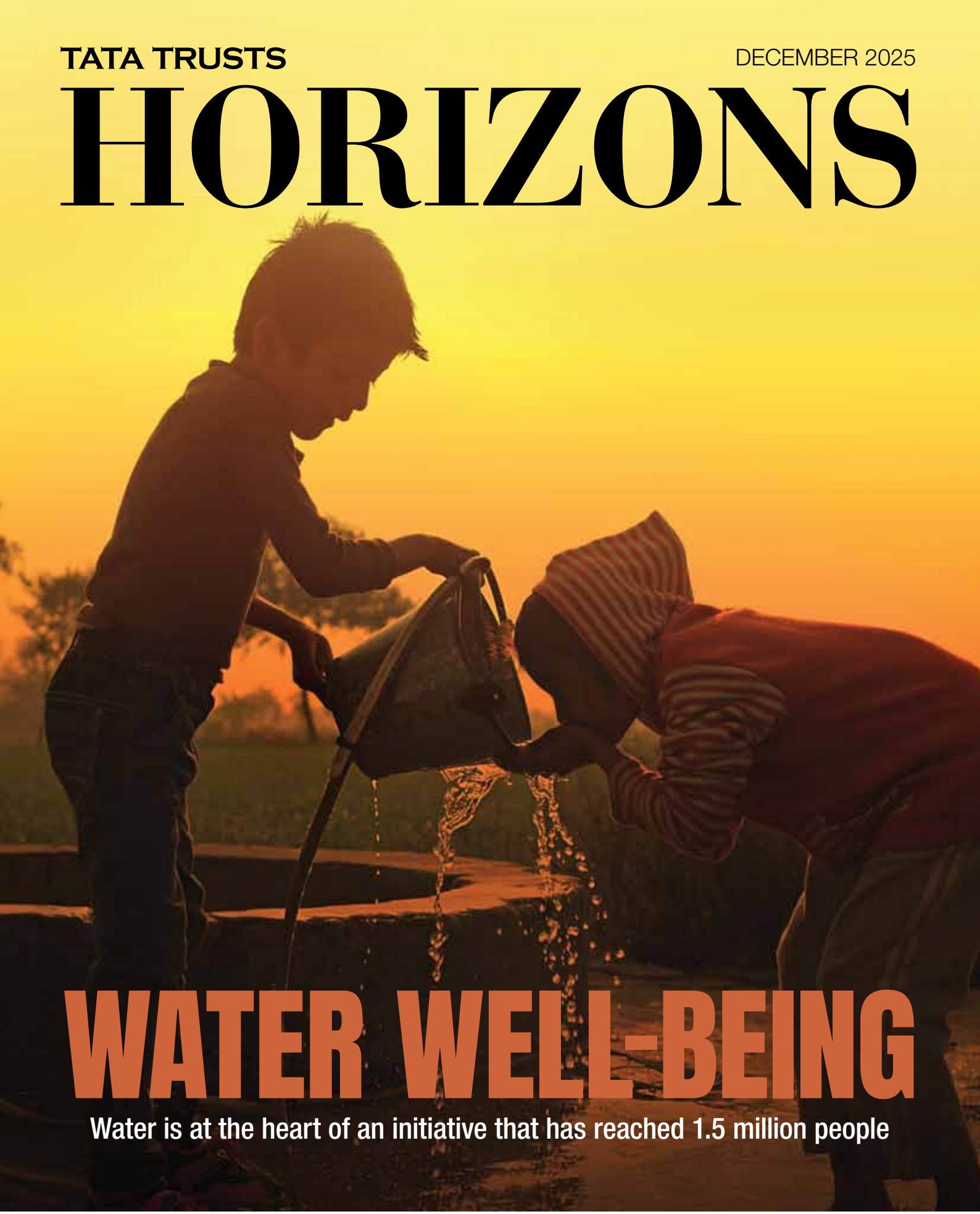
TATA TRUSTS

DECEMBER 2025

HORIZONS



WATER WELL-BEING

Water is at the heart of an initiative that has reached 1.5 million people

SKILLING BOOSTER

Connecting job seekers with industry is the objective of a collaborative skilling programme

RESEARCH RISING

The upcoming Tata-IISc Postgraduate Medical School promises to be a game changer

INTERVIEWS

Nobel laureates James Robinson and David MacMillan open up about their respective spheres of expertise

EDITORIAL

For all the despair that envelops the issue of water and sanitation in India, there are loads of positives as well, be they with governmental initiatives to stem the tide or civil society efforts to protect the most precious of natural resources. Statistics illustrate the scale of the crisis: an estimated 820 million Indians suffer high-to-extreme water stress, 70% of the country's water is contaminated, and, going by current trends, demand for water will be twice that of supply in five years.

Our cover story examines how the Tata Trusts are helping India address its water and sanitation woes. Operating under the rubric of the Tata Water Mission, the Trusts' extensive range of water-related programmes employs a wide-angle approach to conserve and secure water for vulnerable rural communities across the country. The Mission's success over the years is reflected in the numbers. It has reached more than 350,000 households across 13 Indian states, touching the lives of some 1.2 million people, the majority from marginalised backgrounds.

We also have a special report on the Nobel Prize Dialogue India 2025, a double-header event organised by the Tata Trusts in partnership with Nobel Prize Outreach in Bengaluru and Mumbai. The theme of the Dialogue, 'The Future We Want', saw a collection of thought global leaders — among them Nobel laureates James Robinson and David MacMillan — exploring what it will take to create a more inclusive and equitable world.

This was the Dialogue's maiden staging in India and it covered a range of compelling subjects, from science and economics to healthcare and urbanisation. Mr Robinson, who received the Nobel Prize for economic sciences in 2024, and Mr MacMillan, winner of the Prize in 2021 for chemistry, were the star attractions at the event. This edition of *Horizons* has interviews with the Nobel duo, where they speak about their work and the influences shaping society.

In our feature stories section, there's a report on the path-breaking Tata-Indian Institute of Science Postgraduate Medical School, which has the potential to transform healthcare in India through interdisciplinary research, collaborations and more. Additionally, we have the inside view on a partnership in the skilling space between Tata STRIVE and Siemens India.

In the 'opinion' segment, Tata Trusts chief executive Siddharth Sharma writes about the criticality of outstanding institutions of learning to nation-building. To cap it off, we showcase the endeavours of Antaran, the crafts-themed livelihoods programme that has been a godsend for thousands of handloom artisans.

Christabelle Noronha

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

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HIGHER EDUCATION IN INDIA: HOW GREAT INSTITUTIONS POWER GREAT NATIONS

The true imprint of such institutions does not reside only in history books or research papers; it lives in the stories of those who carry these learnings

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CML representatives conduct a training programme for water user committee members in Padmaram Para village in Tripura's Dhalai district

For the sake of water

The ecosystem approach to water management that the Tata Trusts have adopted enables village communities to protect, conserve and secure the most valuable of nature's resources. By Labonita Ghosh

Water is our planet's most precious resource, yet only a tiny fraction of it is accessible and safe for human use. Much of the blame for this rests with our collective inability to manage existing sources of water wisely. Throw in factors such as climate change, population explosion and inadequate infrastructure and this crisis begins to seem like a catastrophe in the making.

UNICEF estimates that about 700 million people could be displaced due to acute water scarcities by 2030. This has critical implications for global health, the environment and the economies of affected countries.

India has its own water woes. The estimated per capita water availability in the country is currently 1,500 cubic metres. By 2030, India's water demand is projected to be twice the available supply. That means we have an emergency on our hands.

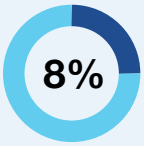
A NITI Aayog report states that nearly 600 million people are facing high-to-extreme water stress in India. And the situation will only get worse given the continuing depletion of groundwater levels across the country.

The Tata Trusts have taken an ecosystem approach towards water management to help India cope with the crisis. The Tata Trusts' water, sanitation, and hygiene (WaSH) programme — which flows from a strategic framework called 'One Water' — takes a wide-angle view with its endeavours to protect, conserve and secure water for vulnerable rural communities across the country.

The programme has extended

A SWELL OF CHALLENGES FOR INDIA

Water scarcity — demand will be twice that of supply by 2030

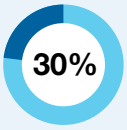


Storage woes
Only 8% of annual rainfall captured for storage

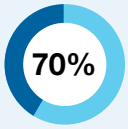
High wastage
India uses five times more water for crop production than China

Limited water access and water contamination

Many rural Indian women spend **2-3 hours** every day to fetch water



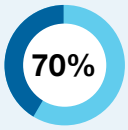
of rural households lack piped water



of water is polluted

Water-borne diseases
Annually, India reports **16 million+** incidences of water-borne diseases and **200,000+ deaths** as a result

Sanitation and menstrual health



without sewer network

Toxic sources
Unsafe disposal of wastewater in water bodies increases contamination

Health Issues
70% increase in incidence of reproductive/urinary tract infections due to poor menstrual hygiene

Minimal wastewater reuse **(less than 1%)**

Limited capacity of treatment plants **(33% septic tanks)**

52% of girls unaware of menstruation prior to menarche

40% females don't have access to quality absorbents

Sources: NITI Aayog; Water Resources Group and Mckinsey; Council on Energy, Environment & Water; CGWB 2019; Dynamic Groundwater Resources Assessment of India – 2017; FSG Report – 2016

its reach to more than 320,000 households across 42 districts in 13 states, improving the lives of nearly 1.5 million people — particularly those in underserved and marginalised communities.

The Trusts' approach to WaSH is designed to address systemic issues through integrated, inclusive and scalable models. The plan pursues a decentralised, demand-responsive and community-managed approach to achieve goals. It also aims to promote innovative technological and economically sustainable solutions. Keeping rural communities at its heart, the programme encompasses three broad categories: water security, water access and quality, and sanitation and hygiene.

