

CSR TODAY

RNI NO. MAHENG/2013/48866 ■ VOLUME 11 ■ ISSUE 12 ■ JULY 2024 ■ PRICE ₹100 ■ TOTAL PAGES: 52

THE EVOLVING DEBATE ABOUT USING GENETICALLY MODIFIED CROPS IN A WARMING WORLD

CROPS THAT HAVE BEEN "ALTERED" BY
SCIENTISTS IN A LABORATORY CAN BE FOUND
GROWING ON MILLIONS OF HECTARES OF
FARMLAND AROUND THE WORLD.

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Act where it matters the most:
Menstrual hygiene

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Migration, rural development and resilience



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Publisher
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Forced displacement can strongly influence local dynamics and community relationships, particularly when it impacts access to natural resources, services, and local markets.

Migration should be a choice, not a necessity. International cooperation should work to make sure that people in rural areas are resilient to threats and crises, have access to sustainable livelihood opportunities and live in peace and prosperity in their homelands.

CSR is poised to play a big role in it and needs to collaborate with the Food and Agriculture Organisation of the United Nations (FAO). This is key to address the adverse drivers of migration such as conflicts, natural and human-made crises, rural poverty, food insecurity, inequality, unemployment, lack of social protection as well as environmental degradation and climate change.

Migration brings both opportunities and challenges to agriculture and rural communities. When migration occurs, migrants and their families, as well as communities at origin and destinations, need to be supported in maximizing the benefits of migration. Promoting the investment of remittances, mobilizing migrants and diaspora, facilitating the transfer of knowledge and skills, supporting the sustainable reintegration of returnees, and facilitating migration as an adaptation strategy to climate change are key elements to harness the opportunities associated with migration.

In many places, migrant workers are essential for food systems, employed in planting to harvesting, but also in distribution and processing, often seasonally. However, rural areas of origin may be challenged by the loss of productive workforce, with risks for household members and rural people who stay behind - especially women and children. At the same time, rural areas also host a significant portion of the world's forcibly displaced. Forced displacement can strongly influence local dynamics and community relationships, particularly when

it impacts access to natural resources, services, and local markets. For this reason, interventions in such contexts need to combine humanitarian assistance with resilience-building approaches.

FAO provides a unique support to countries on how to address the rural dimensions of migration and forced displacement. By gathering statistics and data on rural migration and forced displacement in rural and peri-urban areas, FAO supports evidence-based policies, programmes and investments. By raising awareness on the critical role migration plays in agriculture and rural development, FAO helps to shape emerging global, regional and national agendas on migration and strives to increase coherence between migration and rural development policies. FAO advocates for safe and regular migration pathways, and for the socio-economic inclusion of migrants and the forcibly displaced. It also works with stakeholders to strengthen their capacities to provide viable livelihood opportunities in agriculture and rural areas.

FAO's work on migration can be divided into four key areas:

1. addressing the adverse drivers of migration and providing rural people with the possibility to remain in their communities of origin (if it is safe for them to do so) by creating alternatives in rural areas;
2. facilitating rural mobility and ensuring people can move regularly and safely between rural and urban areas as well as across international borders;
3. reinforcing the positive contribution of migrants and displaced people to agriculture and rural communities;
4. promoting resilient, agricultural livelihoods for migrants, displaced people, returnees and host communities, including migration as an adaptation strategy to climate change. 🌱

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CSR TODAY

JULY 2024 | VOL. 11 | ISSUE 12

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Printed, Published and Edited by Rajesh Tiwari on behalf of Indian Centre For Corporate Social Responsibility. 106, Nirman Kendra, Dr. E Moses Road, Mahalaxmi Estate, Mumai-400 001

Editor: Rajesh Tiwari

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Over 200 residents participated in Tata Chemicals Hospitals' Health Camp

Tata Chemicals Hospital successfully conducted a significant health camp focusing on oncology and cardiology consultations and medical advice, reaffirming its commitment to community well-being. This free camp was organized on June 16, witnessing participation

from more than 200 residents of Mithapur and nearby villages.

A comprehensive range of medical services was offered by the hospital during the camp. While the expert oncologist examined 18 patients, and cardiologist examined 60 patients, there was also a general surgeon and

M.D. physician who each examined 60 and 70 patients respectively. The camp also provided free lab investigations, ECG, 2D echo screenings, and diagnostic check-ups.

Dr. S. Bhatnagar, Chief Health and Wellness Officer at Tata Chemicals Hospital, commented on the enthusiastic response from the locals, stating, "The active participation of residents at the health camp highlights the importance of such crucial initiatives. For over 75 years, through our hospital, it has been our constant endeavour to support the health needs of the communities dwelling around us."

The success of this camp perfectly reflects Tata Chemicals Hospitals' commitment to delivering accessible and quality healthcare. In continuation of this health & wellness initiative, Tata Chemicals Hospital will next host a blood donation drive in the third week of July.



Revitalizing Mangrove Ecosystems at Pulicat near Chennai

United Way Bengaluru Launches 'Mangroves Matter': A Campaign to Restore Mangrove Ecosystems

Recent reports indicate a staggering loss of about 35% of mangroves between 1996 and 2010 highlighting a concerning trend in environmental degradation. Mangrove ecosystems play a significant role in stabilizing coastlines, making their preservation crucial for the environment and inhabitants. Mangroves are a natural solution to climate change, the paramount global threat. They can sequester carbon at a rate five times greater than tropical forests.

Responding to this urgent need, United Way Bengaluru (UWBe) has launched an ambitious and impactful campaign, 'Mangroves Matter', to revitalize mangrove ecosystems. The first foot is at Pulicat or Pazhaverkadu, a coastal town near Chennai, Tamil Nadu. Known as the 'jungle of roots' in Tamil, Pulicat encompasses a vast expanse of 720 sq. km, constituting India's second-largest brackish water body. Rampant destruction of mangrove vegetation by human activities and natural causes has led to a massive reduction in the lake's depth from 3.8m to 2m. This ecological decline has endangered biodiversity and threatened the livelihoods of local fisherfolk dependent on the mangrove ecosystem.

The 'Mangroves Matter' campaign was officially launched on World Wetlands Day, 2024, with a bold vision to rewild approximately 10 lakh mangroves across 100 acres in



the Pulicat region alone. In addition to their environmental advantages, the campaign will closely work with the Irula community, opening up livelihood opportunities for them and boosting the local economy by supporting the cultivation of shrimp and fish species. The project also includes removal of acres of Prosopis (Karuvelam), an invasive species which has destroyed the local flora and soil ecosystems.

Sriram Ananthanarayanan, Director-Projects, UWBe, said, "I am glad that many of our Corporate CSR partners have come forward to support this campaign with a shared vision towards environmental commitment. Notably, our CSR partner, Mphasis, has pledged their support to this cause, dedicating the rewilding of mangroves on 70 acres in Pulicat."

Looking ahead, United Way Bengaluru envisions extending the

campaign's reach to other regions, including Andhra Pradesh, Karnataka, and Kerala. Upholding its mission of "mobilizing the caring power of communities," the organization calls upon organizations from different industries to join hands in supporting this vital mission for the preservation of the planet's precious ecosystems.

Rajesh Krishnan, CEO, UWBe, said, "COP28 made significant progress towards securing the Mangrove Breakthrough's goal of 15 million hectares of mangroves underpinned by USD 4 billion new investments by 2030. I am super excited that United Way Bengaluru is among the very few organisations who have taken this initiative. 'Mangroves Matter' is aligned with the aspiration of COP28, which calls out the responsibility of the State, corporations, local people, community, NGOs and other stakeholders to deliver the Breakthrough."

EverEnviro's CSR Initiatives Uplifting Communities with a Focus on Education, Healthcare, and Sanitation

EverEnviro Resource Management Pvt. Ltd., India's leading compressed biogas/ RNG developer, has launched significant community programs with initiatives focused on ensuring access to education, sanitation, and healthcare. Aiming to enhance the quality of life for less privileged communities across Punjab, Delhi, Uttar Pradesh, and Madhya Pradesh, EverEnviro's CSR initiatives have touched upon over 3,500 lives so far.

Over the past few months, EverEnviro has conducted a series of health camps across its project locations in Burari & Ghazipur (Delhi), Indore (MP), Balrampur, and Kumbhi (UP), catering to individuals across all age groups. These camps provided essential services such as eye check-ups, monitoring of blood pressure and blood sugar levels, as well as ECG, cholesterol, and creatinine tests. The initiative resulted in 460 beneficiaries receiving crucial healthcare support.

Stressing the need to support rural communities to achieve a higher standard of living, KA Chowdary, Chief Project and Operations Officer, EverEnviro Resource Management Pvt. Ltd., said, "At EverEnviro, we believe in the ethos of giving back to the community and are committed to leaving a lasting impact on the communities we serve. Through our CSR programs focused on healthcare, education, and sanitation, we aim to improve the lives of school children, residents, and senior citizens."

Recognizing the pivotal role of education in shaping the youth, EverEnviro has taken proactive steps to enhance the learning experience at schools across Ghazipur, Kumbhi,



Balrampur, Patran, Burari, Indore, and Dhuri. The company distributed school bags and installed digital projectors at select schools, ensuring quality education reaches every section of society. The company has also provided menstrual hygiene products to students and staff at Sarvodaya Kanya Vidyalaya in Burari, Delhi, intending to raise awareness about menstrual hygiene among adolescents and reduce the school dropout rate among girl children.

In another initiative, the team planted over 1,000 trees in schools

and local parks across Balrampur and Indore. Moreover, to provide clean water access to less advantaged people, EverEnviro distributed water coolers and RO systems to government schools, old age homes, and temples, ensuring the well-being of the communities.

With concerted and consistent efforts towards driving a positive and sustainable impact in society, EverEnviro remains steadfast in its commitment to empowering rural communities with its impact-driven CSR strategies.



Promoting Climate Resilience in Vidarbha: Ambuja Foundation Unites Experts

Discussion held on the need for collective action at community level for implementation of integrated water management strategies

Calling for investment in, and creating awareness around, climate resilience in the Vidarbha area, Ambuja Foundation hosted a thought-provoking event in Nagpur recently.

A number of stakeholders like NGOs, corporates, government, development practitioners, academia and civil society organizations from the region came together to have an open dialogue on this critical subject during the event.

Speakers included eminent experts representing NITI Aayog, NABARD, ICRIASAT, renowned key dignitaries in the space like Mr. Popatrao Pawar and known organizations working in water and agriculture in the Vidarbha region. The audience were enlightened with insights and views shared by Popatrao Pawar, Deputy Sarpanch, Hiware Bazaar, Ahmednagar who is known for the transformation of his village, and is a world renowned speaker on the issue

of climate resilience. He said, "It is not the conservation that matters but it is the process after conservation that is the issue. A feeling of ownership amongst the community should be created so that people take care of their water sources."

There were two panel discussions held in which panelists exchanged views on the need for collective action at a community level to ensure implementation of integrated water management strategies. Members hailing from the local community on the panel shared their experiences of how a behavior of ownership can solve the rising problem of water scarcity in their villages. Panelists also talked about their experiences, the challenges they faced, and the

required technologies to be used for water conservation. They said that it was important to train people at the grass-root level and to develop future strategies to enhance sustainable water resource management and climate resilience.

Key speakers who joined virtually highlighted the need for convergence, consortium and collective action from stakeholders and the community. Stakeholder engagement needs to be the basis of any water program. And, discussed that an integrated approach is required to address the challenge of climate resilience. On the other hand, one of the speaker strongly expressed how water indirectly gets polluted once the air and land are polluted. Therefore, it is important to understand grey water management and the importance of using it.

The audience in the room were also filled with experts in water, agriculture, government, policy makers, sarpanches, community members, and universities.

Ambuja Foundation has been making efforts to address the water crisis through implementing several initiatives to further the agenda of sustainable water resource management. It has been working in two districts of the Vidarbha region - Chandrapur and Nagpur - reaching over 1 lakh households across 1100 villages. An integrated water management approach is followed by the Foundation which has led to an increase in surface and groundwater availability. Key impacts of their work in the area include:

- Water table increase by 1.2 mt in monitoring wells,
- 25-30% increase in production due to application of silt,
- Agriculture productivity increased by 10-15%
- Water availability and increased agricultural income has enhanced the adaptive capacity of vulnerable farmers to withstand climate variability.



Stonehill Collaborates With Thapar Entrepreneurs Academy To Foster Young Innovators

Thapar Entrepreneurs Academy recently concluded its dynamic Entrepreneurship Workshop for Grade 10 and 11 students, held at Stonehill International School, Bangalore, from May 31-June 7.

The intensive programme honed their business acumen and provided the budding entrepreneurs with a strong foundation on the practicalities of entrepreneurship.

The week-long workshop guided them through the comprehensive process of crafting a business plan, producing and refining a product, determining pricing strategies, and executing marketing and sales plans.

The participants were divided into teams, fostering collaboration and exploration of creative ideas. The workshop culminated in the development of unique products by each team, featuring innovative concepts such as Mini Minds, a fun and educational activity kit for children; Nutri Box, a nutritious breakfast in a box; The Salvagers, an educational card game for waste segregation; Nature Surfer, an innovative agricultural solutions company, utilising AI for sustainable farming; Thaila Totes, a sustainable Tote company; and Bean, a coffee-on-the-go solution. The students had the opportunity to showcase and sell their products to the Stonehill community, gaining real-world experience in sales and customer interaction.

The highlight of the event was the Trade Show, a platform reminiscent of the popular television show Shark Tank. This event was graced by Namita Thapar, a prominent investor in Shark Tank India, who provided inspiration and guidance to the young entrepreneurs. The Trade Show also featured esteemed judges Abhinav Sharma, Grant Manager, Zerodha, and Dinika Bhatia Dey, Founder, Nutty Gritties. Their expertise and insights were invaluable in selecting the winning teams.

The winning team, EcoPlay Games, with their product The Salvagers, an educational card game about waste segregation, won a cash grant of Rs. 50,000 and an internship at a local start-up.

The Entrepreneurship Workshop at Stonehill provided students with essential business skills that inspired them to pursue their innovative ideas with confidence and determination. Stonehill is enthusiastic about developing real-world partnerships that enhance student skills through immersive and practical learning experiences.

Alstom partners with United Way of Bengaluru to successfully rejuvenate Bidare Agrahara Lake

Addressing the severe water scarcity faced by Bengaluru, Alstom, a global leader in sustainable mobility, has partnered with United Way Bangalore, a leading Non-profit organisation to successfully rejuvenate the Bidare Agrahara Lake, situated in the Doddabanhalli Village, Bengaluru East. The initiative is aligned to the larger 'Wake the lake' plan that aims to address the SDG goal 6.

This comprehensive restoration project has increased the lake's water holding capacity to 18 crore litres, significantly improving the groundwater table and reviving Dakshina Pinakini River. It has led to the removal of 25,800 cubic meters of silt and 8,300 cubic meters of sludge from the lake, significantly improving its water quality and capacity.

Bengaluru, the capital city of Karnataka is also known as 'the city of lakes'. In recent years, the city has been facing a severe water crisis due to various factors such as rapid urbanization, population growth, and climate change. The city heavily relies on groundwater sources, which are depleting at an alarming rate. Moreover, the quality of water in lakes and rivers has deteriorated due to pollution and encroachment. Alstom is at the forefront of addressing the challenges facing society today, from global warming to rapid urbanisation. This initiative represents Alstom's commitment to fostering a positive social and ecological impact, environmental sustainability, and community development.

Commenting on the success of the project, Olivier Loison, Managing



Implemented in partnership with United Way of Bengaluru, the initiative addresses the SDG goal 6 of achieving "clean water and sanitation for all".

The lake now boasts a water holding capacity of 18 crore litres, contributing significantly to the improvement of the local groundwater table.

Director of Alstom India, said, "At Alstom, we are committed to making a positive impact on the communities where we operate. Our dedication to sustainable practices

extends beyond our industry and into the broader communities we serve. The Bidare Agrahara Lake restoration project is a testament to this commitment. With improved

water quality and green covers, this lake has the potential to become a mini biodiversity hotspot in the future. By supporting the 'Wake the Lake' initiative, Alstom aims to make a lasting impact by empowering the local community and contributing to the creation of a sustainable world for future generations.

Alstom and UWBe have also undertaken several impactful activities to enhance the ecological and social value of the lake. These include removal of hyacinth, desludging, and desilting, strengthening of the lake main bund, inlet culvert construction, waste weir restoration, sedimentation ponds creation, and fencing of the lake to protect the boundary.

To promote biodiversity, an island has been created for bird perching at the center of the waterbody, and various native tree species were planted using traditional, dense and Miyawaki methods. Community amenities such as walk paths, benches, an adult open-air gym, and play areas for kids have also been established to provide an enhanced recreational space for greater engagement of the community.

