added benefit is that 144 hectares of forest land in Mizoram have been conserved, thanks to bans imposed by village councils on felling trees in catchment areas. ■

An awareness rally on safe drinking water in Borigaon Kothora village in Nalbari district

Clean break

An affordable purification system has rendered water contamination caused by arsenic and iron a crisis of the past in rural Assam

Quantity over quality is certainly preferable when it comes to goals scored in a football match. Not so when the parameter is attached to a resource like water. The realities surrounding water in India are such, though, that availability tends to take precedence over purity. This is far from desirous, especially since the consequences of consuming unsafe water unfold over longer periods, making prompt detection and treatment of its ill effects less than easy.

The facts about unclean water in the country are alarming: about 50% of rural households depend on untreated water; biological and chemical contamination of water affects countless people every year; industrial growth and chemical farming are leading to rampant pollution of surface as well as groundwater sources; there is an acute shortage of purification and monitoring systems; and lack of awareness about water contamination is widespread.

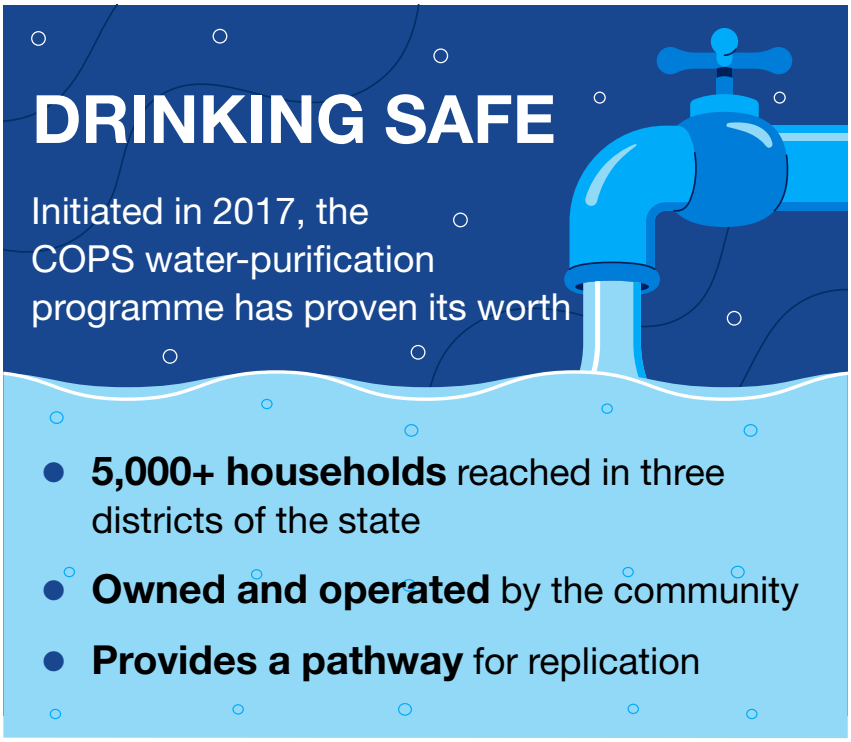
Chemical contamination of the water that Indians have access to, particularly in rural regions, is perhaps the biggest worry. The Central Ground Water Board has identified a number of 'water-quality hotspots' in the country based on high chloride, arsenic, fluoride, iron, salinity and nitrate contamination in local water bodies. It is estimated that the groundwater in almost two-thirds of the Indian states is contaminated with heavy metals.

Assam is among the states hit hardest by water contamination. It was to address this issue that the Tata Trusts began a pilot project in May 2017 in Borigaon Kothora in Nalbari district. The 'community-owned and operated drinking water purification system' (COPS) was aimed at ensuring that the village's residents could access water free of arsenic and iron.

The Borigaon Kothora initiative

has, since then, been replicated in other villages in three districts of the state, reaching more than 5,000 households. Village communities are at the core of COPS, which is calibrated to take a holistic and decentralised approach that integrates the social, the technological and the administrative in delivering potable water in rural India.

COPS has under its canopy technical assessments, community mobilisation, awareness and behaviour-change campaigns, nifty engineering and sustainability. Water sources affected by heavy-metal contamination are identified, deeper tube wells are set up, and treatment and filtration units are installed. For the longer term, there are schemes planned for piped supply from surface water bodies.



COPS at its best

In Borigaon Kothora, which has become an example of COPS at its best, some 2,000 people from more than 300 households have benefitted from the safe water project. The stakeholders in the exercise were the village development committee, the local political leadership and voluntary organisations, the district administration and Assam's public health engineering department.

Before the project began in earnest, drinking water sources from five villages in the neighbourhood were tested for contamination levels and two villages having the maximum concentration of arsenic and iron were selected. Borigaon Kothora was finally picked because the village was more receptive to the COPS idea, providing land for water-treatment infrastructure and showing a greater commitment to sustaining the effort.

The Trusts have relied upon two partners to create COPS and to showcase its effectiveness. Gramya Vikas Manch (GVM), a community-focused organisation familiar with the social landscape of Nalbari, pitched in by mobilising villagers, conducting awareness camps and doing assessment studies.

DrinkWell, a Kolkata-based social enterprise with expertise in drinking-water systems, designed and delivered the water-purification methodology, deploying its patented arsenic and iron removal technology (called HIX-Nanotechnology).

The Tata Trusts team, GVM and DrinkWell worked closely in technology deployment, in trials and commissioning. The meatiest contributors to COPS's success probably were the villagers themselves. They had for support and encouragement their village council, the district administration, state government officials and their elected representatives.

The safe drinking water they now have does not come free for beneficiaries of COPS. This does not cost much — a 20-litre can of water can be purchased for ₹7 — and payments are made by villagers through 'water ATM cards'. These cards work like their banking equivalents, with villagers paying their dues to an operator appointed by the community. The money collected covers maintenance and the operator's salary.

Efficient and easy to maintain, COPS units can work up to eight hours a day and purify 5,000 litres of water while complying with global safety standards. Importantly, this standout water-purification programme offers a beacon of hope for communities battling water contamination in rural India. ■

The Midas touch

A water-management platform is helping farmers in Gujarat make informed decisions about crop selection and irrigation

Water shortages during Gujarat's unforgiving summers are not just hard on humans but cattle as well. In Bhavnagar's Talaja and Amreli's Rajula regions, well water was so unreliable that growing fodder for milch animals was an issue. Farmers had no way to predict how much or for how long water would be available for irrigation during summer. "It was better to buy expensive fodder from elsewhere than risk the whole crop failing," says Panchubhai Bhuva from Juni Chhapri village in Talaja.

Technology has come to the rescue of Mr Bhuva and his fellow-farmers in the form of an app and web platform called Midas, or 'model of interactive decision assistance simulator'. Launched by the Tata Trusts-supported Coastal Salinity Prevention Cell (CSPC) — which addresses the problems of communities affected by increasing salinity ingress in Gujarat's coastal stretch — Midas is a multi-stakeholder water governance tool that tells farmers how much water is available in the local wells. It also predicts future water availability based on consumption trends.

This information helps farmers take informed and timely decisions about crop selection, farming acreage and micro irrigation. "I have adopted laser and sprinkler irrigation systems to grow fodder on my own land. I save around ₹50,000 a year now," says Mr Bhuva. Midas has helped 70 farmers optimise the cultivation of crops.

Villagers from Jalvadar in Bhavnagar district with the Midas app on their smartphones

Developed by Ekatvam Innovations, the Midas platform was piloted by CSPC in July 2021. It is now being used in 20 villages across Talaja and Rajula. More than 110 farmers have downloaded Midas, and CSPC's encouragement and monetary incentives have motivated 142 farmers to adopt drip-, laser- and sprinkler-irrigation systems that cut water usage by 60-70%.

Farmers from Hajipar village in Bhavnagar district at a presentation on Midas

The tool also allows the community to directly monitor and act on the grave impact of groundwater depletion, a recurring concern caused by the overdrawing of water by villages. "By providing water-balance data in real time, Midas helps achieve participatory water governance in villages," says Kamlesh Solanki, senior programme manager at CSPC.

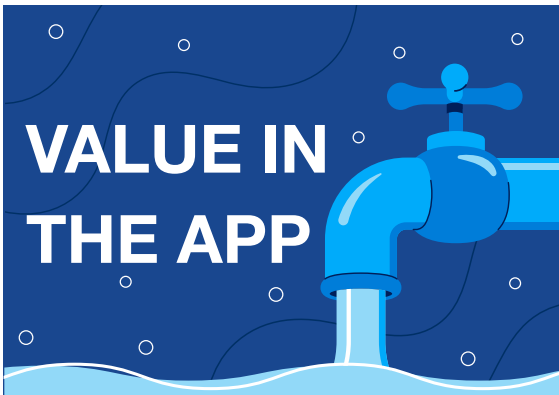
Info advantage

The app integrates information from multiple sources: government and satellite-based surface water data; gradient, runoff, and evaporation data; and rainfall and water usage. The information, entered by CSPC's trained volunteers, is analysed and sent to farmers in the Gujarati language.

Midas also acts as an advisory platform. Farmers get information on the water-conservation structures — check dams, ponds, etc — they can build, how they can diversify their crops and manage water demand. Whatever Midas — also the name of the mythical Greek king — touches may not turn into gold, but it plays a valuable role in supporting CSPC's water-security and water-quality projects. "We get feedback about the impact of our programmes and it helps us in decision-making," says DN Zala, senior programme officer, CSPC.

The challenge for CSPC does not lie in convincing locals of Midas's utility; rather, it's low smartphone penetration. To get around this, CSPC relies on local community resource people like Vishal Bhatt. "We share the data and advisories from Midas at village council meetings. We also print out the relevant information and put it at prominent spots in the village," says Mr Bhatt.

Having proved its worth, Midas is being gradually scaled up in Bhavnagar, says Mr Solanki, adding, "Our immediate goal is to take the app to 30-40 villages with at least five active farmer-users in each." ■



- **20 villages** use Midas in Bhavnagar's Talaja and Amreli's Rajula regions
- **111 farmers** have downloaded the app and **70** are active users
- **142 farmers** have adopted micro-irrigation systems on **264 acres** of land

Check walls built over the Talaji river in Juni Chhapri village in Bhavnagar district

No longer at sea

Salinity ingress in aquifers was affecting lives and livelihoods in coastal Gujarat before a project to stem the salty tide took hold

The coastal regions of Gujarat have battled a salinity ingress crisis for decades. The root of the problem lies in the practice of over-pumping of groundwater by villages. This has upset the region's hydrological balance and caused seawater to encroach into freshwater aquifers. The increase in salinity ingress is impacting an estimated 700,000 hectares of coastal land in Saurashtra, with crop yields plunging by up to 90% in some areas.

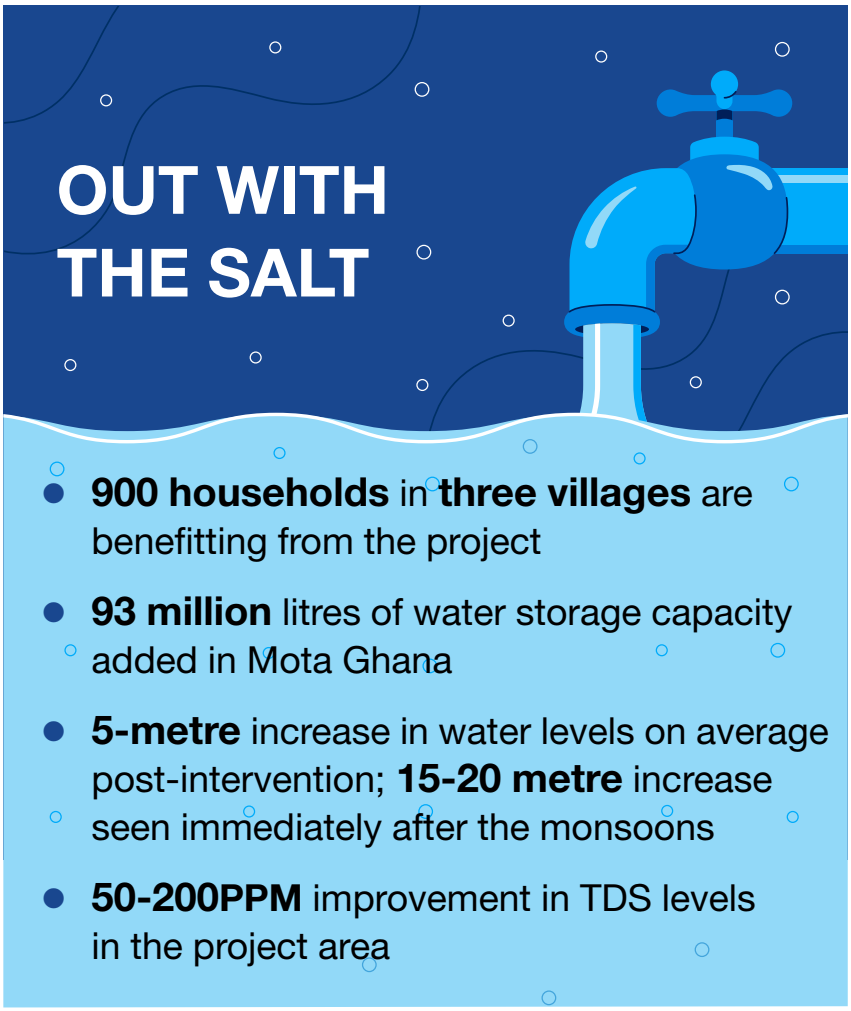
The cause of the distress is salt, because that's what salinity ingress is about. That's the technical terminology for a phenomenon that is harming lives and livelihoods in 2,500-odd coastal villages. Invasive seawater and its salty contents are increasingly polluting the groundwater in these largely rural villages, compromising the health of residents and sabotaging their current and future prospects.

