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AHEAD OF COP26, INDIAN SITE HIGHLIGHTS EMISSIONS GAP

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A day ahead of the commencement of the 26th United Nations Conference of Parties (COP) in Glasgow, Scotland, India has officially endorsed a website, made by Indian climate experts, that lists the historical carbon dioxide emissions of developed countries.

The database aims to highlight the disparity between the emissions of developed and developing countries with countries such as the United States, Canada and Australia and those in Western Europe shown as having a net carbon debt while developing countries such as India and China having net credit.

The key fact that the database highlights is that it is only fair that developed countries must commit to steeper targets towards curbing emissions than developing countries.

India is the third largest emitter of carbon emissions annually but the sixth largest when historical emissions are considered, and when accounting for the size of its population it is among the lowest per capita emitters. This underlines India's demands for climate justice being at the heart of negotiations and its reluctance to agree to a fixed time frame to reach net zero, or when — in balance — it will cease to emit greenhouse gases.

"The website is intended to debunk the narrative provided by many developed countries, and global non-government organisations that focus attention continually on what developing countries must do, constantly demanding greater commitment and action from them," says an accompanying press statement from the Environment Ministry.

"Welcome the scientific initiative, Climate Equity Monitor, (<https://climateequitymonitor.in>) which went live today. Its focus on equity & climate action from a data and evidence-based perspective will encourage vigorous discussion on the crucial issue and engage experts from all nations," Mr. Yadav tweeted from his official handle.

The Climate Equity Monitor, as the site is called, is aimed at monitoring the performance of Annex-I Parties under the UNFCCC (developed countries) based on the "foundational principles" of the Climate Convention.

The performance and policies of the Non Annex-I Parties (developing countries) will be provided for comparison, the statement notes.

The website was conceptualised and developed by the Climate Change Group at the M.S. Swaminathan Research Foundation, Chennai, and the Natural Sciences and Engineering Department at the National Institute of Advanced Studies, Bengaluru, with other independent researchers.

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THE BIG PUSH: THE HINDU EDITORIAL ON JOE BIDEN'S SOCIAL SECURITY AND CLIMATE CHANGE PLAN

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

In what appears to be a rush to the finish line but is in fact the intention to fulfil long-standing policy promises of the Democratic Party, U.S. President Joe Biden sought to push through Congress [an omnibus mega-bill seeking \\$1.85 trillion for social security and climate change](#). While the initiative seemed to be thrust forward on a shorter timeline so that Mr. Biden could speak of his domestic agenda achievements at the G20 meeting in Rome and COP26 in Scotland, the once-in-a-generation bill speaks to issues such as providing universal pre-kindergarten, extending an expanded tax credit for parents, further reducing health-care premiums for those covered under the Obama-era Affordable Care Act, reducing a waiting list for in-home care, building a million units of low-income housing, and worker training and higher education. To balance the implied considerable hike in federal public expenditure, the bill proposes to raise revenue via a 15% minimum tax on the reported profits of large corporations, clamping down on profit-shifting by multinationals, tighter enforcement for large corporations and ultra-high net worth individuals, a 1% tax on corporate tax buybacks, an additional 5% tax on incomes exceeding \$10 million a year and another 3% tax on incomes above \$25 million, and policies to limit business losses for the very wealthy and a 3.8% Medicare tax on people earning more than \$400,000 a year who did not previously pay that tax.

Although Democrats have 50 Senators in the Upper House of Congress and Vice-President Kamala Harris could cast a tie breaking vote should the need arise, the passage of this bill which will be remembered as a major component of Mr. Biden's legacy, hangs on the razor's edge. This is in part because at least two Senators, from Arizona and West Virginia, are potential holdouts. The conundrum that Mr. Biden is facing is a paradox of omnibus bills — different constituents view only some parts of the bill as desirable. For example, House Democrats appear unwilling to pass a version of the bill that the Senate has already cleared, sanctioning a \$1 trillion bipartisan infrastructure package. Lawmakers such as Pramila Jayapal have opined that the Congressional Progressive Caucus would only support the broader vision of the Build Back Better Act, which includes the ambitious climate change programme, federal paid leave for families, a substantial expansion of Medicare policy and two free years of community college. To succeed, Mr. Biden will have to negotiate with all stakeholders to find a compromise formula. At stake is the U.S.'s prospect of climbing out of the recessionary economic trough it was pushed into by the pandemic, not only by directly spurring commercial activity through public expenditure but also by investing in education and social security to keep America's workforce competitive.

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U.S. President Biden should not buckle to pressure from irate anti-vaccine campaigners

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PUNJAB BATS FOR CONSERVATION OF INDUS RIVER DOLPHIN

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

The Indus river dolphin is classified as endangered by the International Union for the Conservation of Nature (IUCN) and, until recently, it was believed that these dolphins were endemic to Pakistan. File | Photo Credit: [AFP](#)

The census of one of the world's most threatened cetaceans, the Indus river dolphin (*Platanista gangetica minor*) — a freshwater dolphin that is found in river Beas, is all set to commence in the winter as part of a project by the Centre. However, Punjab's wildlife preservation wing has gone a step ahead to not only protect the dolphins but also their natural habitat.

The Indus river dolphin is classified as endangered by the International Union for the Conservation of Nature (IUCN) and, until recently, it was believed that these dolphins were endemic to Pakistan. But in 2007, a remnant but viable population of Indus dolphins was discovered in Punjab's Harike wildlife sanctuary and in the lower Beas river. Since its discovery, research is being done by Punjab's Department of Forests and Wildlife Preservation in partnership with WWF-India on the current distribution, habitat use and population abundance of the mammal. The Indus river dolphin was declared the State aquatic animal of Punjab in 2019.

"Enumeration of freshwater dolphins is being undertaken as a nationwide project of the Central Government. At the State level, the Punjab Government has taken the initiative for conservation of dolphins and its habitat. The State Government has recently sent a proposal to the Government of India that focuses on a multi-pronged strategy, including habitat management, research, monitoring, advocacy, and environmental education," Gitanjali Kanwar, coordinator — rivers, wetlands and water policy, WWF-India, told *The Hindu*. "The project is to be implemented over five years. Emphasis will be laid to collect data on spatial and temporal distribution pattern of species and population status through an established and approved methodology. Habitat improvement will be an important component of the project," she said.

"Alongside research, importance will be on engaging the riparian communities by encouraging community-led biological monitoring. Villages around the hot spot sites of dolphin occurrence will be developed as models for community-led conservation. Extension programmes will be held to develop a group of dedicated individuals, called 'Beas-Dolphin Mitras' [friends and protectors] of the river Beas. The project also will embark on dolphin eco-tourism. We will adopt a participatory process to address various water conservation-related issues, including protection of freshwater habitats and species," said Ms. Kanwar.

The Beas river supports a viable population of several key aquatic species and the 185 km stretch of the river starting from 52 Headworks, Talwara to Harike Headworks was declared as the Beas Conservation Reserve in 2018.

While the State government's proposal surrounding conservation of the Indus dolphins and restore its freshwater habitats awaits an approval from the Union Ministry of Environment, Forest and Climate Change, the scientific enumeration under 'Project Dolphin' is set to begin in the winter season in Punjab, which is being seen as a first key step towards the conservation effort.

Till now the enumeration of freshwater dolphins was being done in different areas of the country with different methodologies. Now, the Wildlife Institute of India has created a standardised

methodology for the counting. Based on this methodology, the counting of dolphins across the country, including Punjab, would be done.

After this we will have a nationwide count — this is one of the key steps towards conservation. “The enumeration process for dolphins is not an easy task, especially in rivers, as they are visible for few split seconds. Several training workshops have been held and a few are in process to adequately train the people involved on getting a reliable count of dolphins. We are all set to begin with counting in the next few days,” she said.

Direct count surveys of Indus river dolphins in Punjab have been conducted since 2008 and they indicate that their population is critically small, numbering less than 10. The numbers have been approximately stable over time and there is no suggestion of a decline, and calves are sighted annually, Ms. Kanwar said. The dolphins are found principally between the Harike barrage and Beas town and they are only very rarely reported further upstream or downstream of that range.

The field surveys conducted jointly by the Department of Forests and Wildlife Preservation and WWF-India clearly indicate two hotspots of dolphin occurrence. The first area is in the vicinity of Verowal and Gagrewal in the Tarn Taran district of Punjab and the second further downstream near Karmowala and Mundapind in the Tarn Taran district of Punjab,” said Ms. Kanwar.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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LAST SEVEN YEARS ON TRACK TO BE HOTTEST ON RECORD: UN

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

The preliminary World Meteorological Organization state of the climate report said that global warming from greenhouse gas emissions threatens 'far-reaching repercussions for current and future generations'

The years from 2015 to 2021 are on track to be the seven hottest on record, the World Meteorological Organization said on Sunday, warning that the planet was heading into "uncharted territory".

The preliminary WMO state of the climate report, launched as the UN COP26 climate conference opens, said that global warming from greenhouse gas emissions threatens "far-reaching repercussions for current and future generations".

Based on data for the first nine months of the year, the WMO said 2021 was likely to be between the fifth and seventh warmest year on record -- despite the cooling effect of the La Nina phenomenon that lowered temperatures at the beginning of the year.

"From the ocean depths to mountain tops, from melting glaciers to relentless extreme weather events, ecosystems and communities around the globe are being devastated," said United Nations Secretary-General Antonio Guterres in a statement on the report.

He added that the two-week COP26 climate conference "must be a turning point for people and planet".

The WMO found that the average temperature for 2021 was around 1.09 degrees Celsius higher than pre-industrial levels.

And the average temperature over the last 20 years (2002-2021) for the first time exceeded the symbolic threshold of 1C above the mid-19th century, when humans began burning fossil fuels on an industrial scale.

This will "focus the minds of delegates at COP26 aspiring to keep global temperature rise to within the limits agreed in Paris six years ago", said Stephen Belcher, chief scientist at Britain's Met Office.

The 2015 Paris Agreement saw countries agree to cap global warming at "well below" 2C above pre-industrial levels, and 1.5C if possible.

Since then the world has seen a litany of weather disasters including record-shattering wildfires across Australia and Siberia, a once-in-a-thousand-years heatwave in North America and extreme rainfall that caused massive flooding in Asia, Africa, the US and Europe.

"Extreme events are the new norm," said WMO Secretary-General Petteri Taalas.

"There is mounting scientific evidence that some of these bear the footprint of human-induced climate change."

'Unimaginable' consequences

The state of the climate report is a snapshot of planetary health, including temperatures, extreme weather, glacier retreat and ice melt.

Ocean acidification due to the absorption of carbon dioxide by the seas was "unprecedented" in at least 26,000 years, the WMO said, adding that this will lessen the ability of the oceans to take in more CO₂.

Meanwhile, sea level rise -- mainly caused by the expansion of warming sea water and the melting of ice on land -- was at a new high.

The report is "shocking and deeply disturbing and yet another wake-up call to world leaders that time has run out for talk", said Jonathan Bamber, Director of the Bristol Glaciology Centre, in comments to the Science Media Centre.

He said on the current trajectory, sea level rise could exceed two metres (more than six feet) by 2100, which could displace some 630 million people worldwide.

"The consequences of that are unimaginable," said Bamber.

"What is required now is profound and comprehensive action by every nation and state actor to limit further and deeper climate breakdown."

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WHAT IS COP? KEY FACTS AND TERMS AT CLIMATE SUMMIT EXPLAINED

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Here are some of the terms and key issues that will be discussed at UN climate summit (COP26) at Glasgow, which started Sunday and is scheduled to run to Nov. 13

GLASGOW, SCOTLAND : The UN climate summit, known as COP26 this year, brings officials from almost 200 countries to Glasgow to haggle over the best measures to combat global warming.

Here are some of the terms and key issues that will be discussed at the event, which started Sunday and is scheduled to run to Nov. 13:

COP

Short for Conference of the Parties to the UN Framework Convention on Climate Change.

First held in 1995, it also serves as the meeting of parties to the 1992 Kyoto Protocol that first committed countries to reducing greenhouse gas emissions and those that signed on to the 2015 Paris Agreement. Governments meeting in the French capital six years ago agreed on a target of keeping global warming below 2 degrees Celsius (3.6 degrees Fahrenheit), ideally no more than 1.5C (2.7F), by the end of this century compared with pre-industrial times.

The 26th conference was delayed by a year due to the coronavirus pandemic. More than 25,000 delegates are registered for the Glasgow event, which is being chaired by British official Alok Sharma.

High-level segment

More than 100 world leaders will attend the start of the summit Monday and Tuesday, known as the high-level segment, including US President Joe Biden and British Prime Minister Boris Johnson.

Germany's Angela Merkel, who presided over the first COP, will make one of her last international trips as chancellor, while Indian Prime Minister Narendra Modi is also expected to attend in person.

Queen Elizabeth II and Pope Francis have canceled their trips to Glasgow, while Chinese President Xi Jinping, Russian President Vladimir Putin and Brazilian President Jair Bolsonaro are not scheduled to go but may deliver speeches by video link.

NDCs

The Paris accord set a target for limiting global warming but left it up to each country to submit its own emissions reduction targets, known as Nationally Determined Contributions.

Part of the plan was for countries to regularly review and, if necessary, update their targets to ensure the Paris goal is met.

Governments were required to submit their new NDCs five years after Paris, but that deadline was quietly pushed back a year because of the coronavirus pandemic.

Paris rulebook

Countries had hoped to finalize the so-called Paris rulebook a few years after the accord was signed, but some elements of the agreement remain unfinished.

They include how countries collect and report their greenhouse gas emissions in a transparent way and how to regulate global carbon markets.

Climate finance

Among the top issues at COP26 is the question of how poor countries will afford the expense of ditching cheap fossil fuels in favor of renewable energy while adapting to the inevitable effects of global warming already "baked into" the atmosphere.

There is a consensus that rich nations, whose greenhouse gas emissions are largely responsible for climate change, have to pay up. The question is how much.

Just transition

Many governments have stressed that finding 'green' jobs for millions of people working in the fossil fuel industry is a challenge.

This is true for developing countries as well as for rich nations such as the United States, where coal mines and oil fields are major employers in otherwise economically depressed regions.

Carbon sinks

Trees, wetlands and oceans are constantly removing carbon dioxide from the atmosphere.

Calculating how much CO₂ is absorbed and stored by these carbon sinks is a key part of the climate change equation.

Some countries believe they can balance out much of their emissions using their own natural resources; scientists and environmental campaigners are skeptical about the idea.

The greta factor

Swedish climate activist Greta Thunberg has said she doesn't want to be the center of attention and other campaigners from developing countries should be heard too.

But Thunberg, who inspired the Fridays for Future youth rallies, was mobbed like a rock star by fans and journalists Saturday as she arrived in Glasgow by train.

U.N. Secretary-General Antonio Guterres acknowledged that mass climate protests have put pressure on world leaders to take the issue more seriously,

"Keep pushing for action," he told a youth conference Saturday.

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G20 AGREES ON 1.5 DEGREE CLIMATE CHANGE TARGET

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

G20 countries have agreed on the need to keep global warming to 1.5 degrees Celsius above pre-industrial levels, in language tougher than the 2015 Paris accords, several sources said Sunday.

Three sources told AFP that diplomats had approved language for a final summit communique going beyond what was agreed six years ago, when the landmark climate deal called for capping global warming at well below 2 degrees, and ideally closer to 1.5 degrees.

The declaration, expected to be released later Sunday, will talk about keeping the 1.5 degrees target "within reach", one source said, without elaborating.

Earlier drafts seen by AFP suggested that G20 countries were going to fall short of a firm pledge on the 1.5 figure, but officials worked through the night to toughen up the language ahead of crucial UN talks on climate starting in Glasgow Sunday.

The Group of 20 major economies emit nearly 80 percent of carbon emissions, and a promise of action on their part would provide a much-needed boost to the make-or-break COP26 summit.

Opening the formal discussions on climate on the second and final day of the Rome summit Sunday, Italian Prime Minister Mario Draghi urged counterparts to aim high.

"The decisions we make today will have a direct impact on the success of the Glasgow summit and ultimately on our ability to tackle the climate crisis," he said.

He added: "We need to set long-term goals which are consistent with the objectives of the Paris agreement and make short-term changes to achieve them."

Experts say meeting the 1.5 degree target -- the most ambitious goal in the 2015 Paris climate deal -- means slashing global emissions nearly in half by 2030 and to "net-zero" by 2050.

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CLIMATE EQUITY MONITOR AN ONLINE DASHBOARD FOR ASSESSING, AT THE INTERNATIONAL LEVEL, EQUITY IN CLIMATE ACTION, INEQUALITIES IN EMISSIONS, ENERGY AND RESOURCE CONSUMPTION ACROSS THE WORLD, GOES LIVE.

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Welcoming the going live of the website “Climate Equity Monitor” on global climate policy. Union Minister for Environment, Forest and Climate Change, Shri Bhupender Yadav in a tweet message said, that Climate Equity Monitor, that focuses on equity and climate action from a data and evidence-based perspective will encourage a vigorous discussion on this crucial issue and engage experts from all countries. The Minister also congratulated the team that worked on this project.

The Climate Equity Monitor provides an online dashboard for assessing, at the international level, equity in climate action, inequalities in emissions, energy and resource consumption across the world, and ongoing climate policies of several countries. The URL to access the website is <https://climateequitymonitor.in>.

The website has been conceptualized and developed by independent researchers from India -- the Climate Change Group at the M.S Swaminathan Research Foundation (MSSRF), Chennai, and the Natural Sciences and Engineering department at the National Institute of Advanced Studies (NIAS) Bengaluru, with other independent researchers. The MSSRF team was led by Prof. T. Jayaraman, Senior Fellow, Climate Change and the NIAS team by Dr. Tejal Kanitkar, Associate Professor.