The Trusts' water interventions have resulted in the creation of water-secure communities in different parts of India. In the six states of the Indian Himalayan Region, villagers have taken charge of a springshed programme that tries to rejuvenate springs. In the water-stressed states of Rajasthan, Andhra Pradesh and Karnataka, local communities are driving participatory groundwater management initiatives, taking collective responsibility for protecting and sustaining their water resources.

Two villagers from Lusio in Jharkhand's Deoghar district, set up a *matka* (clay pot) incinerator in their backyard

Turning the tide

- Has benefitted **320,000+ households**
- Covers **42 districts** across **13 Indian states**
- Has touched **1.5 million+ people,** mostly from underserved communities
- Strengthened capacity of more than **2,000 villages** and water sanitation committees
- **Impacted 150,000** women and girls through menstrual health management projects

Contamination combat

In coastal Gujarat, efforts are centred on combating seawater ingress and reducing salinity in drinking water sources, while in Assam, technology-driven solutions are being deployed to tackle arsenic contamination and ensure safer access to potable water

Efforts in sanitation and hygiene have led to nature-based solutions for greywater treatment in Andhra Pradesh and a robotic system to improve the lives of conservancy workers in Maharashtra.

The social behaviour change campaign, operational in seven states, tackles the deep-rooted myths and taboos surrounding menstruation, encourages women and adolescent girls to adopt healthier practices, and frames menstrual health as a shared responsibility and an essential societal agenda.

In our cover package, we highlight three of these initiatives: a water contamination testing and treatment programme in the arsenic and fluoride-affected states of Assam and Tripura; a greywater treatment intervention in Andhra Pradesh; and a menstrual health management initiative in Jharkhand. ■

Protecting the precious

Kusum Bala Das collects water from a tap installed at her home in Barkhal NC village in Assam's Kamrup district

Tackling deadly contaminants and rejuvenating natural sources — that's the two-pronged thrust of the water initiatives in Assam and Tripura

Nobody liked to mention the word 'arsenic' in Balitara village in Assam's Nalbari district. People here would speak in hushed tones about a neighbour who had a mysterious illness, or another who struggled with stomach problems, or a third who had raindrop-like markings on his hands. They would worry about their family's health but never actually come out and discuss how arsenic in their sources of water was slowly poisoning them.

In Balitara, there were reminders of the toxic everywhere: 76 of the 80 tubewells in the village had been painted a dark red — following a government survey conducted decades ago — indicating that the water was not safe to drink.

This was the situation before 2017, when the Tata Trusts and their associate organisation, Centre for Microfinance and Livelihood (CML), embarked on a programme to tackle arsenic and fluoride contamination in Nalbari and Kamrup districts in Assam. This was extended in 2021 to negate iron contamination in the Dhalai district of Tripura.

CML's 'integrated community-managed water security and quality management programme' aims to ensure the long-term viability and sustainability of local water sources, while also trying to rid them of microbiological and chemical contaminants (such as arsenic). The idea is to provide safe and adequate drinking water to communities in the project areas of the two Northeast states.

Bikhya Das, Lipika Das and Jitumoni Das of Barkhal NC village in Assam's Kamrup district test the water quality in their village

Arsenic contamination is responsible for a range of conditions, from skin problems (arsenicosis) and neurological issues to various types of cancers. "We collected water samples from Nalbari and sent them for testing," says Rituparno Chanda, program coordinator at CML. "The arsenic level was found to be 40 or 50 parts per billion (PPB), way beyond the permissible level of 10 PPB."

Arsenic in the rice

Studies by the Assam Agricultural University confirmed that arsenic was also being ingested through the staple, rice, because contaminated water was being used for farming and flooding paddy fields. Awareness about this problem increased when the area reported a rash of gall bladder cancer cases, and further with the setting up of a hospital at Nalbari by the Tata Trusts' Assam Cancer Care Foundation (this serves as a satellite centre to the primary hospital in Guwahati).

Initially left to themselves, residents were desperate for solutions. In Majibari village in Assam, people would buy bottled water for drinking and cooking. "There are some 300 households here and about 70% of them purchased bottled drinking water, spending ₹4,000-5,000 every year," says Mr Chanda. "When your annual income is ₹50,000 on average, this creates a big dent in your household budget."

If Nalbari was struggling with arsenic, in Kamrup district fluoride contamination was the scourge. Fluoride in the water can cause, among other things, skeletal sclerosis (an abnormal hardening of the bones) and dental fluorosis (a tooth enamel defect).

"Nutrition plays a key role in fluoride mitigation," says Mr Chanda. "You can increase the intake of calcium to offset the excess amount of fluoride entering your body in different ways. We work with the District Health Mission and frontline workers to add more calcium and antioxidant-rich vegetables in the meals provided in Kamrup's schools." Water filtration systems have also been set up in the schools to treat fluoride contamination.

Apart from arsenic, fluoride and iron, bacteriological pollutants are an additional concern in both Assam and Tripura, where a substantial portion of the drinking water is from sub-surface sources. Contaminated water is a major cause of diarrhoea, the third leading cause of childhood mortality in India. And, as per the 2019 National Health Profile, Assam reported the

highest number of deaths due to diarrhoea in the country.

The Tata Trusts and CML began in 2017 by installing arsenic- and fluoride-treatment units in 10 villages in Assam, an initiative that benefits more than 7,000 households today. These units, which employ the 'inline chlorination' (ILC) system, complement the existing infrastructure installed through the central government's Jal Jeevan Mission, an initiative that the Trusts contribute to at the state and national levels.

Subsidised supply

The units improve the quality of water and make it safe for drinking. Residents can purchase this purified water at a subsidised price of ₹7 per 20 litres, a fraction of what they had to pay earlier when buying bottled water.

To address the issue of bacteriological contamination, CML has tied up with the Indian Institute of Technology, Guwahati (IIT-G), to treat the local water through the ILC process. IIT-G has helped CML scale up the technology to cover 35 districts in Assam.

It's not enough to set up systems; they need to be run and maintained as well. CML has trained 2,200-plus residents as 'water user committee' (WUC) members, teaching them how to periodically test water quality and also create awareness in the community about the importance of safe drinking water and its impact on health.

About 150 village-level water committees have been formed for the sustainable operation and maintenance of the drinking water supply schemes and for deciding the water tariff. Says Minati Devi, a member of the Balitara WUC: "We now know how water can carry diseases. We are drinking safe water and we feel confident that the system will keep working because we are taking care of it ourselves."

In Tripura, while iron contamination is an issue, a bigger problem in the elevated reaches of the state is water availability. Government-supplied water often doesn't reach the intended recipients due to hilly terrains and undulating slopes. Identification, care and management of sustainable sources becomes, in the context, an imperative, alongside restoring and replenishing existing outlets.

"In the hilly terrain of Tripura, springs are the only pristine source of water," says P Kasee Sreenivas, senior programme manager with the water, sanitation

Neha Singh, a geohydrologist with CML, visits a household in Chalitacherra village in the Dhalai district of Tripura to create awareness and collect data

Outstanding outcomes

- **5,000** — Number of households in Assam (water contamination mitigation) and Tripura (water security interventions) that have benefited
- **230** — Total number of villages covered in both states
- **50%** — Reduction in water-borne diseases
- **30%** — Average increase of water in treated springs

and hygiene (WaSH) vertical of the Tata Trusts. "But, over the years, many of these have dried up and need to be revived."

That starts with creating catchment areas along the path of the spring. "Many of these springs are located deep in reserved forest areas," says Mr Chanda. "To rejuvenate them we have to find nature-based solutions such as brushwood check dams, percolation tanks or recharge ponds."

This 'springshed management programme' covers eight subdistricts of the Dhalai and North Tripura districts, and serves 45 villages. More than 130 springs have been identified and 45 revived, with a recharge area that is spread over 150 hectares, benefiting close to 2,200 households.

Children from Khadaban Para village in Tripura's Dhalai district celebrate World Environment Day by highlighting how to protect our natural resources

Shortage in the hills

That would be households like Mr Lallungawia's in Behlianchhip village in North Tripura district. "Since we live in the hills, water shortage is a constant," says the 42-year-old farmer. "The government's piped water supply rarely works and many villagers had to buy water from private tankers. Also, about one-third of our village depended on spring water, which they had to carry home in large utensils over great distances."

Things have improved vastly since the springshed management programme was started. Rejuvenation sites sometimes require 2-3.5 hectares of land. For the local communities — primarily engaged in the *jhum* (slash and burn) way of agriculture — to give up large tracts of cultivable land is a livelihood sacrifice. But in Tripura they are doing so willingly.

"The people here are entirely dependent on springs for water; they want to protect these natural resources," says Ankush Bhattacharjee, the CML state lead in Tripura for the WaSH initiative. "Earlier, they didn't have the know-how or the technology to do so. After we started working here, we began training them in the rejuvenation process."

Spring water user committees were formed from village clusters to undertake regular cleaning of the rejuvenation sites. This includes desilting them before and after the monsoons to make sure water flow is not impeded.

"The trenches that we dig or the percolation tanks we create for reviving the springs get clogged with silt from the runoff after rainfall," explains Mr Bhattacharjee. "The trenches need to be of a specific depth to hold a desired amount of water, but siltation reduces this and affects the discharge value of a spring. Regular and thorough cleaning is a necessity."

The Trusts are looking to stretch this natural resource further. The public works department of Tripura is currently working on a 'spring census' for the state and CML is supporting it by mapping and providing data on springs in the eight project districts. Perhaps new springs will be identified or forgotten ones brought to life. Either way, this will benefit local communities.

That is good news for people like Mr Lallungawia. "The springs may still be far away, and we might still have to travel over long distances," he says. "But at least we will always have water." ■

Securing the flow

Innovative technology and natural conditions have been employed to provide clean water to rural regions in Andhra Pradesh and Telangana

For more than a decade, Laxipuram village in the Anakapalli district of Andhra Pradesh didn't have proper sanitation. Wastewater from kitchens and sewage would flow into the streets, dragging along all kinds of trash, and drains would get clogged with sludge. Some of this wastewater would also run into nearby water bodies and fields, polluting them. A foul odour hung over the village and, worse, it became prime breeding ground for mosquitoes and vector-borne diseases.