The geology of the region is a factor but the greater culpability lies elsewhere. Fuelled by reckless and rampant exploitation of water resources for agriculture and, to a lesser extent, industrial development, saline contamination of coastal Gujarat's groundwater has crept up to 15km inland and is creeping further in. There is no workable way to stop this subterranean beast, but it can be controlled to an extent.

Beyond agriculture and the livelihoods it supports, salinity ingress has had a debilitating effect on public health. Says Virubhai Bhammar, a farmer from Mota Ghana village in Bhavnagar, one of

the most-affected districts: "Until recently, poor water quality caused problems like skin diseases, kidney stones and hair fall. Families had to spend a lot on medicine and treatment costs."

Water quality wasn't the only issue. Every summer, the water table in Mota Ghana and surrounding regions would dip to precarious lows. The reason was the drying up of the seasonal river Navli, whose catchment area also replenishes the region's wells. This dealt a heavy blow to local residents, mainly groundnut, cotton, wheat and onion farmers who rely on this water for their drinking, irrigation, and livestock-rearing needs.



Freshwater benefit

The situation has improved in Mota Ghana and neighbouring villages thanks to a water-harvesting and artificial-recharge programme in the Navli river basin. Implemented by the Tata Trusts-supported Coastal Salinity Prevention Cell (CSPC), the intervention has increased water levels in the region's wells by 15-20 metres. As freshwater levels improve, contamination in the form of total dissolved solids has fallen by 50-200PPM (parts per million) from earlier levels of up to 2,000PPM.

Initial studies by CSPC established two main problems: a high degree of rainwater runoff into the sea and low groundwater percolation owing to the hard basalt rock underneath. "With the community's help, we desilted the catchment area and built or renovated structures like check dams and recharge ponds," says Kamlesh Solanki, a senior programme manager at CSPC. "We also conducted bore blasting to enhance the storage capacity of the underground aquifers."

The recharge work has created an estimated 93 million litres of underground storage capacity in Navli's catchment area. Along with the additional capacity created by bore blasting, the intervention benefits around 900 households in a 4km radius of Mota Ghana.

CSPC has fostered local ownership for the project by forming village-level water-user groups. Members from these groups encourage village residents to participate in the programme and they provide training in water budgeting and monitoring and in best practices for micro-irrigation and fertiliser use. The community contributes about 25% of the costs.

The initiative has had a salutary effect on public health and on crop and livestock productivity in the Navli catchment area. Importantly, it has reduced the drudgery of having to fetch water from far.

Rambhai Bhammar, a farmer living on the outskirts of Mota Ghana, would ride his bullock cart to the village to fetch water whenever the local well ran dry. He doesn't have to do that anymore. "Thanks to CSPC's work, our local well holds enough water for my family and our cattle, even in summer," he says. ■

Pump operator Manju Bai at the site of the solar-power setup that enables water supply to her village, Kolwara in Pali district

Winning with water

From solar power schemes to behaviour change solutions, the spread of water projects in Rajasthan is making a difference for tribal communities

"All our household chores would be planned around procuring water. Even cooking food had to wait." Methi Bai is matter of fact while recalling how life used to be in her village, Kuran in Rajasthan's Pali district. "There were so many things to do. We women never got any rest."

The water story, and the woes attached to it, was similar for Sita Devi from Nai Jameen village in Sirohi district. "We had to make two-three trips every day to get our fill of water," she says. "I would go in the morning soon as I woke up, then before going to work. And yet again in the evening after coming back from work."

The drudgery of it all is a distant, if still unpleasant, memory

for Methi Bai and Sita Devi, two among many thousands of women whose lives have changed for the better thanks to a range of water programmes nurtured by the Centre for microFinance (CmF), an associate entity of the Tata Trusts, in the Sirohi and Pali districts of Rajasthan.

CmF got started in Rajasthan with its water-for-wellbeing endeavour in 2016 through a water, sanitation and hygiene (WaSH) initiative that has reached more than 12,000 households in about 200 villages. In 2019, it seeded a 'community-managed safe drinking water supply project' — where the emphasis is on solar-powered solutions — to help 67 habitations in 51 villages access potable water.

Social-art messaging

Also in the CmF mix has been an extensive behaviour-change programme, driven by creative social-art campaigns, to educate at-risk villagers of the dangers posed by fluorosis (a medical condition caused by the intake of fluoride in excess from drinking water). Through colourful stage shows in rural settings, these campaigns have reached nearly 28,000 people.

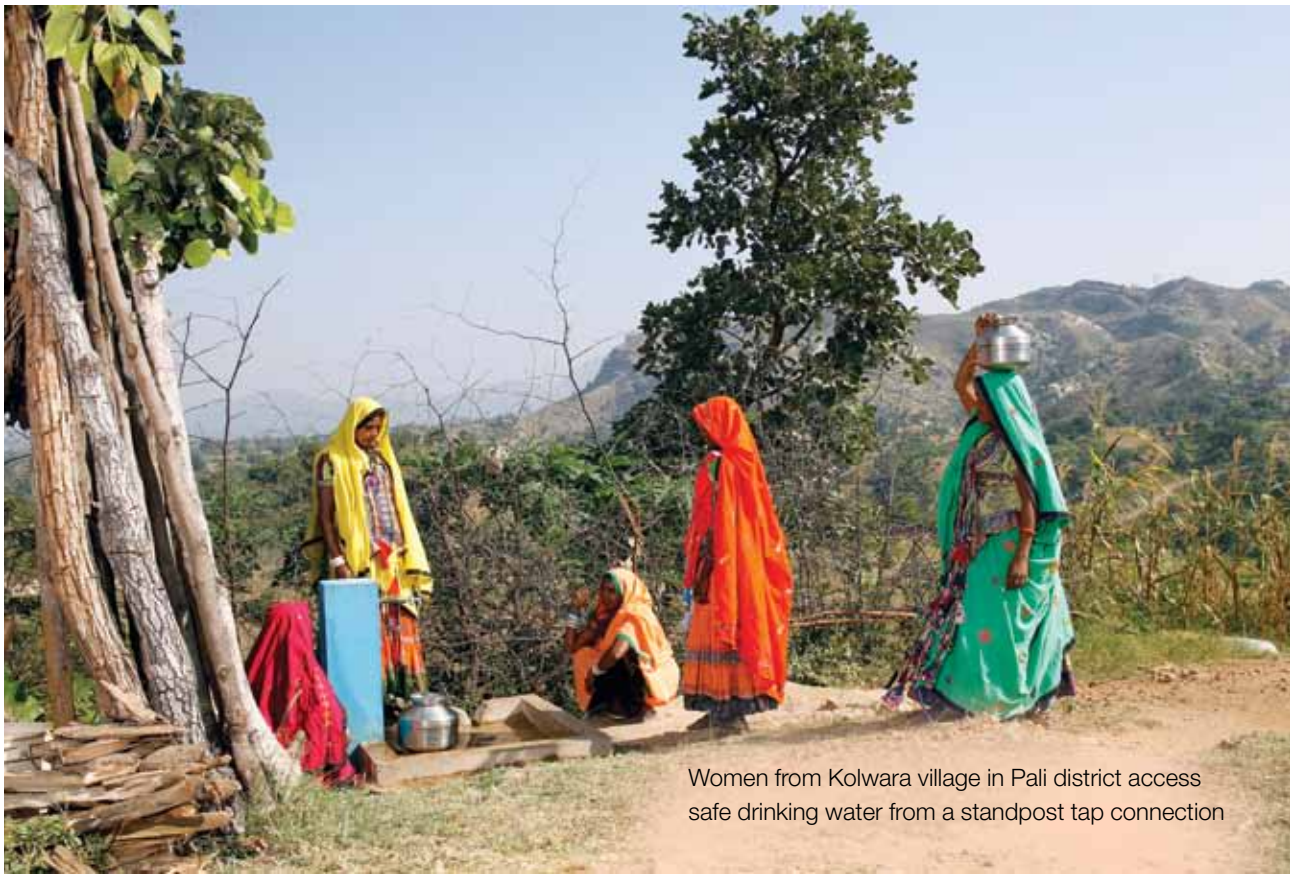
Community mobilisation, participation and ownership have been central to the success CmF has secured from its water-themed spread of initiatives for these rural folks, the majority of whom belong to the socially backward Grasiya and Bhil tribes. Water-user groups (WUGs), *pani samitis* (water committees) and training in the maintenance and operation of water

Kolwara's water-user group at the commissioning of the water scheme in their village

LIQUID LIFT

Beginning in 2016, the Centre for microFinance has seeded and implemented a range of water programmes

- A water, sanitation and hygiene initiative that has reached more than **12,000 households** in about **200 villages**
- Solar-powered water schemes have helped about **1,350 households** from **67 habitations** in **51 villages** access potable water
- A social art-themed **behaviour change campaign** that has driven home the message on the dangers of fluorosis



Women from Kolwara village in Pali district access safe drinking water from a standpost tap connection

infrastructure are essential features in the quest to get village communities deeply involved in the wider effort.

The first and most important part of CmF's implementation process is to form a *pani samiti* in each hamlet where the scheme functions. This ensures the community's support and ownership. A *pani samiti,* typically, has five responsibilities: operation and maintenance of water infrastructure; collecting tariffs from users; cleaning of equipment and water chlorination; record-keeping; and conducting meetings regularly.

The overarching objective of the Trusts' water mission in Rajasthan, as elsewhere, is to improve the quality of life of vulnerable communities. Having the villagers themselves in charge of their affairs translates into equitable access to water and a superior shot at sustaining the endeavour.

It all adds up

The lessons learned from the initial WaSH thrust — which included a menstrual hygiene component that covered 48,000-plus women and adolescent girls — were incorporated in the subsequent safe drinking water project. Among the additional elements are the development of water sources, pipeline and storage improvements, water purification and, not least, solar-powered water systems.

The idea of using solar power seems inevitable in hindsight, given that electricity supply from the grid was erratic at best and non-existent at worst, and expensive to boot. "Our WUGs were struggling with the electricity issue, charges were on the higher side and malfunctions were common," says Pankaj Papnoi, a programme manager with CmF. "The solar power option came at the right time and was instantly adopted by village communities. The dependability in water supply now has led to improved health, hygiene and sanitation outcomes."

There is a deliberate gender bias in CmF's water programmes, and a welcome one too. "Women are the key beneficiaries of our water initiatives," adds Mr Papnoi. "Having a functional tap connection in their homes means they no longer have to endure the burden of fetching water from faraway sources. It saves them two-three hours every day." Methi Bai and Sita Devi would surely agree. ■

‘Water has to be made everyone’s business’

“The overarching idea should be so powerful and noble that people from all walks of life participate and take pride in its success. Ensuring water security for an improved quality of life and economic prosperity is such an idea,” says **Bharat Lal** with a conviction born of expertise and experience that run deep.

More than three decades of involvement in India’s water sector, knowhow that stretches from the grassroots to policymaking at the highest level, and an outstanding record in obtaining results have combined to help Mr Lal make a mark in a sphere, and with a resource, that is as critical as any for the country and its people.

Mr Lal, who joined the civil service in 1988, is currently director general of the National Centre for Good Governance. Prior to this, he served as secretary, Lokpal of India, the country’s anti-corruption body, and as founder director of the flagship Jal Jeevan Mission.

Mr Lal speaks to Philip Chacko about the challenges swirling around the issue of water in India, the part that village communities – and particularly women – play in securing and sustaining progress, and the scholarly background in biochemistry and research work that has been an enabler for him. Excerpts from the interview:

What are the principal vulnerabilities that India faces on the water front? What's the optimal way that we, as a nation, can deal with these vulnerabilities?

We are talking about a country that is a continent, with 17.5% of the world's population but only 4% of its freshwater resources. As a society we are highly aspirational and our economy is expanding. More than 70% of Indians live in rural areas and about 47% of our people are still dependent on agriculture and allied activities.

Ensuring food security for a population of 1.4 billion people is one of our major priorities and this is dependent on rainfall and the availability of water. Many parts of India have a limited number of rainy days and freshwater resources are unevenly distributed. That means much of the country is water-stressed. Besides, our groundwater table is declining due to over-exploitation. On the other hand, economic activities need to be expanded to make opportunities available to our youth.

Put all of these together and the problem becomes clearly evident. The demand for water is rising but its supply is static, or falling. That is our greatest vulnerability. It is in this scenario that we have to consider Prime Minister Narendra Modi's vision to make India a water-secure nation, so that socioeconomic development and our quest for high economic growth is not affected adversely.

From the day he took office as the chief minister of Gujarat, Mr Modi started working to ensure long-term water security for the state; it became his government's top priority. I was fortunate enough to be part of this endeavour.

Thanks to Jal Jeevan Mission, 70-year-old Ayyamma Venkataramana now has a water tap at her doorstep in Itaga village in Karnataka's Yadgir district

A number of steps were taken and, as a result, today you don't hear of water scarcity in Gujarat. The most visible impact of water security has been the massive expansion of economic activities in the state in the last two decades. Paucity of water is a thing of the past in Gujarat, investment has been flowing in and industrial development has been rapid.

The lessons learned in Gujarat and the experience gained have helped in developing policies, programmes and strategies at the national level. As we all know, whatever rainwater we receive during the monsoon needs to be collected and stored, and used judiciously throughout the year.

The Ministry of Jal Shakti was created in 2019 to deal with the demand and supply side of water management in an integrated manner. Also in 2019, the Atal Bhujal Yojana was launched in seven water-stressed states to reverse the trend of groundwater depletion. Perhaps most importantly, the year saw the birth of the Jal Jeevan Mission [JJM], which aims to provide tap connections to every household by 2024.

You have been involved in the water sector for more than three decades. What have you learned along the way in crafting water and sanitation solutions, especially in the context of bringing people and communities together?

What I learned, initially in Gujarat and thereafter at the national level, is the criticality of combining a host of factors in creating solutions in the water sector: designing, planning, implementation, monitoring, transparency, use of technology, people's participation and partnerships.