Welcome the scientific initiative, Climate Equity Monitor, (<https://t.co/KzqShJ1Ggt>) which went live today. Its focus on equity & climate action from a data and evidence-based perspective will encourage vigorous discussion on the crucial issue and engage experts from all nations.

The Climate Equity Monitor is aimed at monitoring the performance of Annex-I Parties under the UNFCCC (developed countries) based on the foundational principles of the Climate Convention, namely equity and the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC). The performance and policies of the Non Annex-I Parties (developing countries) will be also provided for comparison.

In keeping with the latest scientific results of the Intergovernmental Panel on Climate Change (IPCC) that have underlined the importance of cumulative emissions and carbon budgets, the analysis will be anchored in these two concepts. The equitable sharing of the global carbon budget is the fundamental equity principle that will underpin the assessments that will progressively appear on the website. Existing “tracking” websites on climate policies are based in the global North and routinely do not address the crucial aspects of equity and differentiation. Others websites, according to the researchers, bury the key issues in complexities that are not transparently dealt with.

The developers of this dashboard have taken this initiative to build awareness, especially among the public of the global South, that *climate action is a global collective action problem*. The website is intended to debunk the narrative provided by many developed countries, and global

non-government organizations that focus attention continually on what developing countries must do, constantly demanding greater commitment and action from them.

The website is expected to be a valuable tool for policy makers, public institutions, researchers, academics, students, and the general public from developing countries to keep equity and climate justice considerations clearly in view in their perspective. The website will also undergo constant upgradation with additional new material, including the addition of new areas such as climate finance, technology transfer and adaptation.

GK

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PM NARENDRA MODI SURPRISES CLIMATE SUMMIT WITH 2070 NET-ZERO VOW FOR INDIA

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

The country is the world's third-biggest emitter and one of the most vulnerable to the impacts of global warming.

Prime Minister Narendra Modi surprised delegates at the COP26 climate summit with a bold pledge: the world's third-biggest emitter will reach net-zero by 2070.

The announcement injected new life into talks that had been set back by a disappointing outcome from the Group of 20 meeting in Rome this weekend. Though India's goal is two decades behind rich nations such as the U.S. and U.K., it's compatible with what scientists say is needed to avoid catastrophic global warming.

"This was a very significant moment for the summit," said Nicholas Stern, chairman of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics. It's a chance for India to show that "it can deliver on both economic development and climate change."

India stood out among top emitters, including the U.S. and China, that were being closely watched at the conference. President Joe Biden, hamstrung by politics at home, didn't bring anything substantially new to the table. Meanwhile China's Xi Jinping didn't attend in person and offered no new plans to cut emissions.

The challenge for India is figuring out how to finance the transition to net zero, which will require trillions of dollars of investment. Modi reiterated his stance that rich countries should help support poor nations by raising more money to accelerate the transition to clean energy —though he didn't specify how much exactly India would need from the international community. "It is India's expectation that the world's developed nations make \$1 trillion available as climate finance as soon as possible," Modi said, a figure that's 10 times more than annual climate finance target set by rich countries. "Justice would demand that those nations that have not kept their climate commitments should be pressured."

Bloomberg reported earlier that Modi's office had been working on modeling what was needed to get to net zero. But the officials balked at setting a goal without strong financing commitments from rich nations.

On Monday, the Indian leader backed up his 2070 net-zero goal with more aggressive near-term targets. He raised India's 2030 target for low-emission energy capacity to 500 gigawatts from 450 GW and pledged to produce half the country's electricity using renewable energy. India will also cut carbon-dioxide emissions 1 billion tons from business as usual by the end of the decade. To deliver on the 2070 goal, the country still has to lay out a detailed plan for the 40 years in between.

Earlier in the day, U.K. Prime Minister Boris Johnson kicked off the COP26 summit by urging world leaders to 'defuse the bomb of climate change.' With helicopters buzzing overhead, delegates swarmed through the vast conference center along the banks of the river Clyde and long lines formed as organizers struggled to accommodate the crowds.

One of COP26 President Alok Sharma's hopes for the Glasgow summit is to eke out enough commitments from countries to keep the Paris Agreement's stretch goal of global limiting warming to 1.5 degrees Celsius relative to pre-industrial levels within reach.

Modi's announcement is consistent with what research shows is needed to meet that target. To keep temperatures from rising more than 1.5°C, the UN's Intergovernmental Panel on Climate Change projects that the world has to reach net-zero carbon dioxide emissions by about mid-century and then hit net zero across all greenhouse gases by 2070.

"Country-wise net zero cannot be the same for all nations," said Arunabha Ghosh, chief executive officer of the Council on Energy, Environment and Water, who has advised the prime minister's office. India's target is "equitable and just," he said.

It's in India's self-interest to stem global warming, even if the problem was caused mainly by carbon dioxide accumulated in the atmosphere by countries that industrialized first. The nation of 1.3 billion people is one of the most vulnerable to climate impacts. Extreme weather events like heat waves, floods and disruptions to the rainy monsoon season will have devastating impacts.

Modi also committed to increasing India's 2030 carbon intensity reduction goal — measured as carbon dioxide emissions per unit of gross domestic product — from 35% to 45%. Stern, from the London School of Economics, said the new targets could mean India reaches peak emissions by 2030.

At the COP26 opening, developing nation leaders expressed frustration that rich countries have failed repeatedly to deliver on a promise to mobilize more funds to help them decarbonize and adapt to a warming planet. Still, in their speeches on Monday, it was smaller and poorer countries that stepped up.

Nepal and Thailand also set new carbon neutrality targets, for 2045 and 2050, respectively. Meanwhile Canada and Australia declined to set new short-term emissions targets, though they did pledge some new money toward financing the transition.

"In the last few months, India has been lining up policies that can take it towards these goals, policies about hydrogen, electric vehicles, renewable energy and industry decarbonization," said Chandra Bhushan, president of New Delhi-based International Forum for Environment, Sustainability and Technology. "Now India needs investments."

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COP26 SUMMIT

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Prime Minister Narendra Modi gestures as he makes a statement at the CoP26 UN Climate Summit in Glasgow on November 1, 2021. | Photo Credit: [AP](#)

India will achieve [net zero emissions latest by 2070](#), Prime Minister Narendra Modi said at the [COP26 summit in Glasgow on Monday](#).

Until Monday, India was the only major emitter that [hadn't committed to a timeline to achieve net zero](#), or a year by which it would ensure its net carbon dioxide emissions would be zero.

Also read: [CoP26 summit | PM Modi highlights 'injustice' to developing countries](#)

By 2030 India will ensure 50% of its energy will be sourced from renewable energy sources. India will reduce its carbon emissions until 2030 by a billion tonnes. India will also reduce its emissions intensity per unit of GDP by less than 45%. India would also install 500 Gigawatt of renewable energy by 2030, a 50 gw increase from its existing targets, Prime Minister said.

He added that in the spirit of climate justice, rich developed countries ought to be providing at least \$1 trillion in climate finance to assist developing countries and those most vulnerable.

Mr. Modi's statements were in contrast to India's run-up to the COP where it had strongly resisted demands by developed countries to take on [net zero targets](#). Several delegations from the United Kingdom, the United States and the European Union had called upon Indian officials in previous weeks to coax such an agreement out of India. Achieving net zero by 2050, scientists say, is the world's best shot at keeping temperatures from rising above 1.5C of Pre Industrial levels.

Environment Minister [Bhupender Yadav had on Sunday said that principles](#) of Equity and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) and, recognition of the very different national circumstances of countries be respected. Taking on net zero targets, requires a sharp shift to clean energy sources that several experts have opined, will impose a steep cost.

Also read: [Modi, Johnson discuss enhanced cooperation on renewables and clean tech](#)

Earlier speaking at a side-event at the COP, Mr Modi said there hasn't been as much focus on climate adaptation as much as mitigation and that is an injustice against developing nations.

There are changes in cropping patterns, there are floods and a great need to make agriculture resilient to these shocks, he added.

Also read: [CoP26 summit | World is strapped to a "doomsday device", says U.K. PM Boris Johnson](#)

Mr Modi said sustainable modes of living being practised in certain traditional communities ought to be made part of school curricula and the lessons from India's efforts at adaptation in programmes such as Jal Jeevan mission, Swachh Bharat mission and mission Ujwala ought to be popularized globally.

"I want to congratulate PM Modi and India for making a bold statement for low-carbon development. India has clearly put the ball in the court of the developed world. This is real climate action. Now, India demands \$1 trillion of climate finance as soon as possible and will monitor not just climate action, but deliver climate finance. Most importantly, India has called, once again, for a change in lifestyles. If we cannot fix how we live, we cannot fix how we live on this planet." -Dr Arunabha Ghosh, CEO and Founder, Council for Energy Environment and Water, a think tank.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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INDIA CALLS FOR HIKE IN CLIMATE FINANCE TO \$1TN

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

India on Tuesday said that climate finance cannot continue at the levels decided in 2009, and emphasised that it should be at least \$1 trillion to meet the goals of addressing climate change.

Speaking at the Ministerial meeting of Like-Minded Developing Countries (LMDC) at the 26th international climate conference under way in Glasgow, Union Environment Minister Bhupender Yadav also called upon the LMDC countries to work closely to protect their interests.

“Climate finance cannot continue at the levels decided in 2009. It should be at least \$1 trillion to meet the goals of addressing climate change and there should be a system to monitor climate finance as we have for monitoring mitigation,” Mr. Yadav said at the meeting.

The meeting, attended by representatives from China, Cuba, Nicaragua and Venezuela and others, was presided over by Bolivian President Luis Alberto Arce Catacora.

Underlining the unity and strength of LMDCs as fundamental in the UNFCCC (United Nations Framework Convention on Climate Change) negotiations to preserve the interest of the Global South in the fight against climate change, Mr. Yadav highlighted that recognition of the current challenges being faced by developing countries required intensified multilateral cooperation, not intensified global economic and geopolitical competition and trade wars.

The Minister requested the LMDC members to join hands with India to support the global initiatives it has pioneered, including the International Solar Alliance (ISA), Coalition for Disaster Resilient Infrastructure (CDRI) and the Leadership Group for Industry Transition (LeadIT).

He also appreciated the efforts of the Third World Network (TWN) for its support to LMDC, and expressed the need to ensure resources to TWN.

The countries collectively underscored that it needs to be ensured that the voices of the LMDC countries are heard loud and clear.

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CLIMATE PLEDGE: ON COP26 SUMMIT IN GLASGOW

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

In a surprise move at [COP26 in Glasgow](#), Prime Minister [Narendra Modi announced that India will commit to ambitious](#), enhanced climate targets and [cuts in carbon emissions](#) in its [Nationally Determined Contributions](#) (NDCs). There were promises to increase non-fossil fuel energy capacity to 500 GW, meet 50% energy from renewable energy, reduce emissions by one billion tonnes, and bring down the economy's carbon intensity below 45%, all by 2030. Finally, the PM made the much-awaited declaration: to reach [Net Zero emissions by 2070](#). The announcement came as a surprise given that India had given no assurances to visiting western climate negotiators before the conference, and had not filed updated NDCs by the deadline last month. Earlier, the G20 summit in Rome ended without any new commitments on climate change, and India's G20 Sherpa and Minister Piyush Goyal had said that India could not "identify a year" for ending net carbon emissions (ensuring carbon dioxide emissions are absorbed by the use of technology and lowering output), unless the developed world committed to funding India's energy transition and enabled clean technology transfers on a much higher scale. Mr. Goyal even suggested that India could not switch to non-fossil fuel and end coal-based thermal plants unless it was made a member of the Nuclear Suppliers Group, where it is being blocked by China and a number of other countries.

Mr. Modi's pledges in 2021 will require an almost immediate shift in the Government's priorities if it wishes to meet its first few goals in just eight years. According to one estimate (the Centre for Science and Environment), the promise to reduce emissions by one billion tonnes would need a reduction in India's carbon output by a massive 22% by 2030. [On Net Zero, the target of 2070 is two decades](#) after the global goal at mid-century, and would require the world's other growing economies including China to peak emissions, preferably by 2030 itself. India meets about 12% of its electricity needs through renewable energy, and ramping that up to 50% by 2030 will be a tall ask too. If the Government realises Mr. Modi's promises in Glasgow, India will be a global beacon in fighting climate change and ensuring sustainable development. At the least, it is hoped the commitments will inspire other countries to keep their word, particularly the developed world that has lagged behind in fulfilling combined promises of billions of dollars to fund emerging economies, LDCs and the most climate vulnerable countries in the global South. When it comes to climate change, countries must remember they are not in competition with one another, but trying together to outrun the clock.

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U.S. President Biden should not buckle to pressure from irate anti-vaccine campaigners

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MORE THAN 100 COUNTRIES JOIN PACT TO SLASH PLANET-WARMING METHANE EMISSIONS

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

More than 100 countries have joined an effort led by the United States and European Union to slash emissions of the potent greenhouse gas methane 30% by 2030 from 2020 levels, an initiative aimed at tackling one of the main causes of climate change.

Methane is the main greenhouse gas after carbon dioxide. It has a higher heat-trapping potential than CO₂ but breaks down in the atmosphere faster - meaning that cutting methane emissions can have a rapid impact in reining in global warming.

The Global Methane Pledge, launched at the COP26 summit in Glasgow on Tuesday after being announced in September, now covers countries representing nearly half of global methane emissions and 70% of global GDP, US President Joe Biden said.

"Together, we're committing to collectively reduce our methane by 30% by 2030. And I think we can probably go beyond that," Biden said at the COP26 summit in Glasgow, Scotland.

"It's going to boost our economies, saving companies money, reducing methane leaks, capturing methane to turn it into new revenue streams, as well as creating good paying union jobs for our workers."

Among the new signatories was Brazil - one of the world's biggest emitters of methane. The pledge now includes six of the world's 10 biggest methane emitters: the United States, Brazil, Indonesia, Nigeria, Pakistan and Mexico.

China, Russia, India and Iran, also top-10 methane emitters, have not signed up. Those countries were all included on a list identified as targets to join the pledge, first reported by Reuters.

"Methane is one of the gases we can cut fastest. Doing that will immediately slow down climate change," European Commission President Ursula von der Leyen said.

WIDENING THE PACT

Since it was first announced in September with a handful of signatories, the United States and European Union have worked to get the world's biggest methane emitters to join the partnership.

There were roughly 60 countries signed up only last week, after a final diplomatic push from the United States and EU ahead of the COP26 summit <https://www.reuters.com/business/cop>.

While it is not part of the formal U.N. negotiations, the methane pledge could rank among the most significant outcomes from the COP26 conference, given its potential impact in holding off disastrous climate change.

A U.N. report in May said steep cuts in methane emissions this decade could avoid nearly 0.3 degree Celsius of global warming by the 2040s. Failing to tackle methane, however, would push out of reach the 2015 Paris Agreement's objective to limit the global rise in temperature to 1.5C above pre-industrial levels and avoid the worst impacts of climate change.

The 30% methane cut, which is not legally binding, would be jointly achieved by the signatories, and cover all sectors. Key sources of methane emissions include leaky oil and gas infrastructure, old coal mines, agriculture and landfill sites.

If fulfilled, the pledge is likely to have the biggest impact on the energy sector, since analysts say fixing leaky oil and gas infrastructure is the fastest and cheapest way to curb methane emissions.

The United States is the world's biggest oil and natural gas producer, while the EU is the biggest importer of gas.

The United States on Tuesday unveiled its own sweeping proposal to crack down on methane emissions with a focus on the oil and gas sector. The main regulation could take effect as soon as 2023 and slash methane from oil and gas operations by 74% from 2005 levels by 2035, according to the U.S. Environmental Protection Agency.

The EU and Canada both plan to unveil methane legislation addressing the energy sector later this year.

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COP26 SUMMIT

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Britain's Prime Minister Boris Johnson with Indian counterpart Narendra Modi attend the World Leaders' Summit "Accelerating Clean Technology Innovation and Deployment", during the CoP26 in Glasgow on November 2, 2021. | Photo Credit: [Jeff J Mitchell](#)

Leaders at the [CoP26 global climate conference in Glasgow](#) have pledged to stop deforestation by the end of the decade and slash emissions of the potent greenhouse gas methane to help slow climate change.

The inability of major powers so far to agree more broadly on rapid reductions in the use of fossil fuels, the main cause of man made global warming, has upset the poorer, smaller countries likely to suffer its worst effects.

Surangel Whipps Jr, president of Palau, a Pacific state of 500 low-lying islands under threat from rising sea levels, told the leaders of the G20 industrial powers in a speech: "We are drowning and our only hope is the life-ring you are holding."

Nearly 90 countries have joined a U.S.-and EU-led effort to slash emissions of methane 30% by 2030 from 2020 levels, a senior Biden administration official said ahead of a formal announcement on Tuesday.

Also read: [CoP26 summit | India will achieve net zero emissions by 2070, says PM Modi](#)

Methane is more short-lived in the atmosphere than carbon dioxide but 80 times more potent in warming the earth. Cutting emissions of the gas, which is estimated to have accounted for 30% of global warming since pre-industrial times, is one of the most effective ways of slowing climate change.

The Global Methane Pledge, first announced in September, now covers emissions from two-thirds of the global economy, according to the U.S. official.

Among the signatories to be announced on Tuesday is Brazil — one of the five biggest emitters of methane, which is generated in cows' digestive systems, in landfill waste and in oil and gas production. Three others — China, Russia and India — have not signed up, while Australia has said it will not back the pledge.

Humanity has also boosted the greenhouse gases in the atmosphere by hacking away at the forests that absorb roughly 30% of carbon dioxide emissions, according to the non-profit World Resources Institute.

Also read: [CoP26 summit | PM Modi highlights 'injustice' to developing countries](#)

In 2020, the world lost 258,000 sq km (100,000 sq miles) of forest — an area larger than the United Kingdom, according to WRI's Global Forest Watch. The conservation charity WWF estimates that 27 football fields of forest are lost every minute.