Students of KGBV Kondurg school in Shadnagar in the Ranga Reddy district of Telangana queue up to fill their bottles from a newly-installed water purifier

Multiple problems

"This was a problem all through the year," says Ganapathi Naidu, a member of the Laxmipuram *gram panchayat* (village council) and a third-generation farmer. "Sewage and plastic waste would flood agricultural plots and damage crops. After we lost almost 80 acres of cultivable land to the menace, many villagers decided to give up farming and work as labourers in nearby areas. We also had to live with constant illnesses; typhoid, malaria and chikungunya were common." It was small relief, adds the 43-year-old Mr Naidu, that the water table and drinking water sources did not get contaminated.

The problem was, strangely enough, compounded by the implementation in 2020 of the central government's Jal Jeevan Mission, which aims to provide piped water to every rural Indian home. With more houses among the 950-odd in Laxmipuram getting improved access to potable water, more wastewater began to be generated, without any significant solutions for its disposal.

It's the same story that plays out in thousands of villages across India with poor civic amenities. What sets Laxmipuram apart is the turnaround it has pulled off. This is now a 'lighthouse village' — a model of a clean, green and healthy habitation with much that others in the district can learn from.

The path to a cleaner life for Laxipuram's residents began getting paved in 2022, when the Tata

Trusts and their partner organisation, the Vijayvahini Charitable Foundation (VCF), launched a 'greywater treatment programme' in the village. (Greywater refers to water discharged from kitchens and bathrooms that doesn't contain faecal matter or urine.)

Tech to the rescue

A 'compact acarine mite utilising system' (CAMUS), a low-energy, high-quality wastewater rejuvenation technology, has been used to treat and clean almost 25 kilolitres per day of household greywater and make it reusable. The CAMUS setup has reduced stagnation, enhanced village cleanliness and strengthened water security. The treated water is now used for farming, gardening and civil construction, which was earlier managed with water delivered by tankers.

"This technology mimics nature," says Manoj Kumar, team lead, water, sanitation and hygiene (WaSH) and energy with VCF, about the treatment process. "It follows the same principles as some plant species that create moisture during photosynthesis. CAMUS contains different components that clean the wastewater as it passes through them. Also, the technology is low maintenance and requires cleaning and top-up only once in two-three years."

When VCF approached the *sarpanch* (village head) of Laxmipuram, he was keen to employ the technology. He provided a plot for the biotech unit and used government-allotted funds to make drains that would channel household wastewater directly to it.

After operating it for a year, VCF has now handed over the plant to the *gram panchayat*. "We have one channel of clear water that goes directly into the paddy fields and have managed to reclaim most of the 80 acres we had lost to contamination," adds Mr Naidu. "Many villagers are now returning to agriculture because we have enough clean water for irrigation."

With the integration of household toilets, waste management systems and behaviour change demonstrated by members, the Laxmipuram community has shown the way for other villages to follow. In Annaraopeta — another lighthouse village — in the NTR district of Andhra Pradesh, VCF conducted a clutch of awareness activities on greywater.

"Water security entails three aspects: water for domestic use, for irrigation and for the environment," says Mr Kumar. VCF has lent a hand here through WaSH initiatives in Andhra Pradesh.

Since December 2024, it has been working with communities in Pullacheruvu and Yerragondapalem villages in the Prakasam district to build structures for better water management and irrigation.

In Chintapalle and Rajavommangi villages in the Alluri Sitharama Raju district, VCF is starting work on diversion-based irrigation systems, a cost-effective method that uses gravity to channel water from nearby streams and rivers to agricultural fields.

Expanding on the options for safe drinking water, VCF has deployed 'inline chlorination' systems in 200 villages in its project area, enabling 20,000-plus rural

Villagers collect clean water from a centre in Jorhat in Assam, a state where a Tata Trusts programme to eliminate arsenic and iron contamination was a success

Ganapathi Naidu (left), deputy head of the Laxmipuram village council in the Anakapalli district of Andhra Pradesh, monitors the performance of the local water treatment unit

households to access potable drinking water through tap connections. This low-cost, scalable technology effectively reduces microbial contamination and ensures safe drinking water at the distribution point for rural families.

In 2024, in the neighbouring state of Telangana, the Tata Trusts and VCF embarked on a programme to provide safe drinking water to 50 schools in the Shadnagar area in Ranga Reddy district. Co-funded by UNIBIC Foods, this initiative aims to provide hygiene education as well for the staff, improving not only the school environment but also the health, attendance, and overall well-being of students.

This is particularly important for a residential school like KGBV Kondurg in Pulusumamidi village, which houses about 430 students from classes 6 to 12. "We receive Mission Bhagiratha water at our school," says Nissy Shakeena, an official with the school. This refers to a vast network of pipes supplying water to all of Telangana from the Krishna and Godavari rivers and their reservoirs.

Unsafe at school

"But there are often leaks in the pipes and the water gets contaminated," adds Ms Shakeena. "The water we received was turbid, with bacteria and even faecal matter in it. Students who drank this — and earlier there was not much of an option — would fall ill. Absenteeism was high."

Then the school started purchasing bottled water. With a daily requirement of more than 200 litres, the school had to spend about ₹30,000 a month on this. Following complaints, local authorities promised to install three water-filtration systems in the school, but they never arrived.

With funds from UNIBIC Foods, VCF organised for water-purification systems with certified filters. These were then installed in each of the 50 school buildings in Shadnagar and placed at an elevation to enable gravity assistance to push the water.

"VCF's trainers have explained to us how to operate the system and the older students take turns to clean the filters," says Ms Shakeena. "They've also taught us how to test the water periodically. Having safe drinking water in our school 24/7 has made a lot of difference to our students and their health." ■

Women farmers from Kudwa village in the Dhanbad district of Jharkhand watch an educational film about menstrual health and hygiene

Taboo busting

A menstrual hygiene programme in Jharkhand is promoting better healthcare while dismantling generations-old myths and misconceptions

Menstruation is often referred to as 'chandu rog' in rural Jharkhand. This roughly translates to 'moon illness' and is so called because of its monthly occurrence, much like the lunar waxing and waning. However, the word 'rog', even though used loosely, could lead people to believe that menstruation was being equated with an illness, which is slightly more problematic.

After decades of being shrouded in shame and secrecy, it is extremely challenging to make countless Indians — even women among them — understand that menstruation is a physiological phenomenon, that hiding and neglecting it can be harmful.

The wide-ranging menstrual health and hygiene management (MHM) programme of the Tata Trusts has been addressing these issues and more since 2018. In 2022, the initiative was extended to three districts of Jharkhand: Deoghar, Khunti and East Singhbhum.

Operating under the aegis of the Tata Water Mission, the MHM programme promotes safe menstrual practices and aims to

build a sociocultural environment that enables women and girls to manage menstruation with dignity.

"When you describe something as an illness, you would be reluctant to talk about it," says Shaheen Naz, senior executive with Collectives for Integrated Livelihood Initiatives (CInI), the Tata Trusts associate organisation implementing the MHM programme in Jharkhand. "We have come across women in their 30s and 40s who would rather hide their menstruation than discuss it."

Keeping it under wraps

Married women fear bringing shame to their husbands' families if they talk openly about menstruation, and many mothers don't discuss it with their adolescent daughters, adds Ms Naz, because of generations of conditioning. On-ground surveys in Jharkhand have shown that more than two-thirds of menstruating-age women had inadequate knowledge about periods before reaching menarche.

"We want to replace the concept of impurity, strongly associated with periods, with the idea that menstruation can also be a health indicator," says Tanvi Aher, MHM lead in the Water, Sanitation and Hygiene (WaSH) portfolio at the Tata Trusts. Irregular periods can be a sign of a host of serious ailments, including cervical cancer. Not talking about it puts women at risk.

"We have found that infection rates were high here," adds Ms Aher. "Some of these were caused by early marriage, when boys and girls are not properly aware of their anatomy. Others were due to poor water availability, especially during the dry seasons, which led to unhygienic practices, which then led to infections."

A woman gets checked at a health camp for women and adolescent girls in Kokpara Narsinghgarh village in Jharkhand's East Singhbum district

Long way to go

Findings from on-ground surveys in Jharkhand show that…

- **59%** of women are not aware of menstruation before experiencing their first period
- **61%** consider menstrual blood to be impure, reflecting deep-rooted social stigma and cultural taboos
- **45%** hide menstrual absorbents while drying them due to a sense of shame

Lately, another problem has emerged: the use of improper menstrual absorbents and their disposal. The three programme districts are dominated by the *Santhal* and *Munda* tribes. Living in the interiors of the state in discrete

Tribal women attend a health camp in Kokpara Narsinghgarh village in Jharkhand's East Singhbum district to check for menstruation-related infections

clusters, tribal women often don't have access to proper absorbents.

"For years they have used rags, shreds of old clothing or towels, basically anything they could get their hands on," says Ms Aher. "Most of this was for one-time use and discarded thereafter in bushes, in rivers and ponds, or even in agricultural land." This kind of disposal was clogging water bodies and spreading further infections. Some absorbents were buried in shallow pits and would inevitably get unearthed during the monsoons or by strong winds.

Also, if the cloth was to be reused, it would be washed but not hung out to dry in sunlight, which could kill bacteria. The women would put it on a line and cover it with another cloth, or conceal it on their person, hoping to dry it with body heat. This meant the cloth usually remained damp and caused infections on reuse.

Sunita Tudu from Junboni village, in East Singhbhum district, admits to such behaviour in the past. "I didn't know anything about menstruation till the *didis* [sisters] from the organisation came to our village and started providing training," she says. "During these sessions they showed us various menstrual hygiene products and explained each one in detail, including their benefits and drawbacks."

Burn or bury

The 28-year-old Ms Tudu now disposes of her cloth pads by burning them in a clay pot incinerator, as the CInI trainers have taught her. The pots are widely available in every village and require only a small area to be set up. For those who still prefer to bury their pads, the trainers have taught them to dig a hole at least half a foot deep for disposal.