JJM is a classic example of what and how to plan such solutions. First and foremost, we need political leadership and firm resolve. Then there's the empowering of communities and ensuring their participation, the involvement of civil society, and pushing for transparency and long-term sustainability. Along with

A water-user group meeting in Upla Kolwara in Rajasthan's Pali district

modern technologies, traditional knowledge and the wisdom of local communities must be incorporated in finding solutions. Crucially, you have to put women at the centre of water and sanitation programmes.

The overarching idea should be so powerful and noble that people from all walks of life participate and take pride in the success of the programme.

In Gujarat, you helped set up the Water and Sanitation Management Organisation (WASMO), which has played a pivotal role in easing the water woes of the state. How did that initiative evolve?

The WASMO idea was so appealing that everyone in the political and bureaucratic leadership, civil society and local communities wholeheartedly supported the concept and appreciated its approach and working. It soon became a movement. Youngsters were excited and it was a welcome change for village communities. In March 2002, WASMO was set up and started work in 82 villages of Bhavnagar district. Down the line, it was universalised in Gujarat and 74 NGOs joined the endeavour.

We set up a transparent system to monitor and review the work taken up through WASMO. The completion of the Sardar Sarovar project was taken up on a war footing and that provided an immediate impetus to WASMO. Water from the Narmada became available and local communities saw a golden opportunity to develop water-supply systems in their villages.

WASMO created a niche for itself and, as a result, young men and women from all over the country started to join and to contribute. All of us took pleasure in facilitating this work as enablers, in helping village communities stand on their own and achieve water security.

JJM has ambitious goals. What are the challenges that need to be overcome for the Mission to do justice to its mandate?

Clean tap water in every home plays a vital role in improving the quality of life of people, especially women and children. It reduces infant mortality, improves the participation of women in the workforce and enhances ease of living. That's what JJM is all about and it is being implemented in mission mode and in a time-bound manner.

JJM is inclusive and it focuses on universal coverage; no one is left out. Every village has to prepare an action plan with four components: local water resource management, water supply, grey-water management, and operation and maintenance. Simply put, JJM is a

A team member from the Centre for Microfinance and Livelihood, an associate entity of the Tata Trusts, checks the tap connection of a villager — part of a potable water programme — in Sattaluk in Assam's Kamrup district

decentralised, demand-driven, community-managed programme.

The long-term sustainability of sources and systems, assured service delivery and financial viability, along with adoption of water-utility principles, are the key areas where we need to work. Sustained efforts must be continued on the principles of JJM: people's participation, water potability, speed and scale, and service delivery. It is also important to conduct awareness campaigns and mobilise local communities to get involved in the planning, implementation, management and operation of water-supply systems.

Water disputes, from village to district to state level, have become ever more frequent down the years, and judicial recourse has not really helped. How do we resolve water matters in an equitable manner?

Water and air are the most basic requirements for survival. We have to understand that nature has enough to meet everyone's need. Information, education and communication on various aspects of water are essential in finding solutions to conflicts. I believe that Indians are able to solve their differences despite competing demands. Water has to be made everyone's business and widespread adoption of water-conservation methods will be helpful in minimising conflicts.

How important is the governance factor and policymaking in tackling India's water crisis? How has the country been faring on these two parameters?

The fact that a drought-prone state like Gujarat could achieve water security is due to appropriate policies and good governance. At the national level, the government has acknowledged the problem and developed policies in a participatory manner and come up with appropriate programmes and schemes. Bringing all water-related subjects under a single ministry has helped, as have people's participation and the increasing use of technology in the water sector.

Water, ecology and the environment, poverty and social uplift — all of these are linked. How do we balance the need for development with the imperative of taking better care of an invaluable and stressed resource such as water?

All civilisations and cultures have evolved on the banks of water bodies. Our ethos teaches us to worship water and water bodies and our rituals are embedded in nature: forests, flora, fauna and water bodies. There are great inter-linkages here.

Water scarcity leads to poverty and deprivation. If this is not solved, it won't be possible to ensure socioeconomic development, economic growth and ecological

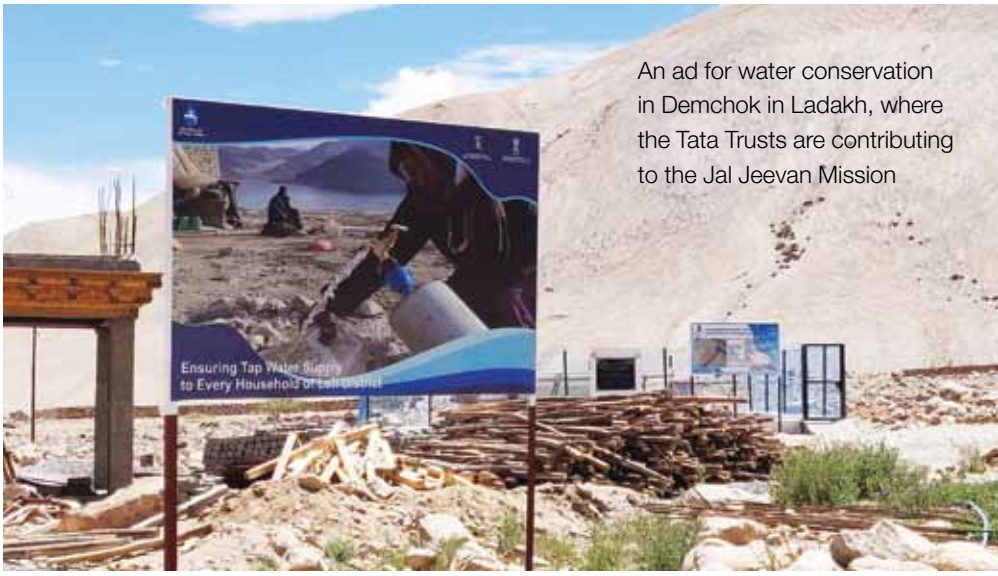
security. Of the 17 Sustainable Development Goals, 11 are connected to water. Without an adequate quantity of water being available, poverty cannot be eliminated. The government is conscious of this fact and is working to ensure water security for all-round prosperity.

What is the role that technology can play in the water sector and in achieving water security?

Repeated droughts and food shortages forced us to construct dams and irrigation systems. The development of Mark-II handpumps has eased drinking water crises not only in India but in many parts of the world. The need to source water from deeper aquifers was solved by high-powered submersible pumps. Microbial contaminants in drinking water have been tackled by the use of technology. These are examples of what can be made possible.

In recent times, water-treatment technologies have made an immense contribution is ensuring the supply of safe drinking water. Desalination technology enables us to convert saline seawater into drinking water. Similarly, satellite data and various digital technologies are used extensively in the planning, implementation and monitoring of water-supply systems and services.

There are disruptive technologies being developed today that are likely to change the whole water sector. Among these are the concept of making water from air, low-cost desalination, ultra-efficient pumps, micro-irrigation systems and water-treatment tools.



An ad for water conservation in Demchok in Ladakh, where the Tata Trusts are contributing to the Jal Jeevan Mission

How can civil society organisations such as the Tata Trusts contribute in helping the government achieve its objectives in the water sector?

Civil society organisations have a huge role to play in building the capacity of local communities, in mobilising and handholding at the village level, in planning and implementing pilot projects, and in filling gaps to make water programmes more effective.

The Tata Trusts are a fine example of how civil society organisations can contribute in the water and sanitation sector. The Trusts have worked with so many NGOs and states; they have a pool of highly committed and talented professionals providing community-level leadership. Additionally, the Trusts are involved in transformational work with technology in the water sector. This is of huge significance in terms of sustainability and service delivery.

You garnered impressive credentials as a biochemist and a scientist back when you were a student and a scholar. Have you been able to use that training as a civil servant?

My educational background in biochemistry and my research work at the All India Institute of Medical Sciences, New Delhi, helped me develop a scientific temper and enabled me to think and work rationally. My knowledge and understanding of science and technology, especially biochemistry, got me to focus on hygiene and public health.

During the Covid pandemic, when I was in the team working on testing, the development and planning of hospital infrastructure, and vaccine development, my knowledge of biochemistry came in handy. I was able to contribute in policymaking because I had this combination of knowhow in science and technology and in public administration. ■

Artisans from Daulasal in Nalbari district display the colourful *mekhala chadors* they have designed and woven

Weaving ways to better days

Antaran, the crafts-based livelihood programme, has created pathways for women artisans in Assam to spin revenue streams from traditional skills

Mina Bibi had never been in an aeroplane until last year. The prospect terrified her so much she was close to tears at the airport. But once the flight took off and levelled out, Ms Bibi relaxed and began to enjoy the experience. "I never imagined I would fly one day," says the 37-year-old resident of Natun Simina village in Assam's Kamrup district. "But then, I never thought I would one day be an entrepreneur, either. Now I can say I've done both."

It was December 2022 and Ms Biba was flying to Chennai for an exhibition, carrying a haul of sarees, stoles, *dupattas* (scarves), curtains, cushion covers, table runners and more that she and others from her village had woven on their looms. The trip was a success, with the group managing to sell most of their wares.

Ms Bibi is one of about 1,200 artisans across the districts of Kamrup and Nalbari that have made weaving their primary source of income. This has been possible thanks to a crafts-based livelihood programme introduced by the Tata Trusts in Assam through their associate organisation, Centre for Microfinance and Livelihood (CML). Called Antaran, the initiative's objective is to revive weaving among various indigenous communities in the state.

"Weaving is passed down from mother to daughter in Assam and generations of women have engaged in it," says Mridula Tangirala, head, tourism, anchoring non-farm livelihoods at the Trusts. "This was mainly a subsistence exercise, though, with women weaving only for their families and themselves."

That meant crafting the traditional *gamosa* (a multiple-use, rectangular piece of cloth) for men and *mekhala chadors* (a two-piece garment similar to a saree) for women. Weaving happened only

when necessary, before festivals or if new clothes were needed. The looms sat idle the rest of the time. "Many women would give up weaving once they got busy with household duties post marriage," adds Ms Tangirala. "It needed to be revived and turned into an income source."

Syed Ruhul Kuddus, an area manager with CML who hails from Golaghat district, saw the decline close up. "My grandmother used to weave but my mother didn't, and neither did my sister," he says. "Weaving was dying in families like mine because one or the other generation discontinued it."

A cultural habit

Meanwhile, in neighbouring West Bengal, people had taken up weaving in a professional way and turned it into a regular source of income. In Assam this remained a cultural habit, with women sitting at the loom only if they had time. "We needed to change that mindset and show them that weaving could be a lucrative, even primary, source of income," adds Mr Kuddus. "That was our first challenge."

In 2018, the Antaran programme was launched in Assam. The idea was to make weaving sustainable and to nurture an ecosystem that would benefit all categories of artisans. The more enterprising and better off could start small businesses of their own. Weavers who didn't have the means to do that could work for the artisan entrepreneurs. Naturally enough, the Antaran effort was targeted principally at women.

Agriculture is the mainstay of

Jyotshna Kalita (centre) with her sisters-in-law Kabita Kalita (extreme left) and Renuka Kalita (second from right); also seen in the photo is Anjali, Kabita's sister

'We have inspired many'

Jyotshna Kalita started weaving at 14, having learned it from her mother and grandmother. But this resident of Nahira village in Kamrup district has never spent as much time on her loom as she had in the last three years.

"I didn't think weaving could ever become a business for me," says the 41-year-old homemaker-turned-entrepreneur. "Before our training with Antaran, we had no idea that we could sell our products online." Ever since she opened an Instagram account in 2020 and started uploading photos of her products, Ms Kalita has been inundated with orders from across India. Even with eight other weavers working with her, some orders take up to three months to complete.

The lockdowns were the busiest time for Ms Kalita. "I connected with customers over social media and sought their opinions about the designs and colours they wanted," she says. "Then, as soon as courier services reopened, we sent the items across."

Ms Kalita is starting to think about expanding her venture, Aalok Handlooms. She wants to buy a Jacquard, a loom attachment that enables weavers to create more complicated designs. This will help improve her products as her current foot-operated loom is quite limiting.

This loom lady's contribution to the family kitty is now more than that of her husband. Ms Kalita makes, on average, ₹15,000-₹20,000 a month and runs the household on her earnings. "I was married at 19 and I used to make clothes for the people in my neighbourhood, just to get some money in hand," she says. "I used to think that was enough, but not now. I don't ask my husband for money anymore; I have my own source of income. Antaran has made that possible."

Ms Kalita's sisters-in-law, Kabita and Renuka, have also come under Antaran's canopy and started businesses of their own. "People say we're a lucky family because the three of us have found this lucrative opportunity and become successful," says Ms Kalita. "We've inspired many others in our village to take up weaving full-time." ■

the indigenous communities in Kamrup and Nalbari. But expanding families and primitive cultivation practices have reduced farming yields for small landholders. What they produce is sometimes not enough to even feed their family. With no surplus to sell, cultivators have been struggling to make ends meet.

Since it started operating in Assam in 2012, CML has tried to introduce other kinds of livelihood means, such as the cultivation of high-value crops and animal husbandry. The goal was to ensure that participating households could generate an additional income of ₹60,000-₹80,000 a year.

It was imperative to draw on all possible options, including weaving. It is in this context that Antaran has made a substantial difference to the lives of artisans in the programme. In many instances, especially with artisan entrepreneurs, family incomes have jumped by ₹200,000 to ₹800,000 per year. "We had to provide local weavers with training," says Sulagna Sen, cluster lead, Kamrup, for Antaran. "They already had the skills; we needed to make their products more marketable."

No loom limits now

The Antaran intervention has been three-pronged. It began with providing technical know-how to help artisans understand and manage their craft better. While almost every household has a loom, these were homemade contraptions fashioned out of bamboo, palm trees or whatever wood was available. This was limiting. Loom care and expertise in repairs were required, and Antaran's trainers stepped in to lend a hand.

In the second part of the intervention, the trainers imparted knowledge about design, colour, composition, layout and enlarging the portfolio of products that could be woven. "Passing the skills down through generations was not enough," adds Ms Sen. "Weavers had to refine their products and make them more appealing to national and international customers."

