# CSR TODAY

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# WARMING OF 2°C WOULD TRIGGER CATASTROPHIC LOSS OF WORLD'S ICE

Global warming of 2°C would see "extensive, long-term [and] essentially irreversible" losses from the Earth's ice sheets and glaciers, warns a new report.

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# The plants that feed the world

**Rajesh Tiwari**
Publisher
*rt@iccsr.org*

**To date, we have relied on a handful of crops, such as wheat, corn and rice, for most of our caloric needs. Yet, there are more than 7000 plant species, and perhaps up to 30000 which are considered edible by humans.**

Most of us have our own ideas about the food and plants that make up a large part of our diet. But how much of an impact do climate change, conflicts, health considerations, lifestyle trends and other modern-day issues have on the crops we grow now and those we might need in the future?

These are among the issues addressed in a new report, called The plants that feed the world, by the Food and Agriculture Organization of the United Nations (FAO).

To date, we have relied on a handful of crops, such as wheat, corn and rice, for most of our caloric needs. Yet, there are more than 7 000 plant species, and perhaps up to 30 000 which are considered edible by humans.

With its Secretariat based at FAO, the International Treaty on Plant Genetic Resources for Food and Agriculture was adopted in 2001 to ensure that the plant genetic resources most important to human diets were safeguarded and used equitably around the world. Annex 1 of this legally binding agreement lists 64 of the key crops that make up our "food basket" and whose genetic resources are exchanged by gene banks through the International Treaty's Multilateral System for Access and Benefit-sharing.

The International Treaty's goal is to ensure that plant genetic resources are accessible by everyone, especially farmers in developing countries, so that we can all benefit from a diversity of crops that can meet our nutritional needs.

Let's look at four significant trends identified in the study that are shaping the way plants are feeding us and that demonstrate why genetic resources are so important for better production, nutrition, environment and livelihoods:

## 1. The concept of food security has expanded.

One reason our "food basket" will need to incorporate more plants than it used to is because our understanding of food security is evolving. More than 20 years ago, when the International Treaty was first drawn up, the emphasis was overwhelmingly on the calories needed to provide a basic diet and eradicate hunger. We now increasingly understand that the focus also needs to be on nutrition, delving into micro-nutrients as well as macronutrients.

## 2. The plants of the past are not necessarily the plants of the future.

As well as eating more vegetables, fruit, nuts and seeds because of nutrition concerns, there is a trend towards consuming more plant-based proteins, like pulses.

Lesser-known, nutritious cereals, such as millet and sorghum, or cereal-like, equally gluten-free alternatives, such as quinoa and amaranth, are also on the rise.

## 3. Countries are becoming even more interdependent on each other for crop varieties.

With the climate crisis affecting global precipitation patterns and temperatures, certain varieties of crops are no longer growing well in places where they once thrived.

These changing weather patterns mean there will be more need for countries to obtain plant varieties from elsewhere in the world in order to continue or improve their production.

## 4. Tastes and fashions are also changing the demand for crops.

Changing tastes and trends are also spurring demand for new crop varieties from farmers seeking to improve their livelihoods, whether it's by growing quinoa or by cultivating pigeon peas.

But new demands are also coming from other quarters, such as chefs who are keen to explore the tastes and textures of traditional, and often more sustainable, grains.

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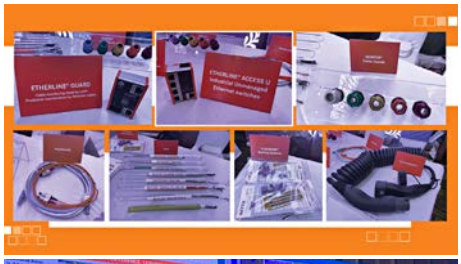


# LAPP India wins Corporate Social Responsibility Award at 12th VDMA Annual Summit

LAPP India, a pioneer in cable and connection technology, is delighted to announce that its unwavering dedication to corporate social responsibility has been honored with the prestigious CSR Award in the large category at the 12th annual flagship event of VDMA India, held in Bengaluru.

VDMA India serves as a pivotal link between German and Indian industries promoting economic relations in diverse engineering sectors. With nearly two decades of experience and a dedicated team of experts, VDMA India serves around 600 member companies in India.

This recognition further reinforces LAPP India's commitment to sustainability, highlighting the organization's belief in the sustainability and serving as a significant milestone that inspires continued efforts to make a meaningful impact on both the industry and society. The CSR Award was received by Gary Bateman, Managing Director – LAPP India and Sehaam Bateman, Head of Corporate Social Responsibility at LAPP India, along with the members of LAPP India's CSR team.

Gary Bateman, Managing Director of LAPP India, was a distinguished speaker at the VDMA Annual Summit. The central theme of his presentation was "Sustainable Manufacturing," reflecting LAPP India's unwavering commitment to fostering sustainability in the manufacturing industry. Expressing his gratitude at the VDMA awards, Gary Bateman, Managing Director of LAPP India, said, "This award is a reflection of our dedication to sustainability, and it motivates us to keep pushing the boundaries of responsible corporate practices. We are proud to partner with VDMA and look forward to setting even higher benchmarks for a sustainable future."

LAPP is deeply committed to global sustainability, evident in its operations. The company focuses on green energy procurement and generation, ISO-certified environmental and energy management in buildings and plants. Energy-optimized buildings in Stuttgart reflect LAPP's commitment. For customers, LAPP emphasizes eco-friendly practices such as minimizing polymer packaging and implementing 'Milk Runs' for product lifecycle management. The company actively promotes the use of green copper and plant-based materials.


# Alstom and NSRCEL to launch the second cohort of the Incubation Programme to support startups in sustainable solutions

Alstom, a global leader in smart and sustainable mobility, and NSRCEL, the startup hub at IIM Bangalore, are excited to announce the launch of the second cohort of their Sustainability Incubation Program.

This initiative is aimed at supporting innovative startups committed to combatting climate change and addressing various sustainability challenges. The program is dedicated to fostering the development, scaling, and market integration of technology solutions that replace high-emission, energy-intensive, and non-recyclable incumbents.

The Sustainability Incubation Program plays a pivotal role in helping startups build sustainable technology, create favorable policy environments, and establish scalable go-to-market and revenue models that prioritize climate-centric solutions. This program is designed to assist startups in their early revenue stages and will focus on innovations in areas such as green manufacturing, mobility infrastructure, energy and renewable energy, climate technology, alternative fuels, and vehicle technology.

Olivier LOISON, Managing Director at Alstom India, stated, “As one of the leaders in sustainable mobility, the NSRCEL Sustainability Incubation program is core to Alstom’s impact investments in the country. Following the success of the first cohort, we are excited to expand the scope of the program to include sustainability more holistically. The second cohort is aimed at positively impacting India’s climate challenges, and we look forward to seeing the solutions achieve their full potential.”

“We are delighted to unveil the second cohort of the Sustainability Incubation Program in partnership with Alstom. This program reflects our commitment to nurturing and supporting initiatives aimed at making a positive impact in the climate tech space. Together, we're sowing the seeds of a greener, more prosperous tomorrow," said Anand Sri Ganesh, CEO of NSRCEL.

The selected 22 ventures have been shortlisted from a pool of 344 applications, based on the viability of their ideas and their proposed solutions to the problems at hand. These shortlisted ventures will proceed to a pre-incubation program, which will reinforce their foundational business fundamentals and provide mentorship based on their specific needs. Subsequently, these ventures will enter a six-month incubation phase, during which they will develop prototypes and refine their pitches presented to the screening committee.

The program is designed to enhance knowledge and expertise among ventures in the sustainability space, enabling them to analyze their product-market fit for various contexts. It offers interactive capacity-building workshops, contextual mentorship, and valuable ecosystem connections for startups.

The program's content is customized to meet the unique requirements of each participating startup. Throughout the program, startups will receive guidance on navigating the ecosystem, understanding policies, and complying with regulations. A funding grant pool of Rs. 1.5 crores have been allocated to support startups with the highest potential for creating a meaningful impact.

Throughout the first cohort of the Sustainability Incubation Program, NSRCEL shortlisted and nurtured ten ventures out of a total of 20 startups. These ventures have collectively generated a monthly revenue of INR 31,105,000 and received a total funding of INR 221,400,000 from prominent venture capitalists. Notably, the program has attracted an impressive client roster, including industry leaders such as SEG Automotive-Mahindra Electric, Zypp Electric, Tata Elxsi, Shell Foundation, and Bounce, underscoring its significant impact within the industry.

# The energy world is set to change significantly by 2030: report

The share of fossil fuels in global energy supply, which has been stuck for decades at around 80%, declines to 73% by 2030, with global energy-related carbon dioxide (CO2) emissions peaking by 2025.

According to the World Energy Outlook 2023 brought out by the Paris-based International Energy Agency, major shifts underway today are set to result in a considerably different global energy system by the end of this decade. "The transition to clean energy is happening worldwide and it's unstoppable. It's not a question of 'if', it's just a matter of 'how soon' – and the sooner the better for all of us," said IEA Executive Director Fatih Birol.

The phenomenal rise of clean energy technologies such as solar, wind, electric cars and heat pumps is reshaping how we power everything from factories and vehicles to home appliances and heating systems, the WEO 2023-IEA report states.

"Governments, companies and investors need to get behind clean energy transitions rather than hindering them. There are immense benefits on offer, including new industrial opportunities and jobs, greater energy security, cleaner air, universal energyaccess and a safer climate for everyone. Taking into account the ongoing strains and volatility in traditional energy markets today, claims that oil and gas represent safe or secure choices for the world's energy and climate future look weaker than ever,"Birol said in a statement.

According to the report, the most authoritative global source of energy analysis and projections, describes an energy system in 2030 in which clean technologies play a significantly greater role than today. This includes almost 10 times as many electric cars on the road worldwide; solar PV generating more electricity than the entire US power system does currently; renewables' share of the global electricity mix nearing 50%, up from around 30% today; heat pumps and other electric heating systems outselling fossil fuel boilers globally; and three times as much investment going into new offshore wind projects than into new coal- and gas-fired power plants.

"All of those increases are based only on the current policy settings of governments around the world. If countries deliver on their national energy and climate pledges on time and in full, clean energy progress would move even faster. However, even stronger measures would still be needed to keep alive the goal of limiting global warming to 1.5 °C," the report points out.

The combination of growing momentum behind clean energy technologies and structural economic shifts around the world has major implications for fossil fuels, with peaks in global demand for coal, oil and natural gas all visible this decade – the first time this has happened in a WEO scenario based on today's policy settings.

But the costs of inaction could be enormous: despite the impressive clean energygrowth based on today's policy settings, global emissions would remain high enough to push up global average temperatures by around 2.4 °C this century, well above the key threshold set out in the Paris Agreement.

# Paytm Foundation distributes laptops in government schools in Lucknow

One97 Communications Limited that owns the brand Paytm, India's leading payments and financial services company and the pioneer of QR, soundbox and mobile payments, along with Paytm Foundation has distributed 50 laptops to two government schools (Municipal Girls Inter College and Aminabad Inter College) in Lucknow under the aegis of Municipal Corporation of Lucknow on November 2. These laptops will be used to establish computer labs in two schools.


Paytm Foundation has been supporting education and bridging the digital gap in the country, and this initiative will enable the students with modern learning tools, ensuring access to a digital education experience in the region. The event was graced by the former Deputy Chief Minister of Uttar Pradesh and current Member of Parliament in the Rajya Sabha, Dinesh Sharma, along with the Mayor of Lucknow, Smt. Sushma Kharkwal.

# CSMIA recycles approx. 9,000 single-use plastic bottles in 10 months, contributes to the goal of zero waste landfill

Mumbai's Chhatrapati Shivaji Maharaj International Airport (CSMIA) has consistently been at the forefront of promoting sustainability and green initiatives. This Recycling Day, CSMIA is delighted to share a remarkable achievement, having recycled a staggering 8,890 used bottles by the end of October 2023, through the Reverse Wending Machines (RVMs) installed at the airport. Moreover, CSMIA is set to install three additional units of RVMs in November 2023, further amplifying this initiative. This milestone underlines the airport's commitment to achieve zero waste to landfill by reducing and recycling of single-use plastic waste.



CSMIA installed 2 RVMs in January 2023 at P4 and P6 at Terminal 2 of CSMIA. Each RVM installed at the airport is capable of processing up to 450 bottles per hour, compressing 70% of the waste for efficient and easy transportation to recycling centres. Hence, saving resources, reducing emissions, and cutting transportation and logistics costs. In 2019, CSMIA initiated a comprehensive single-use plastic ban across its operations including retail, food & beverages, and partner airlines processes, achieving 100% single-use plastic-free status. Over a prolonged period, the RVMs are expected to annually reduce carbon emissions by approximately 125 tCO2e. Being a global airport, CSMIA has consistently introduced a range of groundbreaking green initiatives over the years. These initiatives encompass carbon neutrality, the adoption of solar energy, waste recycling, the production of organic compost, and the publication of sustainability reports compliant with GRI standards, among numerous other initiatives.

CSMIA aims at incorporating sustainability in all aspects of its business and these efforts will directly lead to a decrease in the indirect carbon emissions associated with PET bottle manufacturing. The primary objective of this initiative is to actively encourage and promote passengers and the entire airport community to recycle plastic bottles utilized within the vicinity of the airport. The program underscores the significance of raising awareness about reducing, reusing, and recycling plastic waste. Furthermore, the promotion of this activity at CSMIA plays a vital role in inspiring individuals to understand the importance of

actively participating in recycling of plastic waste on a personal level as well. CSMIA engages the airport community through various campaigns and reward systems encouraging the utilization of the RVMs. A recent campaign involved the distribution of merchandise such as T-shirts and caps to participants. RVMs are also intentionally designed to be self-explanatory, making it easy for anyone and everyone to use. With a 16-inch touch screen for user guidance, the machines are patented and spill-proof, accepting only empty plastic bottles. Moreover, a dedicated agency has been appointed to handle the collection of water bottles from the RVMs. The agency also engages with the airport community to promote the proper disposal of plastic bottles into the RVMs.

Contributing as a partner to the national initiative aimed at developing eco-friendly infrastructure for India's transportation requirements, CSMIA's steadfast commitment to Environmental, Social, and Governance (ESG) and sustainability has further solidified its position in the industry. With the goal of achieving 'Operational Net Zero Carbon Emission' by 2029, CSMIA also remains committed to creating unforgettable journeys for travellers.

# Asia leads global race in renewables

Asian investments in renewable energy are growing 23% annually with USD $345 billion pumped into wind, solar and clean vehicles through 2022, an assessment of energy trends by Zero Carbon Analytics finds. The region is accounting for 52.5% of global capacity in 2022 - driven largely by China, India and Vietnam.

Asian investments in the electric car and scooter market are also notable with sales of electric motorbikes and scooters in the country increasing 3,000% 2015-2022. Globally Asia accounts for 51% of global greenhouse gas emissions with vast coal fleets in India, China despite both countries committing to long term net zero targets.

The new study that highlights the Asian region as the global leader in wind and solar development coincides with government leaders, businesses and civil society organisations gathering in the southern Malaysian city of Johor Bahru this week to enhance cooperation and discuss climate solutions in Asia and the Pacific.

The report 'A driving force: Asia's Energy Transition' is the third in a series of reports looking at evidence of the pace of growth in the clean energy transition. The report builds on several pieces of research on exponential systems change released by RMI, Systems Change Lab and others this year, which shows that change is happening faster than we think.

## Key takeaways:

- Asia has the fastest growth rate of wind and solar capacity at 35% per year, and it has outpaced other continents since 2015.
- Total Asian funding for renewables amounted to $532 billion in 202, that's 65% of the global spend on renewables.
- India's growth in renewable capacity outpaces coal power growth while China had the fastest–growing deployment of wind and solar in the world between 2000 and 2022, doubling its wind capacity about every 1.5 years and its solar capacity about every 2.5 years.

The Asia Pacific Region - home to 4.3 billion people and one of the regions most vulnerable to the impacts of climate change - is grappling with various climate challenges, including sea level rise, extreme weather events, and threats to its biodiversity and water resources.

**Aarti Khosla,** Director, Carbon Copy said: "Asian economies like India, China and Japan are becoming all the more pivotal for global growth especially as the Asian continent is set to contribute about two-thirds of all global growth. As domestic energy consumption will increase off the back of major infrastructure developments and large manufacturing pushes clean energy should be the crux of development. This will assume even greater significance especially with global energy security threatened with defence issues, as well as economic difficulties being faced by many countries across the world."

**Li Shuo,** incoming China Climate Hub Director, Asia Society Policy Institute said: "China is racing ahead in the shift to clean energy, this is no small feat for the world's largest emitter of greenhouse gases. Since the Paris Agreement, China's renewables capacity has soared and we know it's expected to surpass its goal to increase solar and wind capacity to over 1,200GW by 2030. The country is not immune to climate impacts and must use its own momentum to spearhead an ambitious global deal at COP28".

**Amit Bhatt,** India Managing Director, International Council on Clean Transportation said: "In India two-wheelers and three-wheelers are taking the lead in electrifying road transport in the country's crucial development given that these vehicle segments constitute approximately three-fourths of motor vehicle sales in the country. The electrification of two and three-wheelers also holds significant importance from a public health standpoint in urban cities like Delhi, motor vehicles stand out as the primary source of pollutants, contributing to around 40% of emissions. These vehicles contribute almost half (44%) of these emissions, emphasising the importance of transitioning to cleaner alternatives."

# Infosys Science Foundation Announces the Infosys Prize 2023 in Six Categories

*Six individuals awarded for their remarkable contributions to scientific research in India*

The Infosys Science Foundation announced the winners of the Infosys Prize 2023 in six categories – Engineering and Computer Science, Humanities, Life Sciences, Mathematical Sciences, Physical Sciences, and Social Sciences.

Since its inception in 2008, the Infosys Prize has honored the accomplishments of the recipients and awarded them for their contributions to scientific research and scholarship impacting India. The prize for each category comprises a gold medal, a citation, and a prize purse of USD 100,000 (or its equivalent in INR). The event was hosted at Infosys Science Foundation's office in Bengaluru.

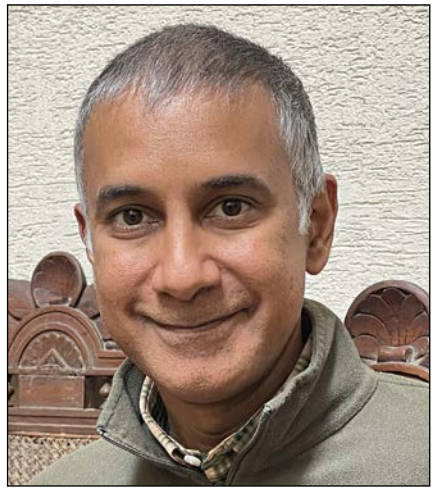
The laureates of Infosys Prize 2023 were shortlisted from 224 nominations by an international panel of jurors comprising world-renowned scholars and experts. Over the past 15 years, ISF has recognized some of the best groundbreaking research and scholarship that has contributed to every aspect of human life. The Infosys Prize is currently the largest

**SN TRIPATHI**
**Winner of Infosys Prize 2023 for Engineering & Computer Science**

**JAHNAVI PHALKEY**
**Winner of Infosys Prize 2023 for Humanities**

**ARUN SHUKLA**
**Winner of Infosys Prize 2023 for Life Sciences**

**BHARGAV BHATT**
**Winner of Infosys Prize 2023 for Mathematical Sciences**



**MUKUND THATTAI**
**Winner of Infosys Prize 2023 for Physical Sciences**

**KARUNA MANTENA**
**Winner of Infosys Prize 2023 for Social Sciences**

award in India that recognizes excellence in science and research.