With government schools in the area providing adolescent girls with free packs of sanitary napkins, information about disposal is critical. The girls receive wash-and-wear pads that can be reused, with proper care, for up to a year.

Conducted over the course of a month, CInI's training module for women and adolescent girls comprises four sessions of between 60 to 90 minutes each. The first session is about breaking the myths and taboos around menstruation; the second delves into anatomical changes; the third discusses proper disposal of absorbents; and the fourth is a revision of the previous sessions.

The sessions are conducted by community-level frontline workers and schoolteachers, who use various aids — cards, charts, drawings, etc — to drive the menstruation message home. "By the fourth session, we typically build up enough trust in the community for the women to drop their inhibitions and talk more freely," says Ms Naz.

There are also specially designed modules for couples and

adolescent boys. With the boys, the training modules address the puberty-related issues they face as well. "Whatever social development programmes there are for boys and men usually have to do with livelihoods, agriculture or banking," says Ms Aher. "They are typically left out of the health infrastructure, including mental health. We speak to them about puberty, their biology, their challenges and peer interactions, and then about menstruation and what girls go through."

For the Trusts and CInI, couples are a priority because of the high incidence of infections among them as well. "Many women have requested us to include their husbands in the sessions," adds Ms Aher. "They feel they can speak to them more freely and are likely to get more support if they have an infection or a difficult period."

Since men, more often than not, control the family finances, getting them on board is necessary to ensure that women can buy the safer (though slightly more expensive) absorbents. Timely checkups for reproductive and urinary tract infections, and for cervical cancer, are also conducted as part of the programme.

Husbands in the loop

Husbands being involved in the initiative is a benefit, as it has been for 22-year-old Suchitra Mahato, a villager from Raghunathdih in East Singhbhum district.

"In our community, we believed that menstrual blood is impure, and because of that we considered ourselves 'unclean'," says Ms Mahato. "We could not cook or fetch water during our periods, participate in certain activities, or even touch anything in the garden or in the fields for fear that the plants would die at our impure touch."

Following her training programme, when Ms Mahato learned that menstrual blood is actually preparation for a new life, she shared what she had learned with her husband. "Let's try it out and see what happens," he said of the impurity hoax. The couple planted a sapling together while Ms Mahato was having her period. The plant gradually grew and started bearing fruit.

"That's when both of us realised that these were just baseless superstitions," says Ms Mahato. "Now, I cook food and do all my usual work during my periods — something I never used to before." ■

Women farmers from Kundibartoli village in Jharkhand's Khunti district install *matka* (clay pot) incinerators for community use

Moderator Owen Gaffney, Montek Singh Ahluwalia, Tolullah Oni and James Robinson during a panel discussion at the Dialogue

Future sense

Nobel Prize Dialogue India 2025 was the setting for a collection of brilliant minds to explore ideas illuminated by knowledge and humanism

The theme — The Future We Want — set the tone at the recently concluded Nobel Prize Dialogue India 2025 for a distinguished panel of global thought leaders to explore how investments in knowledge, creativity and youth can make for a world more inclusive, sustainable and equitable.

Organised by the Tata Trusts in partnership with Nobel Prize Outreach as a double-header event — hosted in Bengaluru on November 3 and in Mumbai on November 5 — the Dialogue covered an extensive canvas, from society, science and economics to the challenges of climate change, healthcare and urbanisation.

The standouts in the collection of speakers were James Robinson, who shared the Nobel Prize for economic sciences in 2024, and David MacMillan, joint winner of the Nobel Prize for chemistry in 2021.

Joining them in conversations were Montek Singh Ahluwalia, former deputy chairman of the Planning Commission of India; physician-scientist Gagandeep Kang, a stalwart in the field of microbiology; Tolullah Oni, public health expert, urban epidemiologist and clinical professor with the University of Cambridge; Jayaram Chengalur, director of the Tata Institute of Fundamental Research; and Kush Parmar of 5AM Ventures, an investment firm that supports life science companies.

The Dialogue is a biannual affair held in two countries every year. This is the first time it has been staged in India and the response from those in attendance, at packed houses in both Bengaluru and Mumbai, reflected the enthusiasm with which it was received.

In his inaugural address at the Bengaluru edition of the event, Siddharth

Sharma, chief executive of the Tata Trusts, articulated the possibilities that lay ahead for people everywhere. "The future envisages justice — social, economic, and political," he said. "To achieve this, we must empower youth and create ecosystems fuelling innovation for those who need it most."

The Dialogue featured presentations and panel discussions on two subject heads: 'Institutions and cities: engines of human progress', and 'Next big thing — the science that will shape our future'. The first had presentations by Mr Robinson and Ms Oni, followed by a panel discussion where they were joined by Mr Ahluwalia and moderator Owen Gaffney from Nobel Prize Outreach.

Mr Robinson spoke about his sphere of expertise — the criticality of institutions and their impact on national prosperity — the fluid exchange of ideas that characterise the modern world, and the crisis of liberal democracy. Ms Oni explored the connection between health and urban infrastructure while explaining why she thinks hope, as opposed to wishful thinking, can be a driving force for change, and the logic of giving youth a chance to shape the future. The pragmatic Mr Ahluwalia, among the architects of India's economic liberalisation of the early 1990s, dissected the complexity of tackling humankind's multifaceted development challenges.

The 'next big thing' topic at the Dialogue saw Mr MacMillan and Ms Kang — the first Indian woman to be elected a fellow of the Royal Society, London — making presentations before being part of a panel discussion that also involved Mr Parmar and moderator Mr Chengalur.

Mr MacMillan illustrated the importance and the potential of organocatalysis, for work on which he shared the Nobel Prize, startling everyone with his contention that we are "one catalytic reaction away from solving climate change". On his maiden visit to India,

Noel Tata, chairman of the Tata Trusts, delivers the opening address at the Mumbai edition of the Dialogue

Mr MacMillian has clearly fallen in love with the country, its colours and cultures. "It's been mind-blowing," he said. "There's a real sort of bubbling confidence and aspiration... It feels like this is India's moment — and India knows it."

Ms Kang highlighted the health threats that India faces in communicable and noncommunicable diseases and then went on to praise the country's pioneering efforts in vaccine development and the production of generic drugs. Mr Parmar emphasised the benefits that innovative science and technology, particularly from an Indian perspective, can deliver to humanity and the planet.

Collaboration is the key in all of this, said Hanna Stjärne, executive director of the Nobel Foundation, in her address. "It has been truly inspiring to listen to and interact with students and experts," she added. "By reflecting on common challenges, exchanging new ideas across boundaries and learning from one another, we create a dialogue that makes a difference." ■

The call of chemistry

And so the story goes: **David MacMillan** was in bed when the call came through from the Royal Swedish Academy of Sciences informing him that he had won the Nobel Prize. He thought it was a prankster and went back to sleep. It was only later, when he read about it in *The New York Times,* that the reality of it sank in.

Scottish–born, settled in the United States and currently a professor at Princeton University, Mr MacMillan shared the 2021 Nobel Prize in chemistry with Benjamin List "for the development of asymmetric organocatalysis". This is a kind of catalysis — a critical process in chemical reactions — that is less expensive, more environmentally friendly and with path–breaking applications in industries such as pharmaceuticals and energy.

The 57–year–old Mr MacMillan spoke to *Christabelle Noronha* on the sidelines of the recently concluded Nobel Prize Dialogue India 2025, hosted in partnership with the Tata Trusts in Bengaluru and Mumbai, about organocatalysis and its uses, India's potential as a chemistry hub, and the need to support young scientific talent. Excerpts from the interview:

What is it about chemistry that got you interested in the subject?
When I was a child, it was always about the future and the idea that we could create the unknown. I went to university to study physics and I was terrible at it. Luckily, I had taken chemistry as a second course. This was organic chemistry – which people had told me would be very difficult – and I loved it. I had a one-hour train ride to university and every day I would sit and read the textbooks. It was like a revelation, so interesting and different from everything else I was studying. I always tell people that I did not find organic chemistry; organic chemistry found me.

You shared the 2021 Nobel Prize for developing organocatalysis, a novel and efficient method to build molecules. Pharmaceutical research was one sphere where this method was primed to have the biggest impact. Has that potential been realised?
I think so. It has become a concrete part of how pharmaceuticals are

manufactured. Pharmaceutical companies are very clever; they will figure out the best way to make a drug, which is usually also the cheapest, has minimal environmental impact, and generates the least waste. Organocatalysis is very good in that context.

I have spoken about this molecule [that was used] for a migraine treatment. It was a molecule that Merck was working on as a cancer medication. It involved three catalytic reactions, one organocatalytic and two biocatalytic reactions, both environmentally friendly. The company is scaling these up right now.

Your work has enabled applications in what is called 'green chemistry'. What exactly is green chemistry?

Green chemistry is a descriptor that came along in the 1990s, and different people have different ways of looking at it. In a general sense, it is the idea of using things that are better for the environment and more sustainable.

From my point of view, organocatalysis has lots of potential environmental benefits. As a young chemist, when I was performing experiments in the lab, I could not understand why we were not using organic molecules to do catalysis. It did not make sense, and that is why we became interested in doing it, because we could see the potential advantages. Does it come under the green chemistry canopy? It probably does, most of the time.

Climate change has had a part to play in extreme weather events like the devastating floods of 2018 in Kerala (seen here); Mr MacMillan believes that the world is "one catalytic reaction away from solving the climate change crisis"

You have said that organocatalysis can help mitigate the damage caused by climate change.

Scientists and chemists are not great at communicating where we are, but we are actually one catalytic reaction away from solving the climate change crisis. When you say that, people get surprised and say, "That can't be true." But when you explain it to them, they understand and ask why it's not happening already.

Scientists are working on it, but this is a difficult catalytic reaction to invent. People understand what the reactions are, and they know it is feasible. We even have proof of concept, but the problem is: how do you develop a catalyst that can work at scale and is both affordable and accessible?

What we need is lots of work, lots of research and validation, to make this catalytic reaction big enough so it helps solve this problem. While some governments, policymakers and administrations are getting behind this, many others are going in the opposite direction. It's almost like the whole world is involved in a very slow car crash and everyone is either looking out of the rear window or sitting at the back playing a video game.