Sarees, stoles, *dupattas, kurtas* (a tunic, waistcoat or shirt), table linen and various kinds of home furnishings were added to the weavers' repertoire. They were urged

A woman weaver with her infant in the basket of her bicycle, a common mode of transport in Kamrup and Nalbari

Pratibha Kalita has become a businesswoman thanks to Antaran

‘Antaran has changed our lives’

With an annual income of more than ₹200,000 from weaving, 45-year-old Pratibha Kalita is one of the big success stories of the Antaran initiative. This resident of Rampur in Kamrup joined the project in 2019 and started her own company, Chandrodoy Weaves, soon after. Ms Kalita employs eight other artisans — all women, because she wants them to become financially independent like her.

Ms Kalita isn’t resting on her laurels. She’s opened bank accounts for her two teenaged daughters and has started putting funds aside for them. She has also taken an insurance policy for herself. “I would never have thought of all this if it hadn’t been for my association with Antaran. It opened up my mind.”

Ms Kalita has bought a refrigerator and an inverter for her home, both on loan. And, unlike previously, she doesn’t worry about where the money to repay the loans will come from.

“Before Antaran, my creations were restricted to *gamosas* and *mekhala chadors*. Now I make sarees, stoles, *dupattas,* shawls and lots of home furnishings,” says Ms Kalita. “I use vibrant colours and have begun to craft cotton and light-coloured garments for summer and eri silk items for winter. It was Antaran’s trainers who taught me, among other things, the nuances of seasonal clothing.”

Ms Kalita has begun to experiment with new designs: stoles with palm leaf-inspired motifs are her bestsellers. These were sold out at the Antaran-organised exhibitions Ms Kalita has been to in Jaipur, Mumbai and Kolkata.

“The Antaran project has been a huge blessing,” says Ms Kalita, “not just for me and my family but for every single person who works with me or is associated with my enterprise. Being part of the programme has changed our lives.” ■

to use new kinds of material. While this region is known for its cotton and eri (an indigenous silk), over the years the price per bolt of these fabrics has gone up so much that local people can only afford polyester and other cheap synthetics.

Antaran took it upon itself to buy bolts from manufacturers directly and lend them to the artisans so that they can make samples from which they can get more orders.

Dyeing was another problem. The cheap cotton that weavers could afford was usually of such poor quality that it would frequently bleed. To deal with the issue, CML is now trying to set up natural dyeing units in the different villages of the Kamrup cluster.

As dyeing was an issue, most artisans would make *gamosas* and *mekhala chadors* in white, off-white or brown, with a red or green border. After training, their palette now includes pastels and bright colours, with better-quality dyed yarns or even natural yarns, as suggested by the trainers.

In with the new

Antaran has also introduced new motifs to the weavers. The traditional floral 'bootas' and geometric patterns of the tribal communities have expanded to include trees, plants and animal motifs. "We have introduced new motifs but we try to keep the language the same so that it can be identified as distinctly Assamese," adds Ms Sen. "We show the weavers how to play

Manju Das Kalita is confident about growing her business

Unstoppable senior

At 62, Manju Das Kalita didn't have much reason to step out of her village of Amtola in Kamrup district. That was till recently. Now she travels to Boko, about 12km away, once or twice a week for work.

That's because in 2022, Ms Kalita started her own weaving business after receiving training under the Antaran project (she was one of the oldest to do so). She currently has 10 weavers working with her. Since two of them live in Boko, she visits regularly to check on their work.

Undeterred by age and a stroke she suffered some years ago, Ms Kalita is determinedly growing her enterprise, Maa Weavers. "I started weaving when I was in Standard X," she says, "but I gave it up once I went to college. Then, at 35, when my children were older, I took it up again."

Ms Kalita had always depended on weaving for some extra money. Before she formally started her label, she would weave *gamosas* — sometimes as many as 100 a month — with the help of two other artisans and sell them at *melas* (fairs) in Guwahati. The sales, however, were nothing to speak of; *gamosas* are made by every other weaver in Assam.

Antaran changed all of that for Ms Kalita. She has expanded her customer base, and to foreign countries too, recently shipping 80 silk stoles to a buyer in the United States (via a Kolkata contact). "They got in touch with me over social media," she says. "I needed my son to download Instagram and WhatsApp on my phone, but I operate them myself. I have become tech-savvy."

Ms Kalita has done a fair bit to bolster the family income. Her husband, who retired as a police officer, manages the family's agricultural plot and makes ₹30,000-₹40,000 every three months (during cultivation periods). Ms Kalita has added ₹60,000-₹70,000 a year to the family's financial pool through weaving.

"I'm constantly thinking of ways to better my business," she says. "I don't have enough money right now, but as soon as I do I'm going to go all out." ■

Women sharpen bamboo sticks into *sheris*, which are used to define designs on the loom while weaving

around with their existing motifs, and also take inspiration from the world around them."

The third, and arguably most important, part of Antaran's programme concerns providing a market connect for the weavers. Social media is one part of that. With mobile penetration, weavers in even the remotest parts of the state have cellphones. After receiving training, many artisan entrepreneurs have opened social media accounts on Instagram, Facebook or WhatsApp and uploaded photos of their products. They have also begun to receive orders online, from India as well as abroad.

Antaran promotes artisans through its social media platforms and has helped some of the entrepreneurs among them create a brand. The trainers encourage the entrepreneurs to post different kinds of content around their products. This move has brought families together, with many of the children of weavers managing their parents' online marketing and sales. Not surprisingly, youth who were disinclined earlier are now reconsidering weaving as an option.

Megha Kalita, 17, who has just finished her higher secondary exams, manages her mother Jyotshna's social media accounts. "I was not sure if I wanted to take up weaving, but after watching my mother I want to do this business myself," she says. "My mother gets so much respect from everyone because of her work. I'm interested in designing garments. So, when I finish my studies, I will join her. Together we will expand the business."

Customer connect

The Antaran team organises exhibitions in different metros from time to time and invites artisans to showcase their products there. "This is immensely helpful," says entrepreneur Pratibha Kalita. "We get to interact directly with potential customers and understand exactly what they want: colours, designs and even the pieces that they prefer."

Antaran has been successful in making weavers independent with a proven method. It provides training free of cost, facilitates the procurement of raw materials at competitive prices, connects the weavers to the market in such a way that customers as well as higher profit margins are enabled, and lends support with technology and design inputs. Financial matters (invoicing, pricing, etc) are left to the weavers.

"I can't thank the Antaran team enough for what they have done for us," says artisan entrepreneur Manju Kalita, who, at 62, is enjoying financial independence for the first time in her life (she contributed about ₹150,000 to her family's income last year from weaving). "They've given our age-old tradition, as well as us, a new lease of life." ■

By Labonita Ghosh

LOOM FOR A LIVING

For decades, families in the Kamrup and Nalbari districts of Assam viewed their generations-old tradition of weaving as a leisure-time activity. Passed down from mother to daughter (and occasionally to son), weaving was rarely seen as a source of primary income for the household. Then in 2018, Antaran — the crafts-based livelihood initiative of the Tata Trusts — was launched in Kamrup and Nalbari, and later in Dimapur in Nagaland. Weavers received training to expand product lines, use natural fabrics and dyes and incorporate new designs. They were also provided with marketing support, particularly with online sales. Antaran has opened up new avenues for Assam's weavers. More than 1,200 artisan weavers have been enabled through the project. Then there are the artisan entrepreneurs, who have earnings of ₹200,000 to ₹800,000 a year. That's not so traditional.

The first batch of artisan entrepreneurs in the Antaran programme after their training in 2019.

Artisan entrepreneur Kabita Kalita (above) winding a bobbin, one of the many pre-loom processes in the craft of weaving; **a weaver** engaged in pirn-winding, where yarn is wound around bobbins before being fitted to the shuttle of the loom.

Artisans with (above) design educator Liz Williams at a workshop in 2020; **a group of** artisans at a workshop conducted by natural dyeing expert Jagada Rajappa (centre). These workshops were held at Antaran's incubation and design centre in Kamrup.

Sayanika Nath, who is training to become an artisan entrepreneur, wearing a ***mekhala chador*** — a two-piece garment for women — that she herself designed and wove.

Artisan entrepreneurs (above) with the smartphones they were gifted by CRISIL Foundation to facilitate digital marketing of their products; **Jyotshna Kalita**, the proprietor of Aalok Handlooms, at Antaran's incubation and design centre in Kamrup.

An artisan warping yarn, a pre-loom process that precedes weaving.

(Clockwise from above) **Products made** by Mina Handlooms, one among the many businesses under the Antaran umbrella; **Namita Nath**, the proprietor of Sakhi Handloom, working with cotton as part of her training at Antaran; **a table linen** set, including napkins and a runner, created by artisans for an Antaran initiative that focuses on design training and product range expansion.

‘Every Indian is an asset’

Poonam Muttreja is not one for holding back. The executive director of the Population Foundation of India (PFI) — a nonprofit founded in 1970 by a group of industrialists under the leadership of then Tata group chairman, JRD Tata, and Bharat Ram of DCM — Ms Muttreja has a lot to say about what it means for India to become the country with the most human beings in the world. And almost all of her thoughts on a subject as big as it comes are positive, but with riders.

More than 35 years of experience in the development sector has equipped Ms Muttreja with knowledge and ideas that go beyond India’s population numbers to the people who comprise them. An inclination to contribute to social uplift was what led her to cofound Sruti, which champions social justice, and Dastkar, an organisation devoted to the wellbeing of the crafts industry. Ms Muttreja opens up here to Christabelle Noronha on a range of issues.

Edited excerpts from the interview:

Poonam Muttreja at the Population Foundation of India office with a portrait of JRD Tata, the late chairman of the Tata group, in the background

India is on the cusp of overtaking China as the world’s most populous country, if it hasn’t already. This is largely symbolic, but what are the wider social implications here?

It was expected that India would overtake China sometime in 2023. While the milestone may be symbolic, the socioeconomic implications are many, given the limited resources we have and the limited opportunities available. India has a very large young population which has huge potential to contribute to the country’s economic growth and development. We have to leverage this potential; it doesn’t happen automatically.

We need to create an infrastructure where there is universal access to family planning services for all people in the reproductive age group. We need to develop the infrastructure for more schools and colleges, better health facilities, skilling and job opportunities for the young.

India’s population story has a north and a south to it. People numbers are still rising in the north, while the population is

plateauing or even declining in the south. What sort of political and economic consequences can we expect as a result?
There is a profound demographic diversity that exists between the north and the south. The states in the south have seen a demographic decline. Some have had a population stabilisation and also a decline (in states such as Kerala). Fertility reduction has worked in the south but this is taking more time in the north.

Much of the population growth in India today is in the north. States here have a much bigger youth population that is at a reproductive age. This is a demographic advantage if we can generate opportunities for them.

From a political standpoint, the northern states will have more parliamentary constituencies when the delimitation exercise takes place. There will, therefore, be an imbalance between north and south. The number of parliamentary seats in each state — calculated on the basis of the 1971 census — is frozen till 2026. Standardising the number of people per constituency through a delimitation exercise, which will happen sooner than later, will lead to reduced representation for the southern states.

This means we are disadvantaging those who have stabilised their population, those who have invested in human development. It's a situation that could cause political and other kinds of discord. For instance, budgetary allocations by the centre to the southern states will decrease. That doesn't sound fair.

You have been quoted as saying "India's demographic dividend could turn into a demographic disaster" if we don't invest wisely and well in "adolescent education, health and sexual health."
India's population is young and that augers well for the future, but the country needs to urgently and greatly step up investments in health, nutrition, education and skilling. We need pathways to employment.

A demographic disaster will happen when we have a large population of young and unhappy people who do not have employment, who lose hope, whose aspirations are being scuttled or are not getting realised. That's when we will have a problem.

We are not a dysfunctional society as of now, but there could be a situation where a large number of people with poor psychological health are attracted to violence, addictive drugs and the like. We have seen that in Punjab, where many young people are not willing to, or who don't aspire to, work in farming.

"The people who fail the poor the most are at the village and [subdistrict] levels, specifically the bureaucracy and the [village councils]."

In terms of policymaking, how best can India deal with the challenges of population growth? What can we learn from other countries in this context?
India has the best of demographic data, thanks to our census. We need to use that data to plan for our people. If you look at the data, you will see the stress-and-supply failure to meet the demand for education and healthcare.

Members of a tribal community sorting out forest produce; Sruti, the organisation that Ms Muttreja cofounded, has been a votary of the rights of such communities

Not only do we need universal healthcare, we need universal access to family planning services. We must empower our women to be able to decide when and how many children they will have. This is something that India can do and has the courage to do. We have some of the most liberal laws on abortion but we cannot be pushing our women to have millions of abortions every year. These are not irresponsible teenage pregnancies; it is, primarily, proxy contraception.

The completion of the 2021 India census has been pushed back to at least October 2023. Could we not have avoided the delay, and how important is the census itself?

The census should have happened in 2021, but the government had a good excuse in that Covid was raging then. The question is whether the census can be completed before the 2024 general election. That's one for the government to answer but the implications of delaying the census are serious for planning and governance.

With census data, the real action is at the district level. That's what best reveals information and data on the state of our human resources, demography, culture and our economic status. This information is vital in shaping our country's future, and beyond merely development.

The precise and detailed data provided by the census on population

size, population composition and spatial distribution are necessary. We keep talking about the two-child norm and we keep saying one religion is going to explode in terms of numbers, but the last two censuses have shown a decline in the Muslim growth rate.

We ought to know what happened because once population starts declining, it declines at a faster rate. That is the phenomenon we have seen across the world. We need to know by how much the Muslim growth rate has come down and the reasons for it, so that we can strengthen those reasons. Policies and programmes without updated data can lead to many unforeseen distortions.

You cofounded Sruti, which works in the area of social justice, as also Dastkar, which is involved with crafts. How have the two experiences panned out?