More than 100 national leaders pledged to halt and reverse deforestation and land degradation by the end of the decade, underpinned by \$19 billion in public and private funds to invest in protecting and restoring forests.

The agreement vastly expands a commitment made by 40 countries as part of the 2014 New York Declaration of Forests, and promises more resources.

“Let’s end this great global chainsaw massacre by making conservation do what we know it can do and deliver long-term sustainable jobs and growth as well,” British Prime Minister Boris Johnson said.

Also read: [CoP26: UK launches India Green Guarantee, commits new funds for EVs in India](#)

CoP26 aims to keep alive a receding target of capping global warming at 1.5 degrees Celsius (2.7 Fahrenheit) above pre-industrial levels to avert still greater damage from the intensified heatwaves, droughts, storms, floods and coastal damage that climate change is already causing.

Under the agreement, 12 countries pledged to provide \$12 billion of public funding between 2021 and 2025 for developing countries to restore degraded land and tackle wildfires.

At least \$7.2 billion will come from private sector investors representing \$8.7 trillion in assets under management, who also pledged to stop investing in activities linked to deforestation such as cattle, palm oil and soybean farming and pulp production.

Brazil, which has cleared vast swathes of the Amazon rainforest, did make a new commitment on Monday to cut its greenhouse gas emissions by 50% by 2030, compared with a previous pledge of 43%.

And Prime Minister Narendra Modi for the first time set out a target date for India, heavily reliant on coal, to reduce its carbon emissions to a level it can absorb, albeit only in 2070 - 20 years beyond the U.N.’s global recommendation.

But there is scant sign so far of shared resolve by the world’s two biggest carbon polluters, China and the United States, which together account for more than 40% of global emissions but are at odds on numerous issues.

U.S. President Joe Biden has singled out China and leading oil producer Russia for failing to step up their climate goals in Glasgow, while Beijing has rejected Washington’s efforts to separate climate issues from their wider disagreements.

The Communist Party-run Global Times said in an editorial on Monday that Washington’s attitude had made it “impossible for China to see any potential to have fair negotiation amid the tensions”.

China said on Tuesday that President Xi Jinping, who decided not to attend in person, had not been given an opportunity to deliver a video address, and had to send a written response instead - in which he offered no additional pledges.

The British government said it had wanted people to attend the conference in person, and had offered absentees the chance to provide recorded addresses or statements.

“If the world was a private company,” said Costa Rican President Carlos Alvarado Quesada, “imagine that for a minute, and the leaders of the world were to be different CEOs of the corporations - today we would all be fired.”

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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INDIA AIMS FOR NET-ZERO EMISSIONS BY 2070, MODI TELLS COP26

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

NEW DELHI : Prime Minister Narendra Modi on Monday pledged to cut India's net carbon emissions to zero by 2070, even as he exhorted developed countries to make available funds to the tune of \$1 trillion for climate adaptation and mitigation.

Speaking at the Conference of Parties (COP-26) summit in Glasgow, Modi said India, the world's third-largest emitter of greenhouse gases, would scale up its non-fossil energy generation capacity to 500GW by 2030, meet 50% of its energy requirements from renewables by the same deadline, bring down its total projected carbon emission by 1 billion tonnes by 2030 and also bring down the carbon intensity of the economy to below 45% by the end of the decade.

With India making such commitments to reduce its carbon footprint, it would need finance and technology to fulfil these targets, Modi said. Describing the promises to make available finances for mitigation and adaptation so far as "hollow", Modi said that with countries raising their ambitions vis a vis reducing carbon emission, "the pledges for finance cannot remain the same as they were at the time of the Paris agreement". He was referring to the 2015 climate summit in Paris.

"Today, when India has made a new commitment with new energy to move forward with its promises at a time like this, climate finance and low-cost climate technology becomes more important," Modi said.

India hopes that developed countries make available \$1 trillion for climate finance, he said. Modi's surprise statement announcing India's commitment to net-zero emission by 2070 may take some pressure off from Asia's third-largest economy to help stop global warming. In the run-up to Glasgow, India had shown signs of shying away from committing to a date by which it would achieve net-zero and not updated its Nationally Determined Contributions—pledges given by a country to bring down its GHGs.

But with India seeking time till 2070 to achieve net-zero emissions while others have committed to net-zero by 2050 or 2060, Indian negotiators may face some rough weather ahead. According to news reports, US President Joe Biden chided China and Russia for their seemingly less ambitious climate goals. Just days before Glasgow, China had pledged to achieve net-zero emissions by 2060.

Modi was among the key world leaders who spoke on Monday, the second day of the climate conference, which comes against the backdrop of dire warnings that the world has already warmed 1.1 degrees Celsius (2 degrees Fahrenheit). Current projections based on planned emission cuts over the next decade are for it to hit 2.7C (4.9F) by 2100. The main aim of the Glasgow conference is to agree to curb carbon emissions fast enough to keep global warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit) below pre-industrial levels. The world has already warmed 1.1 degrees Celsius (2 degrees Fahrenheit).

Modi was greeted by his British counterpart Boris Johnson on his arrival at the Scottish Exhibition Centre to attend the opening ceremony of the COP26 climate summit, where he delivered the national statement.

Johnson opened a global climate summit earlier in the day, saying the world is strapped to a "doomsday device."

Johnson told the summit that humanity had run down the clock when it comes to climate change, and the time for action is now. He pointed out that the more than 130 world leaders gathered had an average age of over 60, while the generations that would be most harmed by climate change aren't yet born.

There were some misgivings that China's Xi Jinping, president of the world's second-biggest polluter, is not attending the Glasgow summit.

But before the UN climate summit, the G-20 leaders, at the close of their meeting over the weekend in Rome, offered some climate pledges instead of commitments of firm action, saying they would seek carbon neutrality "by or around mid-century." The countries also agreed to end public financing for coal-fired power generation abroad but set no target for phasing out coal domestically—a clear nod to China and India.

Meanwhile, Modi in his speech also chided developed countries for their wasteful lifestyles and "mindless consumption" habits that he said had exacerbated the problems related to the environment

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PROTECTING INDIA'S NATURAL LABORATORIES

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

An aerial view on the Zhangye National Geopark in the eastern foothills of the Qilian mountains in Gansu Province of China.

Like social diversity, India's geodiversity, or variety of the geological and physical elements of nature, is unique. India has tall mountains, deep valleys, sculpted landforms, long-winding coastlines, hot mineral springs, active volcanoes, diverse soil types, mineralised areas, and globally important fossil-bearing sites. It is long known as the world's 'natural laboratory' for geo-scientific learning.

Broken loose from a supercontinent 150 million years ago, the Indian landmass, with all its strange-looking plants and animals, drifted northwards all by itself for 100 million years until it settled under the southern margin of the Asian continent. It got entwined with the world's youngest plate boundary. The geological features and landscapes that evolved over billions of years through numerous cycles of tectonic and climate upheavals are recorded in India's rock formations and terrains, and are part of the country's heritage. For example, the Kutch region in Gujarat has dinosaur fossils and is our version of a Jurassic Park. The Tiruchirappalli region of Tamil Nadu, originally a Mesozoic Ocean, is a store house of Cretaceous (60 million years ago) marine fossils. To know how physical geography gets transformed into a cultural entity, we need to study the environmental history of the Indus River Valley, one of the cradles of human civilisation. India offers plenty of such examples.

Geo-heritage sites are educational spaces where people find themselves acquiring badly needed geological literacy, especially at a time when India's collective regard for this legacy is abysmal. Indian classrooms view disciplines like environmental science and geology with disdain compared to how they view other 'pure' subjects like physics, biology, and chemistry. This lack of interest in the government and our academic circles towards geological literacy is unfortunate at a time when we face a crisis like global warming. As the climate of the future is uncertain, decision-making is difficult. Learning from the geological past, like the warmer intervals during the Miocene Epoch (23 to 5 million years ago), whose climate can be reconstructed using proxies and simulations, may serve as an analogue for future climate. The awareness accrued through educational activities in geo-heritage parks will make it easy for us to memorialise past events of climate change and appreciate the adaptive measures to be followed for survival.

The importance of the shared geological heritage of our planet was first recognised in 1991 at an UNESCO-sponsored event, 'First International Symposium on the Conservation of our Geological Heritage'. The delegates assembled in Digne, France, and endorsed the concept of a shared legacy: "Man and the Earth share a common heritage, of which we and our governments are but the custodians." This declaration foresaw the establishment of geo-parks as sites that commemorate unique geological features and landscapes within their assigned territories; and as spaces that educate the public on geological importance. These sites thus promote geo-tourism that generates revenue and employment.

In the late 1990s, in what may be considered as a continuation of the Digne resolution, UNESCO facilitated efforts to create a formal programme promoting a global network of geoheritage sites. These were intended to complement the World Heritage Convention and the UNESCO Man and the Biosphere programme. UNESCO provided guidelines for developing national geo-parks so that they become part of the Global Geoparks Network. Today, there are

169 Global Geoparks across 44 countries.

Countries like Vietnam and Thailand have also implemented laws to conserve their geological and natural heritage. Unfortunately, India does not have any such legislation and policy for conservation. Though the Geological Survey of India (GSI) has identified 32 sites as National Geological Monuments, there is not a single geo-park in India which is recognised by the UNESCO. This is despite the fact that India is a signatory to the establishment of UNESCO Global Geoparks. The GSI had submitted a draft legislation for geo-heritage conservation to the Ministry of Mines in 2014, but it did not make any impact.

Despite international progress in this field, the concept of geo-conservation has not found much traction in India. Many fossil-bearing sites have been destroyed in the name of development. This indifference — strange as it may seem given the current dispensation's penchant for crying itself hoarse about India's heritage — is going to take a toll on our heritage. The development juggernaut will soon overwhelm almost all our sites of geo-heritage. For example, the high concentration of iridium in the geological section at Anjar, Kutch district, provides evidence for a massive meteoritic impact that caused the extinction of dinosaurs about 65 million years ago. This site was destroyed due to the laying of a new rail track in the area. Similarly, a national geological monument exhibiting a unique rock called Nepheline Syenite in Ajmer district of Rajasthan was destroyed in a road-widening project. The Lonar impact crater in Buldhana district of Maharashtra is an important geo-heritage site of international significance. It is under threat of destruction, although conservation work is now in progress under the High Court's supervision.

We are inching towards the disappearance of most of our geological heritage sites. Thanks to unplanned and booming real estate business, many such features have been destroyed. Unregulated stone mining activities have also contributed to this destruction. This situation calls for immediate implementation of sustainable conservation measures such as those formulated for protecting biodiversity. Natural assets, once destroyed, can never be recreated. And if they are uprooted, they lose much of their scientific value.

The protection of geo-heritage sites requires legislation. The Biological Diversity Act was implemented in 2002 and now there are 18 notified biosphere reserves in India. Geo-conservation should be a major guiding factor in land-use planning. A progressive legal framework is needed to support such strategies. In 2009, there was a half-hearted attempt to constitute a National Commission for Heritage Sites through a bill introduced in the Rajya Sabha. Though it was eventually referred to the Standing Committee, for some unstated reasons the government backtracked and the bill was withdrawn. In 2019, a group of geologists under the auspices of the Society of Earth Scientists petitioned the Prime Minister and the Ministries concerned about the need for a national conservation policy under the direct supervision of a national body committed to the protection of geo-heritage sites. But the government's apathy continues.

C.P. Rajendran is an adjunct professor at the National Institute of Advanced Studies, Bengaluru, and author of the forthcoming book, 'Earthquakes of the Indian Subcontinent'

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G20 leaders in particular need to deliver

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BATTING FOR 'ONE SOUTH ASIA' MAKES MORE SENSE

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Over the course of four days, at the [G20 in Rome](#) and [COP26 \(the 2021 United Nations Climate Change Conference\) in Glasgow, Scotland](#), Prime Minister Narendra Modi spoke at nearly a dozen events, expanding on India's plans to counter climate change. India's record since the [2015 Paris Accord](#) and initiatives such as the [International Solar Alliance](#) (ISA) and Coalition for Disaster Resilient Infrastructure (CDRI), as a part of which Mr. Modi (along with other leaders) [launched the 'Infrastructure for Resilient Island States \(IRIS\)'](#) at the World Leaders Summit at COP26 were widely welcomed. The announcement of India's new Nationally Determined Contributions (NDCs) and the "Panchamrit" or five goals for the future elicited applause from across the audience. Missing however, was any reference to India's own region, the subcontinent, South Asia, without which India's multiple forays on fighting climate change could well prove fruitless.

The absence of a South Asian initiative on climate change led by India, accrues to a number of obvious reasons: India-Pakistan tensions that have led to the degradation of the South Asian Association for Regional Cooperation (SAARC) process, especially since 2014, when the last SAARC summit was held; events in Afghanistan and the Taliban takeover which will bring it closer to its Central Asian rather than South Asian neighbours; the differences over pollution issues within the Bangladesh-Bhutan-India-Nepal (BBIN) grouping that has held up its initiatives like the common Motor Vehicle Agreement (due mainly to Bhutan's opposition); and slow movement amongst the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries along the Bay of Bengal that have yet to bring about a common charter at the global level despite adding climate change as an area of cooperation a decade ago.

CoP26 summit | India will achieve net zero emissions by 2070, says PM Modi

Why does this matter?

To begin with, regardless of relations between any of the countries in South Asia (India-Pakistan being the only notable rivalry), there is no question that this is a cohesive geographical unit that is sheltered by the Himalayas to the north, fed by its many glaciers in an intricate network of rivers that fall into the ocean, and buffeted by the same climate and monsoon conditions. Second, South Asia is slowly becoming the world's biggest area of concern when it comes to climate change. According to this year's [Global Climate Risk Index](#), India and Afghanistan are among the top 10 countries worldwide in terms of vulnerability, but South Asia classifies for the overall lowest values. By one estimate, 20 out of 23 major cyclone disasters in the world in the past have occurred around the Bay of Bengal region, and global warming, coastal degradation and soil salinity as well as water scarcities cause the deaths of thousands in South Asia each year. The Asian Development Bank now predicts a decrease of 11% in South Asian GDPs by 2100 if "Business-As-Usual (BAU) Emissions" are maintained. With global warming and sea levels rising, other estimates predict there will be nearly 63 million climate migrants in South Asia by 2050 ([Costs of Climate Inaction: Displacement and Distress Migration](#)).

Second, all these grim figures build a logic for a combined push for global reparations and assistance for the entire region. As a part of the developing world, the Indian subcontinent is not responsible for the massive damage done to the environment already wrought by the developed

world, and according to 2019 figures, no single regional bloc has lower [per capita emissions](#) than South Asia does.

Meeting climate commitments will be a challenge, say experts

When New Delhi speaks of the need for climate justice, global funding and climate adaptation technology transfer, India's voice would only be strengthened multiple times if it speaks for South Asia as a whole. According to the World Bank's newly launched [South Asia road map](#), climate-smart investment opportunities in South Asia total a whopping \$3.4 trillion, with "energy-efficient green buildings" alone representing an investment potential of more than \$1.5 trillion. Green transport connectivity and infrastructure, electric vehicles could represent another \$950 billion in investment opportunities by 2030. This does not include the vast sums of funding available for cross-regional solar grids, windfarms and run-of-river energy projects.

However, while India and other countries in the region access global banks, including the BRICS-led New Development Bank (NDB), the Beijing-based Asian Infrastructure Investment Bank, and Asian Development Bank for projects individually, there is no single South Asian entity the banks could work with for a more targeted focus and more concessional financing for the problem that faces the region.

Editorial | [Climate pledge: On CoP26 summit in Glasgow](#)

Third, growing carbon footprints as well as post-COVID-19 economic compulsions are driving countries into closer regional coalitions, looking for solutions closer home, than those provided by globalisation and long-distance supply chains. South Asia has remained an exception, persistently showing lower inter-regional trade and connectivity, and lower levels of cooperation on migrant labour issues, inter-state tourism and cross-border employment than other regions.

Finally, New Delhi has often warned of the pernicious influence of 'Chinese solutions' to problems in the subcontinent, ranging from unsustainable infrastructure financing to environmentally harmful projects as part of the Belt and Road Initiative (BRI), but it has been unable to proffer a viable alternative, with or without its Quad partners.

CoP26 summit | Leaders pledge to cut methane and save forests

On certain issues, where India has failed, South Asian neighbours have learned to seek help from other international partners or even each other: when India stopped COVID-19 vaccine exports this year for example, Bhutan, which received vaccines from Denmark and a number of other countries including the United States and China after a desperate global appeal, in turn helped Nepal with stocks of AstraZeneca. When New Delhi failed to respond to Sri Lanka's request for assistance with its currency and debt crisis last year, the Rajapaksa government turned to Bangladesh for a currency swap arrangement. The problems between India and Pakistan that have multiplied manifold in the past few years are no doubt a major obstacle, but not one that cannot be surmounted in the face of a common challenge, as the special SAARC conference on COVID-19 in March 2020 showed.

When it comes to climate change, there is a chance to turn this trend, and for India, the largest country in the region sharing the most boundaries with other South Asian neighbours, to lead the way to find holistic solutions: accessing funding, tapping the latest climate adaptation technology, and finding cross-border markets for renewable energy networks. Mr. Modi's "One Sun One World One Grid" and 'Panchamrit plans' would clearly pack more punch if they contain a clear road map for the region, and strive for a common South Asian taskforce to tackle the enormous challenge that lies ahead for India and its neighbourhood this century.

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WATCH

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Polar bears are found in the Arctic circle on the ice-covered waters. These marine mammals are at the top of the food chain and have an important role in the overall health of the marine environment.

Due to global warming, the Arctic ice caps were melting, raising sea levels and threatening their habitat.