Infosys Prize laureates have gone on to win many international accolades. These include the Nobel Prize (Abhijit Banerjee and Esther Duflo), the Fields medal (Manjul Bhargava and Akshay Venkatesh), the Dan David Prize (Sanjay Subrahmanyam), the MacArthur 'genius' Grant (Sunil Amrith), and the Breakthrough Prize in Fundamental Physics (Ashoke Sen). Several laureates have been elected fellows of the Royal Society, among them Gagandeep Kang, who became the first Indian woman to be elected Fellow of the Royal Society. Others have gone on to hold influential posts in government and academia. The winners of the Infosys Prize 2023 were announced by the trustees of Infosys Science Foundation – Kris Gopalakrishnan (President, Board of Trustees), Narayana Murthy, Srinath Batni, K. Dinesh, and S. D. Shibulal. The other trustees of Infosys Science Foundation – Nandan Nilekani, Mohandas Pai, and Salil Parekh – extended their felicitations.

Kris Gopalakrishnan, President – Infosys Science Foundation, said, "This year marks a landmark moment in Infosys Science Foundation's journey. Over the course of 15 years, the Infosys Prize has recognized mid-career researchers who have done impactful, groundbreaking work across disciplines. The prize has helped drive conversations around their work and on a larger scale created meaningful engagement around science and society. I congratulate the winners of the Infosys Prize 2023."

Sharing his thoughts, Narayana Murthy, Founder – Infosys, Trustee – Infosys Science Foundation, said, "Learnability, creativity and innovation are the ways to navigate our fast-changing world. We must be daringly inventive to tackle the daunting and persistent problems of today. The laureates of the Infosys Prize have shown us the importance of this adaptive thinking through their approach to problem solving – be it for centuries old conjectures in mathematics, translational medicine and diagnostics or finding solutions to societal challenges like poverty. For this I congratulate all the winners of the Infosys Prize and those who have won in 2023."

# Resolving climate issues is urgent, and clean energy is the solution: Dr. Andrew Forrest's call to action

Climate change is already here and global business leader and philanthropist Dr. Andrew Forrest, Chairman of Fortescue, is sounding the alarm on the urgency of resolving climate issues.

Driven by his deep commitment to the conservation of our planet, he is championing green energy as the definitive solution. Dr. Forrest's passionate call to action reverberates across the globe as he addresses influential audiences at prestigious universities, sparking conversations vital to our planet's future.

During his current tour of India, Dr. Forrest addressed esteemed institutions including IIT New Delhi, IIT Bombay, and IIT Madras. He also met with key Indian policymakers and business leaders and presented at The Energy Transition Dialogue in New Delhi. His powerful message emphasized the critical role of green energy technologies in mitigating climate change and the collective responsibility we all share in safeguarding our planet. "We are at a tipping point in the fight against climate change. Green energy isn't just an option; it's our lifeline. We must invest, innovate, and collaborate globally to transition to sustainable practices," urged Dr. Forrest.

Dr. Andrew Forrest AO, Executive Chairman and Founder of Fortescue, Minderoo Foundation, and Tattarang.

"Each institution, each individual, can be a driving force for positive change to make big business take action. Together, we can make a difference.

"It is not the fault of individuals that climate change is here, it is big business and I believe the innovations and intelligent minds of India can help us define a better future."

Dr. Forrest has also spoken at prestigious universities including Harvard University, MIT, Berkley, and UCLA in the United States, Oxford University and Cambridge University in the United Kingdom, and Delft University of Technology in the Netherlands.

Dr. Forrest's engagements serve as catalysts for discussions on climate policy, renewable energy, and sustainable development. His insights, honed through Fortescue's groundbreaking initiatives and industry collaborations, provide a roadmap for practical solutions. Through this, Fortescue is already delivering green solutions in metals, fuels, and transport to help the world decarbonize, driving innovation in the green energy sector.

# Sniffer dog squad hits a century

The sniffer dog squad of Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC) and World Wide Fund for Nature (WWF) India has crossed the 100-mark milestone. A new batch of 11 young dogs and their 22 handlers began training at the Basic Training Centre, Indo-Tibetan Border Police Force (BTC-ITBP) camp in Panchkula, Haryana. With this, TRAFFIC and WWF-India's wildlife sniffer dog squads will cross an important milestone as the number of wildlife sniffer dogs trained under the programme will be 105.

Till 2022, 94 wildlife sniffer dogs have been trained and deployed in 21 states and Union Territories. With the current batch, the number of participating states and Union Territories will become 22. The young dogs of 6-9 months of breed Belgian Malinois and their handlers will undergo rigorous training at BTC-ITBP for about seven to eight months, learning skills to detect and curb wildlife crime, according to a press statement by WWF-India.

After completion of the training, the wildlife sniffer dog squads will join the forest departments of Uttarakhand, Jharkhand, Maharashtra, Odisha, Chhattisgarh and West Bengal. In Uttarakhand, three wildlife sniffer dog squads will be deployed by Corbett Tiger Reserve and one squad by Rajaji Tiger Reserve. In Jharkhand, the wildlife sniffer dog squad will be deployed by Palamu Tiger Reserve.

In Maharashtra, the wildlife sniffer dog squad will be deployed by the Pench Tiger Reserve, and in Odisha, two squads will be deployed by the Similipal Tiger Reserve. In Chhattisgarh, two wildlife sniffer dog quads will be deployed by Achanakmar Tiger Reserve and in West Bengal, a dog squad will be deployed by Buxa Tiger Reserve.

"Popularly known as Super Sniffers, the wildlife sniffer dogs trained under TRAFFIC and WWF-India's programme have been highly successful in seizing wild species contraband from smugglers and catching poachers in the act. Much like with detecting drugs or explosives, these dogs use their incredible sense of smell to detect various wild species parts and derivatives in trade, including those from tigers, elephants, and rhinos, deer meat, live birds, snakes, porcupines, red sanders, turtles, and tortoises" said Dr Merwyn Fernandes, Associate Director, TRAFFIC's India office.

Dr Dipankar Ghose, Senior Director, Biodiversity Conservation, WWF-India, further adds, "This important programme of training sniffer dogs for wildlife crime prevention and detection in India was launched in 2008 with just two dogs. Till the end of 2022, 94 wildlife sniffer dogs were trained and deployed under this programme. With this batch, the number of wildlife sniffer dogs trained under TRAFFIC and WWF-India's programme will hit a century. It is heartwarming to see the overwhelming response and support from the government enforcement agencies for this programme".

Inspector General, BTC-ITBP, Panchkula Haryana, said, "Wildlife

crime is growing to become one of the largest crimes that need to be curbed to protect the future of our wildlife. BTC-ITBP, Panchkula, has years of experience in training sniffer dogs for crime detection in India, and we have extended our full support in conducting specialized training of sniffer dogs for wildlife crime detection in India. For this, we have partnered with TRAFFIC and WWF-India in their unique programme. The new batch of wildlife sniffer dogs is the fourth to be trained at our centre, and we wish the participants good luck with their training".

The wildlife sniffer dog training programme at BTC-ITBP is divided into two critical phases. The first phase focuses on developing an emotional and trusting bond between the dog and the handler, crucial to becoming a successful wildlife sniffer dog squad. It is followed by basic obedience training. Later, the dogs learn sniffing and tracking skills and are trained to detect tiger and leopard skins, bones and other body parts, bear bile, red sanders, and other illegal wildlife products.

# Equality Champions: 5 Organizations Breaking Social Barriers and Promoting Equality through their CSR initiatives

In recent years it has become crucial for organizations to go beyond conventional business paradigms and social barriers. These five distinctive organizations are not merely corporate entities, they are architects of transformation for our society. Through innovative CSR initiatives, each is crafting a narrative that transcends business norms, actively breaking down social barriers and fostering an environment where equality thrives. The organizations are pushing boundaries in traditionally male-dominated industries to support equity and equality. These transformative stories of organizations are reshaping communities and paving the way for a more just and equitable future.

Here are the top 5 organizations that are promoting educational solid initiatives which are helping to break the barriers and stereotypes

**1. Lumina Datamatics:**

Lumina Datamatics, a strategically to global publishers offering content, analytics, and technology solutions, collaborated with Space Kidz India to send a satellite into outer space. Space Kidz India, dedicated to cultivating "Young Scientists" for the nation and promoting awareness among children for a "borderless world," initiated this unique project. This satellite launch was distinctive as it involved a total of 750 teenage girls selected from 75 rural schools across India, forming an all-girls project. Recognizing the predominantly male-dominated nature of the Science and Technology fields, Lumina Datamatics seized the opportunity to introduce these 750 teenage girls to the specialized realms of Space, Technology, and Science. This initiative not only contributed to breaking gender barriers but also aligned with Lumina Datamatics' strong belief in the importance of supporting young women in India by imparting new skills and knowledge.

**2. Accenture India:**

Their initiative Vaahini is committed to fostering gender equality by empowering women to dream big, grow and thrive without limits, and excel in leadership roles.The community of women from across industries who are ushering in powerful change at work and outside. They have been championing women's inclusion in the workforce and celebrating their achievements through inspiring content. They are empowering women with learnings and industry knowledge so they can be more creative, dream bigger, accelerate their careers and above all, be themselves.

**3.Hindustan Unilever**

Project Ahilya is challenging gender norms, and HUL has underscored its commitment to this initiative, which seeks to establish equal opportunities for women in frontline sales positions that have historically been male-dominated. Presently, the Ahilya community comprises more than 1,000 women, and the project is steadily gaining traction nationwide, with the overarching goal of constructing a sales frontline that is genuinely diverse and inclusive.

**4.ITC Limited**

The company actively engaged in corporate social responsibility by promoting Women's Empowerment. This endeavor generated diverse employment opportunities for over 77,000 economically disadvantaged women in total. The support extended included capacity building, along with financial aid in the form of loans and grants. Notably, 29,184 of these women, situated in the company's primary areas of operation, now have access to sustainable income through both on-farm and off-farm livelihood options.The financial literacy and inclusion initiative, conducted in collaboration with the Madhya Pradesh State Rural Livelihood Mission (MPSRLM) and CRISIL Foundation, spanned 26 districts throughout the year.

**5. Godrej**

Godrej works in collaboration with the government, NGOs and social enterprises to design and run a number of employability training programmes in vocational skills that are relevant to their businesses. Some of these include beauty and hair care, sales, technical training and rural entrepreneurship. The focus of these programmes is to improve the earning potential of graduates, through skill building and empowerment. Godrej also helps facilitate self-employment or job placements. They have designed our programmes for sustainability and scale, and place great importance on the impact they create. Their technological infrastructure tracks their progress, performance, impact, and helps us drive costs down over time.


# Aditya Birla Fashion and Retail Empowers Youth Towards Green Careers with a Unique Sustainability Accelerator Program 2023

## *An immersive internship program designed for students across India*

Aditya Birla Fashion and Retail Limited (ABFRL), one of India's leading fashion companies, announced the culmination of the Sustainability Accelerator Program 2023, a collaborative project with 1 Million for 1 Billion (1M 1B). The program, held in November 2023, demonstrated ABFRL's commitment to build green skills and empower Indian students while nurturing the talents required to carry our collective sustainability mission forward. Each of the participants were presented with co-branded 'Certificates of Participation' from ABFRL and 1M 1B to recognise their dedication and achievements. The top 20 students chosen for industry engagement at an ABFRL campus were also honoured with diplomas recognising their excellent performance during the 5-day internship.

The Sustainability Accelerator Program 2023 made tremendous progress towards its goals, cultivating a new generation of environmentally conscious leaders. For beginnings, the initiative enabled youngsters to become proactive climate change champions, instilling in them the inspiration and determination to act in their communities. Second, participants acquired significant insights into cutting-edge technology, realising how crucial their role is in crafting a sustainable future. Students had the unique opportunity to apply their knowledge through hands-on activities connected to sustainable technology, bridging the gap between theory, experiential and applied learning. Furthermore, the program provided a platform for mentorship by global experts, allowing students to integrate their original ideas into real solutions, promoting a culture of innovation and creativity.

Dr Naresh Tyagi, Chief Sustainability Officer, Aditya Birla Fashion and Retail Ltd and Co-Chair of the Green Jobs and Sustainability Accelerator Program, highlighted the program's significance stating,

"The Sustainability Accelerator Program 2023 embodies our commitment to nurturing a sustainability mindset in India's youth & students and empowering them to drive our collective green mission forward. Through this program, we aim to create a new generation of sustainability champions who will lead the way in shaping a greener future for all. This program provided school students with hands-on experience, moulding them into responsible, people-centred corporate leaders who prioritise the well-being of our society and its inhabitants." Manav Subodh, Founder, 1M 1B, was proud to bring this collaboration to life, saying "This is an industry first partnership, where a large corporation, ABFRL and a social venture, 1M 1B is coming together placing sustainability at the core of whatever you do. The internship aims to encourage students to be valuable contributors to climate change and introduce them to how technology can play a role in shaping a greener planet. The students will also be mentored by leaders of ABFRL."

# PVR INOX holds a special screening of the animated movie 'Wish' for children of Make-A-Wish Foundation

*Held on 24th November 2023 the special screening was attended by a total of 50 kids along with their guardians*


PVR INOX Ltd, India's leading multiplex chain, partnered with Make-A-Wish Foundation to organise a special screening of Disney's upcoming film 'Wish' for children diagnosed with critical illnesses. The film was showcased today at PVR ICON, Phoenix Palladium, Lower Parel and was attended by 50 children accompanied by their guardians and the team of Make-A-Wish Foundation.

Through this initiative, PVR INOX, in collaboration with Make-A-Wish Foundation, helped to fulfil the cherished wishes of 50 children between ages 3 and 18 of watching a film in a cinema. Disney's film 'Wish' will take viewers through the journey of a young girl who wishes upon a star, leading to the arrival of a trouble-making star from the sky to join her. The film resonates with the Foundation's core message that every wish has the potential to come true.

Gautam Dutta, the Co-CEO of PVR INOX Ltd, shared his thoughts, "The movie 'WISH' encapsulates the innocence and wholesomeness of childhood. It was an absolute honour for us to collaborate with Make-A-Wish Foundation and contribute to their mission of spreading joy across the globe by making wishes come true for medically-challenged children. The children had a delightful time at the event, and we at PVR INOX will continue to commit to such noble activations in the coming future."

Paulomi Dhawan, Managing Trustee & Board Chairperson of Make-A-Wish Foundation, mentioned, "For more than 40 years, Make-A-Wish has granted wishes for children with critical illnesses worldwide. Bringing a smile on the face of a critically ill child when their wish is granted is so fulfilling. A small wish delivers a profound impact. It offers Hope, Strength and Joy to the child and the family to fight the many challenges they face. We are grateful to PVR INOX who so graciously held this special screening of Disney's movie 'WISH' to enthral these young ones, giving their "wishes to go" the power to dream and recover soon."

In the upcoming film, "Wish," the central character Asha, is portrayed by Oscar winner Ariana DeBose. The film features voiceovers by actors Chris Pine, Alan Tudyk, and Evan Peters, amongst others and is Disney Pixar's 62nd animated feature film.


# Samsung Innovation Campus Upskills 3,000 Less-Privileged Students Across India in AI, IoT, Big Data and Coding & Programming; Prepares Them For FutureTech Jobs to Drive Digital India

Samsung, India's largest consumer electronics brand, has upskilled 3,000 less-privileged students from eight cities across India in future tech domains such as Artificial Intelligence, Internet of Things, Big Data and Coding & Programming, making them job ready and helping them get relevant job placements. The students were under Samsung's flagship programme - Samsung Innovation Campus. With this programme, Samsung is reiterating its commitment to being a strong partner of India and working alongside the Government in its mission to empowering the country's youth and strengthening Digital India. Over the last one year, the Samsung Innovation Campus programme was executed by Electronics Sectors Skills Council of India (ESSCI) through its nationwide network of approved training and education partners. The final batch of 120 students of Samsung Innovation Campus are from Babasaheb Bhimrao Ambedkar University in Lucknow.

These students were felicitated and given certificates at a ceremony held in Lucknow in the presence of Mr. Sanjay Singh, Vice Chancellor, Babasaheb Bhimrao Ambedkar University Dr. Shishir Kumar, Dean, Babasaheb Bhimrao Ambedkar University, Dr. Abhilasha Gaur, COO (officiating CEO) ESSCI, Mr. Hyun Kim, Corporate Vice President, Samsung Southwest Asia and Mr. Shubham Mukherjee, Head CSR, Samsung SWA. Of the total 3,000 students trained under the programme, around a third are from Uttar Pradesh. These students will now appear in job fairs and begin their journey in the real world.

"At Samsung, we believe in the power of the youth and want to contribute in creating a pool of skilled workforce to better India's digital future. Through Samsung Innovation Campus, we want to empower the youth and create opportunities for them in future tech domains, further boosting India's growth story and strengthening our commitment to the country. We are elated to have witnessed such talent and potential in these students who are now ready and skilled to digitally transform the world around us," said Mr. Hyun Kim, Corporate Vice President, Samsung Southwest Asia

"At ESSCI, we are working on establishing an effective and efficient skilling ecosystem for developing and imparting outcome-oriented skills. The Samsung Innovation Campus programme, with courses in Artificial Intelligence, Internet of Things, Big Data and Coding & Programming, is strengthening the skills ecosystem in the country and is an important step to make India the skills capital of the world," said Dr. Abhilasha Gaur, Chief Operating Officer (Officiating CEO), ESSCI.

At the Babasaheb Bhimrao Ambedkar University, we welcome the Samsung Innovation Campus initiative that is imparting employment-oriented future tech skills to our students. These skills are much needed in today's digital world", said Sanjay Singh, Vice Chancellor, Babasaheb Bhimrao Ambedkar University. Samsung India launched

its Samsung Innovation Campus program at eight campuses across the country with the aim of upskilling 3,000 less-privileged youth in future tech domains such as AI, IoT, Big Data, and Coding & Programming and helping them get relevant job placements.

Samsung Innovation Campus aims to upskill youth aged 18-25 years in future technologies and enhance their employability. These are key technology skills for the Fourth Industrial Revolution.

During the programme, participants receive instructor-led classroom training through approved training and education partners of ESSCI across the country. Youth enrolled in the programme undergo classroom training and complete their hands-on capstone project work in their selected technology areas – Artificial Intelligence, Internet of Things, Big Data and Coding & Programming. They are also imparted soft skills training to enhance their employability and facilitate job placements in relevant organizations.

Those opting for the AI course undergo 270 hours of theory training and complete 80 hours of project work while those doing the IoT or the Big Data course undergo 160 hours of training and complete 80 hours of project work. Participants opting for the Coding & Programming course do 80 hours of training and become part of a Hackathon.

With Samsung Innovation Campus, Samsung is expanding its CSR initiatives that focus on education and skilling of youth in India. Apart from Samsung Innovation Campus, Samsung runs another CSR programme in India, Solve for Tomorrow, through which it is empowering the leaders of tomorrow and equipping them with the tools they will need to realize meaningful change. Through the programme, Samsung aims to foster a culture of innovative thinking and problem solving among the nation's youth.

# IIT Guwahati and ISRO Researchers Uncover X-Ray Polarization in Extragalactic Black Hole Source

Researchers from Indian Institute of Technology Guwahati (IIT Guwahati) and U. R. Rao Satellite Centre, Indian Space Research Organisation (ISRO), Bengaluru, for the first time, have detected polarized emissions from a black hole source that exists beyond our Milky Way Galaxy through a technique called X-ray polarimetry.

Large Magellanic Cloud X-3 (LMC X3) is a binary star system consisting of a black hole and a 'normal' star that is much hotter, bigger, and more massive than the Sun. It is located in a satellite galaxy of our Milky Way, nearly 200,000 light-years away from Earth. Since its discovery in 1971, it has been observed by various satellites. However, there has been a gap in understanding the polarization properties of X-rays emitted by highly energetic objects like stellar mass black holes in the universe.