I am privileged to have been associated with these organisations. We got the best of people when we founded Sruti and Dastkar, even though I was young (in my 20s). Sruti not only facilitates and supports social action, but also strengthens it through the intermediary processes of advocacy, engagement, association, capacity building and solidarity.

Investment in the social sector by foreign funding organisations is becoming more and more difficult. That's why it was a wise decision to have the Sruti fellowships and to raise funding from sources and individuals in India. As for me, I just set up and move on because I'm a person in a hurry. There's so much to do.

Unfortunately, the problems addressed by Sruti and Dastkar continue to linger, particularly poverty. The people who fail the poor the most are at the village and *block* [subdistrict] levels, specifically the bureaucracy and the *panchayats* [village councils]. *Panchayats* can do good work — as seen in Kerala, for example — when they have greater autonomy.

What about Dastkar?

My dream was to bring artisans into the market. Craftspeople have had a tough time in India; the only place you could find crafts were at the craft emporiums. I thought that, given the number of skilled artisans in India, I could help bring them to the forefront as assets for the country.

The demand for crafts is huge and India could have done what China did. I still hope India will do what China has done, which is invest seriously in crafts and craftspeople. I'm disappointed that we don't have a policy that promotes artisans. We keep talking about skill development but what about the millions of artisans who have skills?

"We have to... make every effort to ensure that we have a dialogue with the government and help it understand that there are NGOs that are good for the country."

The NGO ecosystem in India has been going through a churn, to put it mildly, in recent times. What are your hopes and expectations for the sector?

My hope is that people stay the course because, at this point, it's a question

of life and death for NGOs. Many are closing down, especially at the grassroots level. The new regulations in place prevent intermediary or larger organisations from collaborating financially with smaller ones.

We are not going to be able to support [the smaller NGOs] if we can't support people at the community level financially. We are here to make the government infrastructure stronger and the government must realise that. NGOs enable improved governance at the community level, something that political leaders, parties and governments cannot do on their own.

Considering the fragile and dysfunctional delivery system we have, the NGO sector and social activism at the grassroots are more important than ever, but they are being starved financially. They are facing an existential crisis. My hope is that the corporate sector will step in and that mechanisms will be found; there is a solution for everything.

We have to, moreover, make every effort to ensure that we have a dialogue with the government and help it understand that there are NGOs that are good for the country. Separating the wheat from the chaff is not difficult for the government. There is no point damning the entire sector.

As for PFI, I must say we are in a happy situation. We continue to work with the central government on both policy and programmes. At the state level, we have recently crafted a population policy for Uttar Pradesh. This provides a fine example of collaboration with the government.

We need to point out what needs to change, instead of just condemning the government. We need a dialogue with the government, we need civil society members outside of NGOs raising these issues. We need champions for the sector.

How would you rate, on a scale from one to ten, the socioeconomic progress India has made in the 75 years since independence?

If you had asked me this question 25 years ago I would have found it difficult to answer. I think we have seen the impact of India's investment in the development sector over the last two decades and the census is one of the best indicators of this. I would rate India at five.

India's population is expected to peak at about 1.7 billion people in 2064. What sort of a country do you foresee at that point?

That depends on what we do between now and then. Do we plan for the population or curse it? I think we need to do the former. I am hoping that by 2048 we will have the essential education infrastructure required for every Indian who wishes to study, whether at the village, district or state level.

We should stop complaining about our population numbers and start considering every Indian as an asset. We are on the right trajectory but there has to be more inclusive growth and more progressive attitudes. If we can do away with the strife and discomfort and focus on the prize, we will do well. ■

Dastkar, another organisation that Ms Muttreja cofounded, has been an ardent supporter of crafts and craftspeople across the country

Trained to protect

A women-focused skilling programme has created cybersecurity pros with a high employability quotient

Sofiya Shaikh did not just break the glass ceiling; she took a sledgehammer to it. The 22-year-old resident of Markapur, a town in Andhra Pradesh's Prakasam district, is the first woman engineer in her extended family, and in her neighbourhood as well.

"I'm in this position because of my parents," says Ms Shaikh. "In our family girls are not encouraged to take up jobs or go for office work. But my parents gave me a lot of support; first, to do my engineering, and then to become a software professional."

Ms Shaikh was fortunate in that her father backed her all the way. He himself could not afford an education because of his family's financial situation, but he insisted that Sofiya and her two younger sisters study as much as they could. "When it came to my engineering course and, later, my employment, he convinced the elders in our family. He went to a lot of trouble."

The effort was validated recently when Ms Shaikh landed a job with Infosys. The springboard for this was a four-month cybersecurity course she enrolled in. CyberShikshaa+, as the initiative is called, is a collaboration between Tata STRIVE, Microsoft India, Data Security Council of India (DSCI), Tata Communications and Tata Consultancy Services.

Launched in April 2022, CyberShikshaa+ builds on the CyberShikshaa programme designed by Microsoft India (through its philanthropies in 2018) and DSCI and it is being implemented as a nationwide skilling initiative by Tata STRIVE, which operates under the umbrella of the Tata Trusts. The programme's objective is to provide advanced training in cybersecurity and

augment a talent pool of data- and privacy-protection professionals, much needed in these times when online fraud, spying and attacks are becoming common.

CyberShikshaa concentrates on young women and men. While Microsoft aims to skill more than 45,000 learners and provide employment to about 10,000 of them in the next three years, Tata STRIVE — with CyberShikshaa+ and other initiatives designed in collaboration with Microsoft — can cover a significant portion of this target. With an expanded portfolio of offerings, it will train more than 10,000 youth in cybersecurity in the next two years.

"As the digital world expands, the risk of cyberattacks increases," says Rajarshi Mukherjee, principal lead, partnerships, at Tata STRIVE. "Despite governments across the world putting in plenty of effort, we still see serious cybercrime taking place. That explains the growing need for people trained in cybersecurity."

The demand for such people is huge. A recent report by IBM states that the Asia-Pacific region saw the highest number of cyberattacks in the world in 2022 (for a second successive year). In 31% of the attacks, hackers used backdoor malware — harder to detect and neutralise — to gain access to systems.

Fast-track criminality

Ransomware, where hackers steal data and demand a ransom for it, comprised 13% of cases, added the report, which also pointed out that cybercriminals have become better and faster at infiltrating systems, with the time taken to carry out a ransomware attack decreasing from an average of two months to four days.

There aren't enough trained and qualified professionals to counter the cybercrime wave. In 2018, shortly before enacting its Global Data Protection Regulation — the legislation many

(from left) Shruti Srivastava, Sofiya Shaikh, Vaibhavi Patange and Varshita Bedi have done well for themselves after completing the CyberShikshaa programme

countries have modelled their privacy guidelines on — the European Union had said at least 75,000 data-protection professionals were needed worldwide. That number is much higher now.

"Everyone today, whether individuals, institutions, companies or countries, faces cybersecurity threats," says Gunjan Patel, director and head of philanthropy and community engagement at Microsoft India. "If one looks at the business requirement for cybersecurity experts, it is enormous. But there is a dearth of such experts. Worse, women's participation in the cybersecurity domain is absymally low."

Mr Patel adds that opportunities in the field are increasing to an extent where IT professionals are switching careers to become cybersecurity staff. "We are able to not just create a skilling ecosystem for trained professionals in cybersecurity, but also ensure access and opportunities for learning for a more diverse workforce, which is why we felt the need to introduce a cybersecurity programme. By design, our initiative provides equitable opportunities for young women."

A bigger pool is the goal

Tata STRIVE has built on the existing CyberShikshaa programme and taken it further in two ways. Says Mr Mukherjee: "Our goal is to increase the pool of cybersecurity-trained personnel in India, and also to democratise job opportunities for youth who come from disadvantaged backgrounds and may not be able to access higher levels of education."

One of the criteria for selecting learners is that their family income must be less than ₹700,000 per annum. Shruti Srivastava's family, residents of Bareilly in Uttar Pradesh, made the cut. "I come from a humble background," says the 21-year-old. "Were it not for the CyberShikshaa programme, I wouldn't have got the chance to work where I do now [at a Delhi-based software security company]."

Ms Srivastava earns ₹1.1 million a year, a lot more than what her father, the principal of a government college, does. It helped that she had somebody to lend her a hand. "If our trainers from CyberShikshaa hadn't found us placements or referred us to companies, it would not have been easy to find a job."

Having Microsoft on their side has been an advantage for the learners. "When we started speaking to Microsoft and DSCI about running a cybersecurity programme with content curated by them, it automatically provided weightage to the fact that our learners would receive a Microsoft-endorsed certification," says Mr Mukherjee.

The Tata STRIVE programme has proved to be a boon for many, particularly women. "While cybersecurity has been significantly gaining prominence across the globe, the percentage of women in this space has remained dismally low, even though many IT companies have moved to having an inclusive workforce," says Mr Mukherjee. "In cybersecurity, the number of women today is only 10-15%."

One of these women is Vaibhavi Patange, who enrolled for the course to future-proof her career. "Whether it be artificial intelligence, machine learning or blockchain, the success of your venture will always depend on how secure your operations are," she says. "I opted for something in an area that does not have too many people in it yet."

Ms Patange, a 23-year-old who hails from Mumbai, works with a company that provides cybersecurity solutions to corporate entities. Her job entails preventing data loss and looking for breaches. "We are also getting trained in cloud security, so we can work on other projects if we get the chance," she adds.

Ms Srivastava says the course has

provided her with much-needed practical experience. "As a teenager, I gained knowledge about hacking from YouTube, but I lacked the guidance to do anything more. When I joined CyberShikshaa I asked our trainer if it was going to be more than just classroom learning. He laughed; 15 days later I discovered why."

The software company Ms Srivastava is with provides supply-chain solutions. Her responsibilities include finding bugs in the system (by doing penetration testing, which means hacking into the company's database to check if it is secure). CyberShikshaa has given Ms Srivastava the confidence to think big and to think ahead. In five years, she says, she hopes to become an information security officer heading a crack team.

Race for pace

Varshita Bedi, Ms Srivastava's mate from the CyberShikshaa programme and now also her colleague, loves the blistering pace of her new job. "With cybersecurity, you get to learn new things every day," says the 23-year-old from Najibabad, about 240 km from Delhi. "Attacks are taking place hard and fast today, so you have to keep updating your skills."

Ms Bedi nurtures a desire to give back. "Cybersecurity is still a male-dominated field," she says. "In my team of 12 members, there are only two women. We're both doing well, so why not bring others into this?" Ms Bedi says that sometime in the next 10 years, when she has acquired enough expertise and experience, she will set up a community of women cybersecurity professionals.

"I will teach them everything I've learned," she says. "More importantly, I will create awareness about cybersecurity and help them understand that they, too, can have a flourishing career in this field." ■

By Labonita Ghosh

Setting the course

CyberShikshaa has seven modules: system fundamentals, introduction to cybersecurity, cryptography, network security and counter measures, web server and applications security, cyber forensics, and security audit.

The programme trains learners to potentially build a career as:

- **Security engineers:** Use knowledge of threats and vulnerabilities to build and implement defence systems. This is a stepping stone to becoming a security architect, responsible for the organisation's entire security infrastructure.
- **Incident responders:** Monitor the company's network, work to fix vulnerabilities and minimise losses when a breach occurs.
- **Digital forensic investigators:** Work with law enforcement departments to investigate cybercrimes and retrieve data from digital devices.
- **Penetration testers:** Identify system weaknesses to help companies build more secure systems. Even ethical hackers need a background in cybersecurity, as they try out 'attack vectors' to uncover security weaknesses.

These students from Bhasko Harratoli village in Jharkhand's Khunti district make for a happy lot on their return, in February 2022, to the local primary school after 18 months of being stuck at home due to the Covid lockdowns

Lessons to learn

A comprehensive study tracking Covid's impact on education reveals grim realities about child schooling and safety, and provides a roadmap to effect improvements

Sumathi (name changed) pores over a page, making a crayon sketch of 'life during the pandemic'. The daughter of migrant workers who were stuck in Bengaluru due to the countrywide Covid lockdowns, the Std V student's drawing depicts one of the misfortunes visited on her family during that traumatic time: her parents quarantined in a jail-like structure, separated from their nearest.

Sumathi's plight was not hers alone. Hundreds of thousands of children around India suffered as Covid burned its way through the world, many uncounted going to bed hungry as schools stopped providing cooked food or rations. As the lockdowns continued and schools remained shut for 18 months and more, students living in areas with poor or no internet connectivity gradually lost their grasp of alphabets and numbers. Cases of early marriage, child labour and trafficking rose, as did drug and alcohol abuse.

These glimpses into Covid's impact on the lives and education of India's children are chronicled in a Tata Trusts-supported research study featuring about 1,200 children, and an equal number of parents, across 12 blocks (subdistricts) of Jharkhand, Rajasthan, Uttar Pradesh and Karnataka. The blocks covered were already ranked low on development metrics; Covid rendered their condition dire.

Released in June 2022, this first-of-its-kind study was undertaken by the Delhi-based Council for Social Development (CSD), with a team that reached out to government officials, *panchayat* (village council) members, teachers and school authorities. The focus was on rural and marginalised families, including migrants.

The researchers paid particular attention to the experiences of children during the closure and reopening of schools. Going beyond recording gaps in their learning, they looked at how widespread unemployment, prolonged school closures and other shocks impacted the access children had to education, health and social protection.

The child rights perspective is critical here. "Framing these issues in the context of children being deprived of their fundamental rights is the best way to get society to take note of, and seriously address, these issues," says Kishore Darak, manager, education, at the Tata Trusts.

The pandemic's shadow

The study assessed the efficacy of relief interventions by the union and state governments and non-state players such as nonprofits. Its analyses are distilled into targeted recommendations (see *Covid and after'* , right) necessary to help children still affected by the pandemic's long shadow.

For the Trusts, the report has revealed several insights about the state of education in their project areas. "The Trusts-CSD report is a holistic effort; its findings have the potential of informing our programmatic design and strategies," adds Mr Darak.