But recently the scientists have reported cooling for the first time in the Arctic region which has translated to more retention of ice resulting in the return of polar bears.

Also read: [Polar bears forced to forage eggs as warming shrinks hunting grounds](#)

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Does the knowledge of nerve impulses which can perceive temperature and pressure when initiated help to treat pain?

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INDIA JOINS HIGH AMBITION COALITION (HAC) FOR NATURE AND PEOPLE

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

At a ceremony held between the French and Indian governments on 7th October in New Delhi, India officially joined the High Ambition Coalition for Nature and People, a group of more than 70 countries encouraging the adoption of the global goal to protect 30x30.

HAC members currently include a mix of countries in the global north and south; European, Latin American, Africa and Asia countries are among the members. India is the first of the BRICS bloc of major emerging economies (Brazil, Russia, India, China and South Africa) to join the HAC.

India's announcement comes in the lead up to a high-level biodiversity meeting, hosted by China. The virtual meeting to take place October 11-15 will tackle key aspects of the biodiversity treaty to be finalized in 2022. The global 30x30 goal is currently a centrepiece of the treaty.

Shri Rameshwar Prasad Gupta, Secretary, Ministry of Environment, Forest and Climate Change, Government of India handed over the signed HAC agreement to H.E. Mr. Emmanuel Lenain, Ambassador of France to India in a ceremony held today.



Expressing delight on India joining member countries of HAC, Shri Rameshwar Prasad Gupta, Secretary, Ministry of Environment, Forest and Climate Change, Government of India, said that resource mobilization will always be the cornerstone for implementation of policies and programmes for conserving biodiversity and said India would ensure all support in meeting the global biodiversity targets.

Welcoming India's decision to join the High Ambition Coalition for Nature and People, which was initiated at the "One Planet Summit" in Paris in January 2021, Mr. Emmanuel Lenain, Ambassador of France to India said that on the eve of the opening of COP15, India joining the High Ambition Coalition is a real game changer and will boost our multilateral efforts. Stating that India is a major player for biodiversity protection, the French ambassador informed that this coalition aims to promote an international agreement to protect at least 30 % of the world's land and ocean by 2030.

GK

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CLIMATE RISKS REMAIN EVEN IF WORLD LIMITS WARMING TO 1.5°C: UNEP REPORT

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Smoke rises from chimneys of the Turow power plant located by the Turow lignite coal mine near the town of Bogatynia in Poland. File

Even if the world limits warming to 1.5°C, many climate risks remain and will be irreversible, a latest UNEP report released on November 4 said, while warning that the gap between costs of adaptation and the current financial flow is widening.

'The Adaptation Gap Report 2021: The Gathering Storm' released by the United Nations Environment Programme (UNEP) during the ongoing COP26 at Glasgow said at the current 1.1°C warming, the world has witnessed climate-related devastation in 2021 ranging from floods in Europe and China, heatwaves in Pacific North West, wildfires in Greece and floods and monsoon variabilities in India. "While strong mitigation is the best way to lower impacts and long-term costs, raising ambition in adaptation, in particular for financing and implementation, is critical to keep existing gaps from widening," it said.

CoP26 summit | Countries pledge to phase out climate culprit coal

The report found that the costs of adaptation are likely in the higher end of an estimated \$140-300 billion per year by 2030 and \$280-500 billion per year by 2050 for developing countries only. "Climate finance flowing to developing countries for mitigation and adaptation planning and implementation reached \$79.6 billion in 2019. Overall, estimated adaptation costs in developing countries are five to 10 times greater than current public adaptation finance flows, and the gap is widening," the report said.

Calling for urgent efforts to increase the financing and implementation of actions designed to adapt to the growing impacts of climate change, the UNEP report found that the opportunity to use the fiscal recovery from the COVID-19 pandemic to prioritise green economic growth that also helps nations adapt to climate impacts such as droughts, storms and wildfire is largely being missed.

"As the world looks to step up efforts to cut greenhouse gas emissions -- efforts that are still not anywhere strong enough -- it must also dramatically up its game to adapt to climate change," said Inger Andersen, Executive Director of UNEP. He said, "Even if we were to turn off the tap on greenhouse gas emissions today, the impacts of climate change would be with us for many decades to come. We need a step change in adaptation ambition for funding and implementation to significantly reduce damages and losses from climate change. And, we need it now." It said that \$16.7 trillion of fiscal stimulus has been deployed around the globe, but only a small portion of this funding has targeted adaptation. "Fewer than one-third of 66 countries studied had explicitly funded COVID-19 measures to address climate risks as of June 2021. At the same time, the heightened cost of servicing debt, combined with decreased government revenues, may hamper future government spending on adaptation, particularly in developing countries," the report said.

Globe bounces back to nearly 2019 carbon pollution levels

It, however, said that there was some progress in planning and implementation.

“While early evidence suggests that National Adaptation Plan development processes have been disrupted by COVID-19, progress is being made on national adaptation planning agendas.

“Around 79% of countries have adopted at least one national-level adaptation planning instrument, such as a plan, strategy, policy or law. This is an increase of seven per cent since 2020,” the report said.

Nine per cent of countries that do not have such an instrument in place are in the process of developing one, the report said, adding that at least 65% of the countries have one or more sectoral plans in place, and at least 26% have one or more sub-national planning instruments, it said.

India's net zero commitment at CoP 26, explained | In Focus Podcast

Despite this progress, the report finds that further ambition is needed in financing and implementation.

“The world needs to scale-up public adaptation finance through direct investment and by overcoming barriers to private sector involvement. More and stronger implementation of adaptation actions is needed to avoid falling behind on managing climate risks, particularly in developing countries,” the report said.

It suggested that governments should use the fiscal recovery from the pandemic to prioritise interventions that achieve both economic growth and climate change resilience. “They should set up integrated risk management approaches and establish flexible disaster finance frameworks. Advanced economies should also help developing countries to free up fiscal space for green and resilient COVID-19 recovery efforts through concessional finance and substantive debt relief,” it said.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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COP26 SUMMIT

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Smoke rises from chimneys of the Turow power plant located by the Turow lignite coal mine near the town of Bogatynia in Poland. File

Several major coal-using nations have pledged for the first time to phase out their use of the heavily-polluting fossil fuel or to speed up existing plans to do so, while others announced commitments to end investment in new coal-fired power plants.

U.K. Business Secretary Kwasi Kwarteng said on Wednesday that the commitments made on the sidelines of the U.N. climate summit in Glasgow, Scotland, meant the “end of coal is in sight.” But critics noted the several major economies still have not set a date for ending their dependence on the fuel that is a major source of planet-warming emissions.

Also read: [Leaders pledge to cut methane and save forests](#)

The British government said pledges of new or earlier deadlines for ending coal use came from countries including Poland, Ukraine, Vietnam and Chile.

Further details about which countries were doing what were to be announced Thursday [at the conference, known as COP26](#).

While Kwarteng called the agreements a “milestone moment in our global efforts to tackle climate change,” his counterpart in the opposition Labour Party's said there were “glaring gaps” such as the lack of commitment from large emitters to stop increasing coal domestically.

Also read: [India will achieve net zero emissions by 2070, says PM Modi](#)

Labour's business spokesman Ed Miliband also noted that there were no new commitments on phasing out of oil and gas, the other major fossil fuels, he said.

Existing targets for curbing global warming require countries to stop burning coal, but many major economies including the United States, China, India and Japan have set no formal dates for ending its use.

Still, experts said the announcement and others made so far at the October 31-November 12 summit showed the growing momentum to ditch coal.

“Today's commitments will help to shift whole continents on their journey to phase out coal,” said Dave Jones of the energy think tank Ember.

[COP26 summit | World is strapped to a “doomsday device”, says U.K. PM Boris Johnson](#)

Poland is the second-biggest user of coal in Europe after Germany, which is set to phase it out as early as 2030.

While the Polish government had previously agreed to end coal use by 2049, the new pledge would bring this deadline forward by at least a decade.

Ukraine, the third-biggest coal consumer in Europe, is also bringing forward its coal deadline,

from 2050 to 2035.

“The progress on coal being shown at COP26 demonstrates that the conditions are ripe for a global coal exit,” said Leo Roberts, a senior researcher at the environmental think tank E3G.

“We now need to see the incoming massive scale-up in clean energy finance made available quickly to ensure all countries can confidently move from coal to clean,” he added.

But some environmental activists said the commitments didn't go far enough.

“Emissions from oil and gas already far outstrip coal and are booming, while coal is already entering a terminal decline,” said Murray Worthy of the campaign group Global Witness.

“This is a small step forwards when what was needed was a giant leap.” The agreements on coal are not part of the formal negotiations at the U.N. talks in Glasgow. But British Prime Minister Boris Johnson, whose country is hosting the conference, had said he wanted to see deals on coal, cars, trees and cash.

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THE RIGHT TIME FOR INDIA TO HAVE ITS OWN CLIMATE LAW

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

As the world watches the United Nations Climate Change Conference (COP26, from October 31 to November 12, 2021), the most important climate summit in years at Glasgow, Scotland, India has said it wants to be a part of the climate solution.

Prime Minister Narendra Modi announced, on November 1 at Glasgow, a 'Panchamrit solution' which aims at reducing fossil fuel dependence and carbon intensity (reduce one billion tonnes of total projected carbon emissions by 2030), and ramping up its renewable energy share to 50% by 2030. Glasgow is important as it will call for practical implementation of the 2015 Paris Accord, setting the rules for the Accord. And as the world recovers from the biological and environmental stresses of the COVID-19 pandemic and natural disasters, climate change has also become personal.

Union Minister of Environment, Forest and Climate Change Bhupender Yadav has reasserted the call for the promised \$100 billion a year as support (from the developed world to the developing world) but as we consider new energy pathways, we must also consider the question of climate hazard, nature-based solutions and national accountability.

This is the right time for India to mull setting up a climate law while staying true to its goals of climate justice, carbon space and environmental protection. There are a few reasons for this.

Which law covers climate? First, our existing laws are not adequate to deal with climate change. We have for example the Environment (Protection) Act (EPA), 1986, the Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974. Yet, climate is not exactly water or air. Which law would cover the impacts of a cyclone, for instance or work to reduce future climate impacts? And neither are we ready to tackle environmental/climate violations. The Environment (Protection) Act is grossly inadequate to deal with violations on climate. Clause 24 of the Act, "Effect of Other Laws", states that if an offence is committed under the EPA or any other law, the person will be punished under the other law (for example, Code of Criminal Procedure). This makes the EPA subordinate to every other law.

Second, there is a need to integrate climate action — adaptation and mitigation — and monitor progress. Comprehensive climate action is not just technological (such as changing energy sources or carbon intensity), but also nature-based (such as emphasising restoration of ecosystems, reducing natural hazard and increasing carbon sinks.)

Finally, India's situation is unique. Climate action cannot come by furthering sharpening divides or exacerbating poverty, and this includes our stated renewable energy goals. The 500 Gigawatt by 2030 goal for renewable, solar or wind power for example (of installed power capacity from non-fossil sources), can put critically endangered grassland and desert birds such as the Great Indian Bustard at risk, as they die on collision with wires in the desert.

A climate law could consider two aspects. One, creating an institution that monitors action plans for climate change. A 'Commission on Climate Change' could be set up, with the power and the authority to issue directions, and oversee implementation of plans and programmes on climate.

The Commission could have quasi-judicial powers with powers of a civil court to ensure that its

directions are followed in letter and spirit. It should be assisted by a technical committee which can advise the commission in the discharge of its functions as well as guide various private and public agencies in meeting their climate-related obligations. As an example, the commission could look at agencies or institutions that have a disproportionate impact on climate or environment, and suggest lower energy pathways that are adhered to.

What, for example, is the carbon footprint of a single activity from start to finish? We have the Bureau of Energy Efficiency, but we also need overall carbon efficiency that looks beyond electronics. How could intelligent interventions be made for reduction of footprints, along with common sense, and practical public health interventions which are unaccounted for so far? In a recent case in the National Green Tribunal it was revealed that the National Thermal Power Corporation did not even cover coal wagons with tarpaulin on railways, decades after environmental clearances were granted in 1999, in Chhattisgarh. In 2020, the Supreme Court passed an order directing for the wagons to be covered within a month's time. There will be eventual emissions by coal use. But there is also the issue of respirable coal dust that is spewed into the air through irresponsible transportation.

As of now, many environmental mediations remain glaringly haphazard. The ban on plastic bags in Delhi is a failure because plastic bag substitutes were never really pushed at scale by the understaffed environment department. A plastic bag ban to succeed in one State requires a similar commitment from neighbouring States. A nation-wide intervention here, led by a Climate Commission, considering substitutes at scale for plastic-based products (which are derived from petroleum) and looking at both innovation and implementation, would be useful.

Second, we need a system of liability and accountability at short-, medium- and long-term levels as we face hazards. This also means having a legally enforceable National Climate Change Plan that goes beyond just policy guidelines. Are climate vagaries acts of god, or do certain actions exacerbate them? In an order of the National Green Tribunal in 2016, the court examined the damage caused when floods occurred in 2013 in Pauri, Uttarakhand. When Srinagar dam (Uttarakhand) opened its sluice gates, muck created 8-foot tall deposits, destroying property and fields.

While muck is not hazardous, the handling of the dam — especially in a mountainous area in the face of climate events — created serious damage. The court held the damage was not an 'Act of God' and invoked the Principle of No Fault liability. The Alaknanda Hydro Power Company was asked by the Tribunal to pay more than 9 crore in damages. But all this was after the disaster. A Climate Commission could ideally prevent such gross negligence in fragile areas and fix accountability if it arises.

We have an urgent moral imperative to tackle climate change and reduce its worst impacts. But we also should Indianise the process by bringing in a just and effective law — with guts, a spine, a heart, and, most importantly, teeth.

Neha Sinha is a conservation biologist and author of 'Wild and Wilful: Tales of 15 Iconic Indian Species'. The views expressed are personal

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The plight of Indian women migrant workers in West Asia highlights the lack of gender-centric, rights-based safeguards

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EXPLAINED

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A milestone: The U.S. and the EU have pledged to cut methane emissions by 30% compared with the 2020 levels. In California, 35,000 oil and gas wells sit idle. Many of them are unplugged and could leak methane. | Photo Credit: [AFP](#)

The story so far: At the ongoing [UN Climate Change Conference \(the 26th Conference of Parties-COP26\) in Glasgow](#), the United States and the European Union have jointly [pledged to cut emissions of the greenhouse gas methane](#) by 2030. They plan to cut down emissions by 30% compared with the 2020 levels. At least 90 countries have signed the Global Methane Pledge, with India and China abstaining so far. Separately, 133 countries have signed a Glasgow Leaders' Declaration on Forests and Land Use — a declaration initiated by the United Kingdom to “halt deforestation” and land degradation by 2030. China, too, is a signatory to this but India has stayed out.

Biden climate plan aims to reduce methane emissions

Methane accounts for about a fifth of global greenhouse gas (GHG) emissions and is about 25 times as potent as carbon dioxide in trapping heat in the atmosphere. In the last two centuries, methane concentrations in the atmosphere have more than doubled, mainly due to human-related activities. Because methane is short-lived, compared with carbon dioxide, but at the same time potent, the logic is that removing it would have a significant positive impact. Methane is emitted from a variety of anthropogenic (human-influenced) and natural sources. The human sources include landfills, oil and natural gas systems, agricultural activities as well as livestock rearing, coal mining, stationary and mobile combustion, wastewater treatment, and certain industrial processes. Sources of methane can be harnessed for energy and in principle reduce dependence on energy sources that emit high carbon dioxide but the lack of incentives and efficient energy markets to realise this is an impediment to curtailing methane emissions.

China envoy defends emissions, criticizes U.S. under Trump

India is the third largest emitter of methane, primarily because of the size of its rural economy and by virtue of having the largest cattle population. India has stated earlier that it plans to deploy technology and capture methane that can be used as a source of energy. In a communication to the United Nations Framework Convention on Climate Change, India said approximately 20% of its anthropogenic methane emissions come from agriculture (manure management), coal mines, municipal solid waste, and natural gas and oil systems. To tap into this “potential,” the Ministry of New and Renewable Energy (MNRE) claims to have invested heavily in a national strategy to increase biogas production and reduce methane emissions. “The biogas strategy includes many policy initiatives, capacity-building, and public-private partnerships. In addition to promoting biogas development, the strategy supports goals for sustainable development, sanitation improvements, and increased generation of renewable energy,” the MNRE notes.

The [Glasgow Declaration](#) was signed by 133 countries, which represent 90% of the globe's forested land. The declaration is also backed by a \$19-billion commitment, though whether this translates into legally binding flows remains to be seen. The Glasgow Declaration is a successor to a failed 2014 New York Declaration for Forests — that for a while saw significant global traction — and promised to reduce emissions from deforestation by 15%-20% by 2020 and end it by 2030. However, deforestation has only increased, and is responsible for about 20% of the

total carbon emissions. One of the goals of the pledge, to halt deforestation, is to ensure that natural forests aren't cleared out for commercial plantations. It also aims to halt industrial logging, though several independent estimates say the demand for wood pellets, which stokes deforestation, is only expected to increase. Finally, the declaration seeks to strengthen the rights of indigenous tribes and communities to forestland.

There is again no official reason accorded but reports suggest that Indian officials are unhappy with the wording that suggests meeting the obligations under the pledge could also mean restrictions in international trade. That is unacceptable, they say, as trade falls under the ambit of the World Trade Organization, of which India is a member. India is also mulling changes to its forest conservation laws that seek to encourage commercial tree plantation as well as infrastructure development in forestland. India's long-term target is to have a third of its area under forest and tree cover, but it is so far 22%. It also proposes to create a carbon sink, via forests and plantations, to absorb 2.5-3 billion tonnes of carbon dioxide.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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COUNTRIES' PLEDGES IMPROVE ODDS OF THWARTING GLOBAL TEMPERATURE RISE BY A THIRD

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Staying cool: The effort is to have most major economies pledge to reach net zero by mid-century. | Photo Credit: [Mark Lowery](#)

How effective are climate change pledges made by countries in containing global warming? A study published Friday in the journal *Science* finds that the latest Nationally Determined Contributions by 120 countries, as of September 30, improve the odds of global temperature rise staying below 2°C by 34% and below 1.5°C by 1.5%.