Alstom has been actively working towards supporting the transition towards sustainable transport systems that are inclusive, environmentally friendly, safe, and efficient while implementing a socially responsible business model. Alstom India has participated in a range of community assistance programmes around the country because of its constant watchfulness. These initiatives are carried out in close collaboration with local or international NGOs that have a track record of successfully implementing initiatives on the ground.

Kalpataru and Khushiyaan Foundation Leads Successful Beach Cleanup, Promoting Environmental Awareness



Demonstrating their commitment to environmental stewardship, volunteers from Kalpataru, Khushiyaan Foundation, and the local community participated in a beach cleanup at Prabhadevi Beach. The event raised awareness and took direct action to protect Mumbai's coastline.

From 8:00 am to 10:00 am, volunteers worked diligently to remove litter, plastics, and other debris from the shoreline. Their efforts resulted in the collection of waste, preventing it from polluting the ocean and harming marine life. Around 1350KG of wastage were removed.

"We are grateful to every volunteer who joined us for this important cause," said Representative of Kalpataru. "This beach cleanup underscores the impact we can make when community members come together to safeguard our

environment." Dr. Chinu Kwatra of Khushiyaan Foundation added, "The dedication of those present was truly inspiring. We appreciate all who lent their time and energy to this noble effort."

Under its CSR, Kalpataru has been partnering with Khushiyaan Foundation to conduct weekly beach clean-up drives on Prabhadevi beach. This highlights Kalpataru's endeavor to uphold sustainability & responsibility towards our environment. As a part of World Environment Day, since the last week of May, more than 800 volunteers jointly collected ~20,000kgs of debris thereby ensuring lesser plastic entering the sea.

Kalpataru and Khushiyaan Foundation remain committed to organizing similar initiatives to promote corporate social responsibility and environmental protection.



Inauguration of Deluxe Recycling's new recycling plant in Sarigam

Deluxe Recycling Unveils India's Largest Multi-Layered Plastic Recycling Facility in Gujarat with Major Backing from Circulate Capital

Deluxe Recycling, a premier multi-layered plastic recycling company, is driving strategic expansion with the inauguration of a new recycling plant in Sarigam, Gujarat. The company, established in 1999 has been driving a unique approach to India's waste management problem and has been at the forefront of innovating new technologies to recycle UBCs (Used Beverage Cartons) and MLPs (Multi-Layered Plastic), alleviating the pressure from overburdened landfills. With this new facility, Deluxe is set to more than double its recycling capacity - from 13,000 TPA to 27,400 TPA across 2 locations - cementing its position as one of South Asia's largest MLP recyclers. By FY2030, the company aims to recycle more than 200,000 tons of UBCs and MLPs.

According to an article released by the World Economic Forum in 2023, India alone generates about

9.4 million tons of plastic waste annually, of which only 50% is collected. Typically considered of no value and very difficult to recycle, MLP waste is one of the most polluting

forms of plastic packaging and, if it is collected at all, is used for fuel, incineration, or co-processing at cement plants. Deluxe has developed a scalable ecosystem for the



Jignesh Shah, MD of Deluxe Recycling, with Rob Kaplan, Founder & CEO of Circulate Capital, At The Inauguration of the State-Of-The-Art MLP Recycling Facility at Sarigam

collection of MLP by working with and paying a network of aggregators and small material recovery facilities (MRF) to collect and sort MLP waste. The company then uses proprietary, in-house developed technology to manufacture a variety of high-demand heavy, rigid products. Deluxe currently supplies 90% of the recycled seat boards to the automotive industry, which means nearly every rickshaw driver sits on a Deluxe-recycled seat.

Funding from Circulate Capital, the leading circular economy investment management firm, which manages the largest recycling portfolio in Asia, fuelled the expansion of the venture. This capital infusion has been instrumental

in establishing new facilities in Sarigam in Gujarat, and Bengaluru. The funding propelled changes like an increase in capacity from 13,000 MTPA to 27,400 MTPA in Sarigam and Bengaluru while gearing for the future target of 50,000 MTPA in the next 2.5 years. It is aiming at creating 150+ jobs in Gujarat.

Jignesh Shah, MD, Deluxe Recycling Pvt. Ltd., said, "Opening the largest MLP recycling plant in India is a pivotal step for us towards translating our vision into a reality, and we appreciate the continuous support from Circulate Capital. This facility marks a significant advancement for us towards developing sustainable solutions for the collection, management, and

recycling of multi-layered plastic (MLP), driving impactful environmental progress in India. Our goal is to lead the way in building an innovative ecosystem to source MLP waste and give it a new life in high value applications."

Rob Kaplan, Founder & CEO of Circulate Capital, mentioned, "We believe that Deluxe Recycling's innovative market-based solution that incentivises the collection of typically hard-to-recycle MLPs will drive significant positive environmental and social outcomes, contributing to a circular economy for plastics in India. We are excited to see the transformative change this investment will bring over the coming years."

HDFC Mutual Fund Launches Campaign '#GenerationRestoration' to Combat Climate Change

Reinforcing its commitment to environmental sustainability, HDFC Mutual Fund has launched the 4th edition of its Nurture Nature campaign. Through this campaign the company focusses on water conservation through lake restoration. This year's initiative, titled Generation Restoration, is a long-term effort dedicated to fighting climate change and its devastating impacts. Over the past three years, the Nurture Nature campaign has facilitated the plantation of over 50 thousand saplings across the country and recycled 4.65 tonnes of plastic waste to conserve nature.

Through a compelling campaign video titled Generation Restoration, HDFC Mutual Fund showcases the story of Savitri, an elderly woman forced to migrate after her village home was ravaged by drought. The video drives home the message that climate change is uprooting countless families, stripping them of their homes and livelihoods.

Building on these efforts further, Nurture Nature 4.0 aims to create sustainable water sources by contributing towards restoring the water holding capacity of an existing lake. The campaign highlights the plight of millions of Indians displaced from their homes due to natural calamities like drought, fuelled by climate change. As per the Costs of Climate Inaction Report by Climate Action Network South Asia, it is estimated that by 2050, climate change could force up to 45 million Indians to face this harsh reality.

Under Nurture Nature 4.0 - Generation Restoration, HDFC Mutual Fund will restore water holding capacity of an old lake for every digitally registered SIP during the campaign period, aiming to rejuvenate and restore an existing lake. From June 5th to June 11th, 2024, any new SIPs registered digitally or online of a minimum Rs. 2,500 per month for at least 3 years in

eligible equity and gold schemes, the fund house will contribute towards restoring a 5,000-litres water holding capacity in an old lake. The aim is to rejuvenate and restore the water holding capacity of an existing lake, providing a sustainable water source for villagers, agricultural activities, and environmental preservation.

Commenting on this socially responsible initiative, Navneet Munot, MD & CEO of HDFC Asset Management Company Ltd., said, "Global warming is an existential threat to humanity. As the world grapples with deforestation, rapid urbanization, environmental degradation, and groundwater depletion, it is crucial for us to take immediate action. As part of our ongoing Nurture Nature Campaign, now in its fourth year, we have committed to alleviating the water crisis by restoring an existing lake and providing a sustainable source of water"

Piramal Foundation commemorates the momentous convocation of Gandhi Fellowship Batch 15



Piramal Foundation completed its three-day annual convocation ceremony of the 15th batch of their Gandhi Fellowship Program on June 12, 2024 in Delhi. Gandhi Fellowship is a 2-year program for the youth to work at the grassroots of India and acquire an in-depth experience across areas of Public Health, Education, Climate Change and Digitization. Continuing

the theme of 'Unfolding Possibilities' the convocation event marked another significant milestone of nurturing 497 young change makers, empowering them on their journey towards social entrepreneurship.

The convocation ceremony hosted 600+ distinguished attendees including Gandhi Fellows, mentors, alumni, speakers, and esteemed guests, serving as a

significant platform in recognizing the extraordinary endeavors of the Fellows. The convocation featured dedicated themes each day, emphasizing alumni engagement and collaborative learning with external stakeholders. This approach aims to foster a robust network among past and present fellows while promoting the exchange of knowledge and ideas with industry experts. The convocation upheld the core values of the Gandhi Fellowship Program, fostering leadership, community impact, and lifelong learning to empower fellows in driving meaningful societal change in their professional journeys.

This year, 500 Gandhi Fellows graduated after an intensive two-year program that has significantly honed their skills and broadened their perspectives. Immersed in the communities they served; the Fellows tackled pressing local challenges through various Public Systems projects. Their curriculum included activities such as Vipassana meditation to enhance self-awareness and the development of competencies in Nonviolent Communication (NVC), Individual Work Analysis (IWA), and a commitment to excellence. As they move forward, these graduates are well-prepared to become leaders in the development sector, innovative entrepreneurs, or pursue higher education, all the while continuing their mission to drive sustainable social impact.

Participants enjoyed a high-octane engagement with a lineup of thematic workshops and interactive sessions led by distinguished

speakers, delving into topics ranging across various development themes. Esteemed speakers, included Mr. Amarjeet Sinha, Retired IAS Officer from Bihar Cadre; Ms. Shalu Manan, Global Talent Supply Chain & Talent Match Leader at Genpact; Dr. R Balasubramaniam, from Capacity Building Commission, Govt of India; Dr. Devendra Khandait and Suneeta Krishnan both Deputy Directors at the Bill and Melinda Gates Foundation; Michelle M. Lang-Alli,

USAID/India Director for the Office of Health; Dr. Reuben Swamickan, Deputy Director, Health at USAID/India along with Dr. Amar Shah and Dr Neeta Rao. The Keynote address was delivered by Adil Zainulbhai, Chairman of Capacity Building Commission, Govt of India. These speakers offered valuable insights across domains. Alumni from diverse backgrounds, including entrepreneurs, intrapreneurs, those pursuing higher education and from

the creative field shared their stories with the highly interested Fellows who are now venturing forth into the world to make their individual mark.

The evenings were filled with fun and music adding to the celebratory note. Overall, the attendees had ample opportunities for networking and collaboration, fostering meaningful connections and the exchange of experiences among fellows and guests that will resonate with them over time.

Extreme weather has caused a minimum of \$41 billion damage in the six months

The human cost of disasters is also missed in these figures, from those who lost their lives to those whose homes are destroyed, or who lose out on work or education.

Extrême weather has caused a minimum of \$41 billion damage in the six months since the last major climate conference, according to a new report by international development charity Christian Aid.

They say that not enough progress has been made since COP28 in the United Arab Emirates to move away from fossil fuels or to support lower-income countries to cope with climate disasters. As the second week of climate talks in Bonn begins, these numbers show that the costs of the climate crisis are already here. Negotiators in Bonn are working to establish a "Loss and Damage Fund", to try and unblock financial flows to lower-income countries hit by extreme weather. This funding was a major sticking point at COP28, with wealthier nations slow to agree to the investments needed.

"Rich countries, responsible for the lion's share of the greenhouse gases that are heating the atmosphere and fueling extreme events, should recognise their historic responsibility and step up their funding to the Loss and Damage Fund to help other countries cope and recover from extreme weather," says Christian Aid in the report.

The \$41 billion in damage is an underestimate according to the charity. According to a press statement issued

here, only insured losses are typically reported, and many of the worst disasters have hit countries where few people or businesses have insurance. The human cost of disasters is also missed in these figures, from those who lost their lives to those whose homes are destroyed, or who lose out on work or education.

The report shines a spotlight on four extreme weather events that have happened since the last major international climate talks, all four of which have been scientifically linked to climate change.

Floods in Brazil which killed at least 169 people and did at least \$7 billion damage to the economy were made twice as likely by climate change. In south and southwest Asia, flooding which killed at least 214 people and did \$850 million in insured damages in the UAE alone was also made more likely by climate change. Simultaneous heat waves in west, south, and southeast Asia killed over 1,500 people in Myanmar alone, with heat deaths notoriously under-reported. The heatwave is expected to slow growth and increase inflation, and in southeast Asia it would have been completely impossible without climate change while in south and west Asia it was made five and 45 times more likely, respectively, and also hotter. Flooding from cyclones in east Africa killed 559 people, and was made about twice as likely and also more intense by climate change.

These extreme events hit two of the three climate "troika" countries - UAE, which hosted the climate COP last year and Brazil, which will host it in 2025. This underlines the urgency of the escalating crisis, with climate change fueled disasters causing devastation before and after climate talks are held in those same countries.

Lords Mark Industries Ltd in collaboration with Government of India inaugurates revolutionary E-Smart Clinic in Agra

Lords Mark Industries Ltd, a leading manufacturer of IVD products, in collaboration with Unnat Bharat Abhiyan, a National Programme by the Government of India, under the initiation of FIIT (Foundation for Innovation and Technology Transfer), IIT Delhi is thrilled to announce the inauguration of the revolutionary E Smart Clinic in Anwal Khera village, Agra

in Uttar Pradesh. This initiative aims to redefine healthcare accessibility across the region, marking a significant milestone in advancing healthcare infrastructure.

Previously, the company launched the E-Smart Clinic project in Haridwar, Uttarakhand, which received an overwhelming response from the local communities. Committed to serving the nation,

Lords Mark Industries endeavours to expand the reach of the E-Smart Clinic across the country by making it portable and mobile, ensuring convenience and accessibility. This initiative seeks to provide testing and consultation services to patients at a nominal cost of less than Rs. 1000. The company plans to deploy 16,000 E-Smart Clinics throughout India. The collaboration with Unnat Bharat Abhiyan and FIIT represents a leap forward in democratising healthcare technology and innovation to make a tangible difference in millions of lives across India.

The inauguration ceremony, witnessed esteemed dignitaries, alongside a host of bureaucrats and other eminent personalities include Shri Ashish Chauhan, Shri Y. P. Singh, Shri Chakra Bhushan Pandey, Shri Chunnilal from Unnat Bharat Abhiyan while others are among the local communities include ACOMO - Dr. Sanjiv Barman, Dr. Vijay - Superintendent of CHC, Awalkheda, Mr. Ravinder Chauhan - Gram Pradhan, Shri Avnish - Director RUDSETI, ADO Panchayat Shri Pankaj Yadav, Dr Vijay Kumar - Medical officer In-charge cum Superintendent, Dr Gyanada Mishra - Dentist, Dr. Manushil Pachori - Dentist, Dr. Akancha Singh - Medical Officer, Dr. Upasna Porwal - DMS (Ayurveda), Smt. Neha Verma - Staff Nurse, Shri Arjun Singh - Pharmacist, Shri Rajendra Singh - Pharmacist, Shri Sourav and Shri Harimohan - X-Ray Technician, Shri Devangan Ghanshyam - Manager, Shri Akhil Vishwa - Gayatri Pariwar, Anwalkhera, Shri Jagdish Kushwaha, Shri Akhil Vishwa - Gayatri Pariwar, Representative, Shri Dindayal - Devotee, Akhil Vishwa Gayatri Pariwar and Shri Ranjit Raghav - Social Activist, Murlidharpur.

The E Smart Clinic project is poised to bring about a paradigm shift in healthcare delivery, leveraging state-of-the-art technology and innovative solutions initiating



Lords Mark Industries Ltd inaugurates revolutionary E-Smart Clinic in Anwal Khera village, Agra



Team Lord's Mark Industries demonstrating the technique of E-Smart Clinic

Contactless Vital Monitoring, tele-medicine, consultation and point-of-care diagnostics, the E-Smart Clinic tracks diverse parameters such as live vitals, biochemistry, hematology, infectious diseases, cardiac and inflammation, body and urine parameters and maternity.

Commenting on the occasion, Sachidanand Upadhyay, Managing Director, Lord's Mark Industries Ltd, "We are delighted to launch our first E Smart Clinic in Uttar Pradesh at Agra. The inauguration of E Smart Clinic underlines our commitment to revolutionise healthcare accessibility through technology intervention. We are proud to collaborate with the Government in India in its mission to make preventive healthcare accessible to all. E Smart Clinic leverages new-age technology to bring healthcare closer to local communities. The E Smart Clinic at Agra is a part of our mission to play an enabling role to build a healthier society and help people lead a healthier life."

The E Smart Clinic, developed by Lords Mark Industries in collaboration with their technology partner Dozee, utilizes patented technology to detect vital parameters of patients without any external attachments. Capable of conducting blood tests in just 20 minutes, the clinic seamlessly connects rural patients with top doctors online, communicating in their local language. Lord's Mark Industries has filed patents for the biochemistry and the health kiosk, boasting an accuracy level of 99 percent. This marks the first instance globally of delivering such a portable solution to patients at an exceptionally low cost for disease detection, coupled with seamless online interaction with top-tier doctors aligning with the Honourable Prime Minister's vision of affordable medical infrastructure.