Highlighting the importance of this research, Prof Santabrata Das, Department of Physics, IIT Guwahati, said, "X-ray polarimetry is a unique observational technique to identify where radiation comes from near black holes. LMC X-3 emits X-rays that are 10,000 times more powerful than those from the Sun. When these X-rays interact with the material around black holes, specifically when they scatter, it changes the polarization characteristics, i.e. degree and angle. This helps in understanding how matter is drawn toward black holes in the presence of intense gravitational forces."

Prof. Santabrata Das
IIT Guwahati

Dr. Anuj Nand
URSC,ISRO
Bengaluru

Seshadri Majumder
IIT Guwahati

Ankur Kushwaha
URSC,ISRO
Bengaluru

The researchers studied LMC X-3 using The Imaging X-ray Polarimetry Explorer (IXPE), the first mission of NASA to study the polarization of X-rays from celestial objects. They also made use of the simultaneous broad-band coverage of Neutron Star Interior Composition Explorer (NICER) Mission and Nuclear Spectroscopic Telescope Array (NuSTAR) Mission to constrain the spin of LMC X-3.

Speaking about this novel finding Dr. Anuj Nandi, Scientist, U. R. Rao Satellite Centre (URSC), ISRO, Bangalore, said "Intense gravitational fields can cause the emitted light from black holes to become polarized. Our observations indicate that LMC X-3 likely harbours a black hole with low rotation rate, surrounded by a slim disc structure that gives rise to the polarized emissions. "

The study has been published in the Monthly Notices of the Royal Astronomical Society: Letters and was funded by the Science and Engineering Research Board (SERB), Department of Science and Technology, India. The research team is led by Prof. Santabrata Das from IIT Guwahati and Dr. Anuj Nandi from URSC, Bangalore, and includes their research scholars, Mr. Seshadri Majumder (IIT Guwahati), and Mr. Ankur Kushwaha (URSC).

These findings open a new window to investigate and understand the nature of astrophysical black hole sources.


# Asha School Transforms Lives: Religare Enterprises and AWWA Collaborates to Modernise Asha School in New Delhi

*There is considerable on-ground progress in other cities.*

Religare Enterprises Limited (REL) and Army Wives Welfare Association (AWWA) have announced their long-standing commitment towards the welfare of specially-abled children through modernisation and holistic development of Asha Schools in New Delhi and elsewhere. 32 Asha Schools are run by AWWA across the country to nurture the potential of specially-abled children. Asha Schools are nurturing about 1200 children across various cities in India which includes 500 wards of serving personnel and veterans of the armed forces and 500 children from civil backgrounds. Furthermore, Religare announced that the company will support an additional 5 schools in Agra, Hissar, Mathura, Jalandhar, and Guwahati.

Through a significant collaboration initiated between REL and AWWA in December 2022 and April 2023, a Memorandum of Understanding (MOU) was signed for the upgradation and modernisation of Asha Schools by REL in New Delhi, Pune, Bengaluru, Lucknow, Secunderabad and Udhampur. Significant infrastructural enhancement has been undertaken by REL in less than a year for Asha School, Delhi for giving it a facelift. Considerable on-ground progress

has been achieved in upgrading the schools in other cities as well.

This announcement comes after the successful completion of the first phase of the collaboration that witnessed the modernization of Asha School, Delhi. Replicating the module-based approach implemented at Delhi, REL offers holistic support through various interventions, including the development of the curriculum, infrastructure, and the faculty's capabilities in other schools as well. Religare also intends to support these schools with the medical and nutritional requirements of the students in addition to provisioning transportation facilities, vocational guidance, and placement and internship assistance.

With the objective of making students financially independent, Religare plans for their gradual introduction to corporations by organizing internship and training opportunities. After their training, Religare will also offer employment within Religare Group companies spread over 100 locations in India.

Speaking about the initiative, Archana Pande, President AWWA said, "We are delighted to announce our long-term collaboration for six Asha Schools to begin with, which we are hopeful to expand to other Asha Schools as well. The progress made in this short period is a testament to the noble intentions of both partners. Asha Schools have been a beacon of hope and a sanctuary of learning for specially-abled children. Our commitment is to provide them with the best-in-class facilities and opportunities, enabling them to realize their potential and make their mark in the society." She highlighted the achievements of Asha Schools and the endeavours of AWWA and mentioned that the welfare of specially-abled children has always been the key focus area of the organisation. REL has ably supported this initiative of AWWA and this collaboration will usher in a brighter future for these children.

**The collaboration with the Army Wives Welfare Association (AWWA) that began in December 2022 with Asha School in Delhi also covers schools in Pune, Bengaluru, Lucknow, Secunderabad and Udhampur**

**Religare has been offering holistic support to the School for specially-abled children. It will include the development of curriculum, infrastructure, faculties, and the well-being of students, etc**

**Religare will also offer employment opportunities to students post their internship and training**

**Religare plans to collaborate with all Asha Schools by next year, starting with 5 additional centers**

Speaking about the initiative, Dr Rashmi Saluja, Executive Chairperson, Religare Enterprises Limited said, "We are pleased to be able to support the development of Asha Schools. At Religare, we believe in creating a positive impact on the communities we serve, and we see this initiative as an opportunity to contribute to the Asha schools' endeavour to empower specially-abled children. The schools mentor and nurture children admirably, allowing them to reach their full potential. By supporting the education and well-being of these children, we hope to create a better future for them and our society. We aim to partner with all Asha Schools by next year."

"Through our association, we are also setting an example for our peers in the industry, who can contribute towards building an inclusive society for the children."

The collaboration that began in December 2022 with Asha School Delhi, has been extended to further cover schools in Pune, Bengaluru, Lucknow, Secunderabad and Udhampur. There are plans to expand this partnership to other schools as well.

# AqVerium – the World's 1st Digital Water Bank announces its international foray into the U.S.A. with the signing of a MoU with Montgomery County, Maryland USA

Montgomery County, Maryland, USA signed a memorandum of understanding with AqVerium – the World's 1st Digital Water Bank to provide international soft-landing support for AqVerium to expand their operations in the U.S. The MoU was signed during a reception hosted in honour of a business delegation from Montgomery County and the launch of the US India SME Council, Mumbai Chapter.

Montgomery County Maryland, USA is a top Biotech & Advanced Tech Cluster in the U.S. The county is the #3 Biotech hub and life sciences talent pool in the U.S. and the #4 tech talent pool in the U.S. supporting a wide range of tech-enabled businesses. AqVerium-World's 1st Digital Water Bank is a water tech innovation of AquaKraft Group Ventures. AqVerium is an online platform or system that manages and tracks water rights, allocations, use and efficiency. The robust design is aimed to help governments, water agencies, and stakeholders in the management of water resources.

AqVerium aims to improve the sustainable and equitable use of water resources by making data and transactions more transparent and accessible. It will play a crucial role in addressing water scarcity and ensuring responsible water management incentivising good behaviour with AquaKredits – Water Credits & Water Sustainability Score – a measure of branding sustainability.

Speaking on the occasion March Elrich, County Executive, Montgomery County, MD, USA said "I am very excited to welcome AqVerium to Montgomery County, Maryland. Their focus on leveraging innovative technology to foster sustainability for businesses and residents worldwide is aligned with our goals in the County. I look forward to our partnership."

MoU signing with AqVerium the World's 1st Digital Water Bank to set up in Montgomery, Maryland to promote sustainable water circular economy in the USA.

MoU signing with AqVerium, the World's 1st Digital Water Bank to set up in Montgomery, Maryland to promote sustainable water circular economy in the USA.

The MoU was signed in the presence of Principal Commercial Officer John McCadams, US Consulate Mumbai, dignitaries and delegates from Montgomery County and leadership of the US India SME Council.

"It is a matter of great privilege and honour for us to sign the MoU with Montgomery County marking our foray into International markets. This is a strong testament to the county's commitment to climate action in general and water stewardship in particular. Our main objective is to enable the water circular economy encompassing the comprehensive water lifecycle from harvesting to monetisation.

On behalf of Team AqVerium, I wish to express my sincere gratitude to Hon'ble Marc Elrich for this opportunity and are confident that we will not only address the US markets but build a global water stewardship platform." said Dr. Subramanya Kusnur, Founder of AqVerium.

# Johnson Controls India donates USD 10,000 to Adarsh Charitable Trust to support the upliftment of children with special needs in Kochi

Johnson Controls (NYSE: JCI), the global leader for smart, healthy, and sustainable buildings, announced a donation by its Navy Team of USD 10,000 to Adarsh Charitable Trust, Kochi. The contribution aims to support the rehabilitation of children who are affected by conditions like Down syndrome, Cerebral Palsy and Autism. The announcement was made during an event held at the premises of Adarsh Charitable Trust.

The donation was part of prize money the Navy Team received for Johnson Controls Chairman's Award in FY22, recognizing their contribution helping build the first indigenously built aircraft carrier "INS Vikrant" through installation of their HVAC equipment. The Navy team had won the HVAC design, supply, installation, and commissioning of the system in 2010 and the project was completed successfully in September 2022, with the ship being commissioned into service by Prime Minister Shri Narendra Modi. The donation is a collective contribution by this team to Adarsh Charitable Trust, a foundation with a rich legacy of 25 years that focuses on empowering hundreds of children with disabilities from their birth.

Commenting on this initiative, Cdr K Satish Kumar Menon, Director Navy Systems, Johnson Controls India, said: "It is our privilege to extend our support to the Adarsh Charitable Trust and bring joy to the lives of these young individuals. Our team ethos, 'One Team, Our Time', has always been a driving force to bring about a positive change in the society. The Navy team's aim is to help these children receive required facilities, including medical and therapeutic assistance, academic training, enabling them to lead an independent life."


"We are immensely proud of the Navy Team's initiative to donate USD10,000 to the Charitable Trust. Their generosity exemplifies the spirit of Johnson Controls – a commitment to making a positive impact on society. This noble act not only showcases their technical prowess, as evidenced by their exceptional work on the INS Vikrant, but also their heartfelt dedication to uplift those in need. We stand in wholehearted support of this endeavour," said Arun Awasthy, Vice President & Managing Director, Johnson Controls India.

An estimated 50,000 children below the age of six in Kerala are face conditions like Cerebral Palsy, Autism and Down syndrome. The collective efforts will pave the way for a brighter and more inclusive future, ensuring equal resources and opportunities they rightfully deserve.

## About Johnson Controls:

At Johnson Controls (NYSE:JCI), we transform the environments where people live, work, learn and play. As the global leader in smart, healthy, and sustainable buildings, our mission is to reimagine the performance of buildings to serve people, places and the planet.

Building on a proud history of nearly 140 years of innovation, we deliver the blueprint of the future for industries such as healthcare, schools, data centers, airports, stadiums, manufacturing and beyond through OpenBlue, our comprehensive digital offering.

Today, with a global team of 100,000 experts in more than 150 countries, Johnson Controls offers the world`s largest portfolio of building technology and software as well as service solutions from some of the most trusted names in the industry.

Visit **www.johnsoncontrols.com** for more information.

CSR INDIA UNITED

# FUEL expands future skills training program to Indonesia

*FUEL and YMMI Indonesia join hands with VFS Global, to empower Jakarta youth through Future Skills Training*



FUEL, a non-profit organization based in India, and Yayasan Mitra Mandiri Indonesia (YMMI) will collaborate with VFS Global to launch an innovative Future Skills training program designed to empower 250 aspiring youth in Jakarta.

VFS Global is the world's largest outsourcing and technology services specialist for governments and diplomatic missions.

This initiative reflects a shared commitment to equipping the youth with training in English literacy, digital literacy, and specialized job-related expertise like digital marketing, in addition to enhancing their communication skills.

Kaushik Ghosh, Head - Australasia at VFS Global, expressed his pride in supporting this pivotal initiative, stating, "We firmly believe that investing in the education and skill development of young talent is crucial for their future and the progress of the community, which we belong to. This program demonstrates our commitment towards creating a brighter future for the youth of Indonesia."

The program was inaugurated on 20th November, 2023 in Jakarta in the presence of Kaushik Ghosh, Head - Australasia at VFS Global, Ria Vaidya, Senior General Manager - Corporate Communications & CSR at VFS Global, Ketan Deshpande, CEO of FUEL, Santosh Huralikoppi, Chief Mentor of FUEL Team, Gino Latief, Director Executive of Yayasan Mitra Mandiri Indonesia

The program will be facilitated by FUEL, and the curriculum will be delivered by YMMI Indonesia, an organization committed to nurturing the potential of Indonesian youth.

Ketan Deshpande, CEO at FUEL added, "We are excited to collaborate with VFS Global and YMMI Indonesia in this endeavour. Our mission is to empower young individuals with the skills they need

to succeed, and this partnership allows us to expand our reach and impact.

Through this program, 250 young minds will be equipped with the tools necessary to unlock their full potential and pursue successful careers."

Gino Latief, Director Executive of Yayasan Mitra Mandiri Indonesia said, "Thank you for the support from VFS Global and FUEL for Indonesian children, the next generation of our nation that will walk together for a better future ahead. The program has been fully designed for direct impact, where after 100 days in training, the students will have a golden ticket opportunity for employment through this program. We are grateful for the long commitment of VFS Global for this program of youth development."

# Revfin and Shoffr Set to Redefine Urban Mobility and Financial Inclusion

Revfin, a leading force in improving financial inclusion in India, and Shoffr, a premium EV taxi service based out of Bangalore, have announced a joint milestone after Shoffr's successful completion of its first year in operation. Since its launch in November 2022, Shoffr has established itself as the gold standard of rides with its high quality service, friendly drivers, and dedication to guests. In partnership with Revfin, which initially provided Shoffr with four BYD e6 electric vehicles, Shoffr's fleet has now been bootstrapped to an impressive 40+ electric vehicles, all BYD e6. This growth reflects the dedication and vision shared between Revfin and Shoffr to transform urban mobility.


Shoffr's fleet has not only grown in size but also excelled in performance metrics, with asset utilisation levels remaining consistently above 75%. The Shoffr fleet has now covered more than a million clean kilometers across thousands of rides, underscoring the commitment to providing efficient and sustainable transport solutions in Bangalore.

Moreover, both Revfin and Shoffr recognize the impact on drivers, promoting a friendlier work environment, better pay, and improved quality of life, thus contributing to societal betterment. Environmental impact has been a key focus for the partnership. Together, they aim to scale operations not just in Bangalore but beyond, with a vision to deploy a fleet of electric vehicles that will significantly reduce carbon emissions.

## Vision and Collaborative Efforts:

The joint vision of Revfin and Shoffr aims to revolutionize the transportation sector by deploying a fleet that not only enhances customer experience but also contributes to environmental sustainability. Their shared commitment involves enhancing urban mobility while reducing the carbon footprint, marking a crucial step towards a more sustainable future.

Sameer Aggarwal, CEO, and Founder at Revfin says, "Through our partnership with Shoffr, we're not just redefining transportation; we're transforming the landscape of urban mobility. Our joint efforts mark a significant stride towards a future where financial inclusion and sustainable transportation go hand in hand."

Vikas Bardia, Founder & CEO of Shoffr says, "Shoffr has come a long way in just one-year to establish itself as the gold standard of rides and become a favourite of commuters in Bangalore. RevFin has been an early believer in Shoffr, and we're delighted to strengthen our partnership as we grow."

Both Revfin and Shoffr are excited about the future. The joint plans include expanding their presence in Bangalore and other metro cities, focusing on enhancing the quality of service, bolstering environmental sustainability, and creating a more inclusive urban transport system.

# GUVI partners with Galgotias University to unlock Corporate Careers for 4,000 Students with 1,000+ Skill Certifications


Mr Arun Prakash M., Founder & CEO, GUVI, addressing MoU signing event with Galgotias University at IIT Madras Research Park


Mr Arun Prakash M (2nd R), Founder & CEO, GUVI & Dr Dhruv Galgotia (C), CEO, Galgotias University, exchanging MoU at IIT Madras Research Park

**300+ Self-paced tech courses will be delivered in multiple regional languages, including Hindi, Tamil, Kannada, and Marathi, besides foreign languages like Spanish and Arabic**

IIT Madras and IIM Ahmedabad-incubated Company GUVI and Galgotias University, Greater Noida, have joined hands to bring the 'College2Corporate' (C2C) Program to more than 4,000 students of Galgotias University.

Galgotias University is one of the highly graded universities of the UGC, Ministry of Education, Government of India. This strategic partnership aims to upskill college students with more than 1,000 Industry-recognized skill certifications and bridge the gap between academia and industry by providing a comprehensive set of practice tools, courses, and mentorship to nurture their technical skills.

GUVI's C2C Program is designed to empower college students with career-boosting tech skills. It features an extensive range of offerings, such as over 100 tech webinars, 100 workshops, and 300+ self-paced tech courses, delivered in multiple regional languages, including Hindi, Tamil, Kannada, Marathi, Gujarati, Malayalam, Telugu, Odia, Bengali and English besides foreign languages like Spanish, Arabic. This diverse approach caters to various learning preferences, ensuring comfortable upskilling for all.

The C2C Program not only allows students to explore a wide array of career paths in both tech and non-tech domains but also helps them identify their strengths, understand industry trends, and master high-demand technical skills. This empowers students to make informed decisions about their future careers.

An orientation event was conducted for more than 4,000 students at the Galgotias University today (2nd November 2023). The event featured a motivational speech from Ms Anitha N, COO of GUVI Geek Network Pvt Ltd and an inspiring interaction with the students by Mr Achyut Chandra, Senior Manager and Global lead open innovation, O/o CTO from HCL Tech. Further, students participated in on-the-spot quiz competitions related to their interested career domains.

Elaborating on this collaboration, Arun Prakash M., Founder and CEO, GUVI, said, "Choosing a career path upon graduation is a pivotal moment for students, and the fear of making the wrong choice can be overwhelming. The College2Corporate(C2C) Program is designed to guide students through the process of career exploration, preparation, and skill development, to achieve their future

career in the corporate industry." Looking forward to this collaboration, Dr. Dhruv Galgotia, CEO of Galgotias University said, "With around 32,000 students in our university, we take pride in providing the best education through expert faculty. We are delighted to partner with GUVI to offer our students this incredible opportunity for skill development and career readiness. Our collaboration with GUVI & its EdTech services will propel the learners who possess the passion to give their best, & nothing can stop them from succeeding in their careers with a significant advantage in a highly competitive job market."

The C2C program offers the best guidance and support with GUVI's EdTech resources such as 300+ self-paced courses instructed in regional languages, coding practice platforms like CodeKata, WebKata, IDE and weekly sessions with industry experts from top IT Product companies. Further information about the C2C Program can be obtained by writing to Reachc2c@guvi.in (or) contacting +91 93611 41663.

Further, C2C enables students to streamline their job placement preparations by covering aptitude, logical reasoning, and verbal ability alongside tech interview preparation with mock interviews through our platform https://www.placementpreparation.io/.

Students will get to explore various fields such as Full-stack Development, Data Science, Data Engineering, Automation Testing, AI, Machine learning & so on, to identify where their skills and interests align and head towards their best-suitable careers.

Balamurugan Palaniswamy, Co-Founder of GUVI, said, "Our College2Corporate (C2C) program is a transformational bridge from academics to corporate success. By partnering with Galgotias University, we are unleashing a wave of opportunities for over 4,000 students in the upcoming years, guiding them towards promising careers. The fusion of quality education and real-world skills is a winning formula for our learners and the industries are waiting to embrace them."