By way of comparison, the 2015 pledges made by countries at the Paris Agreement promised only a 8% chance of temperatures staying below 2°C, and zero—or no chance—at 1.5°C.

If countries were to follow a more ambitious path beyond 2030, those probabilities rose to 60% and 11% respectively.

The findings while optimistic come amidst the deliberations underway at Glasgow where the greatest global effort is underway to have countries sign on to an agreement to keep temperatures below 1.5°C and, to this end, have most major economies pledge to reach net zero by mid-century. Net zero is when a country's emissions are offset by having an equivalent amount removed from the atmosphere for zero emissions in balance. While countries such as the United States, the United Kingdom and the European Union have committed to a 2050 time line, China—the world's largest polluter—has indicated a 2060 timeline and India—the third largest—a 2070 timeline.

Only 12 countries have enshrined this commitment in law. These are Germany, Sweden, Japan, United Kingdom, France, Canada, South Korea, Spain, Denmark, New Zealand, Hungary, Luxembourg.

“We are so much closer to getting to the 2-degree goal than six years ago when the Paris Agreement was first signed,” said corresponding author Haewon McJeon, a research scientist at the U.S. Department of Energy’s Pacific Northwest National Laboratory (PNNL) in a statement. “The wave of strengthened climate pledges and net-zero targets significantly increased our chance of staying under 2 degrees Celsius. And we practically ruled out the possibility of the worst climate outcomes of 4 degrees or higher.”

However, making the 1.5° C limit more likely will take more ambition, cautioned lead author Yang Ou, a postdoctoral researcher at the Joint Global Change Research Institute, a partnership between PNNL and the University of Maryland.

The researchers relied on a modelling approach and used the Global Change Analysis Model (GCAM) to simulate a spectrum of emissions scenarios. They then evaluated the likely temperature outcomes for those scenarios.

Several factors influenced near-term emissions trajectories and long-term climate outcomes, the authors noted. These include the global turn away from coal to technological advances that made solar panels and electric vehicles relatively cheaper.

Climate change has already caused global temperatures to rise about 1.2°C above pre-industrial levels.

In the past, it has taken thousands of years for temperature to rise by a few degrees, and dramatic changes, from unpredictable swings in India's monsoon to accelerated heating of the oceans, are already occurring as a result of a 1.2°C increase.

Scientists are calling for climate change to be limited as much as possible to avoid triggering cascading and compounding “tipping points” that could limit our ability to contain global heating.

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Does the knowledge of nerve impulses which can perceive temperature and pressure when initiated help to treat pain?

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A TINY PLANT THAT CAN 'DIGEST' LOW DENSITY PLASTIC SHEETS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Useful plant: An alga variety - *Uronema africanum* Borge - commonly found in Asia, Europe and Africa, seen under the light microscope. | Photo Credit: [Sanniyasi Elumalai](#)

Researchers from University of Madras and Presidency College, Chennai, have isolated an alga species that shows promise as an agent of biodegradation of plastic sheets. It is a preliminary study that has been published in *Scientific Reports* and needs further research and development before it can be translated to the industry.

According to the Central Pollution Control Board's annual report for the year 2011-12, the plastic waste generated in a year amounted to 5.6 million metric tonnes. Only 60% of the plastic used in India was collected and recycled. The metros alone contributed some 21.2% of the total waste, led by Delhi, followed by Chennai, Kolkata and Mumbai.

The usual means of disposal of plastic waste involves incineration, land-filling and recycling. These methods have limitations and also sometimes produce side-effects that are hazardous to the environment. Hence, researchers are on the lookout for biodegradation methods that are safe and environment friendly. It is in this context that the present study gains importance.

In earlier studies, species of bacteria that degrade plastic have been studied. In the present study, this role is played by the microalga *Uronema africanum* Borge. This is a species of microalgae that is commonly found in Africa, Asia and Europe. In Rangoon, Burma, it was noted to be an epiphyte, attaching itself to other algae and plants.

Sanniyasi Elumalai, Professor in the Department of Biotechnology, University of Madras, and his graduate students Preethy P. Raj and Dinesh Kumar Gunasekar, along with post-doctoral fellow Rajesh Kanna Gopal from Presidency College, came upon a plastic bag which was colonised by, as they came to know later through study, three species of microalgae.

"We collected a polyethylene carry bag colonised by green, luxuriously grown photosynthetic microalgae and samples of water," says Prof. Elumalai. "Viewing the collected polyethylene sample under a light microscope showed that it was colonised by microalgae... Abrasions were seen on the surface of the polyethylene sheet at different magnifications."

The samples were collected at the Kallukuttai lake area near Taramani railway station, in Chennai. When they did a closer examination of the microalgal growth, they found one species, *Uronema africanum* Borge, showed potential to degrade plastic.

They first had to identify which species the alga belonged to, and in this they were helped by Dr. B. Babu of Madras Christian College, Chennai, whom they acknowledge in the paper.

In the experiments, they tested the microalga on low-density polyethylene, in sheets which are highly resistant to degradation, into simpler molecules. "We saw that the isolated algae *Uronema africanum* produced enzymes, hormones, and some polysaccharides which slowly degrade [the sheets], and the structural integrity of the polymer [breaks down] and it disintegrates into monomers," says Prof. Elumalai.

After incubation of the algae in the polyethylene sheet for thirty days, they noticed under the microscope that there were aberrations, grooves, ridges and furrows in the material of the sheets. Following it up with gas chromatography and mass spectrum analysis, they found that there was a huge difference in the composition of supernatant fluids of controls and experimental sample.

“The microalgae produce different kinds of extra cellular polysaccharides, enzymes, toxins such as cyanotoxins, hormones which react with the polymer sheets (polymer bonds) and break them up into the simpler monomers which will not have harmful effect in the atmosphere,” says Prof Elumalai.

In their analysis, the researchers used the facilities of Central Leather Research Institute, Chennai, and Vellore Institute of Technology, Vellore.

The researchers are planning to collaborate with industry to take up this technology in to a pilot scale and finally large-scale study.

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Does the knowledge of nerve impulses which can perceive temperature and pressure when initiated help to treat pain?

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THERE'S AN \$80 BILLION HOLE IN INDIA'S CLIMATE PLEDGE

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Unless governments are prepared to depoliticise power and overhaul debt-ridden state electricity companies, the nation will struggle to meet its renewables target

When it comes to saving the planet, the ambition of India's reach is praiseworthy. The challenge lies in the weakness of its grasp.

After emphasizing for years that a pathway to going green was more important than a deadline, India surprised delegates at the COP26 climate summit in Glasgow by announcing a net zero goal for emissions by 2070. More onerous than that longer-term commitment is the intention to use non-fossil-fuel sources for half of its energy needs by 2030.

It's a daunting target. The share of renewables in the country's current energy mix is only 12%. Besides, the third-largest emitter would guzzle 2.5 trillion kilowatt-hours of electricity annually by 2030, almost double what it required at the start of the decade.

Still, the world's lowest-cost solar and second-lowest-cost wind producer can deliver on its pledge, provided a 6 trillion rupees (\$80 billion) hole in the heart of the country's power system can be filled.

That's the quantum of accumulated financial liabilities at India's electricity distribution companies, or [discoms](#). This large overhang crimps their ability to pay on time, forcing them to run up operational debt to electricity suppliers and transmission firms. According to the most recent government data, discoms' payment arrears are now nearly \$14 billion, almost a fifth of which are claims of renewable power producers.

In most of India's 28 states, these utilities are controlled by local governments. A 22.3% "technical and commercial loss" — euphemism for free electricity to farmers and power theft — means that the distribution firms never quite manage to find their footing, despite several restructuring attempts. Their shaky financial position hurts generators, including clean-energy firms. Many discoms now have outstanding dues of between six and 12 times their monthly bills.

Without reforming this bankrupt industry, India will struggle to meet its bold target of raising non-fossil-fuel generation capacity — including hydroelectric and nuclear power — to 500 gigawatts by 2030, up from roughly 150 gigawatts now.

But that's easier said than done. During last year's Covid-19 lockdown, the government of Prime Minister Narendra Modi provided \$17 billion in emergency liquidity support to discoms to prevent them from defaulting. Since New Delhi was loathe to ratchet up public debt, it relied on a couple of public-sector financiers to do the job. They borrowed and funneled the money to the utilities to pay suppliers — including the state-owned NTPC Ltd., the country's No. 1 power producer.

However, the catch was that state governments had to guarantee the concessional loans taken by their discoms. According to ICRA Ltd., the Indian affiliate of Moody's Investors Service, seven states extended almost \$14 billion in such guarantees. Technically, these are contingent liabilities, though in practice they're proving to be very real. Recently, when power distributors in three states couldn't pay their arrears to NTPC, the Reserve Bank of India intervened and

deducted money from their governments' accounts at the RBI.

This is a pass-the-parcel game, where a higher branch of the government lends to entities controlled by a lower branch, and then gets bills of its own producer paid. Private-sector investors, who must do the heavy lifting for India to hit its clean-energy goals, won't be getting these favors: They will have to run around to get paid even as state politicians threaten to renegotiate long-term power purchase agreements.

How then to reform discoms? Better software and demand-management systems may boost their ability to absorb renewables, as Sumant Sinha, chairman of ReNew Energy Global Plc, one of India's biggest producers of clean electricity, told Bloomberg News last month. However, efficiency gains alone won't address the problem of being stuck with older vintages of more expensive power purchase deals. "Utilities which enjoy superior contracts will have cheaper power — it has less to do with management skills," says energy analyst Rahul Tongia at the New Delhi-based Centre for Social and Economic Progress. An overdue change may be to move wholesale demand away from long-term agreements to spot power exchanges, which today handle only about 5% of electricity consumed in India.

Giving retail consumers more choice by allowing multiple distribution companies to share the wires and poles appears attractive in theory, though as a government think tank noted recently, it's not necessary that an open market will be more competitive. Even in Mumbai, which has a long tradition of private power supply, consumers who want to switch suppliers face heavy regulatory charges, making migration unviable.

The biggest bottleneck is perverse incentives. As long as free electricity for pumping groundwater remains a popular ploy to garner farmers' votes, politicians won't want to lose control of discoms, not when they know that a federal government bailout will inevitably arrive every few years. But without a modicum of political will to depoliticize power, the promise of India's renewables industry may disappear in the country's \$80 billion distribution ditch.

This story has been published from a wire agency feed without modifications to the text. Only the headline has been changed.

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NEW CLIMATE PLEDGES BARELY AFFECT GLOBAL HEATING: UN

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A flurry of emissions pledges around the COP26 climate summit will likely do little to slow global warming, the UN said on Tuesday, calling on nations to sharply accelerate their greenhouse gas cuts this decade.

Nations have presented a range of new and enhanced commitments — including a vow by India to be carbon neutral by 2070 — in recent weeks as the UN climate summit sets its sights on limiting temperature rises to 1.5 degrees Celsius.

Countries came in to the negotiations far off target, with national emissions-cutting pledges — known as nationally determined contributions, or NDCs — put Earth on course to warm a “catastrophic” 2.7 degrees Celsius this century.

And a fresh assessment of their new pledges by the UN Environment Programme (UNEP) found the outcome was “very similar”, largely because the most ambitious emissions cuts are envisaged after 2030.

The report highlights the challenges facing climate negotiations, given the yawning gap between the emissions cuts needed this decade to keep warming to 1.5 degrees Celsius and the continuing increases in greenhouse gases pumped into the atmosphere.

UN Climate Change said last week that countries’ renewed NDCs would see emissions climb 13.7% by 2030 before sharply declining thereafter.

To keep in line with 1.5C, emissions must instead fall 45% by then.

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THE LONG ROAD TO NET ZERO

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Future course: An aerial view of a solar park in Karnataka. | Photo Credit: [Getty Images](#)

The story so far: With the announcement of a net zero emissions target for 2070 by Prime Minister Narendra Modi at the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow, India has joined a high-profile group of countries. Others with net zero goals include major emitters such as the United States, the United Kingdom and the European Union with a 2050 target, and China aiming for 2060. A dozen countries besides the EU have a legal enactment towards the goal.

Net zero, which means balancing out man-made national greenhouse gas (GHG) emissions by removing an equal amount from the atmosphere, can be achieved only through a structured programme that relies on sharp emissions reduction, wide support for clean energy innovation and adoption of green technologies.

India's well-founded argument against committing itself to strict emissions goals is that it has historically been one of the lowest emitters of GHGs, and the impetus has to come from the developed economies that had the benefit of carbon-intensive development since the Industrial Revolution. The country represents about 7% of today's global emissions, and has committed itself to a net zero deadline 49 years away. According to the World Bank, in 2018, India had per capita emissions of 1.8 tonnes, which is markedly lower than 15.2 for the U.S., 5.4 for the U.K. and even the middle-income countries' average of 3.7 tonnes. A projected per capita emissions figure in 2030 for India is 2.4 tonnes under the Paris Agreement. India's absolute emissions volume stands third, after China and the U.S.

Mr. Modi's net zero plan, which he described as "*panchamrit*", or the five nectar elements, includes raising renewables capacity to 500 gigawatt (GW) by 2030, share of power from renewables to 50%, and reducing carbon intensity of the economy by 45%. These represent a rise from the Paris Agreement pledge of 175 GW from renewables, 40% share of power, and reduction of emissions intensity of GDP by 33-35%.

Analysis of India's growth path points to rising GDP per capita, with a rise in carbon emissions in the short term, primarily from energy. There is pressure from absolute increase in population and consumption, but population growth is slowing. A greater share for services in GDP is positive for emissions cuts, but there is no indication of when India's emissions, heavily influenced by coal and other fossil fuel use, will peak.

In terms of sectoral GHG emissions, data from 2016 show that electricity and heat account for the highest share (1.11 billion tonnes), followed by agriculture (704.16 million tonnes), manufacturing and construction (533.8 million tonnes), transport (265.3 million tonnes), industry (130.61 million tonnes), land use change and forestry (126.43 million tonnes), other fuel use (119.04 million tonnes), buildings (109.2 million tonnes), waste (80.98 million tonnes), fugitive emissions (54.95 million tonnes), and aviation and shipping (20.4 million tonnes).

To align all national economic activity with emissions reduction with the aim of containing global warming to well below 2 degrees Celsius or even 1.5 degrees Celsius (Paris Agreement goals), India needs to create a legal mandate for climate impact assessment of all activities. This can facilitate investment by dedicated green funds. Public sector institutions promoted by the government, co-operatives and even market mechanisms will participate.

The 500 GW renewables target needs a major boost, such as channelling more national and international climate funding into decentralised solar power. Rooftop solar, estimated at 7,701 megawatt (MW) installed capacity as of June 2021, could be scaled up by modernising unattractive State-level regulation. The problem with expansion of rooftop solar, which registered 53% year-on-year growth in 12 months, is resistance from State electricity utilities, although costs are reducing.

Another emerging sector is green hydrogen production because of its potential as a clean fuel. India has a National Hydrogen Mission now in place. The fuel can cover major sectors such as power and steel production (shifting from coal) and automotive (fuel cell vehicles), while green ammonia, with potential uses in energy storage, shipping, and as a base for hydrogen production, are promising areas. This can steadily decarbonise big sources of emissions as industry leaders explained at COP 26. Since renewables will be at the core of green hydrogen production, India's solar power potential will help in exporting it to global steelmakers, for instance.

India's urban solid waste management will need to modernise to curb methane emissions from unscientific landfills.

These plans need a political consensus and support from State governments. Net zero will involve industrial renewal using green innovation, green economy support and supply chains yielding new jobs. It also needs low carbon technologies, zero emission vehicles, and renewed cities promoting walking and cycling. Industry will need to make highly energy-efficient goods that last longer, and consumers should be given a legal right to repair goods they buy. Preventing the release of stored carbon in the environment, such as trees and soil, has to be a net zero priority.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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COP26 DRAFT URGES TO HASTEN EMISSION CUTS

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A draft UN climate summit text urged countries on Wednesday to boost their emissions cutting goals by 2022, three years ahead of schedule, after data showed the world was far off track to limit warming to 1.5C.

Wednesday's text was the first indication of where nations are 10 days into the COP26 talks in Glasgow, which host Britain has billed as crucial to achieving the most ambitious temperature goal of the 2015 Paris Agreement.

The text called for nations to "revisit and strengthen" their decarbonisation plans by next year and said that limiting heating to 1.5C "requires meaningful and effective action by all parties in this critical decade".

It said "rapid and sustained reductions in greenhouse gas emissions" were needed to avert the worst impacts of heating, which has already seen countries worldwide slammed by fiercer floods and droughts. Countries' latest decarbonisation plans submitted under the Paris Agreement are likely to see Earth warm 2.7C this century.

Vulnerable nations say that the next deadline, in 2025, is too distant to deliver the emissions cuts needed to avoid disastrous heating.

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DOES INDIA HAVE A RIGHT TO BURN FOSSIL FUELS?

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Naresh Chauhan, 50, his wife Rina Devi, 45, fill sacks with coal in Dhanbad on September 24, 2021. The two have lived in a village at the edge of the Jharia coalfield in Dhanbad all their lives.