Manav Teli, Executive Director, Lord's Mark Industries Ltd, added, "The E Smart Clinic at Agra is our second E Smart Clinic in the country

and we are now on a mission to re-define the healthcare delivery with advanced technology. We would like to express our heartfelt gratitude to the authorities for their assistance in setting up the E Smart Clinic in Agra. We welcome the people of the city and adjacent areas to experience the exceptional healthcare services at the E Smart Clinic."

Following successful trials at five initial centres, the E Smart Clinic will be commercialized across India, with international partners expressing interest in global distribution. The market potential for the E Smart Clinic in India exceeds 3000 crores, presenting additional opportunities for Lords Mark Industries to supply consumables for various therapeutic tests. The launch of the E Smart Clinic project marks a significant milestone in the quest for accessible and affordable healthcare for all citizens, aligning with the government's overarching vision of a healthier, more prosperous India.

Emoha & SIS Alarms Launch First-of-its-Kind 24/7 Emergency Response for Seniors

Emoha, India's leading elder-care brand, has partnered with SIS Alarms (VProtect), the nation's top security and response firm, to launch GoSecure, a pioneering 24/7 emergency response service. Recognizing the challenges faced by seniors living alone, such as health risks and vulnerability to accidents, GoSecure offers them peace of mind with a dedicated panic button. When pressed, this button triggers an instant response system operational, seamlessly connecting seniors with a network of over 15,000 ambulance partners and geriatric care specialists for immediate assistance.

This remarkable alliance unites the strengths of two industry giants. Together, Emoha and SIS Alarms aim to establish a robust ecosystem that prioritizes the safety, security, and holistic well-being of India's rapidly growing elderly population. Statistics from the United Nations Population Fund (UNFPA) paint a clear picture: India's elderly population is projected to account for a staggering 17% of the global senior citizen population by 2050, reaching a massive 347 million individuals. This figure is expected to surpass the number of children aged 0 to 15 years by 2046. Even more alarming, the report predicts a 279% increase in the population aged 80 and above between 2022 and 2050. GoSecure stands as a timely and much-needed solution. This innovative service empowers senior citizens with the peace of mind of knowing help is just a button press away, allowing them to live independently with greater confidence and security.

Talking about the partnership, Saumyajit Roy, CEO & Co-Founder of Emoha, said, "At Emoha, our mission

has always been to enhance the lives of seniors through comprehensive care solutions that promote their independence, dignity, and overall well-being. This partnership with Sis (VProtect) marks a significant milestone in our journey. By combining our expertise and resources, we are introducing GoSecure, a first-of-its-kind emergency response service tailored specifically to the unique needs of our nation's elderly. This innovative service not only provides immediate assistance during emergencies but also offers peace of mind to families, knowing that their loved ones are protected and cared for. As part of India's 2047 vision, I hope for a Viksit Bharat that celebrates its Varisht Bharat elders with 'moh'.

The GoSecure service is designed to be user-friendly and accessible. Elders or their caregivers can press a dedicated panic button that triggers an immediate response, connecting them to a network of emergency services, including ambulances and geriatric care specialists. This rapid response capability is crucial in reducing the time to treatment and potentially saving lives in critical situations. Additionally, the service aims to alleviate the anxiety of family members who may not be in close proximity to their elderly loved ones, ensuring peace of mind through reliable and prompt support.

This collaboration with Emoha creates an essential synergy that allows us to deliver truly top-notch emergency response services for India's elders," said Shankar Subramanian, CEO of SIS Alarm Monitoring & Response Services. "Together, we will ensure a consistent level of care and compassion for our senior citizens, who are the

bedrock of our society. Through this partnership, SIS reinforces our commitment to providing quality services that foster an environment where elders receive the love and respect they deserve. We are dedicated to enhancing the well-being of the elder community and recognizing their invaluable contributions to India's social fabric.

About Emoha

Emoha is a one-stop for everything an elder needs, helping sons and daughters of India help their parents age magnificently in the comfort of their own home. Emoha is an anagram of at home and signifies emotional happiness of an elder in their own home. Emoha's comprehensive depth of geriatric care offerings allow opportunities to dial-up more safety, more health, more convenience and more engagement in the lives of their parents.

With over 100,000 parents enjoying the platform today pan India across 120 cities and towns, 1000+ lives saved in emergencies, 5000+ vibrant elder events, Emoha remains committed to re-imagining elder care for 140 million elders in India.

Emoha is part of Age Care Labs - a platform setup in 2019 with the founding team and Lumis Partners as an anchor and also hosts Epoch Elder Care - providing high quality care homes for seniors who require assistance in their activities of daily living, specialized in assisted living and dementia care. Between Emoha and Epoch, the platform provides the full continuum of care for elders across all ages and health conditions. Alongside the founders, it has a strong leadership team with deep domain, technology and operating experience.

Adani Foundation at ACC Chanda site helps Yavatmal farmers double their efficiency with water conserving micro irrigation systems



ACC, the cement and building material company of the diversified Adani Portfolio, along with Adani Foundation has introduced water conserving irrigation techniques to elevate the socio-economic landscape of farming communities near the ACC Chanda site.

CSR efforts have facilitated the farmers of water-scarce Yavatmal district in witnessing the transformative power of micro irrigation sprinkler systems across their farmlands. This has resulted in high water conservation, empowering the farmers to double their efficiency.

For regions such as Wani taluka in Yavatmal, every drop of water is a precious resource. The region's normal rainfall deficit of 911.34 mm, as well as scarce surface and groundwater resources make it crucial for farmers here to conserve the maximum amount of water to ensure a healthy crop. The CSR team identified the need to go beyond recharging the groundwater table. Hence, the sprinkler irrigation systems were identified as an ideal solution.

So far, 171 farmers have benefited from the introduction of these

sprinkler irrigation systems, covering a total of 424 acres of farmland here. Take for example Sandip Vasanta Wasukar from Shindola village, who is now able to irrigate an acre of land in about four hours with the sprinkler system, a task which demanded double the time and labour cost using traditional flood irrigation.

With impressive savings of 65-70% in water usage, Wasukar is able to cultivate wheat, cotton, mustard, millet, and various vegetables on his eight acres of land quicker, and easier. Sprinkler irrigation has not only drastically cut down the time and efforts required, but also boosted his wheat production by two quintals per acre as well as overall productivity.

These irrigation solutions by Adani Foundation at villages near the ACC Chanda site underscore their commitment to social responsibility and sustainable development, creating positive impacts, and fostering inclusive growth in Yavatmal district.





Mankind Pharma Sparks #RippleOfChange with Multi-City Blood Donation Drive

Mankind Pharma, a globally renowned pharmaceutical company, has launched a major multi-city campaign titled #RippleOfChange on World Blood Donor Day. This initiative aims to address the critical shortage of blood donors in India and raise awareness about the importance of blood donation. The campaign's centrepiece is a powerful video that portrays the dire consequences of blood scarcity. The narrative follows a group of friends who experience the tragic loss of a loved one due to the unavailability of blood donors. The

video aims to inspire more people to donate by highlighting how a simple act can save precious lives.

"With less than 1% of our population donating blood annually, India faces a severe and ongoing blood shortage crisis," said Rajeev Juneja, Vice-Chairman and Managing Director, Mankind Pharma Ltd. "This critical shortfall in blood donations leads to the preventable loss of thousands of lives every day. Kindness resides in all of us, yet while many discuss this issue, few step forward to donate. Our #RippleOfChange movement aims to transform this

notion by inspiring individuals to take action. By donating blood, each person can contribute to a ripple effect of positive change, saving lives, supporting medical emergencies, and fostering a culture of community care and responsibility."

The integrated campaign spans digital, outdoor and on-ground activations across multiple cities. It features the release of the #RippleOfChange video on various digital platforms. Metro trains will feature innovative mirror installations to encourage commuters to reflect on becoming blood donors. Bus shelter ads in Delhi will further amplify the call to action. Additionally, Mankind Pharma is organizing free blood donation camps at its offices in Paonta Sahib, Manesar, and Delhi's Okhla head office with 600+ people enrolled to date for this cause.

Despite India's large population, the country faces an annual blood shortage of a million units annually, according to industry reports. This lack of access to blood costs over 12,000 lives every day. At Mankind Pharma, we believe that saving someone's life is one of the noblest acts one can perform, deserving active support rather than passive discussion. The company's employees, known as Mankindians, regularly donate blood and advocate for this cause, demonstrating the potential for collective action to create a significant positive impact.



Nischals collaborates with the Government of Sikkim to establish Math and Science Labs, impacting 30,000 students across the state

Nischal's Smart Learning Solutions, a pioneer in K-12 education, is revolutionizing the field with kinesthetic and immersive technology-based learning, has joined forces with the Government of Sikkim for positively impacting the educational experience of over 30,000 students across the state.

Through this initiative, nischals has established 63 patented microscale portable labs for Math, Physics, Chemistry and Biology across 63 government schools in Sikkim. This effort which covers approximately 30% of the state's schools, also includes comprehensive training for over 250 teachers. The labs, equipped with over 5,000 tools and enabling more than 2,500 experiments, offer students a hands-on learning experience by prioritizing experimental and experiential learning. The content has been carefully tailored to align with the Sikkim State Curriculum (SCERT) for grades 1-10, ensuring it meets the needs and standards of the state. Additionally, nischals' AR-powered resources that are included in the lab, provide a captivating experience by transforming abstract concepts into dynamic elements, with an extensive library of 3D animation videos simplifying complex concepts. Addressing the challenges of internet connectivity in the region, the company has gone the extra mile to provide digital content in offline mode so that students can access high-quality resources regardless of connectivity issues.

► **Nischal's Smart Learning Solutions partners with the Government of Sikkim to establish portable microscale labs**

► **The collaboration has impacted over 30,000 students and 250 teachers**

► **First-of-its-kind initiative in Northeast India covering 30% of the schools in the state**

Sharing his thoughts on the milestone success, Nischal Narayanam, Founder of nischals, stated, "Our collaboration with the Sikkim government marks a significant step towards educational transformation, setting a new standard for future initiatives. It also stands as a testament to what can be achieved when public and private sectors join forces in pursuit of educational excellence. We, at nischals, want to foster innovative educational resources to

not only shape minds but shape the future of students globally."

Sikkim, known for its high Human Development Index, exemplifies a progressive approach that aligns with the company's vision of educational advancement. Despite being headquartered in Telangana, far to the south, the company has successfully navigated logistical challenges to bring their products to Sikkim, demonstrating their commitment to reaching even the most geographically challenging areas. This collaboration gains significance due to Sikkim's strategic location bordering Bangladesh, Nepal, Bhutan, and China. To ensure effective lab use, nischals prioritized comprehensive teacher training sessions. This impactful initiative has yielded a remarkable shift in students' interest. Traditionally leaning towards arts and humanities, Sikkim's students are embracing math and science through interactive labs, overcoming apprehension and fostering a newfound passion for STEM fields. This paves the way for a future generation of innovators and problem-solvers.

This initiative has received commendations from distinguished leaders, including Honorable Chief Minister Shri Prem Singh Tamang and Education Minister Shri Kunga Nima Lepcha. Recently, the brand also partnered with the Government of Gujarat under Mission Schools of Excellence announced by Prime Minister Narendra Modi to establish tinkering labs in 2180 schools across the state.



Collaboration Between NALSAR and Kshetra Foundation Aims to Foster Sustainable Community Growth

The project aims to build local community capacity for conflict resolution and collective self-governance.

NALSAR University and Kshetra Foundation for Dialogue signed a Memorandum of Understanding to undertake a 5-year collaborative project on “Building Community Capacity and Ecosystemic Support for Conflict Transformation,

Collaborative Problem-solving and Self-governance”.

The collaboration stems from the shared belief that systemic change can no longer be achieved through isolated approaches. By bringing together society, governance institutions, and business institutions, the partnership aims to create communities of change through dialogue.

Speaking about the collaboration NALSAR University Vice-Chancellor Prof. Sri Krishna Deva Rao said, “NALSAR’s partnership with Kshetra empowers students and local communities through dialogue, fostering changemakers who drive grassroots

development. This redefines legal education and creates a brighter future for all. Resolving conflicts that arise at community level associated with ecologically sensitive resources is very crucial for wellbeing and harmony. This is in tune with the Gandhian Vision of peace which gives premium to the capacity of resolving disputes peacefully. Building capacities within the community, to settle disputes, protect environment, and strengthen human rights, will be immensely helpful to the community in general and to the vulnerable people in that atmosphere, in particular. Participatory

dispute resolution processes gradually also help in spreading the consciousness of constitutional rights in the long run. By integrating the above values and processes into the curriculum so as to understand and foster community engagement in conflict transformation will go a long way in honing students' skills to work at the grassroots level. NALSAR believes in empowering future leaders with tools to navigate complexity and drive change. This partnership with Kshetra reinforces that commitment."

Dr. Krishna Udayasankar, CEO of Kshetra said, "Our partnership with NALSAR aims to empower community changemakers with the essential skills of dialogue, while also fostering a generation that can transform conflict into collaboration and create lasting change. Changemakers such as Paralegal volunteers and Anganwadi teachers often deal with community conflicts, both formally and informally. Through this project we aim to equip these key change-makers with the Dialogic Method, so that they can better fulfil that role. We have conducted two pilot workshops in Telangana in the last year before commencing this project and found both Paralegal volunteers and Anganwadi teachers eager to adopt these skills, and to use dialogue to drive sustainable solutions that create value for all. As these change-makers go about using dialogic approaches in their work, the positive

outcomes that are created would urge community members also to adopt similar approaches in their own lives, serving as a seed for a larger change in society's approach to disputes and disagreements. Such social change, however, requires an ecosystem of support to come through. We are honoured to be working with NALSAR University and through the University's student body, we hope to create a support structure for community leaders and members to effectively use dialogue to transform conflict into collaboration."

Driving systemic change in today's dynamic environment requires a thorough, multi-sector approach. This collaboration between NALSAR and Kshetra seeks to impact local community welfare tangibly, build capacity for engagement and growth, and create a replicable model of society, governance institutions, and business involvement in social transformation. The initiative focuses on empowering Paralegal Volunteers, Anganwadi teachers, self-help groups (SHGs), and community leaders through NALSAR's academic support and Kshetra's expertise in the Dialogic Method.

Natasha Joshi, Associate Director of Rohini Nilekani Philanthropies, which supports Kshetra in this project, said, "We are excited about the partnership between NALSAR and Kshetra. Building an appreciation for, and understanding of, the value

of dialogue feels important today. In particular, rooting this capacity in young people stands to foster a generation of empowered citizens, who can advocate for their needs, resolve conflicts peacefully, and drive sustainable development in their communities. This collaboration is also a wonderful example of how academia, civil society, and the government can work together to empower individuals, build resilient communities, and create lasting impact."

The MoU marks a significant step towards building a sustainable model for community development, leveraging the strengths of both institutions to foster change across sectors. The project takes a multi-stakeholder approach towards local community development, and places Paralegal volunteers, Anganwadi teachers, Self-Help Group members and community leaders at the centre of the model. It features a series of workshops, mentorships and action research initiatives that focus on enhancing the local community's capacity to use dialogue skills to transform community conflicts and bring together community members to collectively solve their problems and increase self-governance.

At the same time, NALSAR University law and business students trained in community conflict resolution through dialogue will support these trained community members to actively engage with on-ground situations. 

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THE EVOLVING DEBATE ABOUT USING GENETICALLY MODIFIED CROPS IN A WARMING WORLD

CROPS THAT HAVE BEEN “ALTERED” BY SCIENTISTS IN A LABORATORY CAN BE FOUND GROWING ON MILLIONS OF HECTARES OF FARMLAND AROUND THE WORLD.

An analysis by **Orla Dwyer**, Carbon Brief



These “genetically modified organisms” (GMOs) are planted extensively across swathes of North and South America, in particular, but remain strictly limited in many countries.

However, these stringent regulations have eased in some nations for crops altered using new, more precise “gene-editing” technologies.

Several experts tell Carbon Brief that these new technologies are not a “silver-bullet” solution for agriculture, but that they could help crops deal with extreme weather and boost nutrition in a faster, safer and cheaper way than GMOs.

In contrast, other experts, as well as environmental groups, are concerned about how these gene-edited crops will be produced, regulated and patented.

In this Q&A, Carbon Brief looks at the difference between GMOs and gene-edited foods and whether these technologies can help crops deal with climate change while boosting food security.

WHAT ARE GENETICALLY MODIFIED CROPS?

For centuries, farmers have used selective breeding techniques to prioritise growing crops with desirable traits, such as resistance to disease.

In the 1970s, scientists developed new ways to boost these traits directly by changing a plant’s genetic material. GMOs – genetically modified

organisms – are plants, animals and microorganisms whose genes have been altered with the help of technology.

Dr Jennifer Pett-Ridge is a senior researcher at the Lawrence Livermore National Laboratory and principal investigator on a soil carbon

project at the Innovative Genomics Institute in Berkeley, California.