# Dalmia Bharat Celebrates Empowerment of 18000 women on International Day of Rural Women

Dalmia Bharat Group, India's leading conglomerate with businesses in cement and sugar, announces the successful empowerment of 18000 women on International Day of Rural Women. Through the establishment of Self-Help Groups (SHGs), these women are provided essential skill training and access to vital resources for sustainable livelihood development. In collaboration with various organisations like NRLM, NABARD. Dalmia Bharat organizes various training initiatives like micro-enterprise development, handicraft production and others in both farming and non-farming sectors. All these activities are conducted in communities settled around their regions of operation across 12 states in India. These initiatives aim to upskill rural women to empower them, diversify their income sources and provide access to formal credit systems. Through access to credit linkages, many women have built successful micro-enterprises, shops and businesses. They have experienced a boost in their incomes, ranging from Rs 4000 to Rs.10000 monthly, which has significantly improved their individual well-being and the ability to support their families.

One of their notable programs includes upskilling women artisans from different regions in India. In a recent success story, eco–friendly handicraft products made of natural materials like 'Moonj' and 'Sabai' (types of wild grass) found a proud place of display as part of gift hampers for international delegates at the recently concluded G20 Summit. Dalmia Bharat also focuses on sustainable livelihood development through goat rearing, poultry farming, mushroom cultivation, tailoring and other initiatives. SHG women also undergo training in Entrepreneurship Development focusing on home-based products like spices, pickles etc.

Commenting on the company's initiatives on International Day of Rural Women, Ashok K. Gupta, CEO, Dalmia Bharat Foundation said, "Our goal at Dalmia Bharat is to aid marginalized women at grassroots levels, enabling them to secure additional income while balancing their household duties through these comprehensive programs. Our steadfast commitment to empowering rural women aligns with our dedication to achieving the UN Global Sustainable Goals of eradicating poverty, eliminating hunger and advancing gender equality. We firmly believe that by investing in the potential of rural women, we are building an inclusive and sustainable future for India. Our efforts resonate with the essence of Atmanirbhar Bharat, promoting self-reliance and progress throughout the nation."

International Day of Rural Women, observed annually on 15th October, celebrates the vital role of rural women in agriculture, food security, and rural development. It highlights the need to empower them, address inequalities, and aligns with global goals for gender equality and sustainable development.


# Marut Drones Launches Seedcopter 2.0

## India's first reforestation drone services for Corporates and CSR

Marut Drones, India's premier Drone manufacturing Company, has introduced its pioneering product, the Seedcopter 2.0 - India's first reforestation drone.

Marut Drones is delighted to announce the availability of Seedcopter services to corporate entities, enabling them to actively engage in CSR activities and reforestation efforts. Marut aspires to bring together corporate entities and their dedicated CSR teams to take the services of Seedcopters in the reforestation journey, an activity that would align with the UN Sustainable Development Goals (SDG 13, 15, 17 & 9) and actively participate in the management of their carbon footprint while making a lasting and transformative impact on the environment.

Deforestation remains a pressing global concern, with statistics revealing the loss of 1.3 million sq km. of forest cover between 1990 and 2016, resulting in the disappearance of a staggering 15 billion trees annually. In response to this environmental crisis, Marut Drones has been harnessing the power of Seedcopter

2.0 since 2021, which stands as a testament to how technology, combined with community engagement, can drive positive change, and mitigate the dire consequences of deforestation. Marut Drones has successfully utilized the Seedcopter for its ongoing mission 'Hara Bahara campaign' to plant One Billion Trees by 2030. The notable achievement of planting more than one crore trees across 9 states like Telangana, Arunachal Pradesh, Rajasthan, Uttarakhand, Tamil Nadu, Assam in 2022 reflects the undeniable success of Seedcopter. Marut is on a mission to restore 900 forests through 'Hara-Bahara' campaign and is already well underway.

Renowned actor and environmental advocate Rana Daggubati, joined forces with Marut Drones in 2021 to increase forest cover in India through rapid afforestation, using Seedcopter. On the launch of Seedcopter 2.0, he said, "At the heart of sustainable change lies community collaboration and empowerment. Marut Drones has developed an innovative and scalable solution for reforestation and revegetation that is faster and cheaper than traditional manual planting practices. By actively involving rural women to procure mass seedlings, Marut Drones is sowing the seeds of a greener future by making it a community exercise."

Speaking on the launch Prem Kumar Vislawath, CEO of Marut Drones, expressed his enthusiasm for making Seedcopter 2.0 available for corporate use with a CSR perspective, stating, "With Seedcopter, we're not just planting trees; we're sowing hopes of replanting a forest, one drone at a time. By making Seedcopter 2.0 available as a service for corporate entities, we aim to extend the reach of drone technology, inviting more stakeholders to contribute to India's green cover. As stewards of this planet, we have a duty to revive the forests we've lost."


At the core of Seedcopter's approach lies the fusion of community science and cutting-edge technology. So far, Marut has empowered 15000 women across 200 communities, Marut's mission is to empower women and communities in 1400 districts to act and contribute towards reforestation and has been actively engaging local communities to play a vital role in preparing the seedballs, contributing not only to ecological well-being but also uplifting the socio-economic conditions of communities involved. These drones are meticulously designed to disperse seed balls in challenging terrains, including valleys and foothills, providing access to even the most remote areas. The drones significantly reduce the time and labor required for afforestation, offering an efficient and cost-effective solution. Notable environmentalists like Jadav Payeng from Assam, popularly known as the Forest Man of India, and Daripalli Ramaiah from Telangana are key ambassadors for 'Hara Bahara' campaign.

**The drones significantly reduce the time and labor required for afforestation, offering an efficient and cost-effective solution.**

Seedcopter embarks on their mission with a comprehensive aerial survey and mapping of target areas, providing invaluable insights into topography, soil conditions, and vegetation, enabling informed decisions during the seeding process. Seedcopter releases them with precision, ensuring an even distribution across the target terrain, resulting in a higher germination rate and increased chances of tree growth. Post-planting monitoring with data hubs established to track the progress of the planted seeds is a crucial aspect of Marut Drones' efforts. This data-driven approach helps assess the success of afforestation efforts and fine-tunes strategies for future projects.

# WARMING OF 2°C WOULD TRIGGER CATASTROPHIC LOSS OF WORLD'S ICE

**Global warming of 2°C would see "extensive, long-term [and] essentially irreversible" losses from the Earth's ice sheets and glaciers, warns a new report.**

**Aruna Chandrasekhar, Orla Dwyer, Robert McSweeney and Ayesha Tandon of Carbon Brief offer the analysis.**

**The Earth's ice sheets on Greenland and Antarctica together hold enough ice to raise global sea levels by 65 metres. The risks of significant amounts of this ice being lost irreversibly on human timescales "increase as temperature and rates of warming rise".** *Image: Michael Sale, CC BY-SA 3.0, via Flickr.*

It would also lead to polar oceans that are "ice-free" in summer and suffering "essentially permanent corrosive ocean acidification", the report says.

The 2023 "state of the cryosphere" report from the International Cryosphere Climate Initiative (ICCI) lays out the impacts on Earth's frozen land and seas from sustained warming at 2°C and the "catastrophic global damage" that would result.

These impacts would include "potentially rapid, irreversible sea level rise from the Earth's ice sheets", the report says, with a "compelling number of new studies" all pointing to thresholds of sustained ice loss for both Greenland and parts of Antarctica at well-below 2°C. This would commit the world to "between 12 and 20 metres" of sea level rise "if 2°C becomes the new constant".

Holding global warming of 2°C would also not be enough to "prevent extensive permafrost thaw", the authors say, bringing additional warming from the resulting CO2 and methane emissions. A 2°C world would also see "widespread negative impacts on key fisheries and species" in polar and near-polar oceans.

First published in 2021, the focus of this year's annual review on how 2°C of warming is "too high" shows that the aspirational limit of 1.5°C in the Paris Agreement "is not merely preferable to 2°C", but "the only option", the report says.

The ICCI's Dr James Kirkham, chief science advisor at the Ambition on Melting Ice high-level group, tells Carbon Brief that the conclusion that 2°C is too high for the cryosphere "won't come as a surprise at all" to most scientists.

With COP28 in Dubai coming later this month, Kirkham says it is time to make "crystal clear" that "2°C must now be seen as an unacceptable outcome for the world because of the impacts from the cryosphere".

In this Q&A, Carbon Brief unpacks the report's findings for the world's ice sheets, mountain glaciers, permafrost, sea ice and polar oceans.

## HOW CAN 'VERY LOW' EMISSIONS SLOW IMPACTS ON THE CRYOSPHERE?

Past emissions of CO2 and other greenhouse gases (GHGs) have "pushed the planet into a risk zone", the report warns, with very visible impacts on the cryosphere:

"Today's 1.2°C above pre-industrial already has caused massive drops in Arctic and Antarctic sea ice; loss of glacier ice in all regions across the planet; accelerating loss from both the Greenland and Antarctic ice sheets; extensive permafrost thaw; and rising polar ocean acidification."

The implications of these changes stretch beyond the Earth's poles and mountain regions, the authors note, from accelerating sea level rise and disturbed ocean currents to declining water resources and greater carbon emissions.

Nearly all of these changes "cannot be reversed on human timescales", the authors warn, and they will continue to grow with each additional 10th of a degree of temperature rise.

Kirkham likens the way the cryosphere responds to warming to a "bowling ball once thrown". He tells Carbon Brief:

"The changes will continue to roll on long after its initial climatic push because the system has momentum.

"[This means] that many of the long-term challenges associated with the cryosphere are on the cusp of being locked in by decisions made by policymakers in the next few years, and the awareness in the policy world of this 'lock in' appears lost right now."

While the aim of restricting global warming to "well-below" 2°C is set out in the Paris Agreement, the report says the "physical reality" of the cryosphere's response to warming means these changes "would become devastating" well before 2°C is reached.

However, warming of 2°C is not a "predetermined outcome", the authors say, arguing that "only a strong, emergency scale course-correction towards 1.5°C…can avert higher temperatures, to slow and eventually halt these cryosphere impacts within adaptable levels".

A "very low" future emissions pathway that would keep warming within, or very close to, 1.5°C – the more stringent part of the Paris goal – remains "physically, technologically and economically feasible", the report says. This is the "SSP1-1.9" pathway from the set of Shared Socioeconomic Pathways (SSPs) used

| Emissions pathway | Pathway name | Median global warming in 2100 | CO2 levels in 2100 (parts per million) |
|---|---|---|---|
| Very low | SSP1-1.9 | 1.4C (after brief 1.5C overshoot) | 440 ppm |
| Low | SSP1-2.6 | 1.8C (and declining) | 450 ppm |
| Intermediate | SSP2-4.5 | 2.7C (and rising) | 650 ppm |
| High | SSP3-7.0 | 3.6C (and rising) | 800 ppm |
| Very high | SSP5-8.5 | 4.4C (and rising) | 1,000+ ppm |

**IPCC AR6 emissions pathways.** *Credit: ICCI (2023)*

in the sixth assessment report (AR6) of the Intergovernmental Panel on Climate Change (IPCC). Under this pathway (see table below), fossil fuel emissions decline 40% by 2030 and global warming peaks at 1.6C before declining to around 1.4°C by the end of the century.

Under very low emissions, the Earth's cryosphere would "generally [begin] to stabilise in 2040-80", the report says:

"Slow CO2 and methane emissions from permafrost continue for one-two centuries, then cease. Snowpack stabilises, though at lower levels than today. Steep glacier loss continues for several decades, but slows by 2100; some glaciers still will be lost, but others begin to show regrowth. Arctic sea ice stabilises slightly above complete summer loss. Year-round corrosive waters for shelled life are limited to scattered polar and near-polar regions for several thousand years."

In addition, while "ice sheet loss and sea level rise will continue for several hundred to thousands of years due to ocean warming", the authors say, it will "likely not exceed three metres globally and occur over centuries". All other emissions pathways, including "low" emissions where warming peaks at 1.8°C, would "result in far greater committed global loss and damage from [the] cryosphere, continuing over several centuries", the report warns.

## IS THE 'TRUE GUARDRAIL' FOR PREVENTING DANGEROUS SEA LEVEL RISE ACTUALLY 1°C?

The Earth's ice sheets on Greenland and Antarctica together hold enough ice to raise global sea levels by 65 metres. The risks of significant amounts of this ice being lost irreversibly on human timescales "increase as temperature and rates of warming rise", the authors say.

When the ice sheets are in equilibrium, melting ice and the breaking off of icebergs are balanced by mass gain through snowfall. However, "observations now confirm that this equilibrium has been lost" on Greenland, West Antarctica, the Antarctic Peninsula and potentially for portions of East Antarctica, the report says.

This is illustrated in the maps below, which show the gain (blue) and loss (red) in ice on Greenland (left) and Antarctica (right) between 2003 and 2019.

Today, the loss of ice from Greenland is "three times what it was 20 years ago", the report notes, while Antarctica's contribution to sea level rise is "six times greater than it was 30 years ago".

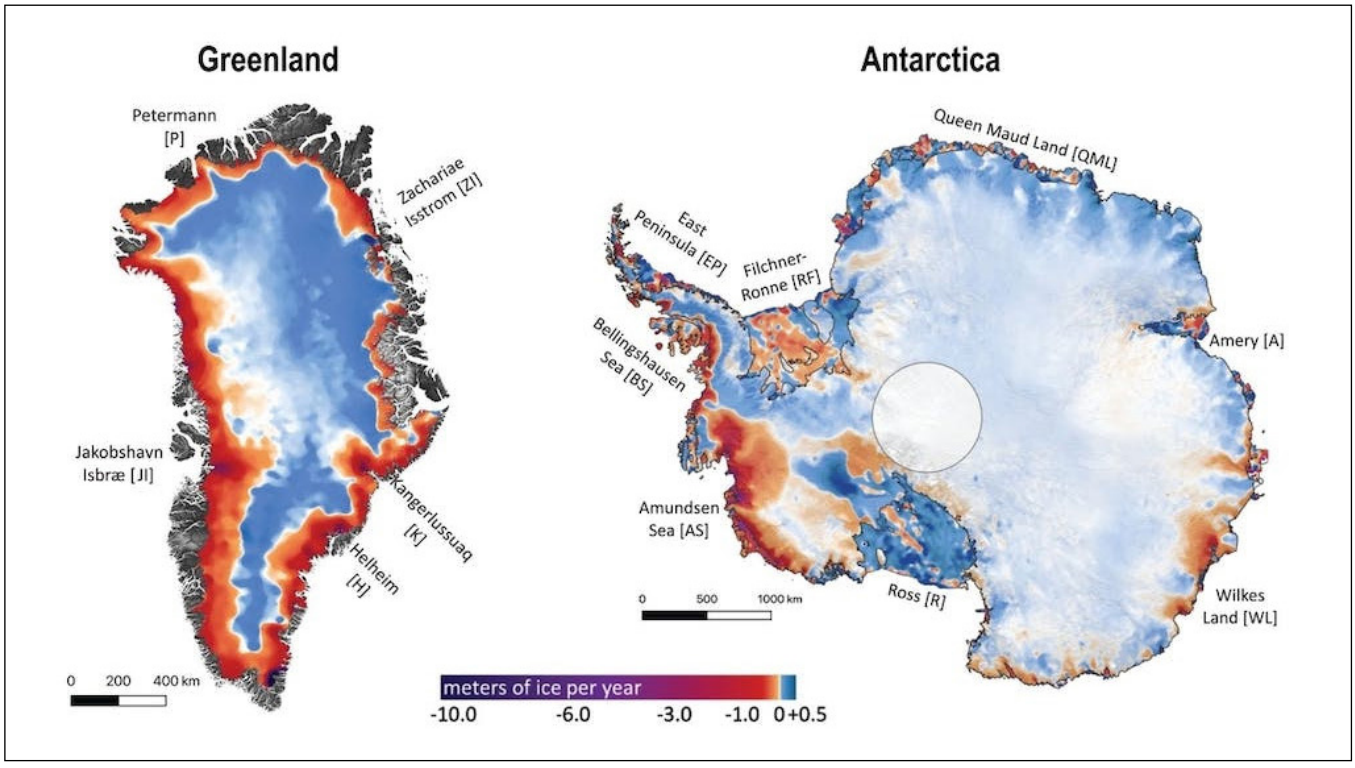
The report paints a bleak picture for the future of both ice sheets. It notes that a "compelling number of new studies" all point to thresholds where irreversible melt becomes inevitable for both Greenland and parts of Antarctica at well below 2°C of warming. This means that were 2°C of warming to become "the new constant Earth temperature", the planet would be committed to between 12 and 20 metres of sea level rise.

For example, evidence from proxy data suggests that, in Earth's distant past, such thresholds have occurred at around 1°C for West Antarctica and the Antarctic Peninsula and between 1.5°C and 2°C for Greenland, the report says. (These contain enough ice to raise sea levels by around five and seven metres, respectively.) It adds:

"It should be noted that changes around past thresholds were driven by slow increases in atmospheric greenhouse gases, but were paced by slow changes in Earth's orbit – unlike today's rapid, human-caused rates of change."

As a result, "many ice sheet scientists now believe that by 2°C, nearly all of Greenland, much of West Antarctica, and even vulnerable portions of East Antarctica will be triggered to very long-term, inexorable sea level rise".

This occurs because a warmer ocean "will hold heat longer than the atmosphere", in addition to "a number of self-reinforcing feedback mechanisms, so that it takes much longer for ice sheets to regrow (tens of thousands of years) than to lose their ice". This means that "once ice sheet melt accelerates due to higher temperatures, it cannot be stopped




**Mass change for Greenland (left) and Antarctica (right) over 2003-19 in metres of ice equivalent per year. The shading indicates gain (blue) and loss (red/purple) of ice.** *Source: International Cryosphere Climate Initiative (2023) / Smith et al. (2020)*

or reversed for many thousands of years" – even if temperatures stabilise or even decrease should the world reduce carbon emissions to net-zero, the authors warn.

Lowering sea level rise from newly reached highs would thus "not occur until temperatures go well below pre-industrial, initiating a slow ice sheet regrowth", the report says:

"Overshooting the Paris Agreement [goal] would therefore cause essentially permanent loss and damage to the Earth's ice sheets, with widespread impacts that are not reversible on human timescales."

The report includes the chart below from a 2023 study, which highlights the long-term consequences of global warming. It shows projected global temperature change (top) and the implications for sea level rise (bottom) out to 2150 under four different SSPs. Under "intermediate" emissions (SSP2-4.5, pink line), which most closely matches the path that the world is on today, sea levels continue to rise. Only "very low" emissions (SSP1-1.9, blue line) would slow and stabilise sea level rise, the report says, "preserving many coastal communities and giving others time to adapt".

In the face of this evidence, "for a growing number of ice sheet experts", the true "guardrail" to prevent dangerous levels and rates of sea level rise is "not 2°C or even 1.5°C, but 1°C above pre-industrial", the report concludes.