There has been quite a lot of debate on India's dependence on coal against the backdrop of the Conference of the Parties (COP26) meeting. While the coal lobbyists may have obvious interests in continuing that dependence, it comes as a surprise when the progressive circles also provide theories to justify this. Despite the Environment Minister adopting a similar position on the eve of the COP26, the Government of India has, for the first time, made a commitment to achieve the net zero target by 2070. It remains to be seen whether the government will indeed walk the talk since the experience on this count (or other issues) does not necessarily inspire that confidence.

The crux of the theoretical argument is that India needs to develop, and development requires energy. However, since India has neither historically emitted nor currently emits carbon anywhere close to what the global North has, or does, in per capita terms, it has no reason to commit to declining dependence on coal, at least in the near future. If anything, the argument goes, it should ask for a higher and fairer share in the global carbon budget. There is no doubt that this carbon budget framework is an excellent tool to understand global injustice but to move from there to our 'right to burn' is a big leap. It is like arguing that since India was colonised, it has a right to do the same and stopping the country from doing that is injustice.

CoP26 summit | India will achieve net zero emissions by 2070, says PM Modi

For development, do the countries in the global South necessarily need to increase their share in the global carbon budget? Thankfully the answer is 'no' and it does not come at the cost of development, even in the limited sense as development is defined generally.

One, there is no doubt that economic development requires energy but that does not translate into energy by burning coal. If there are other cleaner forms of energy available, why persist on the usage of coal? Normally the argument in favour of coal is on account of its cost, reliability and domestic availability. Recent data show that the levelised cost of electricity from renewable energy sources like solar (photovoltaic), hydro and onshore wind has been declining sharply over the last decade and is already less than fossil fuel-based electricity generation. On reliability, frontier renewable energy technologies have managed to address the question of variability of such sources to a large extent and, with technological progress, it seems to be changing for the better. As for the easy domestic availability of coal, it is a myth. According to the Ministry of Coal, India's net coal import went up from 782.6 billion in 2011-12 to 1,155.0 billion in 2020-21. India is among the largest importers of coal in the world, whereas it has no dearth of solar energy.

Two, why should the global South be aping the North in the development model it wants to follow? During the debates of post-colonial development in the Third World, there were two significant issues under discussion — control over technology and choice of techniques to address the issue of surplus labour. India didn't quite resolve the two issues in its attempts of import-substituting industrialisation which worsened during the post-reform period. But it can address both today. The abundance of renewable natural resources in the tropical climate can give India a head start in this competitive world of technology. South-South collaborations can

help India avoid the usual patterns of trade between the North and the South, where the former controls technology and the latter merely provides inputs. And the high-employment trajectory that the green path entails vis-à-vis the fossil fuel sector may help address the issue of surplus labour, even if partially. Such a path could additionally provide decentralised access to clean energy to the poor and the marginalised, including in remote regions of India. So, it simultaneously addresses the issues of employment, technology, energy poverty and self-reliance.

The long road to net zero

Three, the framework of addressing global injustice in terms of a carbon budget is quite limiting in its scope in more ways than one. Such an injustice is not at the level of the nation-states alone; there is such injustice between the rich and the poor within nations and between humans and non-human species. A progressive position on justice would take these injustices into account instead of narrowly focusing on the framework of nation-states. Moreover, it's a double whammy of injustice for the global South when it comes to climate change. Not only is it not primarily responsible, but the global South, especially its poor, will unduly bear the effect of climate change because of its tropical climate and high population density along the coastal lines. So, arguing for more coal is like shooting oneself in the foot. It is true that mitigation from the South alone will not make the difference required to stop this catastrophe but burning more coal will not necessarily solve the problem either.

Why India shouldn't sign on to net zero

But none of this answers how the wrongs of the past will be righted, the basic premise we started with. We have argued in this very newspaper that one of the ways in which this can be done is by making the global North pay for the energy transition in the South. Chalking out an independent, greener path to development may create conditions for such negotiations and give the South the moral high ground to force the North to come to the table, like South Africa did at Glasgow. The current lack of action against climate change both in the North and South has been maintained by dividing the working classes of these two regions — the North justifying operating coal mines since the South continues to emit more and the South negotiating for a higher share in carbon budget based on the past emissions of the North. This is a deadlock. The need of the hour is a global progressive agenda that does not pit the working class of the North against the South but the working people of the world as a whole resisting the global ruling elite in its aggressive and dangerous model of competitive emissions. Even if one is pessimistic about this path of righting the wrongs of the past, at the very least, it is better than the status quo.

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The COVID-19 vaccination drive is a reminder that the benefits of many vaccines have yet to reach the adult population

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COP26 DRAFT SAYS CLIMATE FINANCE IS INSUFFICIENT

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A panel depicting Planet Earth and a message reading 'While you were Talking', regarding the COP26 Summit is displayed on St John's Church, in Edinburgh, Scotland, Sunday, Nov. 7, 2021. | Photo Credit: [AP](#)

A draft document of the agreement that countries, including India, are negotiating in Glasgow, Scotland underlines that the promised climate finance by the developed countries is “insufficient to respond to the worsening climate change impacts in developing countries” and urges the developed countries to “urgently scale up.”

The provision of finance for mitigation and adaptation of the impact of global warming is one of the key sticking points. The United States, Canada, several countries of the European Union and the United Kingdom, among others, have dragged their feet on a commitment to provide \$100 billion annually by 2020. India, along with several other developing countries, has for years pointed out that not providing this money implies that the developed countries' demand to coerce major developing countries into a net-zero commitment by mid-century is unjustified. It also violates the core principle of equity and climate justice, they aver.

Also read | [India at COP26 says its solar energy capacity increased 17 times in 7 years; now at 45 GW](#)

Last week, in Glasgow, Prime Minister Narendra Modi committed to India reaching net zero by 2070, two decades after 2050. Updated reports from the Intergovernmental Panel on Climate Change say that the earth's best shot at keeping temperatures from rising beyond 1.5°C by the end of the century is most nations achieving net zero by mid-century. Net zero is when a country's greenhouse gas emissions are balanced by removing an equivalent amount from the atmosphere. Mr. Modi also said that nearly a trillion dollars in finance was needed from the developed countries.

The countries debating the agreement at the ongoing 26th Conference of Parties (COP) must have a final document in place by Friday, the concluding day of the summit.

The draft document also says that it “recognises that limiting global warming to 1.5°C by 2100 requires rapid, deep and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45% by 2030, relative to the 2010 level, and to net zero around mid-century.”

Editorial | [Climate pledge: On CoP26 summit in Glasgow](#)

It also called upon the nearly 200 countries which are part of the negotiations to “accelerate the phasing out of coal and subsidies for fossil fuels.”

Though Mr. Modi has committed to dramatically increase the use of renewable energy by 2030, India is also likely to double its use of coal in the interim given how it sees the economy growing in the years ahead.

“The funds necessary for adaptation must increase,” said Bhupender Yadav, Environment

Minister. “Our consistent stand has been that developing countries such as India need transparency in terms of what kind of market mechanism will be in place. This is necessary to ensure that the developing and developed countries are on a level playing field.”

In Focus Podcast | [India's net zero commitment at CoP 26, explained](#)

The draft document also “welcomed” the contributions [of \$413 million] to the Least Developed Countries Fund (LDCF), which represented significant progress compared with previous efforts.

The LDCF is for a group of countries, several of them island nations, that have the least carbon emissions but also are at greatest risk. Since 2001, it has provided \$1.7 billion for projects that help buffer the impacts from warming.

Independent commentators appeared unimpressed. “The decision does not recognise strongly enough the extremely urgent need to close the huge 2030 emission gap, and to establish a high-level political process in 2020 to do so. At this stage, the draft only urges parties which have not yet submitted new or updated commitments to do so before 2022, yet many have submitted NDCs that are not at all improved or enhanced and/or are nowhere near sufficient for the Paris agreement’s 1.5°C limit,” said Bill Hare, Founder, Climate Analytics.

“The UN Secretary General should be invited to convene world leaders at the end of 2022, specifically to address closing the 2030 mitigation and finance gap. If this is pushed off until 2023 then the process will really only be addressed here commitments for 2035, nearly 15 years away, leaving the massive gap in 2030 unaddressed,” said Mr. Hare.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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THE LOWDOWN ON INDIA'S GLASGOW ANNOUNCEMENT

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Prime Minister Narendra Modi's surprise declaration on November 2, 2021 at the [COP26 Climate Summit in Glasgow](#), Scotland, of striking enhancements in India's emissions reduction targets did not, for several reasons, get the rave reviews the Government may have expected. Except for a few specialists, international commentators expressed disappointment that India was promising net zero emissions only by 2070 instead of 2050. In India, several analysts praised the new targets as indicating a new climate-oriented development policy.

The Government's raised ambition represents a welcome continuity of the cross-partisan consensus prevailing since the 2015 Paris Agreement. The new policy paradigm, initiated at the Copenhagen Summit in 2009, had departed from the earlier long-held stance that India, as a developing country, was not obliged to cut emissions, and asserted that although India was not a part of the problem, it was now willing and able to contribute to reduction efforts in global emissions. India's pledge at Glasgow, not yet formally submitted as an updated Nationally Determined Contributions (NDC) as required, adheres to the Paris Agreement decision to increase emission cuts to tackle the rapidly escalating climate crisis.

India's newly unveiled commitments deserve close examination, since they came amidst sharply contradictory signals from the Government over several months. Many interactions took place with high-ranking emissaries visiting India and at the G20 meeting before COP26, with India giving no indication of revising its current NDC. Right up to the Prime Minister's speech, senior Indian officials were loudly proclaiming the unacceptability of net-zero and the unlikelihood of higher targets by India. People in India are familiar with the penchant for dramatic announcements by this Government, but the value of such secrecy in the climate negotiations is questionable. India insufficiently communicated the significance of its enhanced commitments, especially in contrast to the weak pledges of developed countries, and little effort was made to leverage India's updated pledge to extract deeper emission cuts from them.

At the time of writing, India has further muddied the waters and taken some sheen off its Glasgow announcement, with senior officials stating that the new pledges are contingent upon substantial financial assistance from developed countries, with figures such as \$1 trillion being mentioned in press interviews. Ramifications of such post-facto conditions would unfold gradually, and further speculation here is pointless.

India's new targets, details perhaps varying in an updated NDC, comprise five elements: reducing Emissions Intensity (EI), or emissions per unit of GDP, by 45% in 2030 relative to 2005 levels; cutting absolute emissions by one billion tonnes, presumably from projected business-as-usual (BAU) 2030 levels; 500 GW (1 Giga watt = 1,000 Megawatts) of non-fossil fuel installed power generation capacity by 2030; 50% electricity generation from renewable sources by 2030; and net-zero emissions by 2070.

India's existing NDC and subsequent submissions to the United Nations Framework Convention on Climate Change (UNFCCC) confirm a steady decline in EI of over 2% p.a. from 2005 onwards. Both the 33%-35% decline promised at Paris, and the updated 45% reduction by 2030, are quite achievable and par for an emerging economy.

Emissions reduction by one billion tonnes by 2030, the first time India has put an absolute

number to this, can be read in different ways. India's current annual emissions are around 2.8 billion tonnes and projected to reach about 4.5 billion tonnes in 2030 on a BAU basis, so the pledged reduction would be a substantial 20%, comparing favourably with several developed country targets. However, the Prime Minister's speech in Glasgow mentioned the Railways' net-zero 2030 target cutting 60 million tonnes annually, and LED bulbs cutting another 40 million tonnes a year, yielding one billion tonnes over 10 years from just these two measures, making the pledged reduction seem easy, which it probably is not.

On installed power generation capacity, India's extant NDC had incorporated the Government's declared goal of 175 GW from renewable energy (RE) sources by 2022, even though the NDC stretched to 2030, raising an anomaly. Even so, India has reached only around 101 GW of solar and wind due to numerous constraints. If one adds large hydro and nuclear, both now considered renewable, current RE installed capacity is about 150 GW or just under 40% of total, almost achieving the NDC target for 2030 showing under-projection. The Central Electricity Authority (CEA) in its 2020 Report on Energy Mix for 2029-30 has projected around 525 GW or 64.3% non-fossil fuel installed capacity including 280 GW Solar and 140 GW wind. Only 267 GW is projected to come from coal and lignite, compared to 203 GW in 2019, so almost all of India's future growth of capacity is to come from RE. Without actually saying so, India at Glasgow therefore seems to have pledged virtually no additional coal-based power! Even accounting for some confusion about whether the Prime Minister meant installed capacity or electricity produced, India's Glasgow pledge of 50% electricity from RE by 2030 is just a tad more than the CEA projection of 44.7%. These commitments may prove difficult as currently witnessed, combined with the need for storage and grid stability.

The Glasgow pledges come from a few sectors mostly related to electricity generation. However, a truly transformational low-carbon future must embrace many more aspects, as indeed emphasised at Glasgow by the Prime Minister as "Lifestyle for Environment (LIFE)". It is also time that India, hitherto vociferous about equity between nations, now seriously addresses the deep inequity in access to energy and other essentials within India. Climate change is multi-dimensional, not confined to mitigation alone and, as all studies tell us, should be tackled cross-sectorally.

Accelerated deployment of electric or fuel-cell vehicles must go alongside a rapid reduction in personal vehicle use and a major push for mass transportation. Carbon lock-ins and energy use need to be minimised through mandatory "green" construction codes for the huge housing and other buildings stock, highways and infrastructure yet to be built. A leap in employment-intensive recycling of waste goods and materials, including in solid and liquid waste management linked to methane recovery, would deliver substantial co-benefits across sectors.

Two big disappointments with India's stance at Glasgow deserve mention. First, India refused to join over 110 countries in a declaration to end deforestation by 2030. India's pledges also do not mention the NDC target for forests and tree cover, in which India is known to be slipping, with deleterious impacts on both the environment and livelihoods of tribals and other forest dwellers. Read together, these may confirm the worst fears of many regarding efforts to dilute environmental regulations in favour of corporate interests. Second, India also did not join the Global Methane Pledge by over 100 nations to reduce emissions of the short-lived but potent greenhouse gas by 30% by 2030 from 2020 levels, when methane is among the fastest growing emissions in India.

On the other hand, Glasgow saw India launch another international climate initiative called Infrastructure for Resilient Island States (IRIS), aimed at providing technical, knowledge and financial assistance to small island nations with the help of developed countries. One wishes such an initiative was undertaken in India too, where coastal erosion, sea-level rise, and urban

flooding due to extreme rainfall exacerbated by haphazard urbanisation are acquiring threatening dimensions.

It would be ideal too if the on-going updating of the NDC was done through a cross-partisan multi-stakeholder consultative process that would make it truly “nationally determined” and implemented.

D. Raghunandan is with the Delhi Science Forum, a constituent of the All India Peoples Science Network

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INDIA LAUNCHES E-AMRIT PORTAL ON EVS AT COP26. DETAILS HERE

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

E-Amrit is a one-stop destination for all information on electric vehicles--busting myths around the adoption of EVs

The Central government launched 'E-Amrit', a web portal on electric vehicles (EVs), at the ongoing COP26 Summit in United Kingdom's Glasgow.

According to a statement issued by the NITI Aayog on Wednesday, E-Amrit is a one-stop destination for all information on electric vehicles--busting myths around the adoption of EVs, their purchase, investment opportunities, policies and subsidies.

"The portal has been developed and hosted by NITI Aayog under a collaborative knowledge exchange programme with the UK government and as part of the UK-India Joint Roadmap 2030, signed by the Prime Ministers of the two countries," the statement said.

E-Amrit intends to complement initiatives of the government on raising awareness on EVs and sensitizing consumers on the benefits of switching to electric vehicles. In the recent past, India has taken many initiatives to accelerate the decarbonisation of transport and the adoption of electric mobility in the country. Schemes such as FAME and PLI are especially important in creating an ecosystem for the early adoption of EVs.

NITI Aayog intends to add more features and introduce innovative tools to make the portal more interactive and user-friendly.

The launch was attended by UK High-Level Climate Action Champion Nigel Topping and NITI Aayog Adviser Sudhendu Jyoti Sinha.

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THE NUMBERS GAME: THE HINDU EDITORIAL ON COP26 UNITED NATIONS CLIMATE MEETING AT GLASGOW

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

The [26th United Nations Conference of Parties \(COP\) in Glasgow, Scotland](#) may not have a significant outcome as yet in sight. Prior to the summit, there was a frantic attempt by leaders of western countries, particularly the United States and summit host the United Kingdom, to have most countries agree on [a mid-century net zero goal](#), or when [emissions dip to near zero](#) or are balanced out by taking out an equivalent from the atmosphere. This put China and India, both major greenhouse gas emitters, on the defensive, and they dug in their heels more strongly on issues such as climate equity and justice. Their argument, that the climate crisis is largely due to the West because of over a century of unmitigated carbon dioxide emissions, and so those countries must bear the lion's share of reparations in the form of finance and access to clean technologies, is an old one, enshrined over the years in earlier COP deliberations. While [China has indicated a 2060 net zero year](#), India surprisingly [agreed to a net zero year of 2070](#) as well as more initiatives by 2030 to move towards having a significantly larger share of its energy needs met by renewable energy.

The target year 2070 is far from 2050, by when scientific consensus says, emissions must decline to zero for earth to have a fighting chance to keep temperatures at manageable levels. So India, now the third highest emitter of carbon dioxide, giving itself a 50-year deadline will unlikely help prevent temperatures from rising beyond the danger mark. However, India has also indicated that for its 2030 goals, it [needs a trillion dollars](#), by 2030, from developed countries. India, it must be remembered, is a \$2 trillion economy and expects to be a \$5 trillion economy by 2024-25 — though the [novel coronavirus pandemic](#) has made it unlikely — and close to \$10 trillion by 2030. Developing countries were collectively promised, nearly a decade ago, \$100 billion annually until 2020 and only a small fraction has been realised. Even the Glasgow summit has shown how hotly contested every dollar is. The conundrum of global warming is that irrespective of how irrefutable the evidence is, it is unlikely that elected representatives of developed countries will impose punitive taxation on their citizens for climate reparations. However, a quicker transition to renewable energy sources may be made by enabling greater sharing of technology and at fora where countries discuss tariff barriers that impede better, cleaner technology from being adopted faster than they should be. In spite of the risks it poses, the climate crisis is yet to get political resonance in India. Unless it appears on electoral platforms, the push away from fossil fuel will not happen; and India might not have a realistic chance at adapting to disasters at minimal cost.