The lockdowns unleashed an economic crisis that affected millions of low-wage, informal-sector workers. This was reflected in the study, where adult participants were mainly seasonal workers living in rural or semi-rural regions. With many of these workers losing their jobs, unemployment rose by 20%. Nine out of 10 surveyed households reported a loss of livelihood. Government-run relief schemes dulled these financial shocks, but only to a limited extent.

Financial distress forced parents to make harsh choices. The study found that about 15% of students were shifted from

Covid and after

Conducted in January-March 2022, the Tata Trusts-Council for Social Development study covered...

- 12 subdistricts in Jharkhand, Rajasthan, Uttar Pradesh and Karnataka
- 14 schools and *anganwadis* (childcare centres)
- 1,200 students; 1,200 parents; and 240 teachers and *anganwadi* workers, government officials, NGOs and village council members

Key findings

- **Financial distress** — 20% rise in unemployment immediately after the pandemic; 90% households reported livelihood losses
- **Education issues** — 15% students shifted from private to government schools due to financial and other problems; 20% parents reported poor school infrastructure; 30% of parents cited children's reduced ability in literacy and numeracy
- **The digital divide** — 98% of children said they preferred regular schooling to online teaching; 72% students did not have access to a digital device; 70% with access could not manage enough time for studies; only 50% of teachers received digital education training
- **Health and wellbeing** — 25% of children reported irregular supply of take-home rations by schools and *anganwadis*; 28% of parents reported reduced wellbeing and higher stress and anxiety in children

Insights and suggestions

- Relax the eligibility criteria for child-protection benefit packages
- Conduct rights-based, inclusive and sustainable interventions to ensure children are protected
- Ensure adequate allocation for education and implementation of the Right to Education Act
- Strengthen teacher recruitment, training and school infrastructure
- Revisit the national education curriculum framework to address learning gaps
- Recognise digital technology as a tool, and not as a replacement for face-to-face education
- Make village councils, school management committees and community members more active in school education

private to state-run schools to save money on fees. Girls bore the brunt in these cutbacks. "Parents typically preferred to give their sons a better education in private schools, while their daughters would be sent to state-run schools," says Dr Nitya Nanda, director, CSD.

By recording how the pandemic deepened long-standing socioeconomic inequalities, the study sends out an important message to policymakers and others working in child development. "The health crisis caused by Covid may be over soon. But the financial losses of marginal families and the learning losses experienced by their children will not disappear overnight," says Mr Darak.

The learning losses are of real concern. The report found that the closure of schools between March 2020 and September 2021 had likely slowed India's progress on implementing free, compulsory and universal right to education. Three-fourths of the parents of government-school students — who comprised the bulk of the survey group — said that their children's education had been affected by the school closures, as had their health and safety.

In Uttar Pradesh, parents desperately wanted schools to reopen because of alcohol and drug abuse by their kids. But reopen to what? The dilapidation of school infrastructure after nearly two years of disuse was stark. While a few school management committees and *panchayat* representatives made efforts to repair or augment school facilities, those were exceptions. On average, one in five parents expressed concern about the state of school toilets, boundary walls and classrooms.

The research team's conversations with parents indicated that learning gaps had accelerated due to the lockdowns. A third of parents felt their children's foundational literacy, numeracy, reading and writing abilities had worsened. Many schools shifted to online classes, but this led to a digital divide between haves and have-nots.

With lots of parents citing financial barriers, less than 30% of the students had access to online classes. Among those who did, most did not like the online experience, were distracted or found that the devices they used caused eye strain. The majority of these online students spent barely two hours a day with their books. The lack, or inadequacy, of training provided to teachers didn't help, either. "Across states teachers said that they had not been educated on the use of digital devices," says Dr Nanda.

Digital divide and after

The Trusts have, through their programmes, attempted to bridge the digital divide through offline alternatives such as community learning centres and a range of libraries. But the challenge remains steep. Says Mr Darak: "Learning levels during the pandemic were abysmally low, but we could stem the losses in regions where we worked closely with the community."

Government endeavours have tried to plug the pandemic-induced gaps. At the national level, the government rolled out apps like Digital Infrastructure for Knowledge Sharing (DIKSHA). Additionally, TV channels, WhatsApp groups and radio have been employed to disseminate information, and there have been initiatives such as community classes and home visits by teachers.

More is needed. India's schools are not just centres for education; they play a vital role in providing proper nutrition to children, in the form of midday meals as well as health supplements and sanitary napkins for adolescent girls. Importantly, schools offer a safe and supportive environment for students and children.

Nutrition was one of the immediate casualties of school closures. The pausing of

the midday-meal scheme in the pandemic's initial stage was a body blow for schoolchildren. States soon woke up to this issue. In lieu of cooked meals, they began distributing dry rations. Over 70% of the students surveyed in the study received these dry supplies; one-fourth among them said the supply was irregular.

Being confined indoors and deprived of their daily routine appears to have caused mental health issues in children across the four states. A high number of the surveyed parents — from 37% in Uttar Pradesh's Pakharpur subdistrict to 70% in Karnataka's Yadgir — felt that their children were under increased stress and anxiety. Household financial woes had a part to play here, as did an increase in domestic violence.

The compromising of child safety during the lockdowns was among the graver findings of the study. There was evidence that child labour, child marriage, child abuse and child trafficking had risen during the pandemic. This was corroborated by child protection personnel who interacted with CSD.

The study found that many children were forced to work during the pandemic to support their families. Karnataka and Jharkhand saw the highest cases of children accompanying their parents for work. Here, too, gender differences were apparent, with boys primarily taking care of chores outside the house and girls doing the cooking and housekeeping.

Oral accounts of child marriage mainly came from parents and children in Jharkhand and Rajasthan. The reasons cited were widespread poverty and concern for the safety of girls. Several parents lost their daughters to trafficking. "They would send their daughters to work in other areas and realise later that they had been trafficked," says Dr Nanda. Lack of official data makes these cases difficult to quantify.

The report has highlighted the need for long-term and comprehensive child-protection policies. Mr Darak says that the poor implementation of child-protection laws should be a key takeaway for policymakers. "The study is a reminder that we need more on protecting children, and that parents, school authorities and policymakers need to unlearn and change their beliefs about child safety."

Child rights is a complex and interconnected subject. By gathering a wealth of qualitative and quantitative data, stories, and insights, the Trusts-CSD report provides a post-Covid roadmap for policymakers, community members, nonprofits, funding agencies and other stakeholders to join hands and bring children back into the educational mainstream. There's no time to lose. ■

By Nikhil Menon

Members of the research team observe a classroom at a Tata Trusts-run community centre in Bardehra village in Uttar Pradesh's Shravasti district

Ravina Solanki, the community health officer at the Unnai health and wellness centre in Jhabua district, speaks to a patient

Healthier canvas

More than 2 million people will benefit from the boost provided by a project to enhance government health and wellness centres in Madhya Pradesh

Pana Damor is 62, diabetic and dependent on public healthcare. For her treatment she would visit the government health and wellness centre (HWC) in Makankui, a village in Madhya Pradesh's Jhabua district. Often, she would make the trip only to find the centre closed.

Over the past year, though, Ms Damor's experience has been transformed. Now when she visits the HWC she meets the community health officer (CHO), who tracks her medical history, manages her condition and counsels her about a healthy lifestyle. "It's a great relief to be attended to properly every time I visit," says Ms Damor.

Thousands of people like Ms Damor are benefitting from a rejuvenated public healthcare system in Madhya Pradesh. The Makankui HWC is among hundreds of centres being upgraded as part of the Madhya Pradesh Health System Strengthening Project (MP-HSSP), a Tata Trusts-supported effort to strengthen the delivery of comprehensive primary healthcare in the state. MP-HSSP helps turn these upgraded centres into model health facilities that can serve as benchmarks for other centres.

Launched in early 2021, MP-HSSP is being implemented by the Trusts' associate organisation, Collectives for Integrated Livelihood Initiatives (CInI). Currently, the initiative covers 432 subcentre HWCs and 14 urban primary health centres (UPHCs) in 23 districts of Madhya Pradesh, benefitting a

populace of more than 2 million people. These numbers will go up when the initiative hits its target of 500 HWCs and 23 UPHCs.

The programme has the weight of the state behind it. It is monitored by an executive committee comprising members of the National Health Mission, the Trusts and CInI. The centres are being upgraded based on guidelines set by Ayushman Bharat and the National Quality Assurance Standards (NQAS). The Trusts, through CInI, provide the technical support to improve the provisioning and quality of services in these model centres. The state government brings in the infrastructure, ensures the necessary supplies and manages human resources.

The mandate for CInI is huge. Apart from overseeing the infrastructure improvements of hundreds of HWCs, it is putting processes in place to ensure service strengthening, quality assurance and capacity building of about 10,000 grassroots healthcare workers.

"Our task was cut out from the beginning," says Sonal Das, general manager, central and east zone, with the Trusts. The challenges in executing the programme were significant: availability of healthcare workers in rural areas, skill gaps among the staff and inconsistent operational processes. These were compounded by community-related issues such as poor 'health-seeking behaviour', lack of awareness and socioeconomic distress.

To start with, CInI conducted an initial assessment of 181 HWCs serving around 1 million people in July-September 2021. The assessment spotlighted a multitude of infrastructural and process inadequacies. For instance, most centres lacked basic facilities like privacy in examination rooms, dedicated spaces for diagnostics and laboratories, functional toilets, amenities for the disabled and biomedical waste management. And there were issues with the availability of essential drugs and supplies, skills and training, record-keeping, etc.

The assessment looked at service gaps in the 12 comprehensive primary healthcare services that HWCs are expected to provide. The findings led to a three-pronged strategy: operationalising standardised protocols at the HWCs and UPHCs, building the capacity of frontline workers and enabling technology adoption.

At the heart of the system-strengthening effort is the capacity building of frontline healthcare workers. "We leveraged the support of existing government institutions and trainers to facilitate upskilling of primary healthcare workers," says Ms Das. The MP-HSSP team has thus far trained nearly 7,500 health workers and mentored more than 2,700.

Digital dividends

An important component of MP-HSSP has been the leveraging of existing digital platforms in the healthcare system to ensure comprehensive and continued care. The digitisation work has been initiated and will be rolled out in phases.

Mohan Prasad, an auto mechanic from Singrauli district, realised how digital records could be a boon. An asthmatic, he would buy medicines based on a prescription from his UPHC. When he lost the prescription, he became anxious. On his next visit the doctor told him not to worry as his data was recorded. "I never imagined that a machine would know more about my age, location, and disease than I do," he says.

There is also an intense effort to improve health-seeking behaviour among rural residents. This translates into better utilisation of the health services available in rural regions and, consequently, a reduction in the load on bigger centres.

"Our team motivates and mentors

Community health officer Rajkumar Pal of the Mahaneem Chouraha health and wellness centre in Vidisha district examining a patient

Voices from the frontline

Community health workers recount their experiences of the MP-HSSP:

"I was introduced to the concept of herbal gardens and medicinal plants, which is a part of creating a model centre. The CInI team and I worked hard and now our garden has *amla* (Indian gooseberry), aloe vera, neem, fenugreek, ginger, garlic, basil and *patharchatta* (kalanchoe pinnata)."
— **Pratibha Pandey,** HWC Kuchwahi, Sidhi district

"The community never counted us as a part of their village. People, even pregnant women, would travel 44-60km to visit district hospitals. My team made it our responsibility to change this mindset and make people aware of our HWC's services. Now the footfalls have increased. A farmer told me: 'Please give me medicine. When I come here, I feel better.' I am humbled by his trust. We worked hard to qualify as a model HWC and it all seems worthwhile."
— **Krishna Kushwaha,** HWC Amgawan, Anuppur district

"I am concerned about the palliative care patients in my area, so I visit them at home. An old lady was suffering from chronic diseases and mental disorders. I visited her regularly and counselled her family. Now she eats better and she even gave me her blessings. HWCs should take responsibility of the community and be patient-centric."
— **Najmeen Bano,** HWC Dudhi, Shahdol district

"There was no drug forecasting here; we used to place orders after the drugs ran out. Because of this unavailability patients would have to go to far-off hospitals. Now we reorder on time and send back expired drugs. The best part is that our patient community trusts us and does not go anywhere else now."
— **Rajkumar Pal,** HWC Mahaneem Chouraha, Vidisha district

CHOs, ASHAs [accredited social health activists] and ANMs [auxiliary nurse midwives] to strengthen their community engagement and drive wellness activities," says Ms Das."

The MP-HSSP team's efforts over the last two years have helped change such behaviour. Says Ravina Solanki, CHO for the Unnai-Jhabua HWC: "Our centre was not in working condition earlier. But we are now able to do routine screening and provide essential health services. We want to change the perception that government centres do not deliver top-class services."

A key service rendered by HWCs is tackling anaemia in pregnant women (by testing and administering iron sucrose). The MP-HSSP trained CHOs, sensitised staff and ensured the availability of equipment and materials. Frontline workers spread community awareness through school visits and by observing 'village health and nutrition day'.

Kanswati Binjhori is one of those who found the best of care at the Bijhori HWC in Dindori district during her pregnancy. "I was treated with care by the CHO throughout my pregnancy," she says. "She organised all the tests and also designed a nutritious diet for me and my baby." Due to improved service delivery, there has been a dramatic rise in the number of expectant mothers visiting the upgraded centres.

Improved score

CInI's efforts are having measurable impact. The centres are periodically assessed on the NQAS framework for certification. From an average score of 28% on NQAS parameters in March 2022, the needle had moved to 56% by February 2023. "The improvement is heartening," says Ms Das.

As MP-HSSP unfolds, the agenda will cover more effective utilisation of digital platforms to drive process efficiencies at the centres. A knowledge management network

Najmeen Bano, community health officer at the Dudhi health and wellness centre in Shahdol district, checks on a patient during a home visit

Blueprint for betterment

Launched in 2021, the health systems strengthening programme in Madhya Pradesh aims to upgrade rural and urban health centres and make them models for public health services

Spread over **23** districts

432 health and wellness centres

14 urban primary health centres

7,500+ healthcare workers trained

Benefitting **2 million+** people

is being established with the expertise of government medical colleges to provide guidance to frontline healthcare workers through virtual mentoring sessions. Also in the pipeline is the setting up of a care-coordination centre to monitor programmatic indices across the range of services and enable better coordination of service delivery.