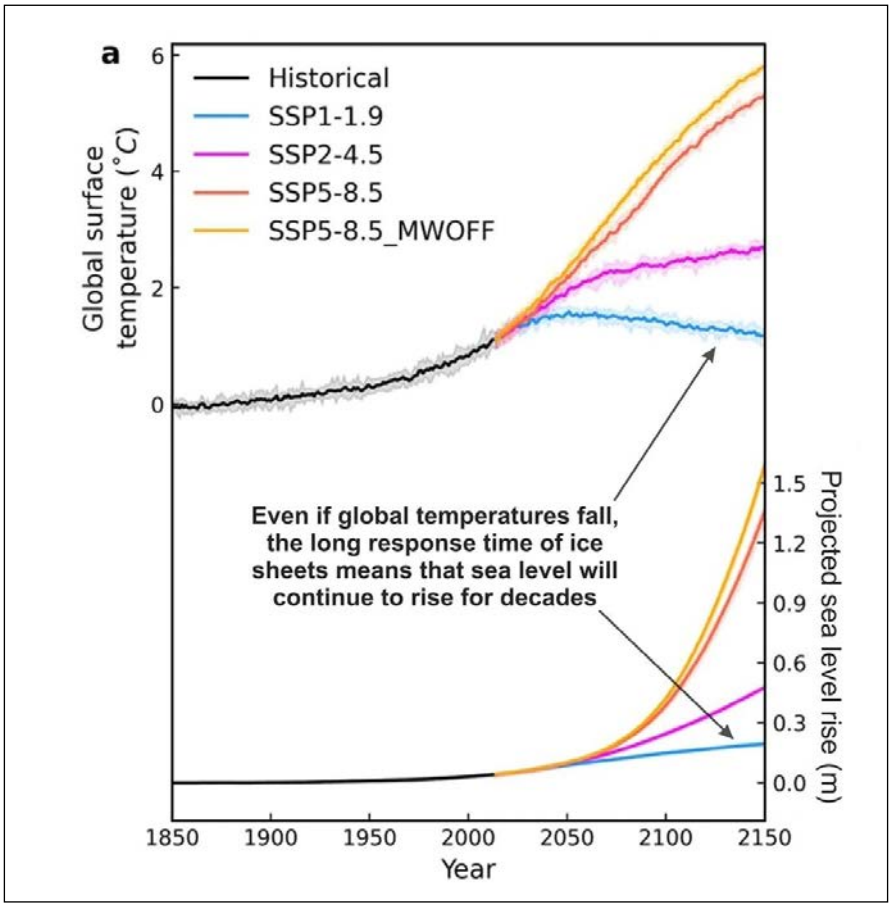
Staying as close as possible to the 1.5°C limit will "allow us to return more quickly to the 1°C level", the authors say, "drastically slowing global impacts from ice sheet loss and especially West Antarctic ice sheet collapse".

This would "reduce the risk of locking in significant amounts of long-term, irreversible sea level rise", the report says. It would also "provide low-lying nations and communities more time to adapt through sustainable development, although some level of managed retreat from coastlines in the long-term is tragically inevitable". For world leaders, not committing to reducing emissions in line with the 1.5°C limit is "de facto making a decision to erase many coastlines, displacing hundreds of millions of people – perhaps much sooner than we think", the authors warn.

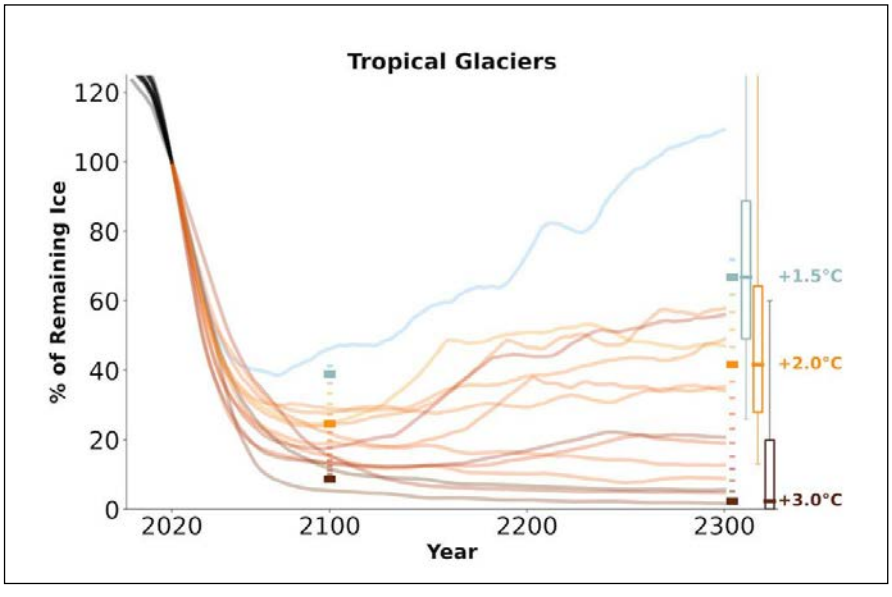
## IS TODAY'S CLIMATE ALREADY TOO WARM TO PRESERVE SOME MOUNTAIN GLACIERS?

Nearly all glaciers in the north Andes, east Africa and Indonesia – along with most mid-latitude glaciers outside the Himalaya and polar regions – could disappear if the 2°C warming threshold is breached, the report warns.

Many of these glaciers are "disappearing too rapidly to be saved" even in the present climate and could be gone by 2050, while those large enough to survive the century have "already passed a point of no return", according to the report's latest projections.




**Projected annual changes (relative to the 1850-1900) in global surface temperatures (top) and global sea levels (bottom) from 2014 to 2150. Different colours represent the historical (black line; period 1850-2014) and SSP1-1.9 (blue), SSP2-4.5 (pink), SSP5-8.5 (red) and SSP5-8.5_MWOFF (orange) simulations. (The "MWOFF" indicates simulations where freshwater coupling from the Antarctic meltwater is decoupled.) Solid lines indicate the ensemble mean and shading the ensemble range.** *Source: International Cryosphere Climate Initiative (2023) / Park et al. (2023)*




**Projections for the percentage of remaining ice in tropical glaciers out to the year 2300 under warming (at 2100) increasing in 10ths of a degree from 1.4°C to 3C.** *Source: International Cryosphere Climate Initiative (2023) / Schuster et al (2023)*

The figure below shows projections of how much ice glaciers in tropical regions would retain, on average, over the next few centuries under different warming levels in 2100. The lines show the impact of warming by 10ths of a degree between 1.4°C and 3C. At 2°C, even the Himalayas are slated to lose around half of today's ice on average, the report estimates. In a very high emissions scenario, 70-80% of the current glacier volume in the Hindu Kush Himalaya could disappear by 2100, the report says, while low emissions would limit glacier loss to 30%.

Without human-induced warming, glaciers in the northern Andes could have served as a reliable source of water for "hundreds of thousands" of years, the report states. Their loss stands to particularly impact villages in northern Peru, Chile and Bolivia and major cities such as La Paz.

This threat to water security is "one of the greatest challenges posed by a melting cryosphere in a 2°C world", Dr Kirkham tells Carbon Brief, "especially in Asia where freshwater sourced from snow and ice provides a lifeline to over 2 billion people". He adds:

"This loss of water will even impact some downstream countries that do not contain any snow and ice at all, such as Bangladesh, especially in years when the timing of the monsoon is unreliable."

Mid-latitude glaciers in the Alps, the Rockies, the southern Andes, Patagonia, Scandinavia and New Zealand are also seeing severe losses.

The report quotes new findings in 2023 showing that the Swiss Alps lost 10% of its glacial ice in just two years over 2022-23, attributed especially to heatwaves, while the Andes witnessed "what may have been the most extreme heatwave on the planet in 2023" in winter. Warmer temperatures at higher altitudes mean what should be snow is now falling as hazardous extreme

rainfall, while other mountain areas face "snow droughts".

The report finds that most glacier-covered regions outside the Himalaya and the poles have already passed a period of "peak water", a point at which water availability will only decline each season.

Recovering lost glaciers could take hundreds to thousands of years and temperatures well below the records being set today, the authors note.

However, a low emissions scenario could limit glacier loss in the Himalaya to 30%, with steeper emission cuts stabilising high mountain Asia's snowpack and glaciers. Some glaciers could eventually even begin to return, the report says.

Rapid cuts consistent with 1.5°C of warming could preserve twice as much ice in Central Asia and the southern Andes, the report estimates. This could benefit vulnerable communities that depend most on glacial water runoff for drinking water and subsistence agriculture while buying them time to adapt to dangerous climate impacts. For instance, one study cited by the report estimates that 15 million people across the world and especially in high mountain Asia and Peru are at risk of glacial lake outburst floods (GLOFs).

A very low emissions pathway could have benefits for cities and economies beyond agriculture, the report notes. The megacities of Delhi, Los Angeles, Marrakech and Kathmandu are all dependent on meltwater, to a degree, while new research shows growing climate-driven threats to hydropower projects in high mountain Asia due to retreating glaciers, thawing permafrost, GLOFs, avalanches and landslides.

Dealing with the changing water supply from glaciers and snow "may render many of these investments defunct before some of the projects are completed", warns Kirkham.

Countries including Japan, the US and Switzerland also stand to lose significant revenues from snow-based tourism, while also being exposed to increased risk of wildfires and mudslides linked to the lack of snow cover.

The figure below contrasts the state of Switzerland's Great Aletsch glacier today – the largest glacier in the Alps – with projections under current emissions and very low emissions scenarios in 2060 and 2100. However, if warming were limited to 1.5°C, the annual snowpack could stabilise – even if at a lower average amount than today. It adds:

"This visible snow and ice preservation, and its benefits for freshwater resources, may be one of the earliest and visible signs to humanity that steps towards low emissions have meaningful results."

Dr Miriam Jackson, senior cryosphere specialist at the International Centre for Integrated Mountain Development (ICIMOD) and author on the mountain glaciers chapter of the report, tells Carbon Brief:

"This latest cryosphere report shows, more clearly than ever, that we have a choice. We can continue as we are now and see 80% of glacier loss by the end of this century. Or we can follow a very low emissions pathway, where glaciers and snow cover in high mountain Asia stabilise and eventually begin to return. Millions of people's livelihoods depend on us making the second choice."

## WHAT IMPACT COULD PERMAFROST EMISSIONS HAVE ON THE CARBON BUDGET?

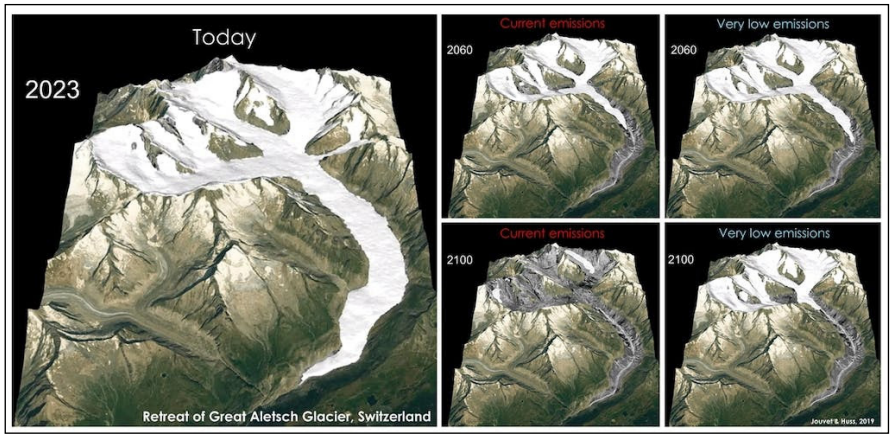
A global temperature rise of 2°C – "and even 1.5°C" – is too high to prevent the widespread thawing of an icy layer spread across more than one-fifth of the northern hemisphere's land, the report says.

Permafrost is a mixture of soil, rock and other materials on or under the Earth's surface that has been frozen for at least two years. It stores a huge amount of ancient, organic carbon.

Research shows that permafrost areas are rapidly warming and, as a result, thawing. This process releases some of the stored carbon into the atmosphere as CO2 and methane, further fuelling global warming. This is known as a "positive feedback". "These emissions are irreversibly set in motion", the report says, and will not slow for one-to-two centuries even if permafrost re-freezes at a later point.

This means that permafrost emissions can further diminish the remaining global "carbon budget" – the amount of CO2 that can still be released while keeping warming below global limits of 1.5 or 2°C.

The report says that carbon budget calculations "must take these indirect human-caused emissions from




**Retreat of the Great Aletsch Glacier in Switzerland by mid-century and the end of the century under current and very low emissions scenarios.** *Credit: International Cryosphere Climate Initiative (2023) / Matthias Huss*

permafrost thaw into account…not just through [to] 2100, but well into the future". It adds:

"Permafrost emissions today and in the future are on the same scale as large industrial countries, but can be minimised if the planet remains at lower temperatures."

The chart below shows the impact of permafrost emissions (pink shaded areas) on the remaining carbon budget (red bars) to stay within 1.5°C and 2°C of warming. Taking permafrost emissions into account significantly reduces the budget estimates, the report says.

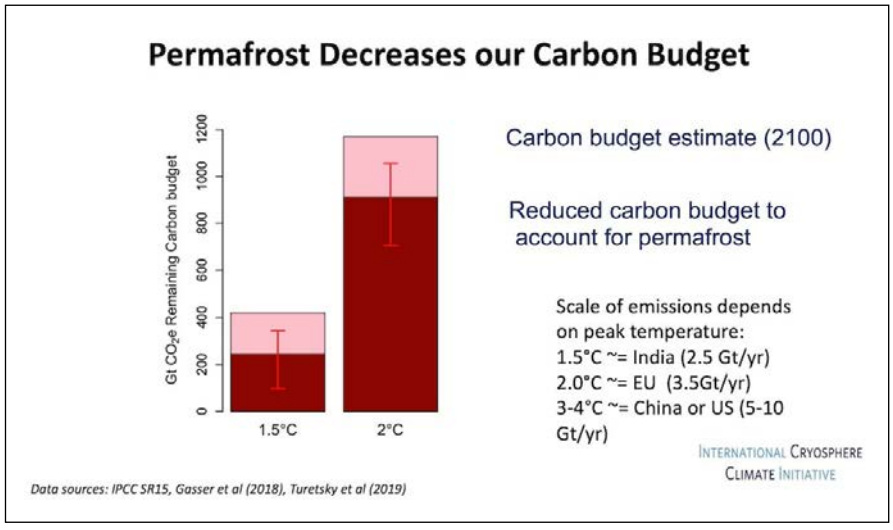
Prof Julie Brigham-Grette, the geosciences graduate programme director at the University of Massachusetts Amherst and author on the report, says she is "very concerned" about permafrost thaw. She tells Carbon Brief:

"The bottom line is that we must reduce fossil fuel use urgently to slow down the demise of glaciers, ice sheets, permafrost, snow cover, sea ice  The climate crisis is real and it's a threat-multiplier to social and political systems around the world."

Currently, at 1.2°C of warming, the annual emissions from permafrost are about the same as Japan – the sixth largest emitting country, based on 2019 figures, the report says. Keeping temperatures below 1.4°C would prevent "most additional new thaw", the report says. But even at 1.5°C, scientists predict a 40% loss of near-surface permafrost areas by 2100.

At a 2°C global temperature rise, permafrost thawing and associated emissions would continue to climb.

At temperatures of 3C or higher by the end of this century, "much of the Arctic, and nearly all mountain" permafrost would reach the "thawed state", where it would produce the equivalent of the combined annual GHG emissions of the US and the EU in 2019, for centuries, the report says. As much as half of recent permafrost thaw occurred during extreme temperature events that were up to 12°C above average, the authors say.




**The bars represent the estimated carbon budget at 1.5°C (left) and 2°C (right) of global warming. Within each bar, the pink area shows the estimated permafrost thaw emissions and the red area shows the remaining carbon budget estimate accounting for the permafrost emissions in GtCO2e.**
*Source: International Cryosphere Climate Initiative (2023) / Based on data from IPCC (2018), Gasser et al (2018) and Turetsky et al (2019).*

But the report notes that current global climate models do not include these "abrupt thaw" processes in their predictions. Scientists are "still working on these phenomena and what it means for emission rates", Brigham-Grette says.

Studies analysed in the report found that, overall, permafrost thaw will have a number of "cascading impacts" with "severe" effects already being felt in the Arctic. The report adds: "Thawing permafrost is causing the loss of Arctic lands, threatening cultural and subsistence resources, and damaging infrastructure, like roads, pipelines and houses, as the ground sinks unevenly beneath them."

The "only means available" to reduce the problem is to "keep as much permafrost as possible in its current frozen state" and limiting global warming to 1.5°C, according to the report.

## WHAT ARE THE PROSPECTS FOR SEA ICE AT THE EARTH'S POLES?

Sea ice at the Earth's poles undergoes an annual cycle of melting and regrowth. In the Arctic, sea ice melts during the warmer summer months towards its September minimum, before regrowing in the colder winter months. However, as the planet warms, sea ice extent at the September minimum is declining.

The area of Arctic sea ice that "survives" the summer has declined by at least 40% since 1979, the report says. Furthermore, it says, the Arctic ocean has "become dominated by a thinner, faster moving covering of seasonal ice, which typically doesn't survive the summer", as opposed to thick, multiyear sea ice.

The authors add:

"Ninety percent of Arctic sea ice loss can be directly attributed to anthropogenic emissions. A threshold has now been crossed in which ice-free conditions in the month of September will occur at times even with very low emissions, and with much slower and later surface freeze-up."

There is widespread public and scientific interest in when the Arctic might see its first "ice-free" summer. The report highlights a recent study that suggests Arctic sea ice is more sensitive to GHG emissions

than was described in the IPCC AR6 report. The figure below shows projections of September Arctic sea ice area for different emissions scenarios. The different coloured lines indicate different models and the horizontal red line shows the threshold for a "practically ice-free" Arctic, which is one million square kilometres of ice. The lowest emission scenario is shown on the left and the highest emission scenario on the right.

The graphic shows that only the SSP1-1.9 scenario results in "sea ice recovery above ice-free conditions". At 2°C warming, the Arctic Ocean will be sea ice-free in summer "almost every year", the report says. The report concludes that the occurrence of the first ice-free Arctic summer is "unpredictable", but "inevitable", adding that it is likely to occur at least once before 2050 even under a "very low" emissions scenario.

Dr Zachary Labe is a postdoctoral research associate at the NOAA Geophysical Fluid Dynamics Laboratory and the Atmospheric and Oceanic Sciences Program at Princeton University, and was not involved in writing the report.

He praises the report, but adds:

"There are countless studies that have evaluated future Arctic sea ice trajectories using models and emergent constraint-like methods, so I advise caution in overly relying on mostly one new study."

At the Earth's other pole, Antarctic sea ice saw record-breaking melt in 2023 setting a summer minimum in February 2023. "The unprecedented reduction in Antarctic sea ice extent since 2016 represents a regime shift to a new state of inevitable decline caused by ocean warming," the authors say.

According to the report, sea ice projections around Antarctica are "considerably less certain" than those in the Arctic. However, the authors say the record-low conditions in 2023 "indicate that its threshold for complete summer sea ice loss might be even lower than for the Arctic".

The authors also highlight recent research that found thousands of emperor penguin chicks died because of the early breakup of Antarctic sea ice in 2022.

"Perhaps more so than for any other part of the cryosphere, 2°C is far too high to prevent extensive sea ice loss at both poles, with severe feedbacks to global weather and climate," the authors conclude.