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U.S. President Biden should not buckle to pressure from irate anti-vaccine campaigners

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COP26

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Members of Extinction Rebellion Red Rebel Brigade take part in a protest during the U.N. Climate Change Conference (COP26) in Glasgow on November 12, 2021. | Photo Credit: [Reuters](#)

The 2022 edition of the Conference of Parties, or the 27th COP, will take place at at Sharm-El-Sheikh, Egypt and the 28th edition in 2023 will be held in the United Arab Emirates, the Council decided even as a final agreement to conclude COP26 proved elusive until the time of going to press.

The ongoing COP26 in Glasgow is expected to formally conclude on Friday evening, Glasgow time. However, negotiators from 200 countries continued to be in discussions polishing a draft agreement that has been ready since Wednesday. For a final agreement, all countries have to agree to every word in the text agreement, that has been drafted by the team of COP President Alok Sharma. This text is a synthesis of all the discussions since November 1 when COP26 began.

Also read: [U.N. chief says global warming goal on 'life support'](#)

The COP26 will not unveil a treaty like in 2015 when the Paris Agreement came into being but is expected to guide implementation of the Paris Agreement, that exhorted countries to take steps to keep temperatures from rising beyond 2C by the turn of the century and “pursue efforts to keep it” to 1.5C. Negotiators at Glasgow started ambitiously keeping the 1.5C target but several outstanding issues and disagreements — most prominently on climate finance — have proved to be stumbling blocks.

Developing countries such as India and China are pushing for formal acknowledgment from the West that they haven't delivered on past promises of providing \$100 billion annually until 2020.

Developed countries have promised to deliver on this by 2023-24 but India and several other low income and developing countries have demanded financing post 2025 and also funds for the loss and damage that has already been incurred in their countries due to climate catastrophes.

Also read: [Climate march keeps up pressure on leaders at U.N. summit](#)

Though much of the text is ready, bones of contention are usually single verbs that open paragraphs of the draft text: “Urges,” “Considers”, “Notes” as each of them, in UN climatespeak denote specific degrees of commitment. For instance, para 48 of the text currently says: “(The Presidency) Urges developed country Parties to fully deliver on the USD 100 billion goal urgently and through to 2025 and emphasizes the importance of transparency in the implementation of their pledges.”

This is considered the highest level endorsement of developing countries' position that enough hasn't been done in the past by developed countries to keep promises. As of now, the latest draft shows up 94 such paragraphs.

As *The Hindu* reported on Thursday, [India has demanded \\$1 trillion](#) over the next decade from developed countries to adapt to and mitigate the challenges from global warming and has kept this as a condition for delivering on climate commitments made by Prime Minister Narendra

Modi.

In a late evening intervention, Richa Sharma, who is part of India's negotiating team said: "The outcomes of COP26 must reflect the urgency in scaling up finance and other means of implementation support to developing countries. We express our disappointment at the lack of significant progress in climate finance related agenda items. We add our voice in support of other parties and groups like LDCs that have called for continuation of the long term finance agenda under the convention; for a mandate to the standing committee of finance to deliver a multilaterally agreed definition of climate finance, and for a structured process that will deliver the new quantified goal for climate finance well before 2025."

Climate finance isn't charity, says Environment Minister Bhupender Yadav at COP26

An earlier version of the draft also called upon countries to "accelerate" the phase out of coal subsidies, a point that wasn't taken to kindly by India and China. Despite India's commitments to significantly increasing its reliance on renewable energy in the coming decade, it also expects to double its use of coal.

"Shockingly, COP26 is the first time that fossil fuels have been mentioned in the text of a global climate negotiations agreement. That shows the tide is turning against the oil, gas and coal companies that knowingly caused the climate crisis and blocked solutions. But our leaders, especially President Biden, must move faster to replace oil, gas and coal with renewable energy. There's no way to avert climate catastrophe without limiting its root cause, which is fossil fuels," Jean Su, Director, of the Center for Biological Diversity's Energy Justice Program, said in a statement.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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THESE THREE INDIAN METROS FEATURE IN THE TOP 10 WORLD'S MOST POLLUTED CITIES. FULL LIST

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

The visibility in Delhi will remain poor for the next three days due to fog and smog, said Senior Scientist of the Indian Meteorological Department (IMD).

Meanwhile, not only Delhi but also two other metro cities of Mumbai and Kolkata also recorded poor levels of air pollution.

According to *IQAir*, a Switzerland-based climate group that is also a technology partner of the United Nations Environmental Program (UNEP) has listed Mumbai and Kolkata are in the top ten most polluted cities of the world.

While Delhi tops the list with an AQI of 460 as listed by the IQAir service, Kolkata ranks sixth and Mumbai fourth in the entire list. The cities with the worst AQI indices also include Lahore, in Pakistan, and Chengdu, in China.

Here are the ten cities with the worst air quality indicators and pollution rankings, according to IQAir:

City	Country	AQI
1 Delhi, India,		460
2 Lahore, Pakistan,		328
3 Chengdu, China,		176
4 Mumbai, India,		169
5 Karachi, Pakistan,		165
6 Kolkata, India,		165
7 Sofia, Bulgaria,		164
8 Dhaka, Bangladesh,		160
9 Belgrade, Serbia,		159
10 Jakarta, Indonesia,		158

The System of Air Quality and Weather Forecasting And Research (SAFAR) under the Ministry of Earth Science reported that the air quality is in the 'very poor' category in Delhi with an air quality index (AQI) of 390.

According to an analysis by the Delhi Pollution Control Committee, people in Delhi breathe the worst air between November 1 and November 15 every year. The city has recorded severe air quality on six of the last eight days after Diwali.

Faridabad (460), Ghaziabad (486), Greater Noida (478), Gurgaon (448) and Noida (488) also recorded severe air quality at 4 pm on Friday.

An AQI between zero and 50 is considered "good", 51 and 100 "satisfactory", 101 and 200 "moderate", 201 and 300 "poor", 301 and 400 "very poor", and 401 and 500 "severe".

A layer of eye-stinging smog lingering over Delhi-NCR thickened on Friday, giving an orange tint to the sun and lowering visibility to 200 metres at several places in the region.

India Meteorological Department officials said moderate fog and low temperatures in the morning -- a low of 12.6 degrees Celsius on Friday -- and calm winds have been trapping pollutants close to the ground.

"Visibility levels at the Indira Gandhi International Airport and the Safdarjung Airport dropped to 200-500 metres due to moderate fog. It intensified on Friday due to high humidity," an official said.

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KAISER-I-HIND IS ARUNACHAL'S STATE BUTTERFLY

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Winged beauty: *Teinopalpus imperialis* .Special ArrangementSpecial Arrangement

An elusive swallowtail butterfly carrying 'India' in its name and found in next-door China will become the State butterfly of Arunachal Pradesh.

The State Cabinet headed by Chief Minister Pema Khandu on Saturday approved the large, brightly coloured Kaiser-i-Hind as the State butterfly. The Cabinet meeting was for the first time held outside State capital Itanagar at an unusual location — Pakke Tiger Reserve.

The Cabinet also adopted the Pakke Tiger Reserve 2047 declaration on climate change-resilient and responsive Arunachal Pradesh aimed at lowering emissions and sustainable development.

Kaiser-i-Hind (*Teinopalpus imperialis*) literally means Emperor of India. This butterfly with a 90-120 mm wingspan is found in six States along the eastern Himalayas at elevations from 6,000-10,000 feet in well-wooded terrain.

The butterfly also flutters in Nepal, Bhutan, Myanmar, Laos, Vietnam and southern China.

The State Wildlife Board had in January 2020 accepted the proposal from Koj Rinya, the divisional forest officer of Hapoli Forest Division in the Lower Subansiri district to accept the Kaiser-i-Hind as the State butterfly. The proposal was made with a view to boosting butterfly tourism and saving the species from extinction in the State.

Protected areas under the Hapoli Forest Division are popular with butterfly enthusiasts.

Although the Kaiser-i-Hind is protected under Schedule II of Wildlife (Protection) Act, 1972, it is hunted for supply to butterfly collectors.

Habitat conservation

According to Assam-based butterfly expert Monsoon Jyoti Gogoi, the species is confined to very few pockets of Arunachal Pradesh and could become extinct if not conserved.

"The State butterfly tag can translate into its habitat conservation," she said.

The first dead specimen of Kaiser-i-Hind was recorded in Sikkim by Usha Lachugpa, a senior forest official of the State, in 2012. It was captured live on camera by a few participants during a butterfly watching meet in Arunachal Pradesh's Talle Valley Wildlife Sanctuary in 2014.

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WATCH

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Global warming has led to extreme change in climate in countries like Bangladesh. As a result, the region faces frequent floods that hinder agriculture and the annual cycle of harvesting crops. To cope with this, farms have adopted an innovative method of cultivation known as 'Dhap' or 'Baira'. Here, floating beds are created with bamboo, water hyacinth, coir and wood chippings. Atop these, crops like Spinach and Bitter melon are grown. These raft like farms range between two and four feet long and can weather volatile waters or inundation. Used rafts are composted.

The UN's Food and Agricultural Organization declared Bangladesh's floating farms method as a globally important agricultural heritage system in December 2015. Many floating gardens have been started by government agencies like the Bangladesh Agricultural Research Institute (BARI) and Department of Agriculture Extension (DAE).

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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BATting FOR AN IMPORTANT YET MISUNDERSTOOD SPECIES

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Imagine dusk in our rural heartland, groups of people returning to their homes from farms, factories and forests. At the same time, hordes of winged mammals called bats (nearly 128 species in India; over 1,200 species worldwide) emerge from their roosts in trees, caves, rock ledges, temples and buildings. Bats and humans have cohabited since time immemorial. Throughout the night, these bats devour insects in farms, fields, forests, grasslands and around our homes, including agricultural pests and disease-causing mosquitoes.

Some bats sip nectar, pollinate flowers, eat fruits, and spread the seeds of many important tree species including wild varieties of bananas, guava, cashew, mango, figs, mahua and other fruits. A study in Thailand has shown that pest biocontrol provided by just one species of bat prevented the loss of 2,900 tons of rice per year — or a savings of \$1.2 million, and meals for 26,200 people annually. Bat droppings (guano) mined from caves are widely used as a fertilizer for agricultural crops as they have high concentrations of nitrogen and phosphorous.

Unfortunately, despite these critical roles bats remain among the most misunderstood of all animals. In India, we have almost no studies on the ecosystem services that bats provide. With scientific evidence mounting that the SARS-CoV2 virus that causes COVID-19 originated in bats, there are growing fears of further disease transmission from bats.

A significant and unique feature of bats is that they are known or suspected to be the natural reservoirs for many novel and recently emerged pathogenic viruses such as Nipah, Hendra, Marburg, Ebola and the coronaviruses that cause severe acute respiratory syndrome. Despite being reservoirs for viruses, bats never fall sick. Flying is a very stressful business, and results in toxic by-products which could damage cell contents. Bats have evolved mechanisms to avoid such damage by suppressing their immune systems. Scientists think that such suppression results in a continuous auto-immune response which helps them combat infections and control virus propagation. Interestingly, this ability to limit excessive inflammatory response (which is responsible for the adverse effects of such viruses in infected humans), ensures they do not over react to viral infections and protects them from multiple chronic age-related diseases.

In other words, in gaining the ability to fly long distances, bats have also inherited an immune system that protects them from viruses. The same immune system also makes them age slower, and live longer. They are among the longest lived mammals for their body size.

Due to COVID-19, we have suddenly become aware of the several viruses bats carry because they could spill over to us. But such spillovers — the transmission of pathogens from their natural host or reservoirs to novel hosts such as humans — are unusual and rare events, and tend to occur when there is increased contact between humans and wild hosts.

Over the last several 100 years, humans have significantly modified the landscapes around them — cutting of forests, clearing of land for agriculture and development — resulting in disturbances to bat roosts, and forcing them to change their 'homes'. Activities such as mining destroy natural cave systems that bats live in. Scientists have shown that when bats are disturbed, they become stressed and could shed viruses that they carry, increasing the risk of spillover. This suggests that human habitat destruction makes bats move closer to human habitation, resulting in stressing them, and in turn viral shedding.

The COVID-19 pandemic has compelled us to look back on the mistakes made in destroying this fine ecological balance, and study how bats and humans can co-exist in certain areas. This is as important as searching for the cure for SARS. Yet, we still do not know too much about the ecology of bats, even in the context of viruses. Are chances of spillover higher in areas with more bat species? Are viruses shed by bats throughout the year or only seasonally?

Several indigenous people had understood the importance of giving enough space to all animals including bats whilst staying with them. Some have isolation practices such as quarantine following hunting. They are dependent on animals and nature, and have achieved a balance without any harm to both sides. The Bomrr clan in Nagaland, for example, have traditionally celebrated the annual bat harvest for many years. They gather at a place called Mimi to smoke a cave full of bats and as bats start exiting, kill them for consumption. In the process, the bats bite them or scratch them. Yet, there has been no major disease outbreak among the Bomrr clan. To understand how and why the Bomrr are immune to the viruses in the bats they interact with, the National Centre for Biological Sciences (NCBS-TIFR), an aided Centre of Department of Atomic Energy (DAE) are carrying out sero-ecological studies on this human-bat interface. They are exploring microbial diversity associated with the bats, and also serology (antibody response to known viral families) to investigate which part of this diversity is potentially pathogenic. So far, they have found: genetic prevalence/detection (between 3%-10% of bats) of several bacterial and viral families and evidence that both bats and humans have shared antibody response to some viral families, indicative of a spillover.

The NCBS is also in the process of sequencing whole genomes of bat viruses. This study could help build a bank of virus genomes as baselines to be prepared for any possible future outbreaks. Local practices and traditions could serve as a guide for us to understand how we should minimise risk of infectious disease spillover from bats in the future. The rich biodiversity and cultural diversity in India serves as an excellent and unique place for such studies.

But the fact remains that bats carry many viruses. So how can we continue to co-exist with them? We could take a few sensible precautions that minimise our direct interactions with bats — such as avoiding handling or eating bats, and not eating fallen fruits gnawed by bats or fruits likely to be contaminated by bat fluids. This would greatly reduce the risk of spillover. In the longer term, we should work towards restricting and reversing land-use change practices that are bringing us in greater contact with, and increasingly stressing out, animals that may harbour 'emerging infections'.

In India, many people are dependent on the ecosystems they live in, and the various services those ecosystems provide, for example water, clean air and pollination. Over the last few decades, habitat destruction and land-use change has impacted most of India. We can regain this balance with nature and animals through a combination of habitat restoration and co-existence with wildlife such as bats. Integrated approaches such as One Health, where human health is linked to that of the environment and animals can result in the best possible outcomes. Any such future will require a global commitment to reduction of habitat loss, and the preservation and restoration of our natural habitats and biodiversity. A world with fewer bats around us will be one that suffers greater crop losses to agricultural pests, witnesses increased incidences of other diseases such as those transmitted by mosquitoes, and one without mahua, too.

Sushma Taishete is Joint Secretary in the Department of Atomic Energy (DAE), Mumbai. Uma Ramakrishnan is a Professor at the National Centre for Biological Sciences, TIFR, an aided centre of the Department of Atomic Energy (DAE), Mumbai

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The ideological moorings of India's non-alignment faded along with Jawaharlal Nehru's idealism

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END THE BLAME GAME: THE HINDU EDITORIAL ON DELHI'S POLLUTION CRISIS

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

A familiar sequence of events unfolds in the National Capital Region before the advent of winter. The monsoon retreats, dries the air and the wind drops. The pollution from construction, industry, road transport, hitherto being masked through the year, becomes more visible. However, the period also coincides with a unique practice in northern India where farmers in Punjab, Haryana and eastern Uttar Pradesh, in a bid to hurriedly clear their fields of rice straw to make space for wheat, set fire to the chaff. This long-standing practice is now facing criticism because of its emerging link to Delhi's noxious air quality. The stubble smoke carries over into Delhi through long-range wind transport. Finally, the third element during the season is Deepavali and the bursting of crackers. The season is also marked by more social gatherings such as weddings or related celebrations that again see a demand for crackers. While there is an official ban on crackers, except so-called 'green crackers' that are not widely available, the additional smoke from all of these add to the bad air, spiking air quality meters into the 'very poor' and 'severe' categories. This provokes a public outcry and concerns from the Supreme Court of India and a harried response from the Government that pushes for restrictions on free movement and construction. Invariably, the weather improves and all is forgiven.

The recurrent tragedy of addressing the problem of air pollution in Delhi is that it invariably descends into a blame game. The Centre blames the Delhi government, because it belongs to a different political dispensation, which in turn quite conveniently blames farmers in Punjab. What is never addressed head-on is that the air pollution crisis is not a problem that can be solved overnight. The lockdown last year provided compelling evidence that taking vehicles off the road and a cessation in industrial and construction activity led to clearer skies. Source apportionment studies by various institutions have shown that the contribution of stubble burning varies significantly, from as low as 4% on some days in October-November to as much as 40%. But the running of power plants and construction are also necessary activities that cannot be shut at a moment's notice. The move to ban the entry of trucks too is not any more effective than waiting for the wind to blow over, and has consequences for the economy. The way forward is to view winter air pollution as a natural disaster and target root causes. Road dust is the dominant source of particulate matter and the most significant impediment to clean air, and unfortunately the least amenable to an easy fix. The emphasis must be on concerted and consistent efforts, and not annual blame games.