She explains that gene modification technologies take DNA from one species and insert it into another. She tells Carbon Brief:

“It might be a frog or a tomato, or something like that, that you’re importing from another organism that has a trait that you really want that will work within your organism of choice. You’re splicing that in, essentially.”

The most common traits scientists put into genetically modified crops include tolerance to weed-killing herbicides and resistance to insects and viruses. The techniques can also be used to develop plants that are better able to deal with drought, heat and other intensifying effects of climate change.

In the US in 1994 – after years of testing and experiments – a GM tomato was the world’s first genetically engineered food sold in shops, according to the country’s Food and Drug Administration (FDA).

This tomato was “genetically altered to ripen longer on the vine while remaining firm for picking and shipping”, the New York Times reported at the time.



Just like GMOs, gene-editing is not a silver-bullet solution to hunger or food security problems or climate change. But it could be part of a solution to a wide range of problems in the agricultural sector and [have] the potential to create crops that are resistant to diseases.

–ADEMOLA ADENLE

Professor, Technical University of Denmark

Two years later, farmers began growing genetically engineered crops across the US. One example is “Roundup Ready” maize, cotton and other crops. These plants were developed by the chemical company Monsanto – which was bought out by Bayer in 2018 – to be more resistant to the weed-killer Roundup.

A gene that is resistant to glyphosate – the herbicide used in Roundup – was taken from a type of bacteria and inserted into these crops. This, in turn, allowed farmers to apply the herbicide to kill weeds without destroying their crops.

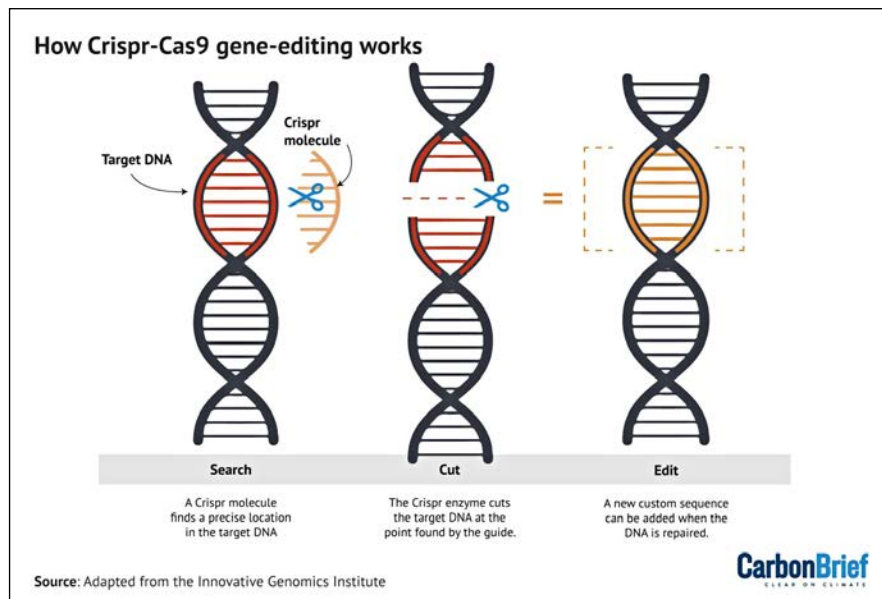
In more recent years, scientists have developed different ways to alter DNA. One prevailing method is Crispr/Cas9 – a gene-editing technology that can tweak genetic code without needing to introduce traits from another species. The scientists behind the discovery were awarded a Nobel Prize in 2020. The method is akin to using a “pair of scissors to just snip a gene out and move it somewhere else” within the same plant, Pett-Ridge says, preventing the need to mix in DNA from other species, which is how GMOs are made.

For example, the technology could be used to remove a gene that makes a plant less able to deal with drought.

A 2016 study on the possibilities of Crispr for plants described the technology as relatively simple, cheap and versatile compared to other methods. So far, scientists have carried out studies on the method’s ability to alter the genetic make-up of a wide range of crops, from rice and tomatoes, to oranges and maize.

However, these trials are in the early stages of development and experts tell Carbon Brief more research is needed before they are widely commercially available.

New technologies such as Crispr are being regulated differently to other GMOs in many countries, but



A visualisation of how the Crispr/Cas9 technology works in DNA. Source: Adapted from the Innovative Genomics Institute by Carbon Brief.

opinions differ on how different they truly are from older genetic-engineering techniques.

Although there is limited evidence showing that GMOs have a negative effect on human health and the environment, they remain controversial for many due to concerns over reduced biodiversity and the prevalence of crop monocultures.

WHERE ARE GENETICALLY MODIFIED AND GENE-EDITED CROPS GROWN AROUND THE WORLD?

Genetically modified crops are widely grown in some parts of the world, such as the US and parts of South America, and are more restricted in the EU and many African countries.

In 2019, more than 190m hectares of genetically modified crops were planted around the world – an area roughly the size of Mexico – according to the International Service for the Acquisition of Agri-biotech Applications.

In 1996, around the time GM crops were being approved for commercial use in several countries, this figure stood at 1.7m hectares.

The US grows the most GM crops of any country, followed by Brazil,

Argentina, Canada and India – as shown in the figure below.

Almost all soya beans, cotton and maize now planted in the US are genetically modified, often to resist pests or deal with herbicide use, according to the FDA.

Alongside feeding people, GM maize and soya beans are frequently used to feed animals. More than 95 per cent of livestock and poultry in the US eat genetically modified crops, the FDA says.

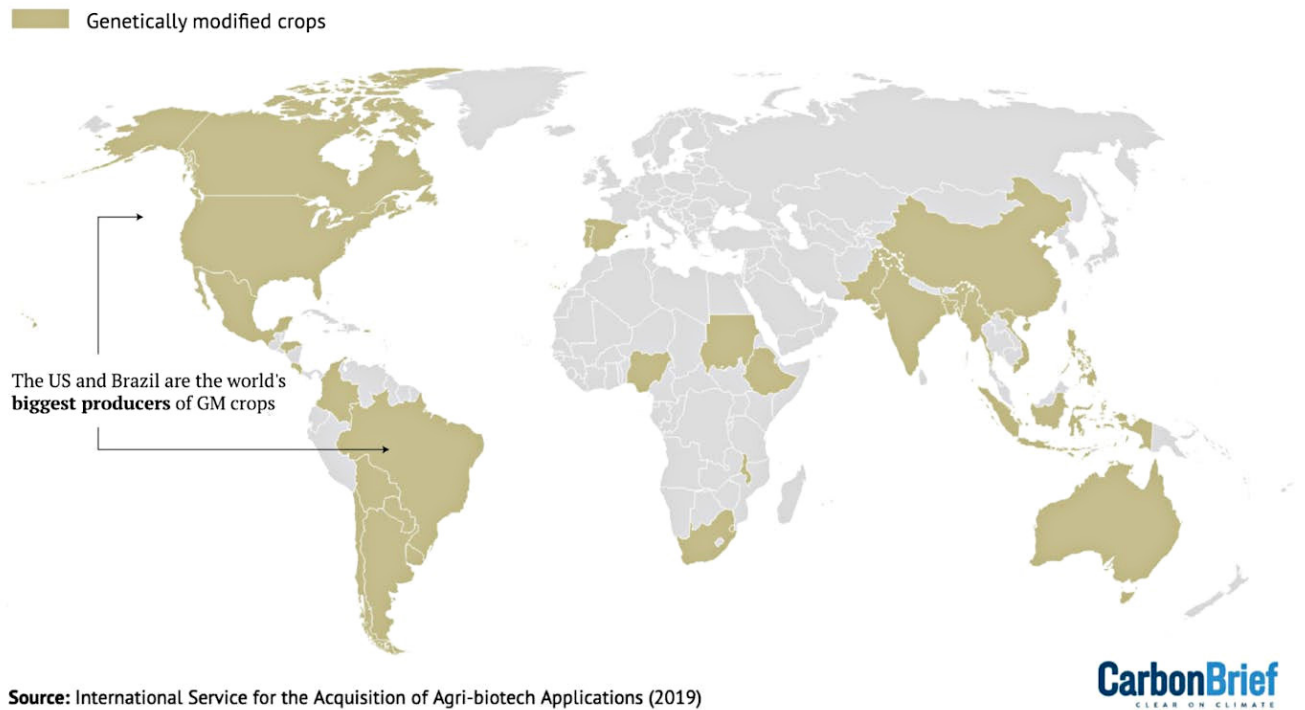
In the EU and other parts of the world, GM crops are not widely grown. The EU’s rules require GMO foods to be labelled as such for consumers and permit individual EU countries to ban genetically modified crops, if they choose. Most EU countries do not grow GMO crops.

The EU’s GMO rules still apply in the UK. But, in 2023, the rules in England were eased to allow the development of plants that are genetically edited using modern methods such as Crispr.

Further laws are needed to allow these gene-edited plants – and, later, animals – to be sold in England. The legislation for plants is set to be brought in this summer. Rules around whether these gene-edited

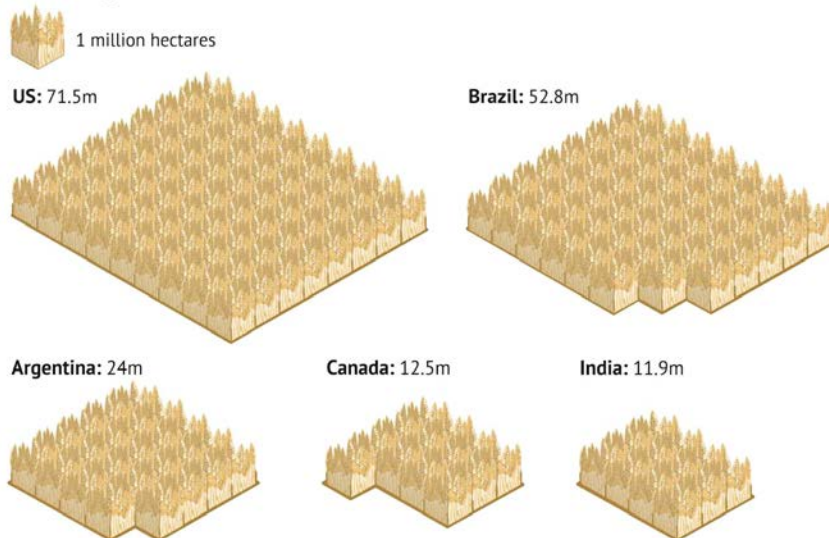
Genetically modified crops are grown in 29 countries around the world

Countries that grow genetically modified crops, based on 2019 data



Genetically modified crops are grown in 29 countries around the world. The countries (brown) are largely in North and South America and parts of Asia. The US and Brazil are the world's biggest producers of GM crops by area. Source: International Service for the Acquisition of Agri-biotech Applications (2019). Map: Carbon Brief.

More than 90% of the land growing genetically modified crops is in the US, Brazil, Argentina, Canada and India



Source: International Service for the Acquisition of Agri-biotech Applications (ISAAA)

CarbonBrief
CLEAR ON CLIMATE

The vast majority (91 per cent) of land growing genetically modified crops is in five countries: the US (71.5m hectares), Brazil (52.8m hectares), Argentina (24m hectares), Canada (12.5m hectares) and India (11.9m hectares). Source: International Service for the Acquisition of Agri-biotech Applications (ISAAA). Graphic: Carbon Brief.

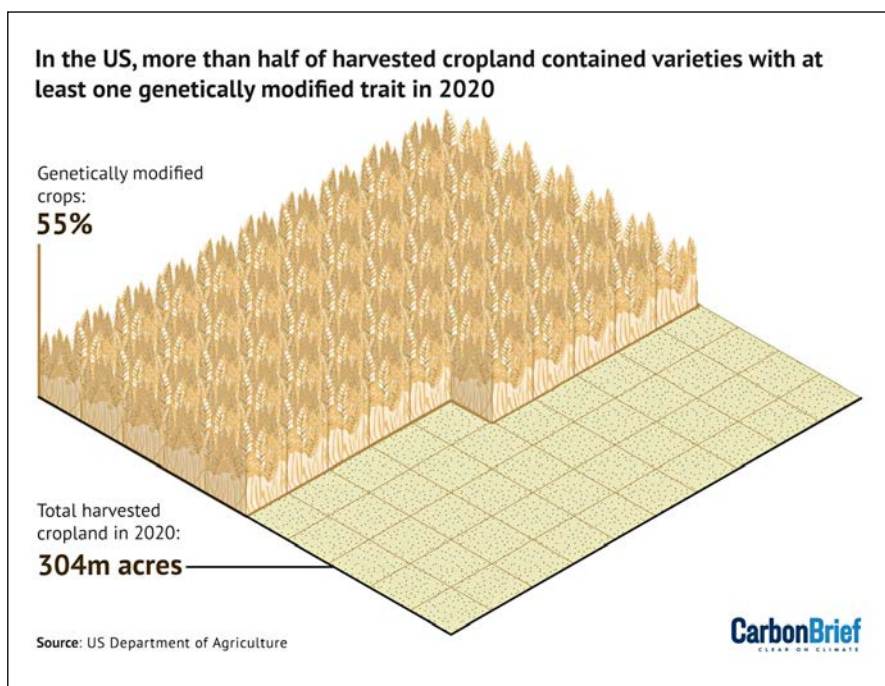
plants should be treated the same as, or differently to, GMOs are still being assessed by many governments around the world.

In some countries, such as the US, they are essentially treated the same as non-GMO products. Since they do not contain “foreign” genes, they are seen as indistinguishable from conventional plants.

The EU could be moving in a similar direction with a proposal from the European Commission to loosen its stringent GMO requirements for plants that have been made using newer gene-editing technologies.

The changes would “better reflect the different risk profiles” of the way in which gene-edited plants are made compared to genetically modified ones, the commission said.

Dr Ludivine Petetin, a reader in law and expert in agri-food issues at Cardiff University, says the proposal marks a significant change from the



More than half of the harvested cropland in the US contained varieties with at least one genetically modified trait in 2020. This is 55 per cent of the 304m acres of harvested cropland.

Source: US Department of Agriculture. Graphic: Carbon Brief.

EU's previous attitude to genetically altered foods.

If approved, the EU would create two categories of plants that have been altered by new genomic techniques. One category of plants would be considered comparable to conventional plants and would not require any GMO labelling for consumers.

Plants that have been made using these newer techniques, but do not meet this criteria, would fall into the second category. This would require stricter assessment and mandatory labelling, similar to how GMOs are currently regulated in the EU. Petetin tells Carbon Brief:

"That's a massive, massive difference to the precautionary principle used before, where it was all about the need to inform the public – the need to tell them whether there is [genetic modification] or not in what we are all eating."

The "precautionary principle" approach is used to apply caution to issues that have uncertain levels of scientific evidence about a risk to en-

vironmental or human health. It is used in the EU's directive on GMOs.

The debate around the EU's proposal is on hold until after the European parliament elections in June.

Earlier this year, more than 1,500 scientists and 37 Nobel Prize winners signed an open letter calling on EU politicians to support gene-editing techniques and "consider the unequivocal body of scientific evidence supporting" new genomic techniques.

WHAT ARE THE PERCEIVED BENEFITS AND CONCERNS OF GENETICALLY ENGINEERED FOODS?

Proponents of GMOs highlight that they can boost crop yields and help feed the expanding global population. Critics point to human and environmental concerns.

A 2022 study found that the "right use" of GM crops could potentially "offer more benefit than harm, with its ability to alleviate food crises around the world", based on a review of different im-

pacts of GM crops on "sustainable agriculture" systems.

The main concerns laid out by the World Health Organization are triggering allergens, raising antibiotic resistance and spillover of GM plants into land that is growing conventional crops.

This spillover could reduce the diversity of crops being grown and lead to monocultures of plants, which can degrade soils and reduce biodiversity.

Other concerns focus on the use of pesticides and herbicides. A 2023 review study said that some areas growing herbicide-tolerant crops sometimes use more of the plant-killing chemical due to the emergence of herbicide-resistant weeds.

Nonetheless, the study found that, overall, genetically modified crops have had a positive impact on crop yields, pest and disease resistance and tolerance to stresses such as high temperatures or drought.

A 2017 study said there is evidence that GM crops can have negative environmental impacts, such as harming biodiversity. But this – and other studies – have concluded that further research is still needed on the human and environmental health risks of GM plants.

Other criticisms around GMOs and gene-edited crops centre around how they are regulated. Patenting is one of these concerns.