What about countries where scientific research and funding are on the upswing? What can India learn from them?

India is primed to do research that is going to benefit the country in productive ways. India has been incredible with respect to manufacturing and being the pharmacy of the world. Also, the country has a large and successful chemistry community. There is no reason why those same scientists and chemists cannot work on manufacturing and move into innovation.

That is going to need government support in spheres such as biotech. China made this leap and is now doing extraordinarily well in biotech. In my opinion, India can be as successful as China, if not more, but it will

need government and regulatory support. Funding has been good in India and the government has been supportive, but you need to accelerate this.

You moved from Scotland to the United States to pursue postgraduate studies and then stayed on. What is it about America that makes it the chosen destination for scientific talent?
That is such a hard question. I grew up in Scotland. I lived in rainy Glasgow till I was 21 and then left for California to do my PhD. I arrived in California on a Tuesday evening when it was sunny and beautiful, and my world completely changed. I was a working-class kid and, all of a sudden, I was living in a Southern California apartment complex that had a jacuzzi, a swimming pool and tennis courts. My world was turned upside down.

There were other advantages as well, especially for a young person coming from the United Kingdom, which is quite hierarchical in terms of who can be successful. In the United States they don't care whether you are Chinese, Indian or Scottish. What matters is how good you are. It is one of the reasons that drew me to the country.

I was able to go to America and get an incredible education, find academic jobs in the best schools, receive funds to put together a fantastic research group, and go on to win the Nobel Prize. Very few countries in the world provide the opportunity for all of this. Do I still feel that way about America? Despite the political situation, which I'm sure Americans will sort out, I do think it is an amazing country.

Students at the school level often complain about how complex chemistry is and are consequently indifferent to it. How can the understanding of, and about, chemistry be conveyed better?
This is a great question — and a real concern. My 20-year-old daughter is in college doing organic chemistry and she complains about it being tough. I think the way we teach it is not optimal; we can do a better job. Like other subjects and other types of chemistry, organic chemistry is still being taught the same way it was after the Second World War.

We have not progressed; we have forgotten how much chemistry and catalysis impact our world right now. When we teach the fundamentals, we make it dry and difficult instead of interesting enough to inspire young people, showing them there is chemistry in everything around them, from the phones that they use to the medicines they take.

It is just traditionalism, because in science we are always taught to be serious, to stick to the facts. But that is not the way the modern world works. I feel that improved communication and teaching could do a better job with chemistry education.

The Tata group has been a steadfast supporter of research and learning. How best can philanthropies and other civil society institutions contribute to furthering the cause of science, particularly in developing countries?

"When we teach the fundamentals, we make it dry and difficult instead of interesting enough to inspire young people, showing them there is chemistry in everything around them..."

The Tata group is pretty unique. If other organisations could think like that, it would be a huge step forward. If you ask an average person anywhere in the world if research is a good thing, they would agree. Then, if you tell them that in most countries research funding is drying up, they would also agree that that should not be the case.

But federal governments — including in the country where I live, the United States — are beginning to remove funding from the machinery of research. In that situation, organisations can play a bigger role in ensuring that funding for research in the world continues and moves forward.

What would be your counsel for young Indian scientists making their way in the world while also seeking research breakthroughs and discoveries?

I visited the Tata Institute of Fundamental Research while in Mumbai and I was really impressed by the energy, enthusiasm and passion of the young scientists there. I don't know if I would give them any counsel; sometimes the last thing you need is for an older person to tell a younger person what to do.

I have a research group of 45 people and I'm often asked how I manage it. I say, "Badly." One of my main jobs is to get out of the way of young people who are doing things that are exciting and different.

The only counsel I would give is to say that it is important to believe in what you are doing, even when everyone tells you it is not.

You have been quoted as saying that great things can be achieved in chemistry without large amounts of money or equipment.

Everyone thinks that big ideas in science and chemistry require a lot of resources and infrastructure, and that is just not true. Great concepts and ideas come from between your ears. We won the Nobel Prize for a chemical reaction that cost about 3 cents to perform. Anybody in the world could have performed that experiment in any country in the world. Having lots of money does help, but I do think that some of the best ideas are elegant, simple and far from obvious.

"Everyone thinks that big ideas in science and chemistry require a lot of resources and infrastructure. That is just not true. Great concepts and ideas come from between your ears."

How are the evolving tools of technology, particularly in the context of AI, enhancing research in chemistry?

AI in chemistry is being used to optimise things, to try and understand how to make chemical reactions better. Perhaps your reaction is working a little but you can use AI to rapidly find out how to make it work really well. That is very useful.

The problem is that AI does not invent new reactions, and it's not clear if it could anytime soon. For the moment, we need plenty of creative people — young people particularly — to get involved with invention. An invention is usually an idea not based upon any information you have had previously; it is just an idea that comes from a different direction.

I do believe that invention is where organic chemistry will still be the domain of humans, but I could be wrong.

Mr MacMillan says that "India is primed to do research that is going to benefit the country in productive ways"

Is it true that when you heard of your Nobel Prize win, you thought the caller was a prankster? How has winning the Nobel changed your life?

Yes, I thought it was a prank call and went back to sleep. The prize has changed my life in so many ways. I had heard that from other people before and used to think it was ridiculous, but nothing has been truer.

The Nobel changes your life in unimaginable ways. I am sitting in Mumbai doing this interview after four of the most amazing days of my life. And this is all because of the Nobel. There are so many aspects of my life now that allow me opportunities and the privilege of doing things I could not have done previously. It has been remarkable.

'The Future We Want' is the theme of the Nobel Prize Dialogue. What is your wish for the future of humankind and our world?

My wish for the future is what most people want if they come from a reasonably equitable country. Number one is empathy; people need to care about one another. I am in a privileged situation, but you have to care about people who are not as privileged for whatever reason.

I think equity is really important. If AI could be used to achieve that, it would be spectacular. Most of us come from cultures where respect for our elders is important. I want the world to hold onto that. Respect for people is what allows civilisation to work. ■

‘There is no such thing as a perfect society’

“I am not even sure that I’m an economist,” says **James Robinson** with the flourish you would expect of a Nobel laureate. ‘Social scientist’ is more to the liking of the 65–year–old Mr Robinson, who shared the 2024 Nobel Prize in economic sciences with Daron Acemoglu and Simon Johnson for their research on the relationship between inclusive institutions and national prosperity.

An alumnus of the London School of Economics and Yale University and currently a professor at the University of Chicago, the British–American Mr Robinson is also the coauthor, with Mr Acemoglu, of the well–received *Why Nations Fail* and *The Narrow Corridor,* both of which explore concepts that have shaped societies for good and bad.

One of the featured speakers at the recently concluded Nobel Prize Dialogue India 2025, hosted in partnership with the Tata Trusts in Bengaluru and Mumbai, Mr Robinson speaks here with *Philip Chacko* about his work and how it explains the modern world. Excerpts from the interview:

You shared the Nobel Prize in economic sciences for your research on the correlation between state institutions and national prosperity. What are the lessons here for a country such as India?
Economic growth is associated with inclusive institutions that create broad-based patterns of incentives and opportunities. What guarantees that is, in some sense, inclusive political institutions. The most obvious challenge in India is that you have had a caste system. This has been a fundamental barrier to inclusion, in the economic sphere, in the social sphere and in the political dynamics of the country

What we emphasise a lot [in our work] is the role of innovation and ideas. Where do innovation and ideas come from in society? They come from the creativity, energy and inspirations of people. If you have a system where people are locked into a particular profession because they are born into a particular *jati* [subcaste], then that’s an enormous impediment to innovation and the efficient allocation of resources. That’s exactly what Mr [Bhimrao] Ambedkar talked about.

James Robinson addresses the audience at the Bengaluru edition of the Nobel Prize Dialogue India 2025

'The Future We Want', the theme of the Nobel Prize Dialogue, is about crafting a world that's more inclusive, sustainable and equitable. What are the essentials that need to be in place for that to happen?

Our work is about politics; it is about whether society is inclusive or not. That is not something that geography determines; it is something that humans themselves decide to do: how they construct their institutions and their society.

What would tend to give you an inclusive society? History does not suggest you can get an inclusive economy on the whim of a narrow elite or when you have power concentrated. Power has to be broadly distributed and the state has to be effective enough.

In this context, how do you explain what China has achieved?

China works and it does not work. The transition to economic growth in China, which happened after 1978, was a transition to more inclusive economic institutions and the dismantling of the socialist economy. If you look at the first wave of innovation in agriculture and the household responsibility system, it was about allowing people to make a residual claim from their efforts.

That is one of the basic ideas of economics: to create incentives. So the Chinese economy becomes much more inclusive and that's what creates this rapid economic growth. But the political system stays extractive and, yes, the state is powerful, but that is part of what you need to stay inclusive.

There is no precedent in world history of a country with the kind of personalistic dictatorship you have in China becoming economically successful. But there are many examples in history of what we call extractive economic growth, where you may be at the right place at the right time, sitting on some natural resource base or whatever (think about the absolutist monarchies in the Persian Gulf).

Our prediction is that China does not have an enduring model of how to become a wealthy, prosperous country. I cannot predict, though, how it will go into reverse.

"Development differences across countries are exclusively due to differences in political and economic institutions…," you and Mr Acemoglu have argued. How has that conclusion gone down with economists and policymakers?

A lot of our work is about politics and the problem of poverty. And it is about the perverse political incentives that keep countries poor; this is not a technological problem. That is a difficult story to tell policymakers. I don't really engage very much with policymakers. I am an academic and my view of the world is complex. I don't judge the success or failure of my ideas based on whether they transform politics or policy.

What we in the social sciences do is revive some simple ideas that will allow people to see what many countries have in common. For instance, we examine different countries — North Korea, Uzbekistan, Sierra Leone, Colombia... — these countries are different in many ways but here is what they have in common: they are all poor and they are all poor because they have extractive institutions.