## WHAT DO RISING TEMPERATURES AND CO2 MEAN FOR THE POLAR OCEANS?

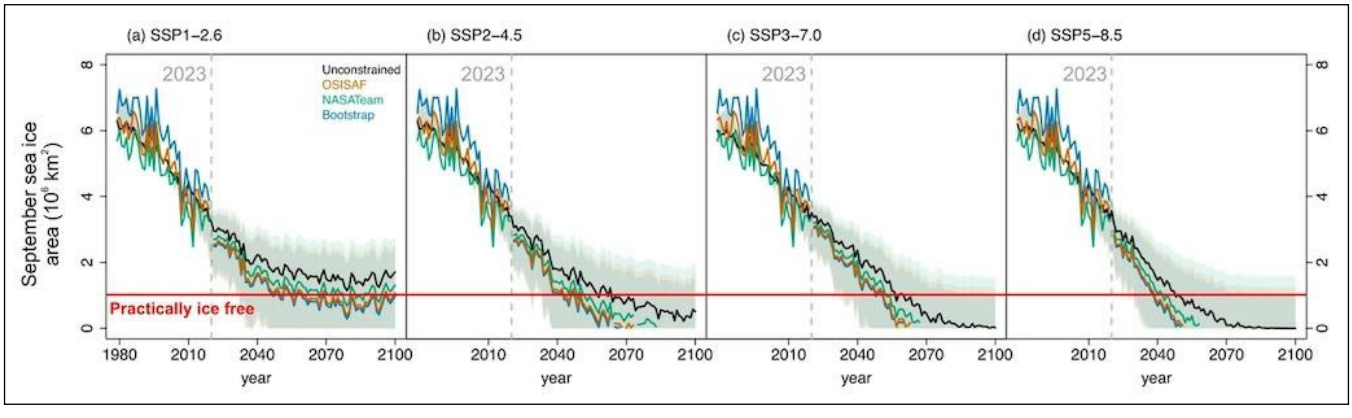
The world's oceans absorb around one-quarter of all human-produced CO2, which reacts with seawater to produce a weak acid in a process called ocean acidification. Rates of ocean acidification are currently faster than they have been at any point in the past 300m years, the report finds. Polar waters in the Arctic and Southern oceans have absorbed up to 60% of the carbon taken up by the world's oceans so far, because colder and fresher waters can hold more carbon, it notes, adding: "The Arctic Ocean appears to be most sensitive: already today, it has large regions of persistent corrosive waters."

In 2008, a group of scientists identified atmospheric CO2 levels of 450 parts per million (ppm) as an important threshold for "serious global ocean acidification", according to the report. This atmospheric CO2 threshold corresponds to around 1.5°C warming, it says.

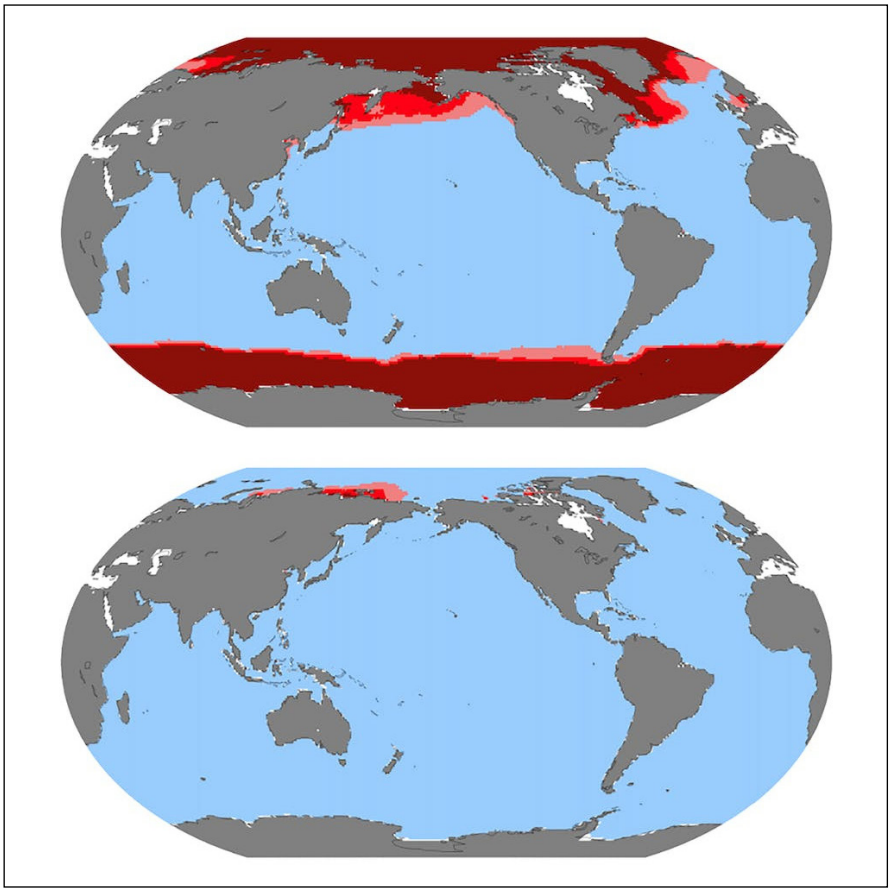
However, it says that current national pledges to reduce emissions under the Paris Agreement – even if completely fulfilled – will result in CO2 levels above 500ppm, resulting in temperatures of around 2.1°C.

The maps below show ocean acidification in scenarios of 3-4C (top) and a 1.5°C (bottom) of warming by 2100. Red shading shows "undersaturated aragonite conditions" – a measure of ocean acidification meaning that shelled organisms have difficulty building or maintaining their shells. Darker red indicates greater levels of ocean acidification.

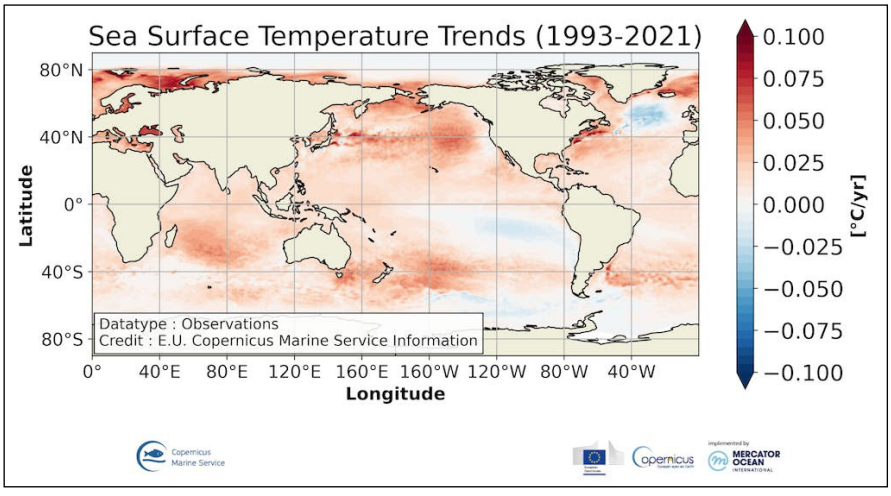
"There is currently no practical way for humans to reverse ocean acidification," the authors warn, add-




**Arctic sea ice projections under four SSPs out to 2100 using different models. The red line indicates a "practically ice-free" Arctic.** *Source: International Cryosphere Climate Initiative (2023) / Kim et al (2023)*



**Ocean acidification in a world that is 3-4C (top) and 1.5°C (bottom) warmer at the end of the century.** *Source: International Cryosphere Climate Initiative (2023) / IPCC (2019).*




**Change in sea surface temperature over 1993-2021, where shading indicates warming (red), cooling (blue) or insufficient data (white).** *Source: International Cryosphere Climate Initiative (2023) / EU Copernicus Marine Service Information*

ing that it will take some 30-70,000 years to bring acidification and its impacts back to pre-industrial levels.

As polar oceans become more acidic, they are also warming at an "unusually rapid" rate, the report warns. The authors note that since 1982, summer surface water temperatures in the Arctic have increased by around 2°C – mainly due to sea-ice loss that allows the sun's rays to hit the water, and an inflow of warmer water from lower latitudes. The map below shows the change in sea surface temperature over 1993-2021. Red indicates warming and blue indicates cooling, while the white at the highest polar latitudes is due to incomplete data for this period. The map shows that near-polar waters such as the Barents Sea have warmed "extensively" over the past two decades. The colder patch in the south of Greenland is an exception which is partly due to cold freshwater being added as the Greenland ice sheet melts, it adds.

The authors add that increased run-off from glaciers, ice sheets and rivers is also affecting global ocean circulation, which could stall ocean currents such as the Atlantic Meridional Overturning Circulation (AMOC).

The report also warns that the dual impacts of ocean acidification and warming could have severe impacts for polar biodiversity, adding that "polar waters contain some of the world's richest fisheries and most diverse marine ecosystems".

Over the past decade, many polar species have experienced "lethal" temperatures which have caused mass-die offs, the report warns.

It also highlights the dangers of ocean acidification, including harm to key ocean-dwelling organisms which could "cascade" up the food chain. "Compound events combining marine heatwaves and extreme acidification have already caused population crashes even at today's 1.2°C," the authors say.

The report concludes:

"2°C will result in year-round, essentially permanent corrosive conditions in extensive regions of Earth's polar and some near-polar seas; with widespread negative impacts on key fisheries and species."

*This story was published with permission from Carbon Brief.*
*(Source: https://www.eco-business.com/news/qa-warming-of-2c-would-trigger-catastrophic-loss-of-worlds-ice-new-report-says/)*

# Pragati Ki Roshni – Illuminating a Million Lives for a Brighter Tomorrow

In the heart of Rajasthan, lies the city of Udaipur, known as the City of Lakes and more fondly as Zinc City. It is home to the aspirations of more than a million people who are on a galvanizing journey to create a strong and self-sustaining future where dreams become a reality and illuminate the path for everyone along the way.

As we move ahead on the journey of Pragati Ki Roshni, just outside of the Zinc City lies one of the world's oldest zinc mines. This is where the dreams of people like Badri Lal Meena come to life. With a curiosity to explore the field of mining which has been a prevalent source of livelihood for many, Badri Lal got the chance to explore this field at the Mining Academy and uplift his dream of operating & understanding the mining landscape. From a worker to a jumbo machine operator, Badri Lal's path led him on a journey of progress and transformation. It is not just him but the dreams of hundreds like him that are fulfilled at the birthplace of zinc mining through the initiative of skill development in various fields of mining, skilling, and development.

Going north from the world's oldest zinc mine, towards the district of Rajsamand, Rekha Mali's dream of pursuing future studies had come to a halt post her marriage. But with the wings of the Sakhi Self-Help Group, she had a chance to rekindle her love for education and become a more confident and courageous version of herself. With the proper guidance and assistance Rekha made sure that students who cannot afford it have access to quality education and counselling, making her lifelong dream of learning a legacy for everyone to follow. Similar to her, more than 27,000 women have been empowered on the path of entrepreneurship, gender rights training and self-awareness.

Towards the east of Rajsamand lies the walled city of Chittorgarh, which is home to the world's second largest single location zinc-lead integrated smelter also to the aspirations of engineers like Prerna Jaiswal, a local of chanderiya. Prerna always aspired to become a civil engineer and contribute to the overall infrastructure development of the country and with the support of the Unchi Udaan program, Prerna achieved her dream of studying Civil Engineering at CTAE Udaipur. Her commitment to excellence and the comprehensive preparation provided by the program made her a shining example of how perseverance can turn aspirations into reality. Like Prerna, more than 260 students are now innovating and cultivating their dreams at top engineering colleges across the country.

Moving north towards the textile hub of Bhilwara lies the world's largest underground zinc mining operation. In this district, where textiles and bricks are the main trade tools, water becomes a scarce resource. Many families' wells dry up even before the crops go for harvesting. Haroon Bano, whose well had dried up and hadn't seen any water in the same since the past decades or so, soon felt a gush of water feeding up her well. This was powered by the groundwater recharge structures installed cross the district. These structures made her dry well filled with water and her fields evergreen. The gushing water in the fields of Haroon Bano is just one example of how more than 300 groundwater recharge structures across 83 ponds are helping to revolutionize water access for people.

Coming towards the city of Udaipur, lies a place famously known as the site of India's oldest zinc smelter at Debari. The place known for its agricultural harvest has witnessed many generations practicing this art for many years. Divya Devra who has seen this art since the day she was born has been fascinated by the stories of her grandfather and father. As a youngling, she wanted to know more about this field and got a chance to learn about it through Shiksha Sambal pre-vocational training which led her to learn more about modern techniques of farming, poultry farming and organic farming thus fuelling her passion of agriculture. Like her, more than 8000 students are steered on the path of witnessing a dream turn into reality with Shiksha Sambal.

From north to south and east to west, one commonality that forges all these stories of dreams into reality is the vision of uplifting the people, empowering the planet, and nourishing prosperity by India's largest and only integrated producer of Zinc-Lead-Silver, Hindustan Zinc. Hindustan Zinc's commitment to social responsibility has transformed the lives of 1.73 million people and provided employment opportunities to thousands more. As we go deep in the geography of Zinc City, we witness a stroke of true grit and determination defining Pragati Ki Roshni, illuminating the lives of a million and enriching a future for generations to come.

# Climate solutions are already in our nature

From natural seawalls to mangroves, countries are starting to combat climate change with nature-based solutions. COP28 might drive more of these efforts, state **Astra Rushton-Allan** and **Dr Sali Jayne Bache**

**Despite the involvement of large conservation organisations like WWF and the International Union for Conservation of Nature (IUCN), some campaigners doubt the power of nature positive as a tool to stem environmental destruction.** *Image: CIFOR, CC BY-SA 3.0, via Flickr.*

Fiji's coastal defence to the rising rate of cyclones is a natural seawall that combines mangroves, rocks and vetiver grass. The natural seawall brings the benefits of hard protection — a barrier separating sea and land — without the erosion that often comes with conventional seawalls.

It is a nature-based solution, one of many opportunities in the Pacific to draw on organic resources to address climate change, with benefits to mitigation and adaptation.

This form of 'green-grey infrastructure' is an attempt to merge soft engineering with the natural ecology of the region, basing adaptation efforts on solutions that reflect the place in which they are embedded.

At the United Nations Climate Change Conference, COP28 in Dubai in November, world leaders will have a chance to increase investment in nature-based solutions to back a climate agenda that integrates biodiversity goals, conservation of carbon sinks and local perspectives and interests.

As the world gets warmer and more greenhouse gases are released, nature's ability to perform important ecosystem functions — like sequestering carbon, regulating the earth's temperature and providing clean air and water — is jeopardised.

These functions are integral to limiting climate change and for building resilience to its impacts. This is particularly key for Asia Pacific islands, where the effects of climate change are most prominent and where nature remains a more foundational component of daily life than more-urban environments.

The International Panel on Climate Change recognises nature as a climate solution and a key to achieving the 1.5 degree target in the Paris Agreement that, if exceeded, poses significantly increased risks to human health, livelihoods and well-being. Some experts estimate that 37 per cent of the greenhouse gas cuts required to meet the Paris Agreement's 2030 targets could be achieved through nature-based solutions. Nature-based solutions are important for their capacity to provide carbon sinks in climate mitigation efforts, but also to assist with adaptation and resilience, especially in coastal areas.

Nature-based solutions limit the consequences of climate change. They reduce emissions by stopping — or at least minimising — the degradation and destruction of ecosystems. These programmes help identify and extend new areas of high carbon storage and adaptation value for protection, reforestation and regeneration. Nature-based solutions also build resilience to climatic events and reduce disaster risk. At their best, nature-based solutions combine adaptation and mitigation interventions, balancing the need for sustainable development with emissions-reduction strategies.

Fiji demonstrates this perfectly: mangroves naturally draw down carbon and their replanting provides coastal protection and support for a sustainable ecosystem.

Combined with rocks and vetiver — a non-invasive clumping grass — these efforts provide a nature-based solution that supports mitigation and helps boost the country's capacity to adapt to rising sea levels and more storm surges.

While focused primarily on climate outcomes, they also interact with the broader Sustainable Development Goals, placing a strong emphasis on the social dimensions of climate change. Nature-based solutions are closely linked to broader social, environmental and economic outcomes, including poverty reduction, livelihoods, equity and zero hunger.

While climate change causes ecosystem degradation, loss of habitats and biodiversity decline, nature-based solutions are intrinsically linked with positive biodiversity outcomes. The world is starting to acknowledge this: in March 2023, nearly 200 countries signed a UN treaty that explicitly recognises "the need to address … biological diversity loss and degradation of ecosystems of the ocean", highlighting the "climate change impacts on marine ecosystems". There is hope that linkage will extend beyond the high seas treaty into broader action to protect nature's intrinsic value. The capacity of vegetated coastal and marine ecosystems to capture and store carbon is referred to as blue carbon. Blue carbon ecosystems tend to be mangroves, seagrasses and saltmarshes.

Left unprotected, these ecosystems can be damaged or degraded and contribute to climate change, shifting from acting as carbon sinks to instead generating greenhouse gases like carbon dioxide, methane and nitrous oxide.

COP28 host nation the United Arab Emirates intends to plant more than 100 million mangroves by 2030, capturing an estimated 43,000 tons of carbon dioxide annually.

**Left unprotected, these ecosystems can be damaged or degraded and contribute to climate change, shifting from acting as carbon sinks to instead generating greenhouse gases like carbon dioxide, methane and nitrous oxide.**

This is part of the country's project to restore degraded mangroves and is significant for its carbon capture and because mangroves improve community resilience to storm surges and are hotspots for biodiversity.

Such actions demonstrate the climate-positive impacts and co-benefits for ecosystem health and human well-being from nature-based solutions.

The definition of nature-based solutions can also be extended beyond human interventions in nature to include infrastructure developments and using technology for climate mitigation, like renewable energy generated from wind, solar and ocean-based technologies.

The mitigation impact of these solutions is particularly meaningful for island states, which can leverage coastal and marine resources to create consistent, clean and sustainable power sources.

Indonesia's ocean-based climate mitigation potential is explored in a 2023 ClimateWorks Centre study. The Southeast Asia Framework for Ocean Action Mitigation assessed the combined impact of ocean-based climate action through offshore energy, shipping decarbonisation and blue carbon nature-based solutions.

It found ecosystem protection of mangroves and seagrass could have a massive impact on Indonesia's emissions profile by 2030 and investment in offshore wind and ocean energy could provide big long-term emissions benefits.

Combined with shipping decarbonisation, these ocean-based actions could by 2050 fill nearly half of the gap between current pledged action and what is needed for Indonesia to align with its net zero-by-2060 ambition.

This year's United Nations Framework Convention on Climate Change Global Stocktake provides an opportunity to identify similar gaps and momentum in climate action.

It is a critical tool with which the climate community can engage with the integral element of nature-based solutions for successful adaptation and mitigation efforts.

This will in turn be key in facilitating raised country ambition in particular as reflected in revised Nationally Determined Contributions, due in two years time.

*Dr Sali Jayne Bache works in ocean conservation and climate change with a focus on the Asia Pacific region. She has a research, academic and diplomatic background and leads programs on offshore governance and the ocean-climate nexus. She is currently coordinating Monash University's delegation and pavilion for COP28 in Dubai.*

*Astra Rushton-Allan is a senior project manager at Climateworks Centre where she focuses on the ocean-climate nexus across Southeast Asia, collaborating with a multi-disciplinary team on partnership development, fundraising, and program design and delivery for the development of sustainable blue economic activities across the region.*

*Dr Bache's SEAFOAM project was made possible with generous support from Quantedge Advancement Initiative and Mr Philip Wang.*

*Monash University is participating at COP28.*



*(Source: https://www.eco-business.com/opinion/climate-solutions-are-already-in-our-nature/)*

# LEADING THE CHARGE

## KPMG in India and Colliers' Report on 'Sustainable real estate' showcases how sustainable real estate practices are transforming the industry

The real estate sector is a major source of global carbon emissions, accounting for nearly 40 per cent of the total emission. By 2040, it is expected that roughly two-third of the existing building stock would continue to contribute to CO2 emissions, posing challenge to the target under the Paris Agreement to restrict temperature increase to 1.5 degrees.

In light of the above, KPMG in India and Colliers present a report titled, 'Sustainable real estate: an opportunity to leverage', that delves into the rise of green building certifications, the growing influence of informed investors and consumers and the impending global building expansion that underscores the undeniable importance of sustainable practices in the real estate sector today.

There is no doubt that the real estate sector, finds itself at crossroads where adopting sustainable

practices is not just an option but a necessity. As a result, they are now integrating sustainable solutions into their operations, across different phases of the project life cycle with many green buildings gaining momentum from both developer's and occupier's perspective.