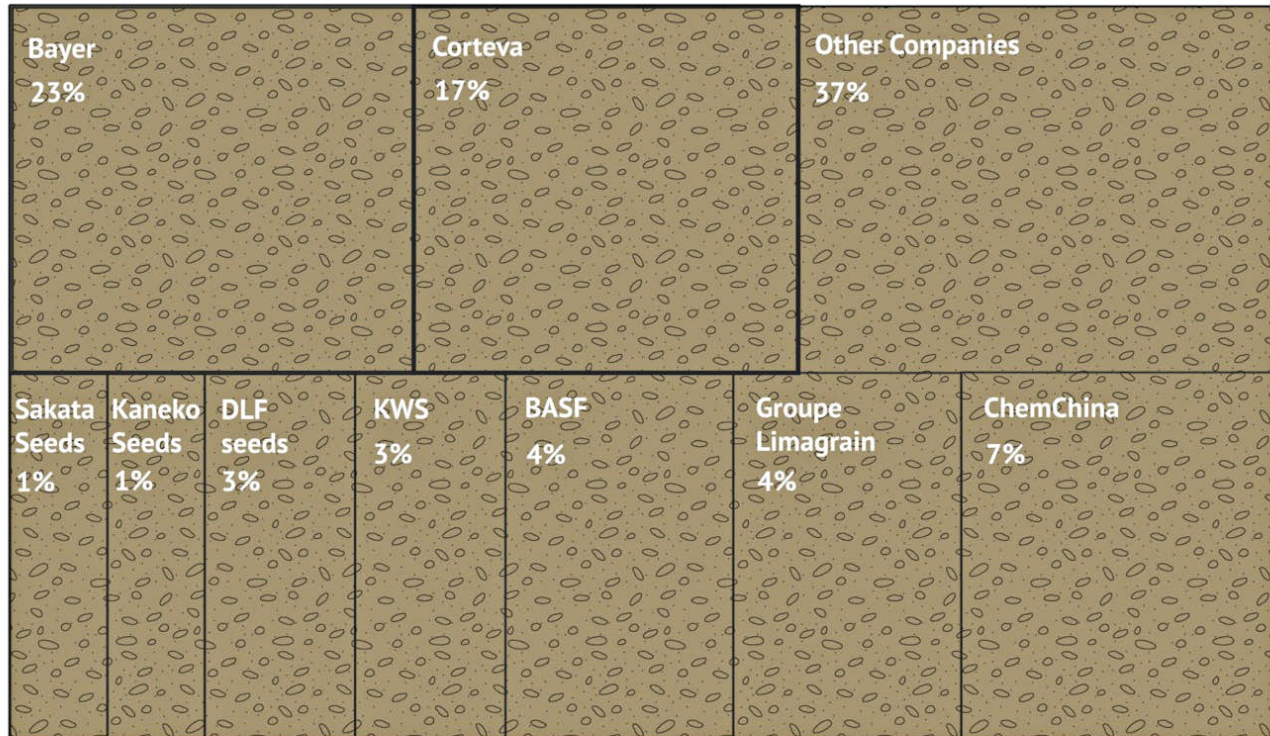
In the US, Brazil and other countries, GMO seeds can be patented. The global seed market, in general, is dominated by a small number of companies, such as Bayer and Corteva. The chart below shows that these two companies control 40 per cent of the global seed market.

Petetin says that if seed patenting is permitted under the EU's gene-editing rules, as currently proposed, it could lead to "more concentration of the seeds and the plant business".

Experts tell Carbon Brief that the patenting of these seeds impacts farmers as they often have to re-

Two companies – Bayer and Corteva – control 40% of the world's seed market

Leading companies by seeds and trait sales, 2020



Source: ETC Group 2022

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CLEAR ON CLIMATE

The leading companies in the global seed market in 2020. Combined, Bayer and Corteva account for 40 per cent of sales and control a significantly higher portion of the market than the next closest competitor, ChemChina, which holds 7 per cent. BASF and the remaining companies each have between 1-4 per cent of the global market share. In total, nine companies control 63 per cent of the market. Other companies control the remaining 37 per cent. Source: ETC Group (2022). Chart: Carbon Brief.

purchase GM seeds each year from a company which has complete control over the cost.

The price of GM seeds rose by more than 700 per cent between 2000 and 2015. A number of large seed companies have taken farmers to court for infringing on patent rights by growing GM crops without payment.

Patenting can also pose problems for small-scale seed developers, as similarities with patented crops can also lead to infringement claims. This can apply to both genetically modified and conventional crops.

Eva Corral, a GMO campaigner at Greenpeace EU, is calling for more

information on the climate, health and environmental impacts of gene-edited foods and for labelling to remain in place in the EU's rules.

She tells Carbon Brief that gene-edited crops are not a "panacea" to "miraculously solve all the problems in the world", adding:

"We have to be really very, very cautious, which I think is something very much missing in the debate about new GMOs."

COULD GENE-EDITING AND GMOS BENEFIT FOOD SECURITY?

Whether through traditional breed-

ing or by scientists in a lab, crops are often altered to make them more resistant to drought, better able to fight off disease or to improve their nutritional value.

All of these elements could be helpful for farmers around the world whose crops are being damaged by extreme weather conditions fuelled by human-caused climate change.

Disasters – such as floods, droughts and wildfires – have caused about US\$3.8tn worth of lost crops and livestock production over the past three decades, according to a report by the UN Food and Agriculture Organization.

Genetically modified crops can increase the amount of food grown in a certain amount of space – which is significant given that the amount of arable land around the world is declining.

Global crop production grew by more than 370m tonnes between 1996 and 2012. Genetically modified crops in the US accounted for one-seventh of this boost.

Increased crop yields and reduced losses due to extreme weather can be particularly attractive for countries hit by high levels of hunger and facing severe impacts of climate change.

Between 691 and 783 million people faced hunger in 2022, according to the UN's 2023 report on food security and nutrition. The issue is particularly acute in Africa, where around one in five people face hunger – a “much larger” amount than the rest of the world, the report says.

Several experts tell Carbon Brief that scientists have long-hoped that Crispr's relatively low cost and simpler technology would enable more gene-edited crop development in developing countries.

In African countries, GM and gene-edited crops could be part of the solution, but are not the only fix to problems facing agriculture, such as drought and poor crop yields, says Prof Ademola Adenle, a guest professor of sustainability science at the Technical University of Denmark. He tells Carbon Brief:

“Just like GMOs, gene-editing is not a silver-bullet solution to hunger or food security problems or climate change. But it could be part of a solution to a wide range of problems in the agricultural sector and [have] the potential to create crops that are resistant to diseases.”

Adenle, who is from Nigeria, has researched the progress in regulation and development of GM crops in different parts of Africa. GM crops are commercially grown in South Africa and a small number of other

countries on the continent, such as Kenya and Nigeria.

He tells Carbon Brief that more research is needed to inform ongoing GMO and gene-editing discussions in African countries:

“Without investment in research and development programmes, Africa will be left behind...in terms of applying new technologies to solve some of the problems we have in the agricultural sector.

“Before gene-editing can be accepted in Africa, just like GMO, [countries] have to have the scientific capacity, they have to have the policy in place and, of course, they need to raise the level of awareness about the advantages and perhaps disadvantages that may be associated with the application of gene editing.”

Dr Joeva Sean Rock, an assistant professor in development studies at the University of Cambridge, has researched the politics of GM foods in Africa, particularly Ghana.

She says there is “a lot of hype” around the potential uses of gene-editing to develop crops that can “improve climate resilience and food security”. But she urges caution, telling Carbon Brief:

“An important question becomes how that hype compares with present reality...We are in a moment where there's a real opportunity to ask not necessarily whether this technology could be a panacea, but rather if and how it might be able to benefit people at different scales and with different needs.”

A recent study found that a relatively small number of gene-editing crop projects focus on benefitting smallholder farmers in the global south. These farmers are “exceptionally vulnerable to climate change and food insecurity”, Rock says, adding:

“Farmers have diverse needs and so an important question is whether genome editing is an appropriate tool to address those needs and whether it is being used to do so.”

DO GENETICALLY MODIFIED CROPS BENEFIT CLIMATE MITIGATION AND ADAPTATION?

There have been a lot of claims – and counter-claims – about the climate benefits of GMOs, both in terms of making crops more resistant to extreme weather and in helping plants to absorb more carbon from the atmosphere.

Dr Emma Kovak is a senior food and agriculture analyst at the Breakthrough Institute – a controversial thinktank in California that claims it “promotes technological solutions to environmental and human development challenges”.

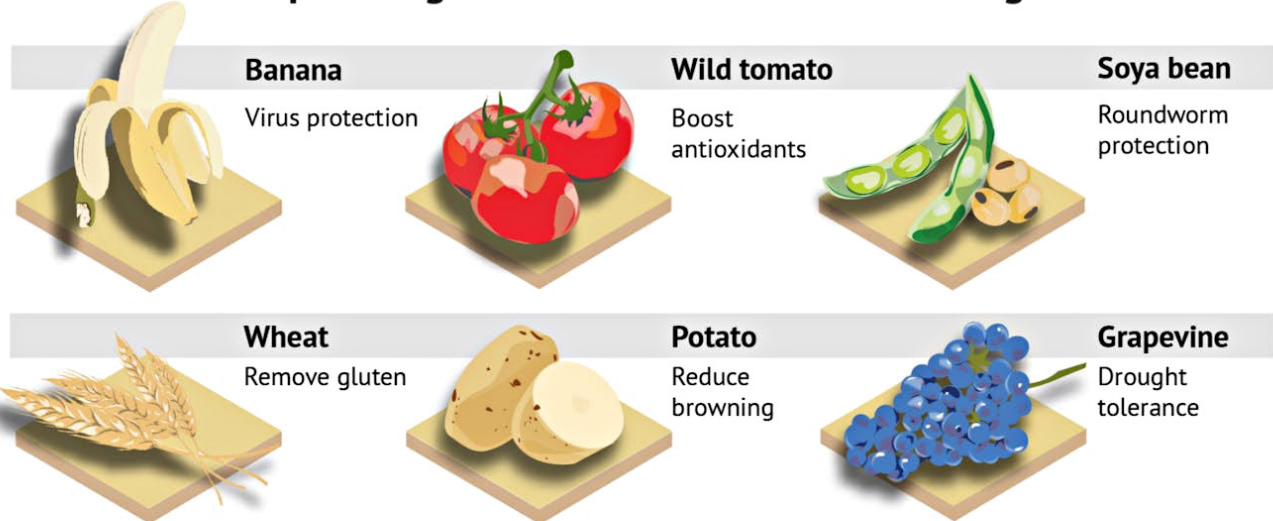
Kovak was the lead author of a 2022 study which said that growing more GM crops, such as wheat, in the EU could lead to reduced land-use emissions in other parts of the world. The researchers estimated the extent that greenhouse gas levels would be impacted by the EU growing similar levels of genetically modified maize, soya beans, cotton, canola and sugar beet as the US.

The study claimed that this increase in EU GMOs would boost crop yields, which would allow the bloc to provide more of its own crops, Kovak tells Carbon Brief. This could lead to emissions cuts equivalent to more than 7 per cent of the EU's greenhouse gas emissions from agriculture, the study found. Kovak says:

“Expansion of crop production through yield increases in the EU can decrease farmland expansion in other places in the world, which means less deforestation and emissions from deforestation.”

Agriculture drives at least three-quarters of deforestation around the world, with forests cleared to raise animals and grow crops such as soya beans. Another study published in 2018 looked at the environmental impacts of GM crops, such as maize, cotton and soya beans, on pesticide use and CO2 emissions across different countries over 1996-2016.

Research examples of gene-edited foods and their targeted traits



Source: The Food and Agriculture Organization of the United Nations

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Examples of gene-edited foods with different targeted traits undergoing early stages of research around the world. Source: The UN Food and Agriculture Organization (2023). Graphic: Carbon Brief.

The study combined previous studies on fuel use and tillage systems – that is, preparing the land for crops – along with evidence on the impact of GM crop usage on these practices. It also looked at farm-level and national pesticide usage surveys.

It found that the use of GM insect-resistant and herbicide-tolerant technology reduced pesticide spraying by 8 per cent. This, as a result, reduced the environmental impacts of herbicide and insecticide use.

It further led to cuts in fuel use and tillage changes, resulting in a “significant reduction” in emissions from areas growing GM crops. Combining figures from reduced fuel use and increased soil carbon storage, the researchers said the emissions reduction would be equivalent to taking almost 17m cars off the road for one year.

A 2011 review study found that GM crops could reduce the impacts of agriculture on biodiversity in a number of ways, such as by reducing insecticide use and boosting crop

yields to ease the pressure to transform more land to grow crops.

A 2021 study found a correlation between GM crop growth and use of the herbicide glyphosate with an increase in soil carbon sequestration in a province of Canada. However, herbicide use decreased soil biodiversity in banana fields in Martinique, a Caribbean island, a different study found.

When it comes to gene-edited plants, experts tell Carbon Brief that more research is needed to determine the possible climate benefits or negative impacts.

Studies on gene-edited crops remain in the early stages of development.

In terms of boosting carbon sequestration through soils, whether it is through gene-editing or conventional breeding, Pett-Ridge says that definitive results are still some distance away. She tells Carbon Brief:

“There is a lot of hype...there are folks out there saying that this can solve everything or we can fix our climate issues with soils. I would

push back on that, while still saying it’s a significant opportunity.”

Targeting certain traits through gene-editing will “take some time before we can really assess whether those have a net benefit on the amount of carbon put in soil”, she adds:

“As much as I’m an optimist and excited about it... I don’t know anyone who has got traits focused on carbon capture really being applied even in a field trial.”

Petetin believes gene-editing may “provide some answers” to help the agriculture sector deal with extreme weather and other issues, but adds:

“They’re not the only answers to all the issues agriculture is facing with biodiversity and climate change emergencies. Putting all your eggs in this one basket is not the solution.”

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(Source: <https://www.eco-business.com/news/qa-the-evolving-debate-about-using-genetically-modified-crops-in-a-warming-world/>)



ACT WHERE IT MATTERS THE MOST: MENSTRUAL HYGIENE

UNS partners with ICCSR to deliver sustainable menstrual health and hygiene program under the project PWP – period with pride to 10000 girls.

Universal NutriScience (UNS) takes a lead in transcending its Corporate Social Responsibility from mere philanthropy to action-oriented engagement that impacts society at the grass root .

Women's health has been a cause of concern at large and at various disease and hygiene levels. UNS this year, Universal NutriScience has dedicated its resources and expertise to address one of most

relevant and often neglected women's issue: Menstrual health and hygiene.

True to its vision of providing a healthier tomorrow, through its nutraceutical range of products, Universal NutriScience is extending its whole hearted support in ensuring Women's hygiene during Mensuration . The challenge of menstrual health is multifaceted, encompassing not just the lack of access to sanitary products but also the stigma and misinformation surrounding men-

struation. This challenge is particularly acute in under-resourced communities where cultural taboos and economic barriers prevent many from achieving optimal menstrual health.

Universal NutriScience through its partnership with ICCSR, is determined to spearhead the movement " PWP – Period With Pride" is a sustainable MHM program that addresses both the physical, mental and educational aspects of menstrual health along with free

distribution of hygienic menstrual products. Through this initiative UNS is not only providing access to sanitary napkins and increasing awareness around menstrual health, for underprivileged school children and women from impoverished backgrounds, but is also revolutionizing the way menstrual health is managed, particularly with its pioneering use of Evening Primrose oil, a natural remedy known for alleviating premenstrual symptoms.

Through the initiative PWP, Universal NutriSciences's is striving to provide a holistic solution to Menstrual hygiene. This effort goes beyond mere distribution of sanitary napkins; it is about ensuring dignity and promoting hygiene among school children and women who would otherwise resort to unhygienic and harmful practices. By making these essential products accessible, Universal NutriSciences is directly contributing to reducing health risks associated with poor menstrual hygiene, such as reproductive tract infections and other related diseases.

To ensure that the project is sustainable, the company is committed to empowering the local manufacturing of sanitary napkins. This initiative not only ensures a steady supply of affordable sanitary products but also stimulates local economies and promotes entrepreneurship among women.

Education is another cornerstone of Universal NutriSciences's program. Through workshops and awareness campaigns, the company is challenging the stigma and myths surrounding menstruation. By providing accurate information and promoting open dialogue, Universal NutriScience is empowering individuals with the knowledge to manage their menstrual health effectively and with confidence. This educational outreach is crucial for creating lasting change and ensuring that both men



and women understand the importance of menstrual hygiene.

Moreover, understanding the environmental impact of sanitary napkins, Universal NutriScience advocates for sustainable production and disposal practices. The company's focus on eco-friendly materials and disposal methods demonstrates a commitment to not only improving menstrual health but also protecting the environment.

Universal NutriSciences's comprehensive approach to menstrual

health is a testament to the transformative power of CSR. By addressing access, education, symptom management, and sustainability, the company is making a profound impact on the lives of countless individuals. This initiative not only elevates menstrual health on the global health agenda but also serves as a model for how companies can leverage their resources and expertise to tackle complex social challenges. Universal NutriSciences's pioneering efforts in improving menstrual



health underscore the vital role of CSR in fostering a healthier, more equitable world.