The policy advice you may give to Uzbekistan will be very different from the policy advice you give to Colombia or to India. Our theory does not lend itself to a simple way of talking about policy. I can talk about inclusion — great, but how do you actually make a society more inclusive? It is about the details, the details of the institutions and the political incentives. You have to immerse yourself in these details, but I am only an academic; I teach students.

How can ordinary citizens help in making institutions stronger, particularly in the face of powerful political interests that prevent that from materialising?

I think it's about what it is that creates a transition from extractive to inclusive institutions. Take the example of Taiwan, where the Kuomintang government decided to open up the system and make society more inclusive. It was the country's elite doing that, being forced to do it because of the geopolitical situation, the threat from China and the desperate need for support from the West and the United States.

These transitions towards more inclusive institutions are mostly driven by society, by the collective action of the people who suffer. At the beginning of our book, *Why Nations Fail,* we write about the Arab Spring,

"History does not suggest you can get an inclusive economy on the whim of a narrow elite or when you have power concentrated."

A street scene from Shanghai, China; Mr Robinson says the Chinese economy becoming more inclusive enabled the country to create rapid economic growth

which was about people protesting against extractive institutions and trying to make society more inclusive. That example, in itself, shows how difficult it is because in not one of those Arab societies was there a successful transition towards an inclusive society.

There are always incentives to try to make the system more extractive, but if we look at the world over the last 100 years, it is now more inclusive than before. The idea of human rights, the liberation of women, the rights of homosexuals — it seems to me that the big picture is one of spreading inclusiveness and prosperity.

You and Mr Acemoglu also write that a free society is attained when the power of the state and of society have evolved in equal measure. How can that be made possible in a country of diverse ideologies and fragile systems?

It is difficult. I work in Africa a lot and many social scientists say that the continent is so diverse ethnically that you cannot really have people cooperating to make the state work in the collective interest. But then, people have multiple identities; the notion that you have just one identity is fallacious.

You can build identities, you can create new ones, and you can find ways of bringing people together. That is part of the political project to build an inclusive society, which is essentially about finding identities or issues that bring people together and give them something in common.

The development challenges confronting nation-states emerging from colonialism have led them to make "mistakes" consciously, you have said. Could that have been avoided?

An Egyptian girl rides on her father's shoulders at a demonstration in Tahrir Square in Cairo in 2011 during what came to called the Arab Spring; Mr Robinson says the Arab Spring's ultimate failure shows how difficult it is to secure inclusivity

Well, I don't know; I think we said that to be provocative. But it remains that institutions have been constructed to guarantee that a country will remain poor. Think about North Korea – they chose poverty there because that's the way the communist party runs and controls society, ensuring that most people will have no incentives and no opportunities. You can never have any success when a society is organised so, and that suits the people running the country because it perpetuates their power.

But there are exceptions, India under Jawaharlal Nehru and Tanzania under Julius Nyerere being standouts. These were genuine attempts to build inclusive societies, to move on from the past and from colonialism. Having said that, the political problems that colonialism left behind were very difficult to solve. Some did, like Botswana in Africa; others could not, leading to economic decline and military regimes. In Tanzania itself, Nyerere's party has degenerated into a repressive kleptocracy.

The United Kingdom's role as a colonising power in India is contentious, to say the least. How can these two countries come to terms with their past?

The history of the world is very messy and very complicated; there are no good guys and bad guys. How you move forward from that, while kind of recognising the responsibility of colonial powers, is what counts.

India is a big player in the world. The United Kingdom is not, although it thinks it is. The future belongs to India, so I don't think Indians should care much about the British. Honestly, I think the world is going to be dominated in the future by India and China, and possibly the United States, depending on what happens in the next decade.

You have drawn upon fieldwork in many different countries for your research. Which memories stay in your mind of discoveries made along the way?

Well, many, many; I don't know where to start. It is simultaneously about all the pat ideas I had, which I realised were quite ridiculous once I started talking to people and going to places. It made me realise how terrible these ideas were, but then you also got some amazing ideas and hypotheses.

When I was an economist it was all about mathematics, writing papers and things like that. I felt life is too short for that. You are trying to understand what goes on in the world. I found that everywhere is fascinating.

I have been working in Eastern Nigeria for the past six years and I find the region amazing. Eastern Nigeria was never unified politically; every village is sort of independent and so you have this staggering variation in culture and institutions from village to village. I am passionate about Colombia as well. I worked there for 30 years and my wife is Colombian.

You spoke in your presentation [at the Nobel Prize Dialogue] about the world being at an inflection point, about the crisis of liberal society. What could emerge from this?

I don't know, really. Something much worse could happen or something much better. There is no such thing as a perfect society. The evidence from the last 150 years, however, shows that liberalism is capable of reinventing itself for the better. That's what happened in the United States in the late 19th century with the robber barons, with Franklin Roosevelt and the emergence of the welfare state, and with the birthing of social democracy in Sweden in the 1930s.

Human beings are very good at rationalising hierarchy. What I see at the moment is the extraordinary rapidity with which people rationalise more hierarchical relationships and a more autocratic way of making decisions. People will adapt to that like chickens with their pecking order.

My personal opinion as a social scientist is that there is no end to history. Human society oscillates between different models; there is no reason to believe that it couldn't happen again. If you can clarify that, it shows what the stakes are to recreate a more egalitarian society.

Homo sapiens originated in East Africa and spread all over the world, and they created these incredibly different societies, cultures, technologies, etc. I feel optimistic about the future because we, as human beings, have created all this stuff out of nothing.

Economics has been called the dismal science. You surely think otherwise, or do you?

I am not even sure that I am an economist; I have not had a position as an economist in the last 26 years. I left economics and took a job in political science because, for me, it was more freeing intellectually.

I know we got the Nobel prize for economics, but the work for which we got it is about institutions, about politics, and it rests heavily on anthropology. Our work is interdisciplinary. I reckon that the best thing about the recognition is that it is a prize for the social sciences going forward. ■

"The history of the world is very messy and very complicated; there are no good guys and bad guys. How you move forward from that... is what counts."

Where research is the centrepiece

The trailblazing Tata-Indian Institute of Science Postgraduate Medical School, and the Bagchi-Parthasarathy Hospital embedded within it, is primed to transform healthcare in the country

There's much about the Indian Institute of Science (IISc) that sets it apart, the rarefied air of its Bengaluru campus a reminder of all that the country's leading centre for learning and research has going for itself: a singular heritage, the brightest of scholars, sustained excellence and alumni with outstanding accomplishments. And that air is poised to get more rarefied still.

The upcoming Tata-IISc Postgraduate Medical School, with the attached Bagchi-Parthasarathy Hospital, is a path-breaking undertaking that aims to provide a platform for cutting-edge clinical research and the indigenous development of medical technologies.

Affordable and high-quality healthcare is at the heart of an endeavour primed to foster interdisciplinary research, seed a new generation of physician-scientists, and enable collaborations between the medtech industry and startups.

It may seem like a lot for a newly minted institution, but this is no ordinary enterprise. The first of its kind in the country, the School is a transformative effort to blend complementary elements, fuel a confluence of basic sciences, engineering and medicine under one roof, and drive research and innovation in healthcare.

Spread over 1.5 million square feet and estimated to cost about ₹13 billion (1,300 crore) when completed, the School has plenty of goodwill and well-wishers on its side. The Tatas have been steadfast supporters, with a clutch of group entities contributing to the cause: the Tata Trusts, Tata Consultancy Services, Tata Steel, Tata Sons, Indian Hotels and Tata Capital. The Hospital project has been funded by the families of Subroto Bagchi and NS

Artist's impression (far left) of the School as it will look, and the work completed thus far

Parthasarathy, cofounders of infotech company Mindtree.

The 832-bed Bagchi-Parthasarathy Hospital is expected to be fully functional by July 2026. It's in the order of things that this precedes the commencement of academic programmes at the School, which is slated to start accepting doctorate students in July 2027, with the year's gap essential for the necessary patient population to add up. The intent is to have an annual intake of about 35 students in the initial years before raising the number to 75.

The brainchild of IISc's director, Govindan Rangarajan, and his colleagues, the idea of the School was sparked by the Covid pandemic, a dark period during which India had to grapple with shortages of medicines, vaccines, oxygen and more. The project proper kicked off in 2022, with the two years leading up to it cementing the essentials of what it would take to create an institution for the present and the future, serving the national interest and plugging a gap that has long compromised India's healthcare ecosystem.

"There's this brick wall staring at us," says Navakanta Bhat, dean, division of interdisciplinary sciences at IISc. "We have excellent hospitals and our medical institutes train doctors to become very good clinicians, but we do not have an adequate cadre of clinical researchers or healthcare innovators crafting new solutions. The School is a response to that."

Mr Bhat adds that the School is a natural progression for IISc given its legacy, its nation-building character and its prowess in science and engineering research. "Interdisciplinary collaborations are what we are after because innovations and discoveries happen at the intersection of different disciplines. We figured that if anybody can pull this off, it is IISc."

It was clear from the off to the folks at IISc that the School would be for postgraduate studies only. "We do not want to start an MBBS programme because our focus is on clinical research, just as in engineering and the sciences," explains Mr Bhat. "We have always been known as a postgraduate research institute and we have a history of collaborating with clinicians."

Questions aplenty

The question was, how does an institution with no experience of a medical school or a hospital go about building both from scratch? With precious little in India to base its concept on, IISc had to look elsewhere for a blueprint. That meant similar setups across the world, university hospitals such as Stanford Medicine, Harvard Medical School and Johns Hopkins University School of Medicine among them. "These are all hospitals embedded in interdisciplinary universities, with research labs where faculty and students can pursue clinical research," says Mr Bhat.

From drawing board to design and

construction, a host of points had to be clarified. What sort of specialties does a postgraduate programme require? What about research equipment? And, importantly, how can the facility be customised for the Indian context? IISc has found the answers to these and other matters while executing its plans for the School with precision, in no small measure thanks to its credentials, capabilities and commitment.