## A few highlights from the report:

- In 2023, the office real estate market witnessed a significant shift towards sustainability, registering an 83 per cent growth in green office stock compared to 2016.
- In India, 61 per cent of the office market stock was green in 2023, reflecting a growing trend.
- Moreover, 94 per cent of the surveyed real estate companies acknowledged the potential of green buildings to boost valuation. This surge in interest aligns with the increasing demand for energy-efficient buildings, given the projected doubling of global building floor area in the next three decades.
- From the supply side, developers are making conscious efforts towards creating sustainable commercial real estate by following prevalent green building rating systems such as LEED (Leadership in Energy and Environmental Design), Green Rating for Integrated Habitat Assessment (GRIHA) and WELL building certification.
- India's sustainability goals, which include achieving net zero greenhouse gas emissions by 2070 and deriving 50 per cent of energy from renewables by 2030, highlight the nation's commitment to a greener future.
- At present, green penetration of Grade-A office stock has been significant in metropolitan and Tier-1 cities of India, which include Bengaluru, Delhi-NCR, Hyderabad, Mumbai, Chennai, and Pune accounting for 421 mn sq ft.
- About 16-26 per cent of the existing ageing buildings in the top six cities have scope for upgradation to improve building performance.

| City | Green Building Stock(mn sq ft) |
|---|---|
| Bengaluru | 140 |
| Chennai | 46 |
| Delhi NCR | 74 |
| Hyderabad | 72 |
| Mumbai | 50 |
| Pune | 39 |
| **Total** | **421** |

"India contributes to about 7.3 per cent global emissions with real estate being one of the largest contributors, hence, the importance of sustainability in the sector cannot be overstated. The carbon emissions may reach 4.48 giga tonnes by 2030 from 2.88 giga tonnes in 2021, however, reduction in emissions by 22 per cent today can keep 2030 emissions lower, at 3.48 giga tonnes. Energy-efficient technologies such as automated HVAC systems, solar panels, and green roofs may result in 70 per cent less waste and 10 per cent savings in operational cost yearly. Notably, about 56 per cent of the stakeholders shared high importance for sustainable buildings since these may have 5-10 per cent higher valuation, high occupancy rates and allow them to be better positioned to succeed in a rapidly changing market. It is time for the real estate sector to take a leadership role in promoting sustainability through buildings that are energy and resource-efficient and drive positive change for the environment and society as a whole." said Neeraj Bansal, Partner, Co-Head and COO - India Global, KPMG in India.

Additionally, the report highlights that in top 10 office micro markets in India, including Bengaluru ORR, Whitefield and SBD; Hyderabad SBD; Chennai OMR Zone1, Pune- Kharadi; Delhi NCR- Noida Expressway; and Navi Mumbai, account for the bulk of country's green building stock at 62 per cent.

These top micro markets are largely a part of suburban and peripheral areas that consist of newer developments. At the same time, the vacancy levels in green buildings of most of these micro markets is lower than that of non-certified buildings.

"Green certified office buildings have almost doubled since 2016 to an impressive 421 mn sq ft, forming over 60 per cent of India's Grade A office stock. This showcases developers' & occupiers' rising commitment towards sustainability. This is likely to reflect in terms of favorable pricing and asset valuation resulting in increased brand value, client retention & rental upside. As the industry looks into the future, developers and investors alike, are likely to remain focused on high-performing assets as more occupiers will scout for sustainable workspaces." said Badal Yagnik, Chief Executive Officer, Colliers India

Note: Data is as of September 2023 and pertains to Grade A Office Buildings

Going ahead, faster adoption of sustainability in real estate, green financing, innovative interventions undertaken at portfolio-level and attracting sustainable investment through dynamic policy making becomes an imperative. Simultaneously, concerted efforts towards provisioning better funding for sustainability research and development must be augmented.

Lastly, the report delves deeper into the multifaceted facets of this transformative journey, exploring green building standards, occupier initiatives along with actionable recommendations to shape a more sustainable future.

# Greenwashing No More

## ASCI Proposes Draft Guidelines for Environmental Claims in Advertising

The Advertising Standards Council of India (ASCI) has taken a pivotal stride towards enhancing transparency and accountability in environmental advertising through the unveiling of comprehensive draft guidelines on "Environmental/Green Claims."

The draft guidelines are open for public feedback until the 31st of December 2023, post which they will be finalised. Developed by a multi-stakeholder task force, including environmental experts, these guidelines aim to ensure that advertisements are free from greenwashing practices. The draft guidelines establish a clear framework for advertisers to present truthful and evidence-based environmental claims.

Environmental claims include claims that suggest or create an impression that a product or a service has a neutral or positive impact on the environment, is less damaging to the environment than a previous version of the same product or service or a competitive product, or has specific environmental benefits.

Environmental/Green claims can be explicit or implicit. They can appear in advertisements, marketing material, branding (including business and trading names), on packaging or in other information provided to consumers.

The draft guidelines target greenwashing – the deceptive practice of making misleading environmental claims. ASCI emphasizes the paramount importance of substantiated, comparable, and verifiable claims to combat misinformation. In its ad-surveillance ASCI has found that several terms are loosely used to communicate environmental benefits, giving an impression that the product is greener than it actually is.

### PROPOSED GUIDELINES:

1. Absolute claims such as but not limited to "environment friendly", "eco-friendly", "sustainable", "planet friendly" that imply that the product advertised has no impact or only a positive impact must be supported by a high level of substantiation. Comparative claims such as "greener" or "friendlier" can be justified, for example, if the advertised product or service provides a total environmental benefit over that of the advertiser's previous product or service or competitor products or services and the basis of such comparison is made clear.

2. Environmental claims must be based on the full life cycle of the advertised product or service, unless the advertisement states otherwise, and must make clear the limits of the life cycle. If a general claim cannot be justified, a more limited claim about specific aspects of a product or service might be justifiable. Claims that are based on only part of an advertised product or service's life cycle must not mislead consumers

about the product or service's total environmental impact.

3 Unless it is clear from the context, an environmental claim should specify whether it refers to the product, the product's packaging, a service, or just to a portion of the product, package, or service.

4 Advertisements must not mislead consumers about the environmental benefit that a product or service offers by highlighting the absence of an environmentally damaging ingredient if that ingredient is not usually found in competing products or services by highlighting an environmental benefit that results from a legal obligation if competing products are subject to the same requirements.

5 Certifications and Seals of Approval should make clear which attributes of the product or service have been evaluated by the certifier, and the basis of such certification provided. Certifications and Seals used in an advertisement should be from a Nationally/Internationally recognised certifying authority.

6 Visual elements in an ad should not give a false impression about the product/service being advertised. For example, logos representing a recycling process on packaging and/or in advertising material can significantly influence a consumer's impression of the environmental impact of a product or service.

7 Advertisers should refrain from making aspirational claims about future environmental objectives unless they have developed clear and actionable plans detailing how those objectives will be achieved.

8 For carbon offset claims advertisers should clearly and prominently disclose if the carbon offset represents emission reductions that will not occur for two years or longer. Ads should not claim directly or by implication that a carbon offset represents an emission reduction if the reduction, or the activity that caused the reduction, was required by law.

9 For claims pertaining to the product being compostable, biodegradable, recyclable, non-toxic, free-of etc. advertisers should qualify the aspects to which such claims are being attributed, and the extent of the same. All such claims should have competent and reliable scientific evidence to show that:

The product or the qualified component where applicable will break down within a reasonably short period of time after customary disposal. The product is free of elements that can lead to environmental hazards.

Manisha Kapoor, CEO and Secretary-General, ASCI said, "ASCI's draft guidelines on Environmental/Green Claims are a crucial step to ensure that consumers who wish to support green brands have the correct information to make an informed decision. These guidelines set a standard for advertisers, and aim to foster a culture of transparency and authenticity in advertising in the best interest of the consumers. We encourage all stakeholders, including consumers, industry, civil society members, and experts, to provide their feedback on the draft guidelines to enable us to sharpen and strengthen them." The public consultation period is open until December 31st, 2023. Feedback can be submitted via email to contact@ascionline.in

**Thailand's new US$925 million LNG facility. PTT LNG, a unit of the state-owned oil and gas company, awarded the EPC contract to build the terminal to a joint venture consisting of Saipem and CTCI Corporation in 2018.** *Image: Saipem.*

# SOUTHEAST ASIA'S LNG INVESTMENTS PREDICTED TO PEAK BY 2040: STUDY

Thailand, the Philippines, and Vietnam lead the charge in proposed natural gas projects, which could thwart climate mitigation, warns a new study by the Asia Research & Engagement, states **Hannah Alcoseba Fernandez**

More natural gas facilities than ever will be firing in Southeast Asia almost two decades from now, according to a report by Singapore-based research firm Asia Research & Engagement (ARE). Led by Thailand, Indonesia and Singapore, the region currently has liquified natural gas (LNG) facilities operating at a capacity of 45 million tonnes per annum (Mtpa), which release the equivalent greenhouse gas emissions of about 30 coal plants in one year.

This is expected to almost double to a capacity of 80 Mtpa by 2040, as proposed projects, mostly in Thailand, the Philippines and Vietnam will be completed by then.

"If allowed to continue, expanded LNG use stands to thwart efforts to keep global warming below 1.5 C," ARE's report read. "Growing investment in LNG by the Philippines, Vietnam, and other

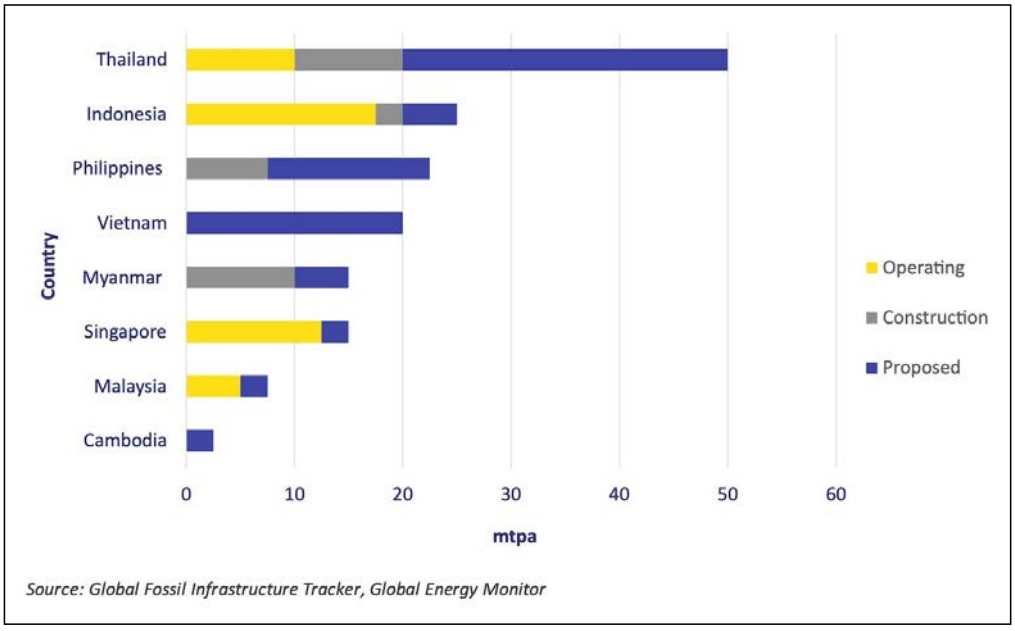
Southeast Asian nations will only help push the world further beyond this critical target."

Last year's biggest addition to global LNG consumption was Thailand's new US$900 million regasification facility, with a capacity of 7.5 Mtpa, added the analysis.

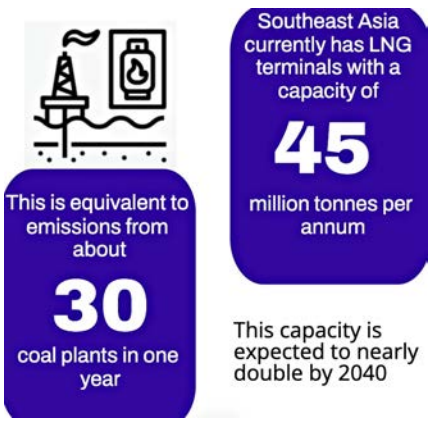
The Philippines and Vietnam made their first forays into LNG this year.

The Philippines received a shipment in April to fuel its 1,200 megawatt (MW) Ilijan power plant, amid declining reserves from its Malampaya natural gas field off the province of Batangas and after Asian spot LNG prices slid from all-time highs in 2022. The purchase was handled by AGP International Holdings, backed by Osaka Gas and the Japan Bank for International Cooperation.

A month later, Vietnam's first imports of LNG arrived with a shipment of 70,000 tonnes of Indonesian LNG purchased by state-run Petro-Vietnam Gas. The new terminals in both Southeast Asian nations are slated to expand the region's LNG import capacity by 7.8 Mtpa.




**Indonesia has the most LNG operating in Southeast Asia, as of 2021, but is expected to be overtaken by Thailand, once its facilities that are both under construction and proposed will be operational by 2040.**




**HAF, Source: ARE, Greenhouse Gas Equivalencies**

The Philippine government has been promoting renewable energy, but as part of its energy development plan, it continues to approve projects to import LNG as a transitional fuel. Although Vietnam is trying to reduce its reliance on coal while tackling worsening power shortages that imperil its fast-growing economy, its development plan likewise calls for more than doubling its reliance on natural gas.

Elsewhere in Southeast Asia, Thailand, Malaysia and Singapore began importing LNG in the 2010s, and Myanmar did so in 2020. Cambodia is preparing to start taking shipments, with a three-phase plan to promote the fuel's adoption at home.

"Southeast Asia's limited legacy LNG infrastructure makes the pivot to low-carbon power sources a viable option compared to investing in new LNG infrastructure," Kurt Metzger, energy transition director of ARE, told Eco-Business.

"The new research underscores that LNG's carbon intensity is on par with coal, emphasising the necessity of investing in solar, wind, and low-carbon sources to limit global warming below 1.5 degrees."

In the rest of the world, the report's authors find it worrisome that the expected production of LNG "far exceeds" what global energy authority International Energy Agency (IEA) calculates is necessary to meet the goals of the Paris Agreement.

The report noted how IEA predicts that LNG used globally must peak in 2025 and decline to 150 Mtpa by 2040 to achieve its 2050 net zero target. But oil firm Shell forecasts in its outlook this year that demand will reach almost 700 Mtpa by 2040, with projected LNG production and supply rising by 20 per cent to 480 Mtpa based on LNG infrastructure currently under construction.

Natural gas is considered a cleaner-burning fuel because it releases up to 60 per cent less carbon dioxide than coal. But experts have flagged the climate impacts of methane—a powerful greenhouse gas—that is emitted during its production, transportation and combustion.

*(Source: https://www.eco-business.com/news/southeast-asias-lng-investments-predicted-to-peak-by-2040-study/)*


**Temperatures during the first few months of 2023 were suppressed by an unusually persistent triple-dip La Niña event, which resulted in lower global temperatures between late 2020 and the start of this year.** *Image: Jun Acullador, CC BY-SA 3.0, via Flickr.*

# GREATER THAN 99% CHANCE THAT 2023 WILL BE HOTTEST YEAR ON RECORD

With three months of 2023 still remaining, Carbon Brief's analysis reveals there is a greater than 99 per cent chance that 2023 will be the hottest year since records began in the mid-1800s, and likely for millennia before as well. **Zeke Hausfather** speaks about the concern.

In the "likelihood" language of the Intergovernmental Panel on Climate Change (IPCC), this means a new record year is "virtually certain".

After a cooler start to the year, the past four months have seen truly exceptional global temperatures, surpassing prior monthly records by large margins.

Temperatures during the first few months of 2023 were suppressed by an unusually persistent triple-dip La Niña event, which resulted in lower global temperatures between late

2020 and the start of this year. Then, starting in March, conditions in the tropical Pacific began to transition rapidly into what is shaping up to be a strong El Niño event. This will likely be weaker than the super El Niño events of 1997-98 and 2015-16, which helped drive record-warm years at the time.

However, global temperatures tend to respond around three months after peak El Niño conditions. The extreme temperatures the world has experienced over the past few months have occurred well before the current El Niño event is expected to peak. This has led to lots of scientific speculation – though few firm conclusions yet – around the variety of factors that could be contributing to extreme global temperatures along with El Niño and the long-term accumulation of human-caused greenhouse gases.

## Hottest year across all records

Based on the temperatures recorded over the first nine months of the year, current El Niño conditions and projected El Niño conditions over the remainder of the year, Carbon Brief can provide an estimate of where each different surface temperature record will likely end up. (See the methodological note at the end for details.)

The figure below shows both the prior record warmest year in each record (coloured square), as well as Carbon Brief's central estimate of where 2023 will end up (coloured circle) and the 95th percentile confidence interval of that estimate.

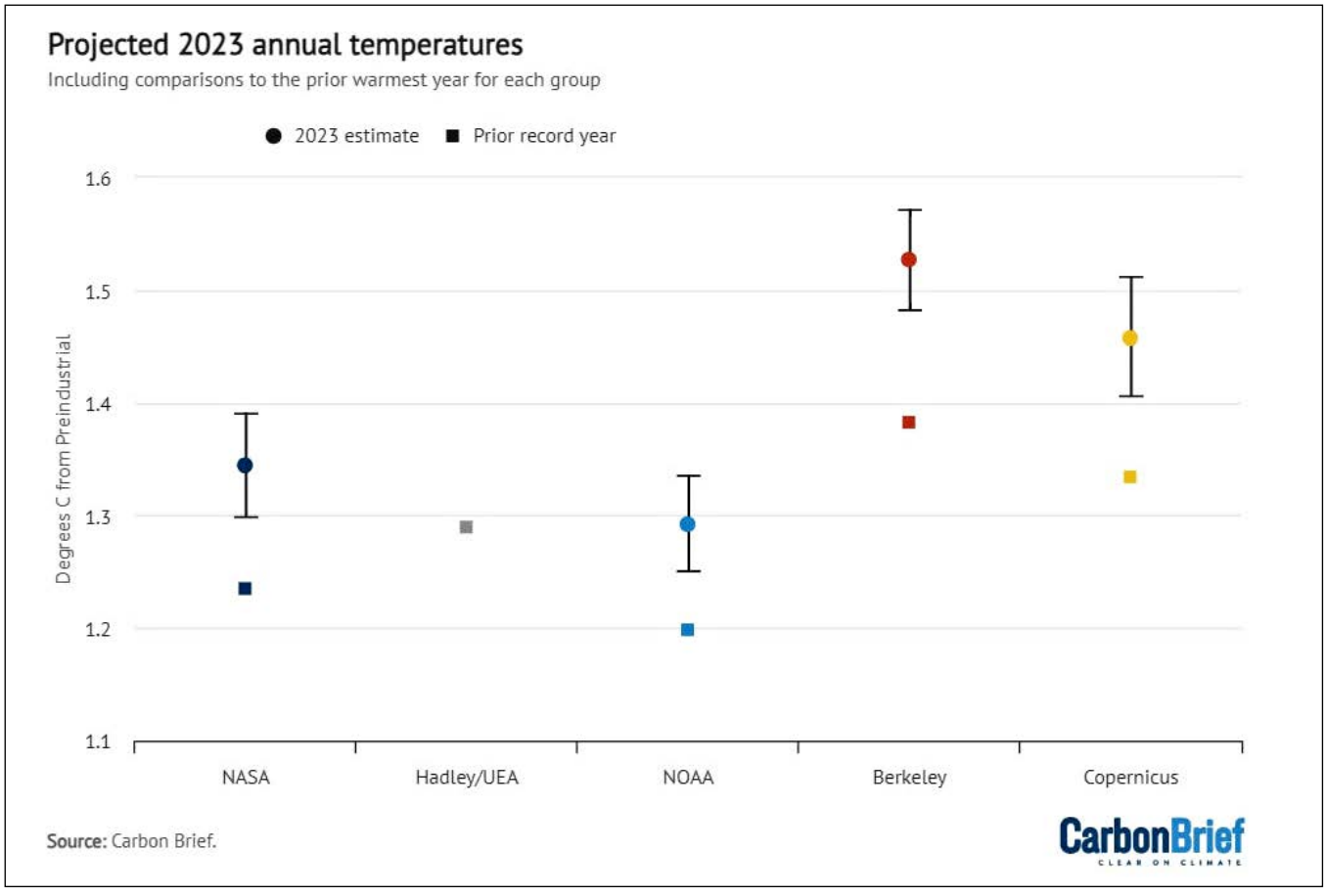
(Note that a 2023 projection is not shown for the Hadley/UEA HadCRUT5 dataset given that September data is not yet available.)