UNS in association with ICCSR with sustainable MHM project PWP- Period With Pride executing and

thriving to scale it up with more target beneficiaries:

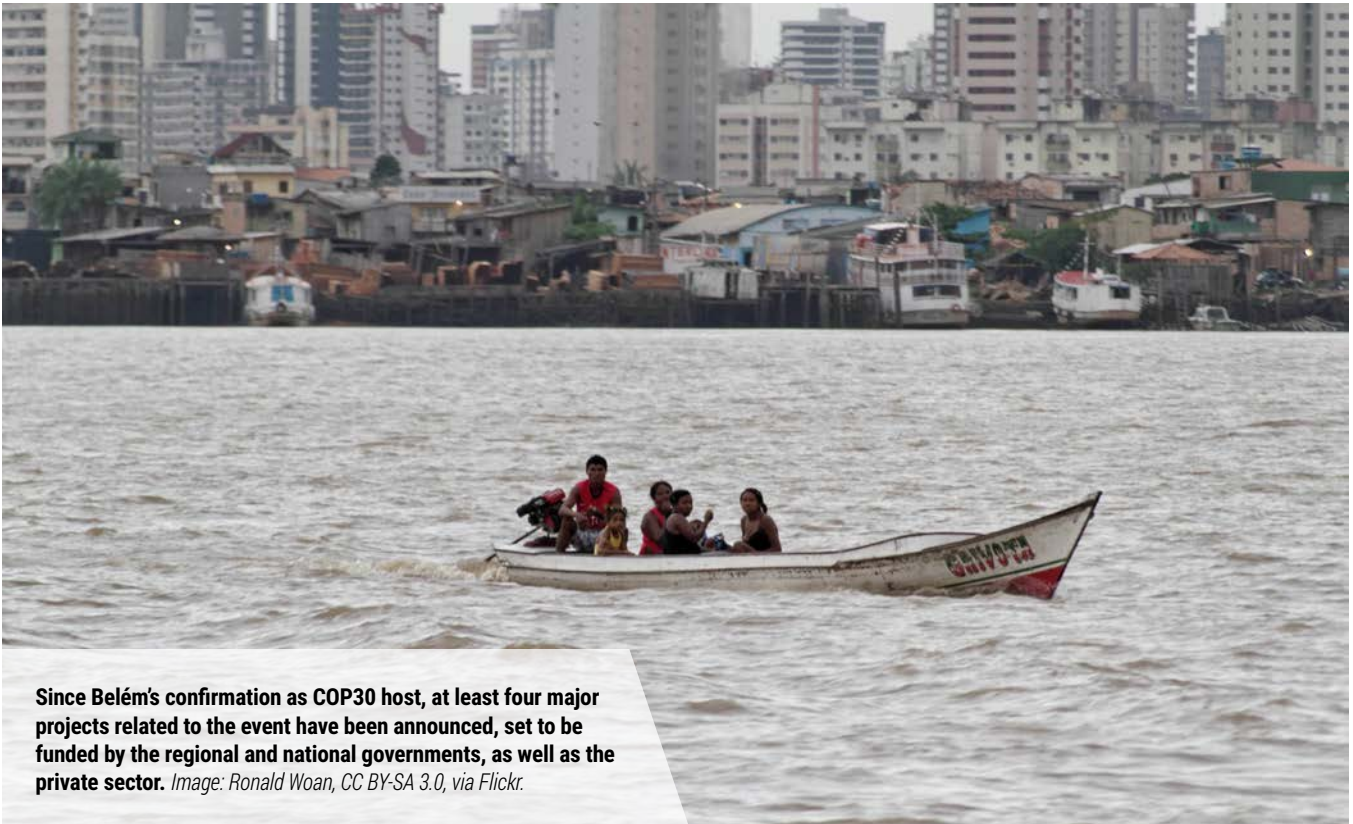
1. Identified schools under Bombay Municipality Corporation and Thane Municipality Corporations where MHM awareness and free

sanitary napkins for 6 months are addressed.

2. 20 sanitary napkin vending machine and 20 incinerators are to be installed in identified schools.
3. House pad bank concept has been initiated where menstruating girls will save 1re per day for their period products.
4. Comprehensive awareness on menstruation right is given.

Upcoming projects:

1. Adolescent care program in schools for both boys and girls.
2. Community MHM for women
3. Community drinking water
4. Drinkable drinking water in schools
5. Targeting 20000 beneficiaries under the project PWP in FY 24-25. 📍



HOPES AND DOUBTS AS AN AMAZON CITY PREPARES TO HOST COP30

The Brazilian city of Belém will welcome the world at next year's UN climate summit, but faces a race to be ready. Its residents are calling for a lasting legacy and investment, writes **Catarina Barbosa**, Dialogue Earth

Preparations are underway in the Brazilian city of Belém as it gets ready to host the United Nations' COP30 climate conference in November 2025 – a crucial meeting for the future of the planet, and one unprecedented in size for this northern corner of the Amazon rainforest. As the eyes of the world turn towards it, attention is falling

on the city's capacity to welcome the world, and the structural challenges faced by its residents.

The call for the Amazon to host the event was led by Brazil's then president-elect Luiz Inácio Lula da Silva, during his visit to COP27 in Egypt in November 2022.

"I think it's very important that people who defend the Amazon and who defend the climate get to

know that region up close," Lula told the conference. Belém's official candidacy was launched following his inauguration in January 2023 and was accepted by the UN at the end of the year. The selection of the city often dubbed the "gateway to the Amazon" as host for COP30 is recognition for the central role the rainforest plays in the planet's geopolitics and economy, experts say.

“This is the moment to encourage the leading role that only we in the region can play,” says João Cláudio Tupinambá, a professor at the University of the Amazon in Belém, who is representing the institution in the preparations for COP30.

However, the city, the capital of the northern state of Pará, still struggles to guarantee a healthy environment and basic services for many of its 1.3 million citizens – a picture similar to that of many municipalities in Brazil’s Amazon region. In the middle of the world’s largest river basin, 23 per cent of Belém’s residents lack access to the city’s drinking water supply, while 83 per cent are not connected to the sewage system.

“Around here, we hear a lot of promises, but when it comes to concrete works, the reality is different,” said Renata Corrêa, a Belém resident who sells tapioca for a living.

Corrêa highlights open-air waste dumps, a dilapidated historic centre, and limited hotel capacity as significant challenges as the city looks towards COP30, for which more than 40,000 participants are expected to attend.

On both land and water, connecting with the islands across the Guajará Bay on which the city sits, public transport is precarious, sometimes non-existent in more remote areas. While the size of Belém’s vehicle fleet grows every year – at a faster rate than the population – its roads remain narrow and bumpy, often leading to chaotic traffic.

With less than two years to go and many challenges to confront, Belém’s residents told Dialogue Earth that the road to COP30 may also be a bumpy one, though some remain hopeful of a better future and legacy following the event.

Promised works

Since Belém’s confirmation as COP30 host, at least four major projects related to the event have been



We shouldn’t limit the COP to a mere event or superficial negotiations about investment. This is too little in the face of the opportunity and what we have in hand: the Amazon rainforest, the intelligence existing in the region and the knowledge we have already produced here.

**– JOÃO CLÁUDIO
TUPINAMBÁ**

Director General, Instituto Saber Ser

announced, set to be funded by the regional and national governments, as well as the private sector. Among them is the renovation of one of the city’s postcard landmarks, the Ver-o-Peso market, the largest open-air market in Latin America, which houses the city’s biggest fish, meat and açaí exchanges.

Founded as a customs post after the arrival of European settlers in Belém more than four centuries ago, the 25,000-metre complex will receive investments of 63 million reais (US\$12.6 million) from Brazil’s National Institute of Historical and Artistic Heritage. However, scepticism remains among market traders who have not seen major works on the site for over 20 years.

Maria Cristina dos Anjos do Carmo, 63, has been selling medicinal herbs native to the Amazon for over 42 years at the market. She learned how to make *banho de cheiro* – “scent baths” of mixed herbs and plants that are popular

in local rituals – at home on Marajó, a large island and protected area across the Guajará Bay from Belém.

“Ver-o-Peso has given me everything I have today – this is where I make my living, it was with the money from my work here that I was able to buy my house, and I want more people in the world to get to know our herbs,” says Carmo from her stall. “But our space is completely derelict.”

At Ver-o-Peso at the end of February, our reporters saw the frames of stalls corroded by the weather, torn tarpaulins with improvised repairs, and a handful of public workers cleaning up the historic streets, littered with rubbish and weeds poking through the cobblestones.

In contrast, João Alexandre Trindade da Silva, 61, who also sells medicinal herbs, expects to strengthen his sales and believes that the market traders have an opportunity to up their skills as the summit nears: “I still don’t know how this will be done, but I imagine, in the future, a Ver-o-Peso where we will all speak English and do good business.”

Fernando Souza, 54, buys and resells seafood that fishmongers at the market source from around Belém, and serves as president of the local fishmongers’ union. “It’s a good place to work, but it needs to be better looked after by the relevant bodies, since we’re the biggest attraction on a Belém postcard,” he says. Souza fears that there will not be enough time to deliver quality projects that serve both COP30 and the population: “There’s no point in giving the city a makeover just for the COP. Either you do a good job or you don’t.”

Another planned project is to transform a disused airport into a 50-hectare complex featuring everything from cultural centres, theatres and an exhibition space, to food courts and markets.

This project and the expansion of Porto Futuro, a port complex on the shores of the Guajará Bay, are set to be financed by Vale – the multinational mining company behind the collapses of both the Mariana and Brumadinho dams in Minas Gerais state, which were among the worst environmental disasters in Brazil's history, leading to severe damage and nearly 300 deaths. The company has also been accused by Indigenous peoples, such as the Awá Guajá, of violating their land rights.

Beyond infrastructure

João Cláudio Tupinambá says that the city must consider more than just a legacy of new infrastructure when looking at the opportunities offered by hosting COP30. “We shouldn’t limit the COP to a mere event or superficial negotiations about investment,” he says. “This is too little in the face of the opportunity and what we have in hand: the Amazon rainforest, the intelligence existing in the region and the knowledge we have already produced here.”

Tupinambá believes that this is a chance to highlight the potential of the Amazon, and says it is essential that local representatives manage to secure deals for the event and the future of the Amazon that ensure profits remain in the region: “There is no precedent for local economic actors to have participated in strategic decisions about the development model for the Amazon.”

Belém's pick as Brazil's host city for COP30 comes in the wake of strong campaigning by the governor of Pará state, Helder Barbalho, who has in recent years sought to sell a package of green solutions to the international market. He has announced plans focusing on boosting climate finance, promoting the bioeconomy, and actions to reduce forest loss in a state that, since 2006, has seen more deforestation than any other in the Brazilian Amazon.

In August 2023, the Pará capital hosted another major event: the Amazon Summit, which brought together leaders from the South American countries that share the rainforest, aiming to boost cooperation on its protection.

The gathering ended with frustration from observers at a lack of concrete targets to curb deforestation in the biome. As of 2021, 17 per cent of the Amazon's original forest cover was estimated to have been lost, edging ever closer to an irreversible “tipping point” that could lead to the forest's progressive death, and have significant implications for global climate and biodiversity.

Riverside communities

Ilha do Combu is one of the 39 islands that surround Belém in the Guajará Bay, and is an environmentally protected area. There are few official records, but it is thought to have been founded in the 19th century by Indigenous and black populations who fled to the islands to avoid impacts from the city's urbanisation. Today, its inhabitants make their living from fishing and forestry, especially the harvesting of açaí palm trees, found all over the island.

Edienif Eva Costa, 21, was born on the island and is the daughter of ribeirinhos, the name given to traditional riverside-dwelling communities. Her family fishes for a living and grows açaí for their own food. To help with the family income, she also works in a local restaurant. She hadn't even heard of COP30: “I'm finding out about this event now, because you're talking about it.”

Official population figures for the islands are lacking, but according to the town hall, around 2,500 people travel by ferry from the island to Belém between Monday and Friday, while 15,000 do so at weekends. Ilha do Combu has made a name for itself as an ecotourism spot, thanks to largely

to its preserved Amazon rainforest surroundings, though its residents must also deal with water pollution and inadequate waste services.

In a restaurant on the water's edge, waitress Suelane Costa, 28, expresses doubt over the city's ability to host COP30: “I keep imagining an event of this size in Belém. Our city is beautiful, but all you have to do is look around and see that it's completely dilapidated.”

Mário Carvalho, 44, is the manager of a business that is popular with tourists to the island: Casa do Chocolate Filha do Combu, which produces organic Amazonian cocoa for use in its chocolate. He says that the company has already started investing to prepare for the upsurge in visitors for COP30, with the construction of a café, an increase in chocolate production and improvements to the path that leads to his cocoa plantation.

Carvalho regularly travels from Belém to the island. He says this is why, in addition to tourism, he would like to see longstanding demands resolved, such as improving the quality of ferry transport and drinking water supply. But, he cautions, “COP30 won't change our daily reality, because when they think of us, they look at us through the eyes of tourism.”

Between now and November 2025, Belém faces a series of challenges, not only to ensure its success in welcoming the world, but, above all, that it also creates sustainable and lasting opportunities for its residents, Carvalho says: “COP30 is a unique opportunity, but the results will only be positive for those who live in and defend the Amazon if the resources are really well utilised.”

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(Source: <https://www.eco-business.com/news/hopes-and-doubts-as-an-amazon-city-prepares-to-host-cop30/>)



Despite making up less than 5 per cent of the global population, indigenous communities act as the planet's wise custodians, protecting at least one-quarter of the world's land and seas and 80 per cent of its biodiversity. Image: CIFOR-ICRAF, CC BY-SA 3.0, via Flickr.

THE OZONE LAYER'S RECOVERY SHOWS HOW TO PROTECT THE PLANET

To restore Earth's stability, governments must recognise the need to respect the nine planetary boundaries. This requires a steadfast commitment to reducing greenhouse-gas emissions and protecting biodiversity and water resources, writes **Robert Redford** and **Xiye Bastida**

There was a time, not so long ago, when the depletion of Earth's ozone layer seemed like an insurmountable challenge. Decades of using harmful chemicals, such as chlorofluorocarbons (CFCs), had threatened to cause irreparable damage to our planet.

Without swift action, we faced the risk of climate destabilisation, eco-system collapse, and the breakdown of our food system. Consequences that were once almost unthinkable became painfully real.

But then, the most remarkable thing happened: humanity united to protect the ozone layer. Heeding the

warnings of Nobel laureate scientists Paul Crutzen, Mario Molina, and Sherwood Rowland, whose research underscored the severity of the threat, we did not ignore or dismiss the scientific evidence, nor did we bury our heads in the sand and claim that the challenge was too daunting. Instead, the global com-

munity recognised the urgent need for collective action.

By harnessing scientific knowledge, entire industries have been transformed, and equitable policies have been put in place to shield countries that did not contribute to the problem. Thanks to the Montreal Protocol, ratified by 197 countries, nearly 99 per cent of ozone-depleting substances have been phased out. This includes the reduction and replacement of CFCs, which has slowed climate change by at least a decade.

The successful global effort to protect the ozone layer should serve as a beacon of hope for all of us. It is one of humanity's greatest environmental achievements, showing what we can achieve when we act together with commitment, respect, and determination.

But it can also serve as a warning. A 2023 study by Johan Rockström and 28 other leading climate scientists revealed a startling new reality, underscoring the need to adopt a collaborative approach to protecting the planet before it is too late.

The planetary boundaries model, introduced by Rockström and others in 2009, provides a useful framework for assessing the planet's health. It identifies nine interconnected factors – including climate, freshwater availability, biodiversity, and land use – that are crucial for the planet's stability and habitability. In their recent study, Rockström and his co-authors found that six of these nine boundaries have already been breached, putting Earth on a dangerous course that undermines the planet's resilience and jeopardises human well-being. Notably, the ozone layer is the only area showing signs of improvement.

Given that Earth functions as an interconnected system, we cannot solve one problem without addressing the others. Despite being aware of the critical role of planetary boundaries in preserving our

Earth's habitability, we have not acted decisively enough to halt our slide toward catastrophe.

For example, we know that more than a million species are on the brink of extinction, potentially triggering the collapse of entire ecosystems. We also know that nitrogen and phosphorous runoff leads to the proliferation of toxic algae blooms in oceans and freshwater systems, thereby breaching the biogeochemical flow boundary. Similarly, tolerating dangerous levels of chemical pollution and allowing our children to ingest microplastics compromise the life-support systems necessary for humanity's survival.

To restore Earth's stability, governments must recognise the need to respect the nine planetary boundaries. This requires a steadfast commitment to reducing greenhouse gas emissions and protecting biodiversity and water resources. Moreover, our chances of success increase exponentially when we cooperate: if the international community can unite as it did when it agreed to repair the ozone layer, there is hope.