Two learning streams

The academic centrepiece of the School will be an integrated dual-degree MD-PhD (doctor of medicine-doctor of philosophy) programme that combines two learning streams. The other dual-degree programme is MD-MPH (doctor of medicine-master of public health) and MD-MTech (doctor of medicine-master of technology).

The objective is to educate a new breed of physician-scientists and medical technologists in battling the ill-health that India is burdened with: infectious diseases such as tuberculosis and malaria and noncommunicable diseases like diabetes and hypertension. The broader objective is for the School to serve as an exemplar that can be replicated in the country.

The imperative is to equip India to cope better with its public health challenges. That cannot happen in an environment where research output in healthcare is dismally low. The Western world, for its part, pushes mostly for innovations that apply to its populace, or those that can be seriously monetised. In the circumstances, the onus is on India to work on discoveries for its — and the developing world's — problems.

"We have India-specific issues, tuberculosis, for instance. I don't think the West is too interested in tuberculosis; it's up to us to find solutions," says PS Anil Kumar, dean, administration and finance, at IISc. "Then there's affordable healthcare, which is a worldwide concern. A medical school with clinical research competencies can be a big help in tackling such issues."

Affordability and quality of care have been key factors in the shaping of the Bagchi-Parthasarathy Hospital. There will be a roughly 50-50 split in patients receiving treatment free of cost and those who pay — though much less than corporate hospital rates — to fashion a self-sustaining model.

"Diagnosis and therapy will be common for both sets of patients, which means the quality of care will be the same, but one group will subsidise the other," says Mr Bhat. "Crucially, patient hospitality will be the cornerstone of the hospital. We are putting together the best of digital and communication technologies to ensure that patients are well-informed about their care and treatment; they will be part of the decision-making process."

IISc's medical school-hospital prototype will surely translate into Indian clinical researchers no longer having to feed on morsels, and there are a bunch of additional benefits on the horizon: public health initiatives, citizen-centred healthcare delivery models, vaccine development, AI-enabled healthcare, precision medicine, health data science and analytics, and, far from least, integrative medicine that draws on traditional systems such as Ayurveda.

Integrated approach

"We are keen to integrate traditional knowledge systems with modern science and come up with healthcare solutions that are uniquely Indian," adds Mr Bhat, who is just as keen on the inventive and the original. "We want India to go beyond being a manufacturer of generic medicine. We want the next blockbuster drug and the next breakthrough medical equipment to be made in the country. That's the reason for developing a startup incubator in the School."

A legacy that endures

The Indian Institute of Science (IISc) was born of Jamsetji Tata's belief that for India to climb out of poverty, its finest minds would have to be harnessed.

The founder of the Tata group pledged ₹3 million — half his personal fortune — to set up IISc, drew up a blueprint of the shape it ought to take, and solicited the support of everyone from the then viceroy of colonial India, Lord Curzon, to Swami Vivekananda to turn his vision into reality.

Aided by the generous donation of a 371-acre land parcel by the rulers of Mysore State, IISc came into existence in 1919, five years after Jamsetji Tata's passing. The institution has fulfilled its promise in full in the time since, becoming the foremost source of engineering and technological excellence in the country while nurturing the talent of scientists such as Nobel laureate CV Raman, Homi Bhabha, Vikram Sarabhai and CNR Rao.

"What advances a nation or community is not so much to prop up its weakest and the most helpless, as to lift the best and most gifted, so as to make them of the greatest service to the country," said Jamsetji Tata. IISc is an illustrious example of how that can be accomplished. It helped in the creation of other scientific institutions and organisations in India, including the Tata Institute of Fundamental Research and the Atomic Energy Commission.

The Tata legacy continues to burn bright at IISc, the upcoming postgraduate medical school being the latest example. ■

"Our intent is to marry science and medicine, to build bridges between our faculty in engineering, chemistry and physics and bring a multidisciplinary approach to research problems that originate in a clinician's mind," says Usha Vijayraghavan, dean, division of biological sciences at IISc. "That's an ecosystem you will not find anywhere in India as of now." ■

By Philip Chacko

Dual VET trainees from the ITI in Thane, Mumbai, during a site visit to the Tata Power facility in Trombay

Smooth skilling

A collaborative effort involving Tata STRIVE and Siemens India demonstrates how industry support for skills training leads to a win-win outcome for all

When Hemant Ingulkar stepped into the Industrial Training Institute (ITI) in Aundh near Pune in Maharashtra, he was hoping to learn a skill that would lead to a livelihood. He received far more than that when he became part of Dual Vocational Education and Training (Dual VET), a programme that strengthens India's ITIs through industry-relevant training.

As part of Dual VET, Mr Ingulkar went to Sona Sales and Service for on-the-job training. The experience was an eye-opener. "The world of wires, circuits and electrical systems moved from the pages of textbooks into my hands," he recalls. Soon thereafter, he and his peers participated in the programme's innovation challenge, where ITI trainees have to think of solutions to challenges shared by industry.

The technical and soft skills he learned, combined with real-world experience, helped Mr Ingulkar secure a job as a technical executive at Talbot Force in Pune, earning around ₹360,000 a year.

Mr Ingulkar credits Dual VET with making him employable. He is among the 139,000 beneficiaries whose lives have been transformed by this initiative, launched in 2017 as a collaborative endeavour by Tata STRIVE and Siemens India.

Tata STRIVE is a skills development programme housed in the Tata Community Initiatives Trust. It has been focused on improving India's skilling ecosystem since 2014, and has touched the lives of more than 2.5 million young people through a range of programmes.

Based on the German-origin model of skilling through apprenticeship, Dual VET seeks to bridge the gap between training institutes such as ITIs and the real-world requirements of different industries.

The model engages with industry and government-run ITIs, bringing them together to train electricians, mechanics, welders, and tool and die makers, along with other core engineering trades of the ITI craftsman training scheme. The programme covers 398 ITIs in Maharashtra, Uttarakhand, Andhra Pradesh, West Bengal, Punjab and Gujarat.

"India's ITIs play a pivotal role in preparing young people for industry," says Ameya Vanjari, chief operating officer of Tata STRIVE. "It is interesting to see how the small step of bringing ITIs closer to industry benefits trainees, enterprises and the nation at large. The Dual VET programme demonstrates our commitment to bringing about change in the ITI ecosystem."

In urban and semi-urban India, ITIs provide a straightforward route to learning vocational skills. Take Hira Kisan Gavit, one of the few women who joined the electrician course at the ITI in Surgana, a town about 90km from Nashik in Maharashtra's tribal belt.

Careers take centre stage

As part of her course, Ms Gavit underwent on-the-job training at the Hindustan Aeronautics facility in Nashik. Recognising her capabilities, Siemens then offered to train her on the latest machinery at its Nashik facility. Coming from a tribal village where early marriage is often the norm, Ms Gavit chose instead to pursue her training and build a career.

Her journey, marked by courage, persistence and a willingness to step beyond the traditional, has inspired many young women in her community to imagine new possibilities for themselves.

Tushar Awhad, a trainee from the Chatrapati Sambhaji Nagar ITI in Maharashtra, during his on-the-job training course at a factory

The Dual VET model focuses on industry relevance by addressing two key aspects of the skilling ecosystem: improving pedagogy and encouraging local industries to offer opportunities for on-the-job training. Tata STRIVE recognises that the quality of instructors directly influences the employability of young people.

Bijitha Joyce, head of ecosystem strengthening at Tata STRIVE, explains that pedagogy training for instructors plays a critical role. "Our master trainers work with ITI instructors to make vocational training more relevant and engaging," she says. "We encourage project-based learning and enquiring minds. Young people are more motivated to work on real-world problems, and they learn about teamwork and critical thinking. This helps create a pipeline of competent job candidates."

The pedagogical attention on sparking

thinking and enquiry makes candidates more attractive to employers, says Mayank Agarwal, joint director at the Kumaon Mandal ITI in Uttarakhand. "Because this approach helps trainees develop stronger problem-solving abilities, we have been able to place about 70% of our trainees for on-the-job training," he says. "We find that companies like Tata Motors are directly recruiting candidates who have completed their training."

With on-the-ground learning as a core component of Dual VET, the Tata STRIVE team works to encourage more enterprises to come on board. The programme has already connected with about 2,600 large, medium and small enterprises, which have the option of participating in numerous ways, from offering on-the-job training to conducting subject-matter expert sessions, and providing apprenticeships and placement opportunities.

Opening doors through industry exposure visits and facilitating real-world innovation challenges are among the other measures through which the programme makes vocational training more relevant.

Employment avenues

Says Manoj Naigaonkar, plant head at Gogate Electrosystems, an industry partner in Nashik: "We look for Dual VET trainees who are sound in basics such as soldering, assembly of printed circuit boards, testing and fault-finding. We also consider soft skills like teamwork, communication, punctuality and workplace discipline." The company takes in around 100–120 trainees for on-the-job training every year, of which around 30–40% are absorbed as employees.

Vijeta Switchgear, based in Sangli in Maharashtra, is a Dual VET partner offering training for fitters and electricians. As part of its association with Dual VET, the company has aligned its training approach with the programme's emphasis on job-role relevance and practical exposure.

"Our training is structured around core mechanical and electrical competencies," says the company's human resources representative, Prajawal Jadhav. "It begins with a skill-mapping exercise aligned to job roles, followed by hands-on training under supervision. Typically, more than half the trainees are offered full-time employment."

In the eight years since its rollout, Dual VET has garnered recognition not only from industry but also from government agencies. In the academic year 2023–24, the central government made on-the-job training compulsory for all ITI trainees across India, a measure that gives trainees the opportunity for real-world skilling.

Says Anantharaman Subramaniyan, head of strategy, sustainability and corporate social responsibility at Siemens India: "Essentially, what we have created is a systemic change. More ITIs, even those that are not covered by us, are now

Value in the vocational

Highlights of the Dual VET programme, which has worked to make India's network of industrial training institutes (ITIs) more industry-relevant:

- Launched in 2017 as a partnership between Tata STRIVE and Siemens India
- Has enabled more than 139,000 trainees while enhancing skilling in 10 trades
- Covers 398 ITIs in Maharashtra, Uttarakhand, Andhra Pradesh, West Bengal, Gujarat and Punjab
- Has trained 1,500+ ITI instructors
- Connected with 2,600+ industries to promote on-the-job training

onboarding industries to provide on-the-job training."