The figure below shows these estimates in context with their respective records going back to 1970.

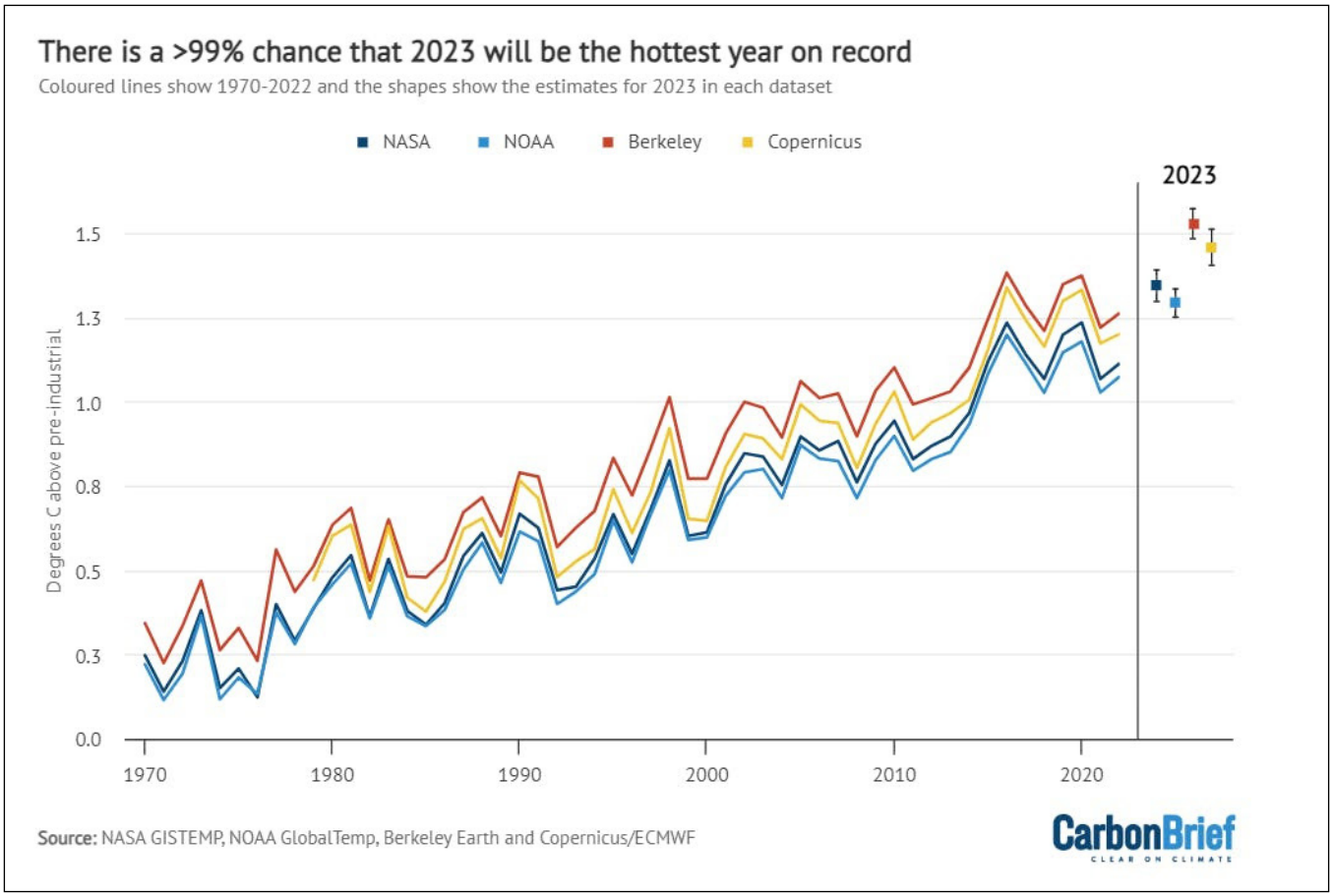
Based on Carbon Brief's analysis, there is a greater than 99 per cent chance that 2023 will be the warmest year on record across the NASA GISTEMP, NOAA GlobalTemp, Berkeley Earth and Copernicus/ECMWF datasets.

This is up substantially from the 47 per cent-to-79 per cent likelihood that Carbon Brief estimated at the end of July, reflecting just how high global temperatures have been over the past three months.

While all the different temperature datasets project that 2023 will




**Carbon Brief's central estimate (dot) and 95th percentile range (whiskers) of where 2023 annual temperatures will end up relative to the pre-industrial period for each group. Note that Hadley/UEA is not shown as data was not available through September at time of publication. The Copernicus values shown here use HadCRUT5 data to estimate warming between 1850-99 and 1981-2010. See the methodological note at the end for details. Chart by Carbon Brief.**




**Annual global average surface temperatures from NASA GISTEMP, NOAA GlobalTemp, Berkeley Earth and Copernicus/ECMWF (lines), along with 2023 estimates (as previous chart). Chart by Carbon Brief.**

exceed the prior 2016 record by a similar margin, the expected warming in 2023 relative to pre-industrial conditions varies widely across the datasets. The central estimates range from 1.29C (NOAA) and 1.35C (NASA) above pre-industrial (1850-99) levels, to 1.46C (Copernicus) and 1.53C (Berkeley Earth).

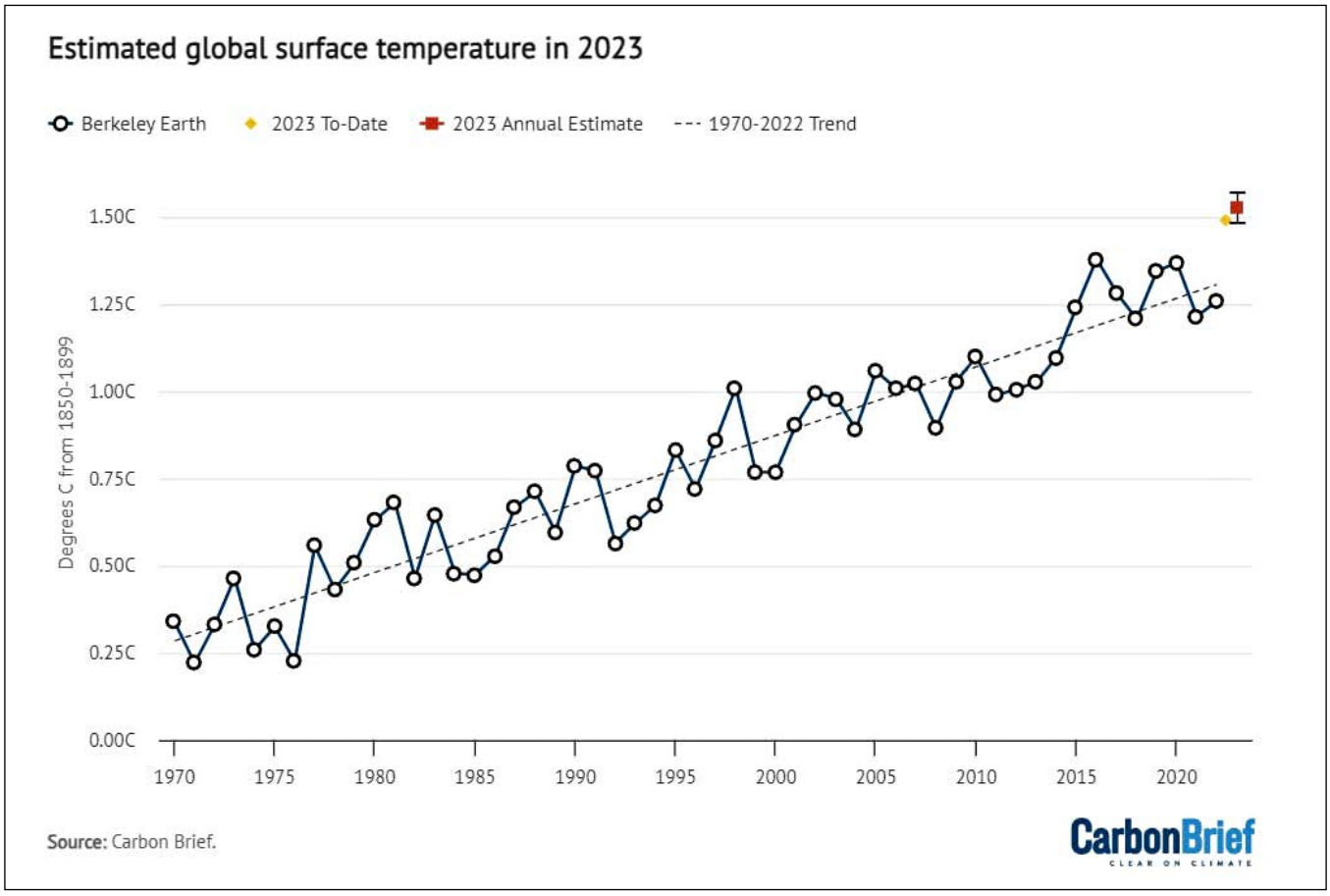
(It is important to note that hitting 1.5C in an individual year is not equivalent to a breach of the 1.5C warming limit in the Paris Agreement. The latter refers specifically to long-term human-caused warming and not annual temperatures that include the influence of natural fluctuations in the climate, such as El Niño.)

These differences primarily emerge from variations in how different temperature datasets reconstruct global temperatures in the period prior to 1920 – where global temperature data is more sparse – and which data is used. How gaps between observations are filled has a notable effect on the resulting temperatures. Differences in the ocean dataset used also contribute to variations across groups in estimated warming since pre-industrial times.

The figure below shows Carbon Brief's estimated 2023 annual temperatures in the Berkeley Earth

| | GISTEMP | HadCRUT5 | NOAA | Berkeley | Copernicus |
|---|---|---|---|---|---|
| 1st | **>99%** | TBC | **>99%** | **>99%** | **>99%** |
| 2nd | 0% | TBC | 0% | 0% | 0% |
| 3rd | 0% | TBC | 0% | 0% | 0% |

**Estimated probabilities of where 2023 will rank compared to previous years for each global temperature dataset. Note that these probabilities do not include measurement uncertainty for each record. Hadley/UEA is not shown as data was not available through September at time of publication. See the methodological note at the end for details.**




**Annual temperatures from Berkeley Earth from 1970-2022, along with year-to-date values (yellow diamond) and Carbon Brief's 2023 projection for the dataset (red square and black whiskers). Chart by Carbon Brief.**

dataset (red square), as well as the 2023 value to-date (e.g. the average of the first nine months of the year, shown as a yellow diamond).

In this case the annual estimate is slightly higher than the value to-date due to the expectation of continued high global temperatures over the coming three months as El Niño conditions intensify.

## New record becomes clear

This latest estimate is notably higher than most scientists expected early in the year. Because the year started out cooler compared to the prior few years, estimates of annual 2023 temperatures early in the year suggested that 2023 would only be one of the top four warmest years on record.

As the figure below shows, this projection started to change with warmer March, April and May temperatures. But it is only in the past two months that it has become unambiguously clear that 2023 will be the warmest year on record.

Similarly, as Carbon Brief reported back in January, most groups (including Carbon Brief) projected that 2023 would end up similar to or slightly warmer than 2022 at the start of the year.

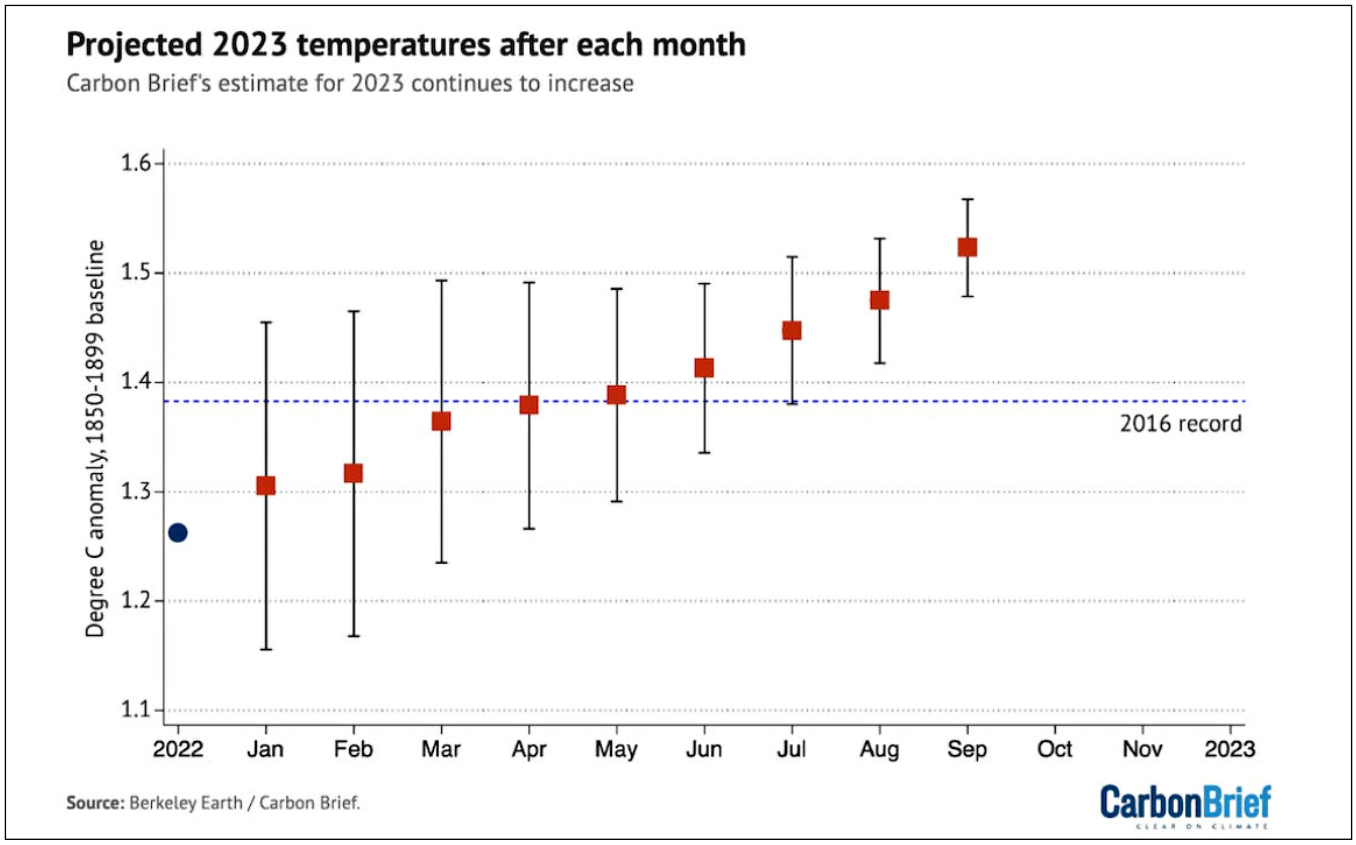
The figure below shows 2023 projections made before any data was available for the year by NASA's Dr Gavin Schmidt (purple square), the UK Met Office (dark blue), Berkeley Earth (blue) and Carbon Brief (yellow), compared to the latest estimate using data through September (red).

No one predicted just how extreme 2023 temperatures would be back at the start of the year (though Dr Schmidt was the closest).

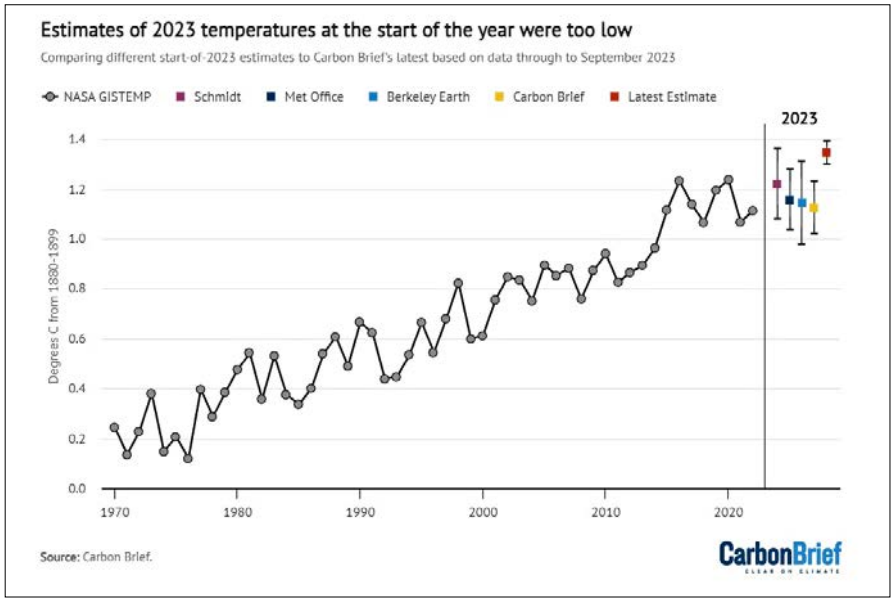
The extreme summer temperatures that have driven such a change in fortunes for 2023 has drawn the attention of many scientists. On top of the long-term warming trend caused by human-caused greenhouse gas emissions, there are several other factors at play. In addition to the strong El Niño event, there are likely to be warming contributions from a reduced cooling influence from air pollution, a natural peak in the sun's intensity and the water vapour injected into the stratosphere by the Hunga Tonga–Hunga Ha'apai volcanic eruption in January last year. The climate science community is working hard to better understand these different drivers – and what they entail for global warming going forward.

## Methodological note

A statistical multivariate regression model was used to estimate the




**Carbon Brief's estimate of where 2023 annual temperatures would end up in the Berkeley Earth dataset after data for each month of the year first became available. Chart by Carbon Brief.**




**Annual temperatures from NASA GISTEMP from 1970-2022, along with 2023 estimates published at the start of the year prior to any 2023 data being available (coloured dots and whiskers), as well as the latest estimate using data through September (red dot and whiskers). Chart by Carbon Brief.**

range of likely 2023 annual temperatures for each group that provides a temperature record. This model used the average temperature over the first nine months of the year, the average ENSO 3.4 region value during the first nine months of the year and the average predicted ENSO 3.4 value during the last three months of the year to estimate the annual temperatures.

The model was trained on the relationship between these variables and annual temperatures over the period from 1970-2022 (or 1979-2022 for the Copernicus/ECMWF dataset). The model then uses this fit to predict both the most likely 2023 annual value for each group, as well as the 95 per cent confidence interval. The predicted ENSO 3.4 region values for the last three months of 2023 are taken from the IRI plume forecast.

The percent likelihood of different year ranks for 2023 is estimated by using the output of the regression model, assuming a normal distribution of results. This allows Carbon Brief to estimate what percent of possible 2023 annual values fall above and below the temperatures of prior years for each group.

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