Given that Earth functions as an interconnected system, we cannot solve one problem without addressing the others. Despite being aware of the critical role of planetary boundaries in preserving our Earth's habitability, we have not acted decisively enough to halt our slide toward catastrophe.

But first, we must heed the advice of indigenous peoples and local communities and listen to what nature is telling us. Despite making up less than 5 per cent of the global population, indigenous communities act as the planet's wise custodians, protecting at least one-quarter of the world's land and seas and 80 per cent of its biodiversity.

To advance this approach, we have joined forces with Planetary Guardians, an independent collective of global leaders, scientists, and environmental advocates championing the planetary boundaries model. Our goal is to promote its adoption as a framework for assessing and guiding collective climate action.

By bringing together leaders from various countries, industries, age groups, genders, and cultures, Planetary Guardians aims to leverage our diverse backgrounds and experiences to find solutions to protect the planet. While our planet's resources are finite, there is no limit to human ingenuity and our capacity for solving complex problems. The real question is what Earth we wish to leave to future generations.

To be sure, there are no simple answers or quick fixes. Our future hinges on the steps each of us is willing to take. But in saving the ozone layer, we have already shown that taking swift, informed, collective action can facilitate the changes needed to sustain human life on Earth. 🌱

Robert Redford, Co-Founder of the Redford Center, is an actor, director, and producer.

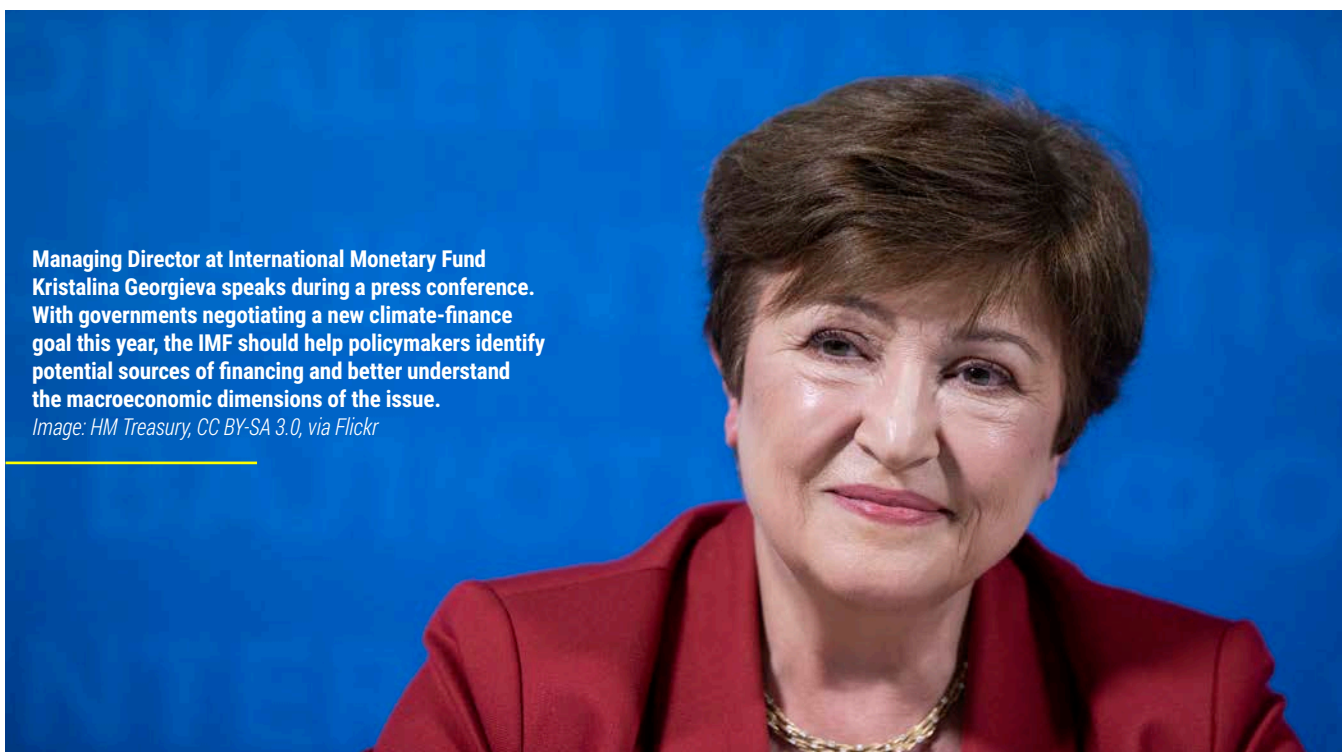
Xiye Bastida, a climate-justice activist from the Otomi-Toltec indigenous community in Central Mexico, is an organiser with Fridays For Future and Co-Founder of the Re-Earth Initiative.

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(Source: <https://www.eco-business.com/opinion/the-ozone-layers-recovery-shows-how-to-protect-the-planet/>)

Managing Director at International Monetary Fund
 Kristalina Georgieva speaks during a press conference.
 With governments negotiating a new climate-finance
 goal this year, the IMF should help policymakers identify
 potential sources of financing and better understand
 the macroeconomic dimensions of the issue.

Image: HM Treasury, CC BY-SA 3.0, via Flickr



WHAT A CLIMATE-ALIGNED IMF WOULD LOOK LIKE

As the only multilateral institution charged with maintaining global financial and fiscal stability, the IMF's role is critical for addressing climate change, writes

Mohamed Nasheed and Rakesh Mohan

Last week, the board of the International Monetary Fund approved current Managing Director Kristalina Georgieva for another five-year term. It is a welcome development that comes at a critical moment. Her second term will finish just before the end of this “make-or-break” decade for reining in climate change and delivering on the United Nations Sustainable Development Goals.

Georgieva has made significant progress in aligning the IMF with these goals. She was instrumental in the IMF's decision to acknowledge climate change as a critical

macro issue under its institutional mandate. Under her leadership, the IMF launched its first-ever climate-change strategy; created the Resilience and Sustainability Trust (RST), its primary climate-finance instrument; and fostered global dialogue on the issue through its flagship publications and research.

But now even bolder leadership is needed. As the only multilateral institution charged with maintaining global financial and fiscal stability, the IMF's role is critical for addressing climate change.

Georgieva can build on the progress made in her first term by doing four things: committing the IMF

to align with the Paris agreement; ensuring that it has ample financial firepower; elevating the voices of climate-vulnerable emerging-market and developing economies (EMDEs); and mobilising international support for climate mitigation and adaptation efforts.

The first task is the most important. All the IMF's programs – not just those that are explicitly climate-focused, like the RST – need to start promoting low-carbon development. Critically, that means avoiding scenarios that lock in fossil-fuel-intensive growth paths that will leave countries stranded in a net-zero future.

All the IMF's work must be consistent with models of inclusive growth and development, including those where value is generated from natural capital and biodiversity. Equally, the IMF's surveillance efforts (which involve all countries, not just borrowers) should help governments identify how best to achieve their development and climate goals.

But aligning IMF financing and operations with the Paris goals will not be enough. With governments negotiating a new climate-finance goal this year, the IMF should help policymakers identify potential sources of financing and better understand the macroeconomic dimensions of the issue.

This will require fresh thinking, because the evidence shows that carbon pricing will not be enough to generate the resources needed to support the net-zero transition. Robust analytics from the IMF can help to foster a global consensus on how best to generate international and domestic public finance – whether through taxation, revenue from carbon border adjustment mechanisms, or other channels.

Second, Georgieva must ensure that the IMF itself has ample financing firepower. As she has previously warned, the world is increasingly prone to a wide range of shocks, many of which would have profound macroeconomic consequences.

In this fraught new setting, the IMF's operations and balance sheet must be calibrated against what member states need to remain resilient. While the IMF Board approved a 50 per cent increase in member states quotas (contributions) last December, that is far below the 267 per cent increase required to meet the gross external financing needs of the most vulnerable members.

Similarly, the transition to net zero will radically alter the economic terrain for many countries,

especially those that have long relied on exporting or taxing fossil fuels. The IMF should track these trends and prepare to support countries that need help pursuing an orderly, low-carbon transition.

Third, Georgieva has a special responsibility to ensure that climate-vulnerable economies are involved in the IMF's decision-making. These economies are more likely to seek IMF help, so it is all the more important that they have a say in how the IMF works. Yet, as of October 2022, the Vulnerable Group of 20 (V20) commands only around 5 per cent of the voting power at the IMF, despite being home to 17 per cent of the world's population.

One major V20 demand is to “make debt work for the climate.” That means revising the IMF's debt-sustainability model to incorporate urgent investment and spending needs, and to determine what it will take for each country to meet them. Implicit in this approach is a move away from conventional austerity-based measures, and toward strategies focused more on resource mobilisation.

To be sure, the recent addition of a third African chair on the IMF

Executive Board was a welcome development. But at the end of the day, last year's 16th General Review of Quotas was a missed opportunity to rebalance voting power.

Given that the IMF has never had a non-European managing director, it will take fundamental governance reforms to convince climate-vulnerable economies that it truly represents their interests. To that end, Georgieva should offer her support for ongoing efforts to recognise the V20 as an official inter-governmental group at the IMF.

Finally, since Georgieva cannot undertake these efforts alone, the IMF Board must support her in hiring and funding additional staff from diverse disciplines and backgrounds. Additional resources would allow the IMF to scale up its direct country engagement and ensure that national policies are tailored to local contexts.

Coordination with other international institutions is also essential. The World Bank, for example, can help leverage the RST's limited resources to mobilise more money, especially toward resiliency programs like Climate Prosperity Plans.

In her first term, Georgieva won the argument that climate change is central to the IMF's mandate. Now, she will have to show that the institution can rise to the challenge posed by the climate crisis at this “now or never” juncture. 

Given that the IMF has never had a non-European managing director, it will take fundamental governance reforms to convince climate-vulnerable economies that it truly represents their interests.

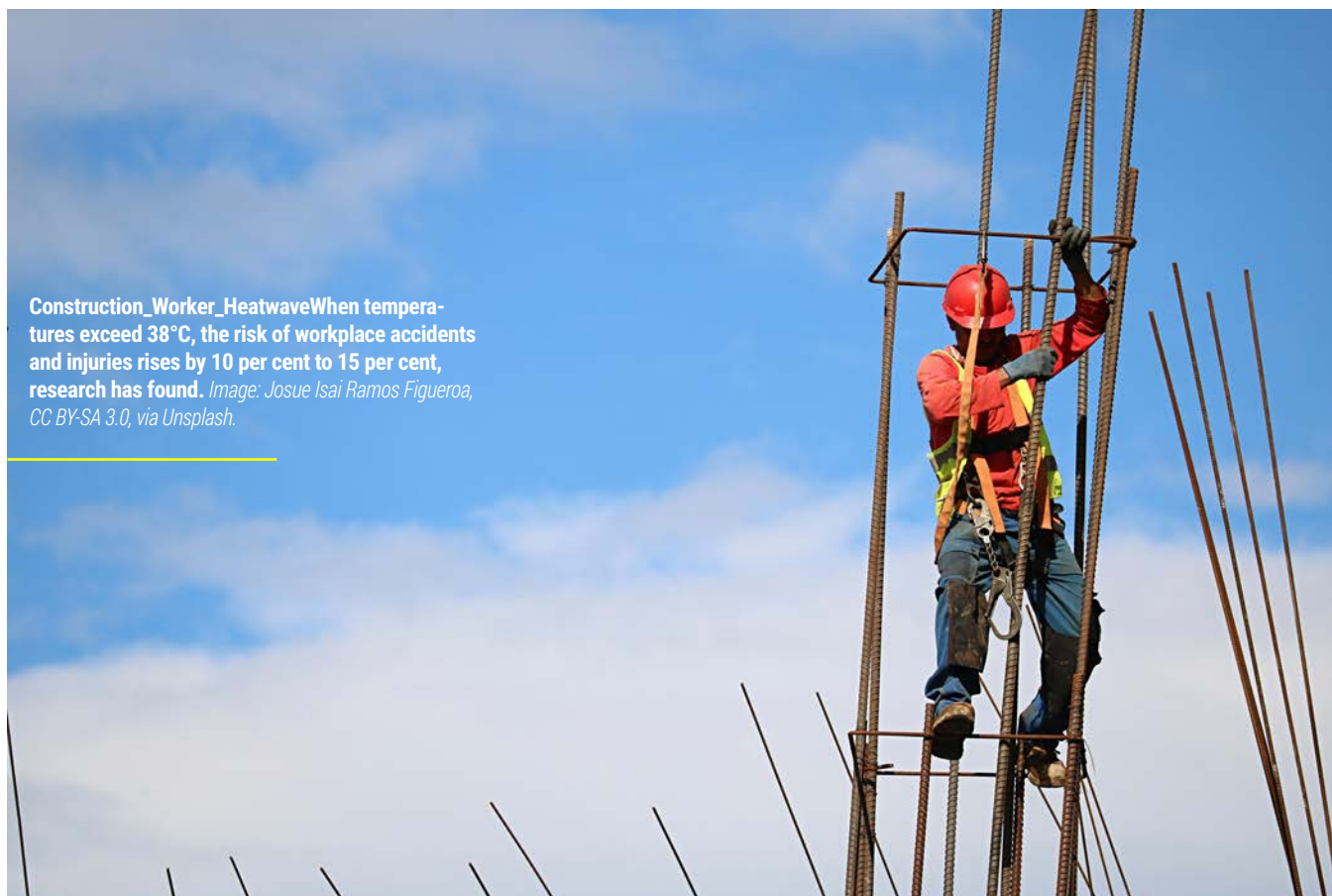
Mohamed Nasheed, a former president of the Maldives, is Founder and Secretary-General of the Climate Vulnerable Forum.

Rakesh Mohan, a former deputy governor of the Reserve Bank of India, is a member of the Economic Advisory Panel to the World Bank President Ajay Banga, President Emeritus of the Centre for Social and Economic Progress, and a member of the Task Force on Climate, Development, and the International Monetary Fund.

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(Source: <https://www.eco-business.com/opinion/what-a-climate-aligned-imf-would-look-like/>)

Construction_Worker_Heatwave When temperatures exceed 38°C, the risk of workplace accidents and injuries rises by 10 per cent to 15 per cent, research has found. *Image: Josue Isai Ramos Figueroa, CC BY-SA 3.0, via Unsplash.*



HOW CAN WORKERS BE PROTECTED FROM EXTREME HEAT?

Not enough is being done to protect workers' health as heatwaves fuelled by climate change increase the risks, labour experts say.

More than two-thirds of workers have been exposed to excessive heat while doing their jobs, according to a new UN report, but few countries have taken steps to protect them as climate change makes heatwaves more frequent and intense.

Nearly 19,000 people die every year due to workplace injuries attributed to excessive heat, and an estimated 26.2 million people are living with chronic kidney diseases linked to workplace heat stress, according to this month's report by the UN's International Labour Organization (ILO).

What are the health risks of extreme heat?

Heat exhaustion, which can include dizziness, headaches, shaking and thirst, can affect anyone, and is not usually serious, providing the person cools down within 30 minutes. The more serious version is heatstroke, when the body's core temperature goes above 40.6 degrees Celsius (105 degrees Fahrenheit). It is a medical emergency and can lead to long-term organ damage and death. Symptoms include rapid breathing, confusion or seizures, and nausea.

Existing conditions, including respiratory and cardiovascular diseases, as well as diabetes, can also heighten risk - and be exacerbated by heat. When temperatures exceed 38°C, the risk of workplace accidents and injuries rises by 10 per cent-15 per cent, research has found.

Which workers are most at risk?

People working outside are among those most at risk from extreme heat - from farm labourers to construction workers and gig workers, who often lack regular breaks or access to drinking water while out delivering orders.

“

Food delivery drivers have heart attacks when it's hot outside ... We need to think of that in the context of climate change.

—OĞUZ ALYANAK

Researcher, Fairwork

“Food delivery drivers have heart attacks when it's hot outside ... We need to think of that in the context of climate change,” said Oğuz Alyanak, a researcher at Fairwork, a gig research project at Britain's Oxford Internet Institute.

Inadequate cooling in the workplace can also pose problems for indoor workers such as domestic workers, teachers or garment factory employees.

Within those groups, pregnant women and older workers can be at particular risk of heat-related illness, while those with no sick leave benefits often feel unable to take time off if they feel unwell.

Migrant workers hired to work outdoors in hot countries are another high-risk group, especially when they are not given time to

acclimatise, said Manal Azzi, an occupational safety and health safety expert at the ILO and the study's lead author.

“They just throw them on construction sites where they're daily facing excessive heat, and their bodies will react much worse than others,” Azzi told Context.

They are also less likely to speak up because they do not know their rights and are scared of losing their jobs.