Industry collaboration is a significant pillar of Dual VET's success. Mahesh Kumar Sidam, the vocational education officer for Palghar district in Maharashtra, says the programme is a win-win for both industry and the ITI ecosystem. "Industry meets have played a vital role in bringing industry associations closer to the ITIs," he says. "There is better alignment of training with industry needs."

Working closely with the government is critical for programmes that operate at scale. The Dual VET team drives advocacy with state directorates to ensure buy-in. "It is heartening to see how the state is supportive of improvements in the ecosystem," explains Ms Joyce.

Sustainability in sight

With so much working in its favour, Dual VET is now focused on sustainability. Says Ajita Karve, head of design, quality and communications at Tata STRIVE: "We will be enabling ITIs and industries to sustain the programme without our handholding. ITIs will be categorised as elementary, intermediate and mature, based on outcomes in training and industry connect. Once an ITI reaches the mature stage, we will plan our exit."

Meanwhile, Siemens and Tata STRIVE intend to introduce Dual VET to ITIs in Karnataka, Uttar Pradesh, Bihar and Himachal Pradesh. Also, more ITIs will be brought on board in Maharashtra, Andhra Pradesh and Uttarakhand.

As a solution that addresses youth unemployment – an issue India has grappled with for long – the country's need for a skilled workforce, and industry hiring requirements, Dual VET hits all the right notes. ■

By Gayatri Kamath

Purva Sakpal's career got a boost thanks to Dual VET

Yearning to succeed

Aniket Shingole: Despite having to live with a disability, Mr Shingole aspired to learn a trade and secure employment. He joined the electrician course at the ITI in Khalapur, Maharashtra, leading to an on-the-job training stint with Amptronics Techno, an engineering enterprise. Today, Mr Shingole is an apprentice with the Maharashtra State Road Transport Corporation.

Purva Sakpal: Ms Sakpal joined the women-only ITI in Dadar in Mumbai as a trainee in electronic mechanics. After on-the-job training at Vinayak Electricals, she participated in an innovation challenge where her team excelled. Her skills led to a placement with Brihanmumbai Electric Supply & Transport (BEST) as a technician. Ms Sakpal has since joined the Jio World Centre in Mumbai as its first female elevator and escalator technician.

Y Balayogi: Hailing from a village near Kadapa in Andhra Pradesh, Mr Balayogi dreamed of a better life when he joined the machinist course at the Kadapa ITI and was placed with Rane (Madras) at its Hyderabad facility for training. Since then, he has learned 5S theory, a Japanese methodology to improve workplace efficiency and cleanliness. He now has hands-on experience in operating machines and handling industrial tools, which should help him find employment opportunities. ■

ROOM FOR LOOM

India's handloom industry does not quite get the credit it deserves. Rooted in a diverse and culturally rich tradition, it is the second-largest employer in the country, an age-old source of exquisite artistry. For all its advantages, though, the artisans who breathe life into the sector face a host of challenges.

Antaran, the crafts-themed livelihoods programme of the Tata Trusts, has been enabling handloom artisans to better cope with these challenges. Launched in 2018, the initiative encourages artisans to become entrepreneurs and provides them with the tools to do so.

From its kick-off in Assam's Kamrup and Nalbari districts, Antaran has spread its weaving wings and now covers about 250 villages in six handloom hubs in four states, reaching more than 3,700 artisans, some 2,500 of them women.

This edition of Showcase journeys back to where it all began, Kamrup and Nalbari, where weaving is a way of life passed down through generations, and where handloom artisans are finding pathways to success.

Artisan entrepreneurs of the Kamrup cluster celebrate the successful completion of an order of Eri silk stoles placed by Taj Khazana, the lifestyle chain of Indian Hotels.

Rumi Roy from Laduguri village in Kamrup Rural winds bobbins as part of the pre-loom preparation that goes into the making of handloom garments.

Leela Das (above), an artisan from Chapathuri village in Kamrup Rural, winds tussar ghecha yarn for an order from FabIndia, the famous Indian chain of stores; **artisan-entrepreneurs** from Kamrup Rural raise a cheer after securing their first major institutional order.

Artisan-entrepreneur Jaba Thakuria (above) of Mairapur village in Kamrup Rural works on her loom; **Naba Das**, from Chatemari village in Nalbari, weaves cotton-by-tussar silk yardage.

Dipti Mini Talukdar (above) of Chatemari village in Nalbari aligns cotton with tussar yarn while preparing yardage for an order; **Geeta Haloi** from Daulashal village in Nalbari prepares yarn to develop new stock products for an institutional buyer.

Archana Rabha (above), an artisan-entrepreneur from Hathibandha village in Kamrup Rural, with some of the products she crafted; **Rupali Kalita** of Chapathuri village in Kamrup Rural dries naturally dyed, handspun Eri silk at her home.


The Tata Institute of Fundamental Research

Higher education in India: how great institutions power great nations

The true imprint of such institutions does not reside only in history books or research papers; it lives in the stories of those who carry these learnings

Siddharth Sharma is the chief executive officer of the Tata Trusts

Behind many of India's most remarkable achievements lies a common force: high-quality institutions that empower generations to build paths that once seemed impossible. From designing AI-powered mosquito-tracking systems that prevent disease outbreaks to breakthroughs in space exploration to artists from rural India performing on world-class stages, these milestones are not incidental. They are visible outcomes of decades of collective effort, deep, purpose-driven investment in the centres of excellence we have incubated and nurtured, and unwavering belief in human potential.

Born of visionary intent to confront India's defining challenges, and to reinforce its cultural mores and civilisational values, institutions such as the Indian Institute of Science (IISc), Bengaluru, and the National Centre for Performing Arts (NCPA), Mumbai, stand out as multigenerational legacies of impact. Across the decades, philanthropic leadership in India has not only supported existing centres of excellence but also actively incubated new institutions that address the emerging needs of our society.

Examples such as the Tata Institute of Fundamental Research (TIFR), the Tata Memorial Centre and the Tata Institute of

Social Sciences illustrate how long-term philanthropy, rooted in partnership and mentorship, has helped seed early-stage organisations that have grown into nationally and globally recognised pillars of progress.

This commitment to institutional incubation, from ideation and sustained mentorship to investment and collaborative networks, has enabled pathbreaking solutions and empowered new generations of talent across healthcare, education, technology and social sciences, contributing to India's transformation.

The true imprint of such institutions does not reside only in history books or research papers. It lives in the stories of those who carry these learnings into the world — scientists, artists, and changemakers whose ideas, nurtured first in classrooms or laboratories, ripple outward, touching lives, shifting systems and quietly rewriting what's possible. We see it in rockets that carry hope and in breakthroughs in energy, health and climate action.

Our past shows us what this looks like. Nobel Prize laureate CV Raman's leadership at IISc, Jayant Narlikar's stewardship of the Inter-University Centre for Astronomy & Astrophysics, Pune, and Homi Bhabha and JRD Tata's vision for TIFR — all left us stronger than before. They turned fledgling institutions into engines of discovery, built ecosystems that nurtured innovation, and laid the foundations for India's scientific self-reliance.

We stand on the shoulders of such visionaries — inspired not just to protect their enduring impact, but to extend it.

As the nature of our challenges evolves, so must our institutions. India's aspirations multiply, and more Indians rise to meet them. The problems we face today cannot be solved in silos, be it the climate crisis, the AI evolution or antimicrobial resistance. Consider this: by 2050, India could lose almost 3% of its annual GDP due to climate-induced productivity losses. At the same time, India's share of the global workforce is set to grow dramatically, creating both opportunities and responsibilities.

These intersecting realities demand institutions that go beyond producing knowledge. They must break disciplinary boundaries and bring together technology, communities and policy under one roof.

The role our institutions play in solving global problems has never been more crucial. The climate crisis is redrawing coastlines and straining health systems. In

The Tata Institute of Social Sciences

The National Centre for the Performing Arts

2024 alone, 5.4 million people in India were internally displaced due to disasters like floods and storms, the highest in more than a decade. In such times, these must be more than places of learning. They must become platforms where diverse voices come together to co-create solutions at scale.

Institutions act as connectors and enablers: meeting people where they are and opening doors to a more equitable future. As Nobel Prize laureates Daron Acemoglu and James Robinson remind us in *Why Nations Fail,* inclusive, adaptive and resilient institutions, and not growth alone, make progress lasting and fair.

The true strength of institutions will be measured when knowledge translates into action. During the recent pandemic, Indian institutions were central to enabling the delivery of Covid-19 vaccine doses nationwide. Over 2 billion doses were administered, in turn protecting millions of people and strengthening public health systems. Similarly, in the clean energy sector, collaborations between scientists, universities and industry helped reduce the cost of solar power by more than 80% over the past decade, powering rural communities and driving livelihoods.

Institutions are not just systems or structures; they are catalysts for dreams and launchpads for human potential. They are the reasons that a young girl in Jharkhand dreams of curing cancer, or a first-generation student from Uttarakhand can lead clean energy research, or a musician from Rajasthan is able to share their art with the world on the stages of NCPA.

In nurturing such aspirations, these centres build the very foundations of a more inclusive India, empowering citizens to contribute to the nation's transformation.

However, despite being living, breathing ecosystems and the country's inheritance to our children, they remain persistently under-resourced. Funding gaps restrict innovation, limit infrastructure, and constrain the next generation of innovators. This is where the Tata Trusts have shown that philanthropy can make a difference. Today, it continues to drive progress where it is needed most, whether enabling new research, funding early-stage innovation, or building collaborative platforms.

The future of our institutions will not be written by policymakers or philanthropists alone, but by how each of us chooses to support and reimagine them. Nations are not built overnight, but generation by generation, through institutions that evolve, endure and empower. Our work today shapes tomorrow's India. It is guided by the promises we keep to serve as architects of enduring foundations. ■

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