Having come a long way in the last two years, MP-HSSP plans to build on what has been learned and absorbed. Documentation of the model approach is an integral part of the programme. This will enable the sharing of ideas and processes to support the state government to achieve its end goal – replicating the model centres across Madhya Pradesh to make primary healthcare more accessible and effective. ■

Putting the fun back in schooling

An early education effort in Karnataka's childcare centres has had a transformative effect on tutors and the tutored

Once a shy and withdrawn child, five-year-old Vanishree chatters nonstop now about herself and the stuff she's into, not least the activities at her *anganwadi* (childcare centre) in Hosalingapura in Karnataka's Koppal district. Their daughter's enthusiasm is the reason Vanishree's parents have decided to keep sending her to the free-of-cost centre, even though they can afford a private school.

Anganwadi Centres (AWCs) in rural Karnataka have come a long way in building vibrant learning environments for children. This wasn't the scenario a decade ago, when these centres were referred to as *uppitu kendra,* loosely translated as food centres. The implication was that kids were sent to AWCs only for the free midday meals they provided, a perception aided by the poor quality of teaching there.

The transformed AWCs are now called learning centres, in no small measure because of a clutch of teacher-training

Children get a taste of an outdoor class at a childcare centre in Hosalingapura in Karnataka's Koppal district

programmes run by Kalike, an associate organisation of the Tata Trusts. Since 2010, Kalike has worked — through its early childhood education (ECE) initiative — alongside Karnataka's Department of Women and Child Development (DWCD) to improve the quality of teaching at AWCs.

The ECE initiative has spread to more than 13,300 AWCs across seven districts of the Kalyana-Karnataka region: Yadgir, Bidar, Kalaburagi, Raichur, Koppal, Ballari and Vijayanagara. Hundreds of AWC workers have been trained under the programme and child students have come back to the AWCs in droves, with attendance more than doubling to 80% since its launch.

Matter of delight

Teachers and education authorities couldn't be more delighted at this transformation in the attitudes of students and parents. "Many children would earlier run home after having their meals at the AWC. Now they stay for the entire preschool duration," says D Shivakumar, the Trusts' regional manager (Karnataka), who oversees the ECE effort.

The Trusts' involvement in early childhood education in Karnataka came on the heels of a devastating report released by the state-constituted Nanjundappa committee in 2002. The committee examined regional educational imbalances in the state and found that among the worst-performing places was Yadgir (then a part of Gulbarga district), where there was a direct link between the region's economic backwardness and the poor quality of AWC education. "Standard III students were not able to manage basic reading," adds Mr Shivakumar.

At the heart of the issue was the poor quality of teaching. The *anganwadi* workers themselves had inadequate qualifications and their attendance was irregular. There are other issues as well: many parents did not understand the importance of early learning. As a result, their children rarely had the foundational requirements of reading and writing by the time they entered the formal school system.

Children playing at a childcare centre in Halemalapanhalli village in the district of Vijayanagara

Given that AWC workers are responsible for early childhood education in rural areas, Kalike made them the focus of its ECE intervention. As a first step, it provided them with intensive, capacity-based training. This included giving them hands-on training to conduct age-appropriate activities for the all-round development of children and use practical methods of teaching.

Kalike's strength lies in utilising local themes and materials. Rather than teaching children the usual Jack-and-Jill nursery rhymes, Kalike's team trained educators to use familiar materials — beads, pebbles, beans and tree leaves — that the children could easily relate to.

The AWC workers were coached to use jigsaw puzzles and simple maths problems to let children think independently. "It's important to let kids think through a problem, ask questions, and come up with solutions, even if they are flawed," says

Dr Chitkalamba N, head of early childhood development at Kalike.

Another challenge was that the AWC workers had little or no support. Besides, they are assigned so many other tasks during the day that educating children often takes a backseat. "There are six services under the Integrated Child Development Services (ICDS) in Karnataka, but the least importance is given to early education, probably because there are no reliable methods to measure results," says Mr Shivakumar.

As Kalike's teacher training programmes progressed, many *anganwadi* workers found themselves growing in proficiency and confidence. Shabana Ajmi, an *anganwadi* worker — and a double graduate — from Heroora village in Gulbarga, recalls the time from before the ECE endeavour, and it was far from ideal. "Kids often had to be dragged in by their parents," she says. "Sometimes they would ask to use the bathroom and then slip away to their homes. It made me dejected because I was failing as a teacher. I nearly quit my job."

Five-year-old Tasmiya identifies her bag at the childcare centre

Things started changing quickly after Kalike's ECE training programme got going. The training transformed Ms Ajmi's approach and soon she began supplementing the available learning materials with locally relevant teaching aids. Her enthusiasm has rubbed off on the children she teaches. "I often find them waiting to enter the centre, even on Sundays and other holidays."

Three to teach

Building monthly timetables for the AWC workers was also a challenge, as these needed to be customised to local conditions. Since these workers get a limited number of working days to spend with the children, and have plenty of other responsibilities, it was decided that activities would be divided into those that are non-negotiable (some bit of arithmetic every day), repetitive (alphabet, arithmetic) and revision.

Repetition and revision were essential because it was assumed there would be no reinforcement of concepts once the child returned home. Kalike also spread out its training modules across the year instead of bunching them together, as used to be the norm. The workers were taught simple activities that they could introduce in their classes. As their confidence grew, more complicated tasks were taken up.

About a third of the teaching material used in the ECE programme is made by the AWC workers themselves (picture cards, number cards, etc). Another one-third is locally collated and includes beads, stones, leaves, flowers and such. The rest of the teaching material, such as books and

building blocks, are provided by DWCD and a few are sourced from the market.

Several mothers, encouraged by seeing their children at the recast centres, pitched in with contributions. "Some of them bring their husbands along for review meetings, which was unheard of previously," says Dr Chitkalamba. "Some parents even play with the materials and solve puzzles."

Over the years, supervisors (government employees from DWCD) acquired skills as trainers and began supporting 'demo *anganwadi* centres' as models for *anganwadi* workers from elsewhere to visit and learn. This decentralisation has caused a ripple effect, and the momentum gained has made it all the more likely that Karnataka's entire AWC network will be covered under the ECE initiative.

That's because the whole process of supervisor and trainee has had better-than-expected results. The supervisors were given a target of developing two demo AWCs in their circles, but many have exceeded this target through their own initiative.

A midline assessment of Kalike's ECE programme, which turned in its final report in March 2023, found that the intervention "has had a significant impact on the members of the ICDS team and has helped in developing a shared vision of the intent and scope of the intervention programme and their own role in it". At the time of the assessment, 1,800 demo AWCs were in place and used for the training of grassroot-level workers.

More remains to be done, but there is little doubt that Kalike's early-education initiative has produced stellar results. Aided by a solid framework and built-up momentum, the Trusts are now in talks with the government to take the programme to more districts and, eventually, the entire state. ■

By Kalpana Shah

Circle time in the childcare centre in Hosalingapura

Making room for more

A few years ago, Karnataka's education department introduced Chili Pili, which are activity-based learning programmes designed to help students at *anganwadi* centres (AWCs) develop basic cognitive, linguistic and numerical skills. This programme has been upgraded with help from Kalike.

Under Chili Pili, AWC workers would explore a new activity every week. The challenge here was that covering some themes within a week was sometimes futile. Themes based on festivals and seasons, for instance, needed to be explored closer to the actual event to allow children to relate to them.

"We modified the processes so that each theme could be taught at the ideal time, and for the ideal duration, to ensure better retention of information in the child's mind," says Dr Chitkalamba N, head, early childhood development, at Kalike.

The second change is infrastructural. Each of the AWCs upgraded with Kalike's help has four activity corners: a *gombe mane* (doll) corner, a painting corner, a reading corner and one with building blocks. The children explore a corner of their choice for the first 30 minutes of the day. After that they are taught structured activities, such as conversations and storytelling, sticking flowers and leaves (to improve their motor skills), counting beads (to learn numbers), and so on.

These changes have made learning a joyful experience for the children, who look forward to coming back to their AWC. "Till a few years ago, *anganwadi* workers had to visit homes to pick up reluctant children. Now parents themselves drop off their children at the centres," says Dr Chitkalamba. ■

Milk for many over ice cream for a few

Every little bit helps, says **Priti Patkar,** in the struggle against trafficking and for the protection of child rights. It's an endeavour that Prerana — the NGO founded by Ms Patkar along with her husband, Pravin — has been involved with in right earnest since 1986, initially in the grimy and grim spread of Kamathipura, Mumbai's notorious red-light precinct, and far beyond in the years that have followed.

A topper from the Tata Institute of Social Sciences in Mumbai, Ms Patkar has been a pioneering social worker, an educationist and a committed campaigner in a sphere where exploitation plays out over generations. But change, and radical change at that, has come about, says Ms Patkar in this interview with Christabelle Noronha, thanks to efforts that have brought together governments and civil society organisations. *Excerpts:*

Inter-generational child trafficking and the rights of children born to prostitutes were the principal concerns for Prerana when it was founded in 1986. What has changed for these children and their mothers in India since then?

I think there has been a radical change for many children born in red-light areas. The model that Prerana created has been replicated in other red-light areas as well, keeping in mind the needs of the children there and the local community. Children above six are in school and some complete their 10th and 12th standard exams. In many red-light areas we now see that the entire inter-generational cycle has been disrupted.

The ground realities have also changed remarkably in terms of governmental response. Governments today are serious about wanting to support these women and children in whatever possible way. Municipal corporations are involved in ensuring that these children have seamless access to education.

Civil society participation is much more now. There are many organisations and funding agencies who want to support safety services and education services for these children and these communities. A recent development is the government's commitment to ensuring these women and children get their identity and official documents so they can access social security and protection schemes.

Could you tell me about the model created by Prerana?

We run a night-care centre that caters to the protection and development needs of children. We also have an education support programme that emphasises and supports every child's right to be in school. Our maximum effort is in linking mothers and their children to public or government schools and eventually, as and when there is the requirement and the possibility, to government-aided institutions.

Our philosophy is based on securing a glass of milk for every child rather than using our limited resources to provide a cup of ice cream for a few. I am not in any way against education at the best institutions, even if it means having to go abroad. But with the limited resources we have, our focus has always been to ensure that the largest number of children and youth get a basic education.

Our third programme involves institutional placement. There are certain children in red-light areas for whom it is not safe to stay with their mothers. Also, if the mother passes away and we don't move the child immediately, there is the possibility that somebody will pose as a parent or family and whisk the child away. And that child would be completely lost after that; we wouldn't know how to trace her.

What about child rights in the wider context? How has India been faring and how does the country compare in terms of global standards on the issue?

"You cannot leave vulnerable communities invisible; they have a voice and we have to hear them."

When it comes to global standards, it's all out in the public domain. However, in the last 10-15 years in India, people and the government have taken child rights seriously. Many civil society organisations are now involved in protecting children's rights, and even corporates are lending support.

In the context of corporate backing, I can see the difference. Many of them, in the past, would come and see our work and walk away because they felt investing in such programmes ran the risk of them appearing to promote prostitution. A lot of us, very patiently, tried to educate them about how this is a human rights issue. You cannot leave vulnerable communities invisible; they have a voice and we have to hear them.

We certainly now have more robust laws. These are good enough laws and, moving forward, I think we need to create that much-needed ecosystem where we can deliver justice. Just having laws does not mean justice is delivered. We need to create the necessary infrastructure, have sufficient human resources, pay decent salaries to people in child protection, trust them and treat them with dignity.

I remember one of my first visits to the police station at Kamathipura some three decades ago. This involved a child born to a prostitute, a young girl who had been raped. I worked with this police officer who had very good intentions. When I say good intentions, it is important to note how people normalise exploitation, how people normalise abuse and the ill-treatment of children.

When I told this officer what had happened with the girl and that we had to file a case, he said this was not rape, it was 'grooming'. The girl was being groomed because, eventually, she would have to work in a brothel. That was the extent to which we had normalised abuse.

These are the changes we are seeing. Are they enough? I don't think so. There is a lot that is going very slow or not happening. For instance, we still haven't brought child rights onto the agenda of local politics. Child issues should be in political manifestos. This has to be intentional and investments have to be made to keep children safe.

"Child issues should be in political manifestos. This has to be intentional and investments have to be made to keep children safe."

Prostitution has always had a kind of quasi-legal sanction in India and there's no wishing it away, as the history of human societies shows. Which way, then, do we choose as a country? Will the Nordic model — where the purchase of sex is criminalised and the prostitute is sought to be enabled — work here?

Our current law is silent on an adult woman taking to prostitution of her own free will. I think anybody being trafficked and sold into an exploitative situation is what we need to address and eliminate completely. If there is a situation where a woman has a range of choices – for example, if she has a chance to take up any other job – and she still chose to be in the sex trade, then the state needs to ensure she is not harassed for her choice.

The problem at hand is that the sex trade is mostly reserved for women who are socially, economically and politically very vulnerable. We need to

A Prerana team member at a motivational session for youth

understand 'choice' in totality. The circumstances in which people give consent and make choices also has to be understood. In such a situation, we think the state should not legitimise sex trade or prostitution.

Human trafficking does not seem to get much attention in India's mainstream media. How is such trafficking different from what's seen in other parts of the world? And is enough being done to stop it?

There is nothing that is enough but compared with earlier there is a lot happening in terms of change. Today when the police conduct raids in places like Kamathipura and Falkland Road, they don't find children being forced into sex trade in the brothels. There is vigilance and awareness. Child welfare committees are alert about not handing over a child to a claimant, even if he or she is a biological parent.