What is being done to protect workers from heat?

Countries including Spain have set heat exposure and maximum temperature limits for outdoor workers, and many in the Middle East enforce midday work bans and rest breaks when temperatures soar to dangerous levels in the summer months.

In the United Arab Emirates, for example, when labourers have to work during these hours, employers must provide cold drinking water, first-aid kits, cooling facilities and shaded rest areas.

Several Indian states have adopted heat action plans that recommend minimal outdoor activity during the hottest hours of the day, though that is not possible for many workers - including the country's roughly 7.5 million gig workers.

And as record heat hit the United States in mid-2023, the Biden administration issued its first heatwave hazard alert to affirm workers' rights to heat protections.

In the Philippines, record temperatures in recent weeks led thousands of public schools to switch to online classes as the heatwaves took a toll on the health of both teachers and students. They were also allowed to wear cooler clothing, instead of uniforms. 🟩

(Thomson Reuters Foundation)

(Source: <https://www.eco-business.com/news/how-can-workers-be-protected-from-extreme-heat/>)

Inadequate cooling in the workplace can also pose problems for indoor workers such as domestic workers, teachers or garment factory employees.



From Left to Right: Mr. Harish R, representative from Asia Book of Records; Dhananjay Ganjoo, Chief Resource Mobilisation and Marketing Officer (CMO), The Akshaya Patra Foundation; Shridhar Venkat, Chief Executive Officer, The Akshaya Patra Foundation; Aparna Rao, Cargill Business Services India Center Lead and Balaji Munjurpet, Chief Financial Officer, The Akshaya Patra Foundation

CARGILL BUSINESS SERVICES INDIA AND THE AKSHAYA PATRA FOUNDATION ENTER ASIA BOOK OF RECORDS

Over 1000+ Blackboards Revitalized in a Record-Breaking Initiative Across 99 Government Schools in Bengaluru

The Akshaya Patra Foundation, in collaboration with Cargill Business Services (CBS) India, has created a new Asia Book of Records and India Book of Records at a mega event on 23rd May 2024 at Government Model Primary school, Gunjur. Named Clean Slate Carnival, the

initiative witnessed the painting of 1000+ blackboards in 99 government & government-aided schools across the city. This 100% volunteer-driven activity also saw the presence of both India and global leaders from Cargill, including Aparna Rao, CBS India Center Lead, and Matthew Wood, Sr. Director, Sustainability Digital, Data,

& Analytics, along with Shridhar Venkat, Chief Executive Officer of The Akshaya Patra Foundation.

The event featured the mobilization of over 1,000 employees who volunteered towards the cause of improving education infrastructure for better learning outcomes. This initiative underscores the Foun-



Mr. Shridhar Venkat, Chief Executive Officer of The Akshaya Patra Foundation and Aparna Rao, Cargill Business Services India Center Lead participating in the revitalisation of 1000+ blackboards across Bengaluru

dation's commitment to creating meaningful change through community involvement. Through this activity, the organization aims to demonstrate the importance of corporate responsibility in educational development with community participation.

'We at CBS India are thrilled to conduct this initiative, 'Clean Slate Carnival' in collaboration with Akshaya Patra. This is a testament to our commitment to enhancing the educational environment for over 30,000 students in Bangalore. Education is the cornerstone of a prosperous society, and every child deserves access to quality academic resources. By cleaning and painting 1000+ blackboards in government schools, we aim to provide students with better learning facilities and a more engaging classroom experience. We are also incredibly grateful for the enthusiastic participation of our colleagues whose dedication is making this vision a reality. Together, with Akshaya Patra, we are excited to contribute to a promising future for the children.

said Aparna Rao, Cargill Business Services India Center Lead.

Speaking at the event, Shridhar Venkat, Chief Executive Officer of The Akshaya Patra Foundation said, "This event is more than just an attempt to set a record; it is a demonstration of the community's commitment to improve educational infrastructure and create a brighter future for children across India. We are grateful for the opportunity to cultivate a sense of civic respon-

sibility and community service, in addition to improving educational resources. The association with Cargill Business Services India and the involvement of more than a thousand volunteers is a true testament to the astounding results that can be achieved when people and organizations come together for a shared goal. We are truly grateful to everyone who has donated their time and effort for this initiative."

The activity is expected to have a substantial positive impact on the educational infrastructure of these schools, improving the overall learning experience for students. By revitalizing blackboards, the foundation aims to directly contribute to better educational outcomes. The initiative is also expected to further expand the reach and impact of the Akshaya Patra Foundation's mission of achieving the Sustainable Development Goals of 'Zero Hunger' and 'Quality Education'. This large-scale volunteering effort showcases the power of collaboration between non-profit organizations and corporate partners in driving social change. 

This event is more than just an attempt to set a record; it is a demonstration of the community's commitment to improve educational infrastructure and create a brighter future for children across India.

Flipkart and Bajaj Auto team up to drive sustainable deliveries with Green Machines

Bajaj Auto Ltd., the world's most valuable two-wheeler and three-wheeler company, and Flipkart, one of India's leading e-commerce marketplaces announced a strategic partnership to accelerate the adoption of electric vehicles (EVs) in the latter's last-mile delivery operations. This collaboration signifies a significant step towards a greener future for the Indian e-commerce landscape.

The Memorandum of Understanding (MoU) was signed on 10 May by Bajaj Auto and Flipkart spokespersons - Samardeep Subandh, President (Intracity Business Unit, Bajaj Auto Ltd) and Prabhu Balasrinivasan, Vice President, Commercial, Flipkart Group, Hemant Badri, Senior Vice President and Head of Supply Chain, Customer Experience & Re-Commerce, Flipkart Group, lays the foundation for a long-term business partnership between Bajaj Auto and Flipkart. The initial, non-binding commitment of supplying a minimum of 1000 technologically advanced electric three-wheeler cargo vehicles to Flipkart paves the way for further collaboration and potential fleet expansion in the future.

Enhancing Efficiency and Sustainability - Adopting Bajaj's best-in-class EV technology will empower Flipkart to enhance the efficiency and sustainability of its last-mile delivery operations. This collaboration positions both Bajaj Auto and Flipkart at the forefront of adopting sustain-



Co-branded Bajaj Maxima XL Cargo E-TEC vehicles



Left to Right: Hemant Badri (Senior VP and Head of Supply Chain, Customer Experience & Re-Commerce, Flipkart Group) & Samardeep Subandh, (President, Bajaj Auto Ltd)

able solutions for India's evolving e-commerce logistics landscape.

Talking about the MoU with Flipkart, Samardeep Subandh, a spokes-

person from Bajaj Auto Ltd., stated, "As e-commerce continues to scale up rapidly, the impact of last-mile logistics will increase significantly in

The MoU will establish a framework for a long-term business relationship between Bajaj Auto and Flipkart, fostering the adoption of EVs in logistics.

Bajaj Auto Ltd. will supply 1000 technologically advanced electric three-wheelers over two years.

Superior technology provided by Bajaj's 3-wheeler E-TEC Cargo range will significantly improve the efficiency and sustainability of Flipkart's last-mile delivery.

India. Driving sustainability in last-mile logistics has been a key agenda for Flipkart, India's homegrown ecommerce marketplace. Bajaj Auto, the global leader in 3 Wheelers and Flipkart will now join hands to drive this transition towards a 100% sustainable last-mile fleet for Flipkart. As a part of this partnership, Bajaj Auto will provide 1000+ electric cargo vehicles over two years. The Bajaj Cargo ETEC products will provide the best-in-class performance and reliability driven by its innovative design and features, which are gaining rapid acceptance in the market".

Hemant Badri, Senior Vice President and Head of Supply Chain, Customer Experience & Re-Commerce, Flipkart Group, said, "As India's homegrown e-commerce marketplace, we recognize the profound impact our operations can have on the environment and society. Our alliance with Bajaj Auto Ltd. marks a



Left to Right: Hemant Badri (Senior VP and Head of Supply Chain, Customer Experience & Re-Commerce, Flipkart Group) & Samardeep Subandh, (President - Intracity Business Unit, Bajaj Auto Ltd)



Left to Right: Prabhu Balasrinivasan (Vice President, Commercial, Flipkart Group) & Samardeep Subandh, (President - Intracity Business Unit, Bajaj Auto Ltd)

pivotal moment for Flipkart and the entire landscape of Indian e-commerce, underscoring the company's unwavering commitment to sustainable supply chains. We are taking significant strides towards a more sustainable future by consistently integrating electric vehicles into our last-mile delivery operations. This is also mission-aligned with our com-

mitment to transition our 100% last-mile delivery fleet to EVs, a pledge Flipkart took as a member of Climate Group's global electric mobility initiative – EV100. By leveraging the latest technology and forging strategic partnerships like these, we enhance operational efficiency and pave the way for a greener, more sustainable future." 🌱



Data_Drought_India Traditional weather forecasting typically relies on computer calculations based on physics to predict the weather. In contrast, AI and deep learning (a subset of machine learning) use large volumes of raw, unfiltered and processed data to predict weather. Image: Aditya Siva, CC BY-SA 3.0, via Unsplash.

DATA DROUGHT: THE CHALLENGE OF AI WEATHER FORECASTING IN INDIA

As the world moves towards AI-based weather forecasting, a lack of precise data spells a rough patch ahead for Indian climate scientists, writes **Nidhi Jamwal**,
Dialogue Earth

Amid the surge of extreme weather events globally, billions of dollars are pouring into developing cutting-edge weather forecasting models based on artificial intelligence (AI) and machine learning (ML). Leading tech giants, such as Google and IBM, are spearheading efforts for more precise and expedited forecasting.

In India, climate scientists have also begun experimenting with AI. In December 2023, Kiren Rijiju, a minister at the Ministry of Earth Sciences (MoES), said the department had established a virtual centre dedicated to developing and refining various AI and ML techniques for enhanced weather predictions.

There has since been considerable excitement around AI-based weather forecasting in the country. But there is a problem: lack of credible data.

Amitabha Bagchi, a computer science professor at the Indian Institute of Technology Delhi, explains that AI-based modelling, “extrapolates and builds scenarios based on the available data and past trends.” According to Bagchi, 95 per cent of the development process of AI models revolves around data management, and robust data is critical to the process.

Compiling such data is a challenge in India, especially in the Himalayas, says Irfan Rashid, an assistant geoinformatics professor at the University of Kashmir. Rashid is working on a MoES project profiling 15 glacial lakes in Jammu & Kashmir and Ladakh to improve data collection in the Himalayan cryosphere (the frozen part of the Earth system), which could enhance AI predictions of glacial lake outburst floods (GLOFs).

The Geological Survey of India has recorded over 9,575 glaciers in the Himalayas yet detailed glaciological studies cover less than 30, he explains. This data scarcity under-

“Traditionally, weather forecasting models use a bunch of different starting points and then use physics equations to build models that give out various probabilistic scenarios.”

—MOHAK SHAH

Founder, Praescivi Advisors

mines the development of AI-based early warning systems (EWS). “At present, if we want to know the volume of water in a glacial lake, there is no credible in-situ data. The data based on empirical models is associated with a high degree of uncertainty. Using such data to build an AI and ML based model may simulate scenarios/forecasts that might not be robust,” says Rashid.

His concerns are shared by Madhavan Nair Rajeevan, one of India’s top climate scientists and former earth sciences secretary. He notes the country’s data sets do not extend to the Himalayas, affecting the reliability of AI/ML predictions for the region’s complex terrain: “In India, we have good data sets on rainfall, temperature, humidity, wind speed etc, which are the basic meteorological parameters. However, we don’t have adequate data over the Himalayas and hardly any data to work on GLOFs,” says Rajeevan.

Machine learning and weather forecasting

Traditional weather forecasting typically relies on computer calculations based on physics to predict

the weather. In contrast, AI and deep learning (a subset of machine learning) use large volumes of raw, unfiltered and processed data to predict weather. When used in combination with traditional physical models and statistical methods, they can enhance the accuracy and reliability of weather forecasts.

Mohak Shah, founder and managing director of Praescivi Advisors, a strategic AI advisory firm based in California, USA, tells Dialogue Earth, that “Traditionally, weather forecasting models use a bunch of different starting points and then use physics equations to build models that give out various probabilistic scenarios.” ML, however, speeds up weather forecasting by using historical data correlations.

According to Shah, like any technology, machine learning has its advantages and challenges: “It is relatively low-cost ... scalable too and can democratise weather forecasting. But we assume that there is enough granular data available, which isn’t the case [in India], at least not yet. Lack of local-level data can pose a fundamental problem.”

To mitigate data scarcity, ML can approximate missing information using data from similar areas, effectively giving forecasters a head start, though for optimal results, there is no substitute for high-quality data, Shah tells Dialogue Earth.

Shah raises concerns about the opaque “black box” nature of ML models. Traditional weather models come with a quantifiable margin of error, which allows for the identification and correction of specific errors based on the physics equations on which they are built. AI/ML models often lack such transparency since they are based on past correlations, making it difficult to ascertain the exact reasons behind their inaccuracies.

The data dilemma

Roxy Mathew Koll, a climate scien-

tist at the Pune-based Indian Institute of Tropical Meteorology (IITM), which operates under the MoES, has struggled to obtain the data required to build an AI-based forecasting model for dengue, a climate sensitive disease.

“We have used past data of several factors that affect the incidence of dengue, including rainfall, temperature and humidity. But getting health data on the daily disease caseload in the city was a huge challenge. Concerned agencies were not ready to share the data. We had to knock on several doors and getting permission to use and publish the data was a tedious task,” says Koll.

Koll highlights the direct correlation between data quality and

scale. If we want impact studies, we need such data,” says Rajeevan. Without it, the research doesn’t translate into real-world benefits, adds the former secretary. Like Koll, he insists the technologies are only as good as the data they’re fed.

Bagchi also agrees. “Machine learning has the best mathematical tools available to us and is the future. But, in the Indian context, data integrity, data quality and quantity are a challenge, which may mar the development of AI-based weather forecasting.”

Shah sees AI/ML as a complementary addition, rather than a fix-all replacement. “We have to see machine learning like an additional tool in our arsenal,” he says.

which were continuously active for 2.5 hours prior to main detachment, but we do not monitor seismic activity around glaciers,” Sain tells Dialogue Earth.

Sain’s institute has been identifying potential risk zones for GLOFs in Uttarakhand. He singles out the Alaknanda-Dhauliganga-Rishiganga, a tectonically active basin, as a priority area due to the 29 existing hydropower projects, in various stages of completion, in addition to 54 proposed plans.

“For an AI-based integrated early warning system for glacial hazards, we need satellite data, real-time meteorological data, real-time hydrological data, real-time seismic and GPS data and general field survey,” says Sain. He underscores the urgency of setting up a dedicated glaciological centre in the region, requiring an investment of Rs 10-12 crore (US\$ 1.2m-1.4m).

Rashid seconds this view, citing the disastrous 2021 Chamoli event and a 2023 GLOF in Sikkim, which occurred despite the presence of monitoring equipment that malfunctioned.

“At present, no seismic data is collected around glaciers in the entire Indian Himalayan region. Also, there is no detailed GLOF risk,” he says. Existing studies are fragmented, offering an incomplete picture of the Himalayas’ glacial risk.

Rashid advocates for a standardised method of collecting field data on glaciers and glacial lakes across the region. This data would be instrumental in developing a comprehensive AI-based forecast and alert system. “This massive exercise will need funds and money will come only if there is a strong political will,” Rashid concludes. ■

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(Source: <https://www.eco-business.com/news/data-drought-the-challenge-of-ai-weather-forecasting-in-india/>)

Machine learning has the best mathematical tools available to us and is the future. But, in the Indian context, data integrity, data quality and quantity are a challenge, which may mar the development of AI-based weather forecasting.

AI’s predictive capabilities: “If AI is trained on very high-resolution data, it would be able to provide high-resolution forecasting [for] climate-sensitive diseases such as dengue, malaria, Chikungunya, etc,” he says. “The AI-based modelling for dengue in Pune, can be replicated in other places provided there is access to data from the respective health departments, which is a challenge.”

Government scientists have also faced this problem. “Even when I was secretary [the highest level administrative officer in the government], I tried to gather some health data from the highest government officials. Nothing came. We lack the culture of compiling and archiving social-economic data at a granular

Can AI help predict GLOFs in the Indian Himalayas?

The Wadia Institute of Himalayan Geology, situated in Doon Valley, Uttarakhand, is pioneering the development of an advanced warning system for glacial hazards, with its director, Kalachand Sain, advocating for the integration of AI and ML in these efforts.

Sain conducted extensive research into the Chamoli disaster, where an avalanche in February 2021 severely damaged two hydropower projects in Uttarakhand’s Chamoli district, leading to over 200 casualties.

“Our study found that the rock-ice avalanche appears to have been initiated by seismic precursors

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