What we need are resources to strengthen these programmes so that not a single child falls through the cracks of the safety net. Having been rescued from the sex trade, the worst scenario for the child is to be re-trafficked and re-victimised. And in the criminal justice system we need to strengthen victim and witness protection if we want justice to be delivered.

What is the link between human trafficking, child rights and all the rest with issues such as rural distress, the agrarian crisis in the country and extensive unemployment?

You will find that every time there is distress in families and communities living on the margins, their vulnerability increase. When these families and communities are in a vulnerable situation, you will find traffickers reaching

out to them as messiahs. It is so easy to lure and trap children and families; these people fall prey to the false promises of traffickers.

Vulnerability is not seen and experienced only by rural populations or the urban poor. There is vulnerability and family disintegration in middle- and upper-class families too; it's just that we don't talk much about it. If it gets exposed, it also gets covered up quickly.

You began your work with Prerana in Kamathipura. A process of transformation, of gentrification, has been underway in the area for a while. What do you make of it?

We have seen the decline of Kamathipura as a red-light area over the last two decades. Pimps and brothel keepers have moved their business to Thane and Raigad districts. Thane has, in fact, become a hub of the sex trade. There is no visible red-light area there. The brothel keepers and pimps rent or buy houses where they keep these young girls. It's definitely a well-oiled system.

People keep talking about these new development plans [for Kamathipura], but will the exploited women living there benefit, will they get compensation? Legally they have no proof to say that they lived here. The system is so smart they keep moving these women. They don't keep a woman for too long in Kamathipura; she is moved to Falkland Road, to Vashi, Mulund, Bhiwandi or some such place.

I doubt if a trafficked woman in the sex trade is going to get any kind of state compensation or if there is going to be any rehabilitation package declared. Currently all efforts to support these women is happening through civil society interventions.

Your social uplift endeavours have, it appears from the outside, taken you to more than a few dark corners of human existence. What has been the effect of this on you personally and on your belief systems?

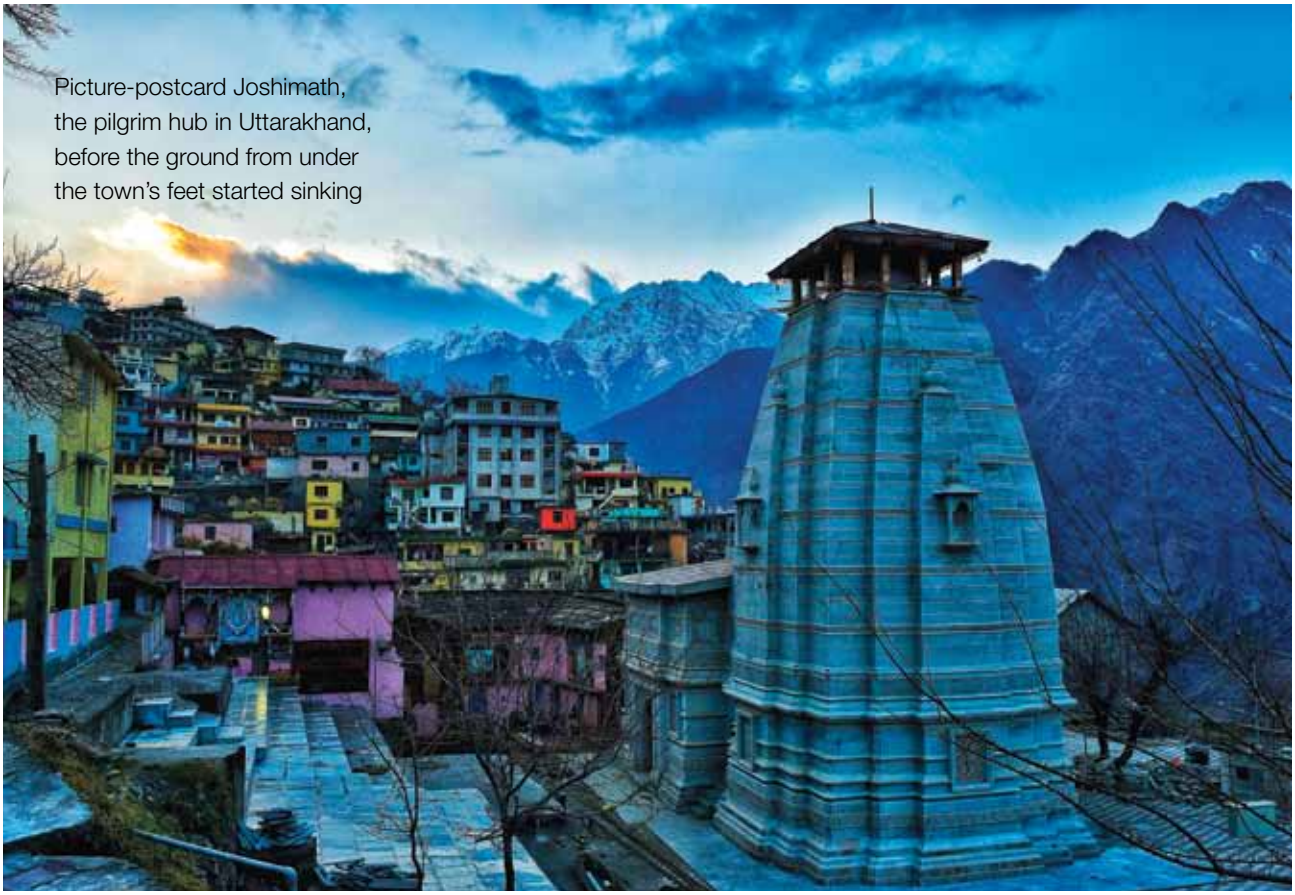
I strongly believe that more and more change is possible. I strongly believe that if people are supported and given opportunities, they work towards change, they work to realise their aspirations and dreams. Let our support not be predicated on where a person is born, to whom it was born, etc.

There is no small or big contribution; every drop counts in forming the ocean. I have come to understand that we should do whatever we can depending on the resources we have. Don't be a bystander, but there's no need to be harsh on yourself; you cannot do everything.

"If there is a situation where a woman has a range of choices ... and she still chose to be in the sex trade, then the state needs to ensure she is not harassed for her choice."

Prerana was founded by you and your husband, Pravin. How much of a help is it to have your life partner by your side in your work?

I think it's superb because there's no convincing required. You don't have to convert anybody to the cause; we are both converted. Sometimes it's difficult, though, to draw the line when you bring work home and into your personal time. That definitely affects things. ■



Picture-postcard Joshimath, the pilgrim hub in Uttarakhand, before the ground from under the town's feet started sinking

Arrogance: The bane of urban planning

The belief that engineering and technology can help us tame nature and build over it has been proven wrong time and again — to little effect

At the start of 2023 we got to know that Joshimath, the pilgrim hub in Uttarakhand, is sinking. The primary culprit is bullish urban development that believes technology and engineering can make any habitat liveable. This sort of planning doesn't take into account the rhythms of nature or the fact that local residents, whose lives and livelihoods depend on it, know their land and how best to manage it.

In Joshimath the land itself was affected by a lot of environmental damage. Then rampant urban growth, born of an increase in tourism, happened in a manner that overrode the existence and compulsions of nature. It's easy to analyse a situation far removed from many of us, but the truth is that a lot of Indian cities suffer from the same malaise.

Mumbai, for instance, has developed without planners paying much heed to the people there closest to nature: the city's fishing community, the Kolis. Shortly after

Rahul Srivastava is the co-founder of Urbz, a research, practice and advocacy collective for urban planning and design.

the 2005 deluge in Mumbai, we learned through conversations with some fishers that they had noticed unusual patterns in the sea in the days leading up to the cloudburst. They tried reaching out to government authorities but, unfortunately, there were no official channels of communications that were effective and few took their warnings seriously.

In an earlier time in Mumbai, there was much less construction in areas where the city would flood. Anuradha Mathur and Dilip da Cunha had pointed out, in their SOAK exhibition on the city in 2009, that in the 16th and 17th centuries, the Portuguese who came to Bombay (as it was then called) would map the city during the monsoons, making sure to never build in areas that flooded. As navigators, they respected the weather and its patterns.

The technocratic British

The British, who arrived later at a time of greater technological knowhow, developed a narrow, technocratic approach. They were keen to reclaim land for increasing habitation. Beginning then, a lot of Mumbai grew out of the conceit of urban planners who thought they could build over nature without suffering the consequences.

In many places in India, indifferent urban planning goes hand in hand with bad engineering. Local administrations rarely understand what environmentally-sensitive urbanism should be. A lot of this involves paying attention to people who live close to nature, whether it's the fisherfolk of Mumbai or indigenous communities living off the forest.

As writer Amitav Ghosh puts it in his book, *The Great Derangement*, this kind of arrogance in habitat planning and denial of climate change is the root cause of catastrophes. It is a time of reckoning for us and it's a perennial and global problem, even in the developed world. There are ways to account for the risks, though.

In Tokyo and Osaka in Japan, cities that had to live with frequent earthquakes, the excellence of Japanese town planning and technology has been used to great advantage. One of several examples is the country's railways, which distributed populations in a more networked way and also allowed for a greater diversity of habitats to flourish. Even modern cities had low-rise, high-density neighbourhoods which developed into quality precincts.

According to Urbz cofounder and my research partner, Matias Echanove, the Japanese also recognised the contribution of the middle classes to urban planning and encouraged them to develop their own habitats in many instances. In his extensive research on Japan, he writes how after World War II the country allowed a lot of small contractors and local residents to take over the responsibility of housing in their neighbourhoods. Most of them continued building systems in places where people had traditionally lived and worked, and infrastructure grew around that.

But Japan, too, has examples of poor planning: building a nuclear reactor atop a fault line in Fukushima stands out. This was just another case of modern-day engineering and urban planning ignoring the signs of nature. It's what happens when you adopt a top-down approach to urban development.

This tussle between economics and ecology happens in top-down urban development everywhere in the world. We see marvels of urban development in places they shouldn't be, like a city in the middle of a desert. Which is why a metropolis such as Los Angeles, which has always denied its relationship with the forest, suffers devastating nearby forest fires ever year.

The tragic and most extreme human cost of poor urban planning is, of course,

Modern-day engineering and urban planning that ignores the signs of nature have led to the Los Angeles area suffering devastating forest fires every year

lives lost. And it's inevitably the lives of the most vulnerable. In Joshimath, it's the locals who are suffering, not the tourists. And there is a livelihood implication in this, too. When catastrophe strikes, tourism is the first industry to collapse, taking with it the jobs of a large number of local people.

Dependence on a singular economic activity, like having one job, is the modern language of employment. But historically many families, especially in Asia, were enmeshed in larger community networks. Many factors worked together to provide safety nets. Family members worked across sectors, from agrarian to industrial, across rural and urban regions.

This kind of networked economic activity, based on familial and community connections, has got lost in today's context. Anthropological studies show that it's a mistake to straitjacket citizens into narrow categories such as farmers or factory workers, as rural or urban. Social history shows how communities create more complex systems of livelihood and do not see contradictions between trades and occupations.

Most indigenous communities have historically had similar multifaceted approaches towards livelihoods — ranging from foraging to farming, fishing to trading. Even embracing modern technologies within the framework of their ecosystems and forest economies. They potentially had systems in place that provided people with alternatives and possibilities, with risk-mitigating factors built in.

Unfortunately, modern economies create mono-systems everywhere, from agricultural to industrial, and people are reduced to uni-occupational identities. The downside here has urbanism's imprint on

it as well. On the one hand, it encourages zoned approaches to urban existence and, on the other, it causes a reduction of what it means to be urban in the context of our relationship with nature.

Most significantly, it diminishes the capacity of people and their community systems to become part of the process of producing urban spaces, of participating in the process of making cities. Taking away the direct relationship that citizens have with their land and their natural resources is the hallmark of modern urbanisation all over the world. This makes either victims or survivors when they could be collaborators.

The picture is especially stark in the realm of urban housing. The common narrative is that of mechanisms to provide housing for everybody, either by the state |or the market. In reality, even the two together cannot deliver in the volumes that are required.

Persecuting complex

Instead of encouraging systems where people with skills can build their own houses in a legitimate and valid way, all efforts are directed towards persecuting those who take responsibility to make their lives, homes and habitats. No wonder that all over urban India there is the continuous growth of so-called slums.

This phenomenon simply signals that you have not allowed people to legitimately claim space to live in a legal and dignified way — outside the realm of property ownership. The only official form of slum rehabilitation allowed is through privatisation of property, where everybody gets tiny apartments and the shanties disappear, temporarily and in specific spaces, only to reappear as entire livelihood systems. That's because neither the market nor the state can execute rehabilitation programmes effectively.

After all, the so-called slum, is a socio-economic ecosystem for its residents. If slum redevelopment were done from the point of view of these residents, they would probably prefer collective ownership of the land and may choose to improve their habitats on their own. This doesn't happen because we have reduced human lives to a single variable: that of economic activity.

Urban planning needs to recognise economic activities that already exist in a place, and how human beings generate livelihoods for themselves. A street hawker should be enabled to hawk his wares better. If fishing is part of Mumbai's history and sections of the Koli community are dependent on it, planners should pay attention to their requirements. Doing that will not make Mumbai any less advanced or urbane.

Interestingly, in the global narrative of aspirational urbanism, people are talking about urban farming. From New York to Paris to neighbourhoods like Bandra in Mumbai, we suddenly want to promote farmers' markets. If we had given importance and space to this idea when visualising modern cities, it would already have been a part of our everyday lives. One cannot resist pointing out that up until the 1960s we had rice farms in Parel in the heart of Mumbai (along with gigantic textile mills and, not too far north, plenty of fishing in the clean waters of the Dharavi creek).

If only we had not reduced the city to just land for buildings and real estate, Mumbai — in the era of aspirational farmer markets and trendy urbanism — would have been way ahead of its time. And also much more resilient to the vagaries of climate change. Besides, it could well have been the benchmark of quality urban planning in India. ■

Rahul Srivastava spoke to Labonita Ghosh