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U.S. President Biden should not buckle to pressure from irate anti-vaccine campaigners

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WIDE FAULT LINES WITHIN THE GLOBAL CLIMATE RISK INDEX

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

The [address by Barbados Prime Minister Mia Mottley](#) at the [26th United Nations Conference of Parties, or COP26](#), in Glasgow, Scotland, attracted global attention with her remark that failure to provide critical adaptation finance as well as measuring the extent of loss caused by climate change with respect to “lives and livelihoods” was immoral. This has again brought the complexity in measuring climate risk to the forefront.

The Intergovernmental Panel on Climate Change (IPCC), under the aegis of the United Nations, defines climate risk as the likelihood of unfavourable impacts occurring as a result of severe climate events interacting with vulnerable environmental, social, economic, political or cultural conditions. Quantitatively, it is the product of the probability of a climate event occurring and its adverse consequences.

Tackling the climate crisis

Recent discussions around climate risk assessment and management have been based on the “Global Climate Risk Index” (GCRI), published annually by GermanWatch, a non-profit organisation. The latest version of the GCRI, published in January 2021, ranked 180 countries based on the impact of extreme weather events and associated socio-economic data from 2000-2019. According to the publishing agency, the rankings are meant to forewarn countries about the possibility of more frequent and/or severe climate-related events in the future. This index uses historical data to provide insights on exposure to extreme events. It cannot be used for linear forecasts about future climate impact. There are deep fault lines in the methodology and interpretation of the country rankings. Recommendations based on this index should be generated with caution.

First, the GCRI ranks countries based on four key indicators: number of deaths; number of deaths per 1,00,000 inhabitants; sum of losses in Purchasing Power Parity (in U.S. dollars); and losses per unit of the Gross Domestic Product (GDP). Of these indicators, two are absolute while the other two are relative. However, the GCRI report does not provide a rationale for the selection of these macro indicators.

Second, the index suffers from exclusion errors and selection bias. Composite indicators are better constructed using micro indicators instead of macro indicators, which measure loss because isolating the effect of the loss of elements on GDP is fraught with errors. Instead, a number of key micro indicators such as the total number of people injured, loss of livestock, loss of public and private infrastructure, crop loss and others are better candidates for assessing the composite loss resulting from climate change events. Third, the index accounts for information on weather-related events like storms, floods, temperature extremes and mass movements. However, it omits geological incidents like earthquakes, volcanic eruptions or tsunamis, which may be potentially triggered by climate change and can have economic and humanitarian impact.

Climate migration predicted to rise in India as extreme weather worsens

Fourth, the ranking under the GCRI is done based on data collected by Munich Re’s NatCatService, which is not validated at the ground-level. The data gaps particularly with regard

to economic losses are based on experience, the prevailing intellectual property of MunichRe and the market value of elements at risk that are at best approximate values of economic losses.

Any discussion on measurement and management of climate risk is incomplete without accounting for issues of uncertainty, scale and delays between action and response to climate change. Therefore, climate change can at best be managed within a comprehensive risk assessment framework, which uses climate information to better cope with the impact of climate change.

In this context, India's latest module on the National Disaster Management Information System (NDMIS) captures damages and losses caused by disasters and monitors the targets of the [Sendai Framework for Disaster Risk Reduction](#). The NDMIS captures details on parameters like death, injury, affected population by categories as well as economic losses in social and infrastructure sectors due to weather and geological events on a daily basis. The data captured by the NDMIS includes all major climatic events.

Deploying effective approaches and principles to foster collaboration among climate risk information users and providers, along with enabling the implementation of effective management actions, will allow India to leapfrog on the targets envisaged in the Sendai Framework.

Veenu Singh is a Research Officer and Tanvi Bramhe is an Economic Officer at the Development Monitoring and Evaluation Office (DMEO), NITI Aayog

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'Janjatiya Gaurav Divas' is a part of the steps being taken to secure the culture and welfare of India's tribal communities

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INDIA NEEDS \$10 TN. TO MEET NET ZERO

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

India's energy needs are largely met with fossil fuels such as coal.AFP/AFP

To meet its goals of net zero, or being able to effectively eliminate carbon dioxide emissions by 2070, India will need close to \$10 trillion (Rs. 700 lakh crore), according to an analysis by climate and energy research firm, CEEW Centre for Energy Finance (CEEW-CEF). CEEW is the Council for Energy, Environment and Water Research, a think tank here.

Most of this money, around \$8.4 trillion, would be needed to scale up generation from renewable energy and bringing together the necessary integration, distribution and transmission infrastructure. Another \$1.5 trillion would have to be invested in the industrial sector for setting up green hydrogen production capacity to advance the sector's decarbonisation.

Green hydrogen is made from renewable energy and can be used for many things, from heating to powering batteries as well as fuelling vehicles.

The study estimates that India would fall short by \$3.5 trillion to achieve its net zero target and hence, investment support of \$1.4 trillion would be required from developed economies to bridge the gap.

Country's goals

Reaching net zero by 2050 is earth's best chance, scientists say, to keep the globe's average temperature from exceeding 1.5 Celsius by the end of the century.

Last month, the CEEW in another study had computed that India's total installed solar power capacity would need to increase to 5,630 gigawatts by 2070. The usage of coal, especially for power generation, would need to peak by 2040 and drop by 99% between 2040 and 2060.

Further, crude oil consumption across sectors would need to peak by 2050 and fall substantially by 90% between 2050 and 2070. Green hydrogen could contribute 19% of the total energy needs of the industrial sector.

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THE HEAVY LIFTING ON CLIMATE ACTION MUST BEGIN

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Will the recently concluded, and much reported on, [Glasgow climate meeting \(COP26\)](#) make a difference to humanity's efforts to address global [climate change](#)? Glasgow's success was that it finished building the scaffolding for climate action initiated through the [Paris Agreement](#). But true success depends on whether countries are receptive to these nudges. Without generating greater political support for implementation within countries, international negotiations do risk becoming the 'blah, blah, blah' talk-fests that youth activists such as Greta Thunberg warn about.

Yet, Glasgow was necessary for stronger action to address climate change because it put in place levers that stimulate domestic processes, such as the formulation of domestic pledges or 'Nationally Determined Contributions' (NDCs). Drawing on the insights from a webinar organised by the Centre for Policy Research, what were Glasgow's successes and failures?

Wide fault lines within the Global Climate Risk Index

Mitigation, or efforts to reduce greenhouse gas emissions, as always, grabbed the headlines. Glasgow strengthened the Paris Agreement mechanism of eliciting pledges from countries and ratcheting them up over time. It requested countries to update and strengthen 2030 emission targets in their NDCs by the end of 2022, earlier than previously expected, created a benchmark of five yearly cycles for updates, urged countries to prepare long-term emissions strategies, and strengthened mechanisms to scrutinise both.

Success at Glasgow was explicitly defined around 'keeping 1.5 degrees alive' through such pledges. When added up by modellers, the flurry of net-zero pledges extracted pre-Glasgow, including a surprise net zero by 2070 pledge by India, showed that limiting warming to 1.5° is still technically feasible, but only just. In the jargon of climate negotiations, Glasgow clarified the 'ambition cycle', and this appears to have had results in the form of enhanced pledges.

There are two problems with this interpretation. First, the Paris, and Glasgow, approach focusing on target-setting gives insufficient importance to the challenge of implementing those targets. Long-term aspirational targets to 'keep 1.5 alive' get the headlines, but detailed shorter term 2030 targets, for which today's politicians can be held accountable, have received less attention. A focus on shorter term targets and their implementation — which India to its credit has been highlighting — will be important. Second, by calling on countries to strengthen targets to align with the Paris Agreement objectives without explicitly considering that countries have different roles and responsibilities in doing so risks side-stepping, again, the long-standing issue of climate equity. Future arguments over how we know whether a countries' pledges are adequate and fair are guaranteed.

U.K. PM says COP26 climate deal 'tinged with disappointment'

The question of equity crystallised around a specific high profile clause calling for the 'phase down of unabated coal power and phase out of inefficient fossil fuel subsidies'. India ended up at the centre of this particular storm, because it was the Indian Minister who read out an amendment modifying 'phase-out' to 'phase-down' for coal, among other changes, although the language originated from the U.S.-China statement. India's real concerns included not

precluding subsidies for social purposes, such as for cooking gas; querying whether from an equity point of view, all countries should be asked to limit coal use at the same time; and noting the lack of mention of oil and gas.

On coal specifically, India is actually on a strong footing substantively, as our investments in new coal-fired plants have been much less than projected even a few years ago. Nonetheless, the term 'phase-out' is of considerable importance to vulnerable countries, and, that India introduced the amendment although the language originated elsewhere, has given us a somewhat unnecessary diplomatic black eye. From an environmental point of view, more explicit discussion of coal, but ideally all fossil fuels, is a positive, including for India. From a developmental view, however, India is concerned that explicit mention of coal constrains us in our choice of fuel. A possible way out is for India to explicitly seek global support for an accelerated transition away from coal, an approach taken by South Africa.

Glasgow climate summit | Coal 'phase-down' is a right, says Environment Minister

Adaptation — preparing for the reality that some climate impacts are unavoidable — has long been neglected in global negotiations, reflecting a global power imbalance that places less weight on the concerns of vulnerable nations. In this context, it was a partial win that Glasgow set up an explicit two year work programme for a 'global goal' on adaptation.

However, the important complementary agenda of 'loss and damage' — compensating for unavoidable impacts that go beyond adaptation — received at most lip service. Even though there was discussion of a specific mechanism, backed by funding, to the dismay of small, vulnerable nations, only a 'dialogue' was established. At the core is the fear among some developed countries that taking forward the loss and damage agenda will open the door to a call for reparations.

Climate finance promised to be the central issue of COP26, with considerable frustration from developing countries that the decade-long commitment of \$100 billion had not been met. Beyond expressing 'deep regret' at this failure — a diplomatic slap on the face for developed countries — Glasgow did no more than establish a work programme on post-2025 financing and continue tracking progress on the \$100 billion. The exception was a call to double adaptation finance by 2025. Since current levels of finance are already low, this implies mobilising about \$40 billion, which is well short of estimated needs; the United Nations finds current needs are \$70 billion and rise considerably in coming years.

India demands \$1 trillion as 'climate finance'

However, there were indications that the climate finance discussion may become more complex. South Africa announced it had received multi-donor support of \$8.5 billion to support a 'just transition' out of coal, and India is reportedly negotiating support from the World Bank to address coal mine closures. Former Bank of England Governor Mark Carney indicated that companies committed to net zero initiatives could marshal a scarcely believable \$130 trillion, suggesting growing efforts to mobilise private finance. Developing countries have long insisted that publicly funded climate finance is a right devolving from the 'polluter pays' principle rather than aid. However, these tendencies suggest that to access substantial funds may require embracing a more multi-stranded approach.

There were two particularly important 'nuts and bolts' elements of what is called the 'Paris Rulebook' that were completed in Glasgow. First, the transparency framework was completed, which includes reporting rules and formats for emissions, progress on pledges and finance contributions. While India and some other countries pushed for separate rules for developed and

developing countries, the Glasgow outcomes narrowed this gap. To ratchet up pledges and action over time, this enhanced transparency is crucial and, other than issues of capacity, there is little justification for separate developing and developed country transparency requirements.

Editorial | [The numbers game: On Glasgow climate meeting](#)

The second key was completion of agreed rules for carbon markets, the complexities of which had stymied agreement for four years. For example, credits generated from earlier periods, including through the Clean Development Mechanism were permitted, but only from 2013 onwards. Rules were put in place to limit the scope for 'double-counting' of credits by more than one country.

What Glasgow accomplished was necessary, if not sufficient, for accelerated climate action. The meeting hit many, but not all, of its procedural benchmarks by building scaffolding for the future. But the real determinant of success or failure rests on national politics and popular support for climate change within countries — how countries use the scaffolding. For India, these politics are complex because they revolve around simultaneously balancing concerns over whether our policy space will be limited by inequities embedded in the global mitigation efforts, and our own interests as a vulnerable country in enhancing and accelerating climate action. A balanced view requires consideration of both objectives.

Navroz K. Dubash is a Professor at the Centre for Policy Research

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COAL MINISTRY ACCELERATES SUSTAINABLE DEVELOPMENT EFFORTS: CONSTITUTES SUSTAINABLE DEVELOPMENT CELL

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

With recent announcement on new climate targets by the Prime Minister at COP26 under 'Panchamrit Strategy', India has taken a big step towards cementing its commitment to clean energy. Since coal has to play a role of primary fuel for power generation in our country for the time being, till renewable source fully caters to our energy demand, Ministry of Coal, in line with the commitment, has already moved forward with a comprehensive Sustainable Development Plan. Action has already started for its speedy implementation. Emphasis is to put major thrust on Sustainable Development in coal mining, taking care of its environmental and social impact.

A full-fledged Sustainable Development Cell (SDC) in Ministry of Coal has been established to advice, mentor and plan action to minimise the adverse impact of mining. Apart from suggesting way-forward, its implementation and monitoring, SDC is also formulating future policy framework for environmental mitigation in Coal and Lignite sector of our country. Extensive work by Coal India Ltd. (CIL) and its subsidiaries along with Singareni Coal Company Ltd. (SCCL) & NLC India Ltd. (NLCIL) has already started, effect of which could now be seen in some of these mining companies.

In line with the commitment of our country to reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030, **Bio-Reclamation of mined out** land has already been taken up on a big scale by all coal companies through massive tree plantation drive. In next five years target is to cover more than 12000 hectares of land for plantation which will help in having carbon sink potential to the tune of more than one lakh tonne per annum. Monitoring of such efforts is being done through remote sensing.

In order to contribute in our commitment to increase non-fossil energy capacity to 500GW by 2030, Coal & Lignite companies have planned to install additional 5560 MW of **renewable capacity** with an investment of over Rs. 15000 Crores. This will take the total installed capacity to 7 GW. Coal India alone has planned to install 3 GW of solar Power in next 5 years to achieve its net zero target.



Solar Park (30 MW) at Manuguru, SCCL

First Mile Connectivity (FMC) is other major initiative by coal companies to minimise

environmental pollution, where coal is being transported through conveyor belt from Coal Handling Plants to Silo for loading. This process eliminates movement of coal through road. Taking a big step, 39 such projects have been planned to be commissioned by 2023-24 with an investment of over Rs. 13000 Cr. CIL alone will enhance its mechanical loading and transport of coal from the present level of 120 million tonnes to 565 million tonnes by 2023-24. These FMC projects will save diesel worth Rs.2100 crores per annum. There will be reduction in vehicle density by 2770 trucks per hour paving the way for significant reduction in carbon emission.



FMC Project at Nigahi OC of NCL – Rapid Loading with closed Belt Conveyor

Similarly, Surface **Coal Gasification Projects** have been planned for Syn Gas production to be used further either for production of Methanol/Ethanol, Urea or Petrochemicals. This will be a way forward for use of dry fuel as green coal with relatively lesser carbon footprint and environmental pollution. One such CIL JV project of 2.5 MTPA capacity is already in operation in Talcher Coalfield in Odisha. Other five projects with an investment of about Rs.30,000 Cr is under formulation by different Subsidiaries of CIL.

Use of LNG to **substitute diesel consumption** in mining and coal transport equipment has also been planned on a massive scale. Pilot Project has been initiated in one of the coal companies. This technology will be replicated shortly in coal transporting dumpers in the first phase for substantial reduction in carbon footprint.

On social front, priority has been given on gainful utilisation of Mine Water for irrigation and providing treated water for drinking to rural population in and around command area of mining subsidiaries of CIL, SCCL & NLCIL. Huge volume of mine water released during mining operation is partially utilised for internal consumption in mining area for providing drinking water in the colony, dust suppression etc. Some of the subsidiaries of CIL are already providing mine water for irrigation purpose and drinking water to nearby villages. Target is **to provide 4600 lakh cubic meter of mine water for drinking and irrigation purpose to adjoining villages in next 5 years**. This will cover rural population of 16.5 lakh with irrigable potential of around 3.4 Lakh acres of rural land.



Mine Water discharge from Pipla UG in WCL benefitting around 17000 villagers

On showcasing clean environment front, 12 new Eco-Parks in mining area are under different stages of development in all the subsidiaries of CIL, SCCL & NLCIL and will be completed by next year. WCL has already developed a huge Eco-Park in its mining area near Nagpur and is running Eco-Mine Tourism Circuit, a first of its kind in India, in collaboration with MTDC where people visit mining operation of both Opencast & Underground Mine. On similar pattern, Eco-Mine Tourism Circuit is going to start shortly in different coal companies with an investment of over Rs. 100 crores to showcase efforts made by coal companies in environmental protection. Bamboo plantation along coal transport roads and on the edges of mines will help in minimising dust pollution.

Extraction of sand from Over Burden (OB) dump for use in construction is another unique initiative for sustainable development. This will not only help in availability of cheaper sand to masses for house and other construction but will also minimise the land required for OB dump in future projects. Such effort has already started in WCL, where sand produced through large Sand Processing Plant is being used for low cost housing scheme under PradhanMantriAavasYojana (PMAY) and also for construction by other Govt. & Private Agencies. Sand Plants contributing over 1.3 crore cubic meter in next 5 years are being erected in different coal and lignite companies.

In addition to this, Energy Efficiency Measures are also being taken for reduction in carbon foot print. New environment friendly mining equipment have been introduced on a mass scale by different coal companies to mitigate impact of carbon emission.

All these activities will pave way in coming five years for benchmarking a better Sustainable Development effort by Coal Industry on Economic, Environmental and Social front and also in line with the commitment made in COP26.

MV/RKP

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TWELVE NEW BUTTERFLY SPECIES RECORDED IN THE EASTERN GHATS OF VISAKHAPATNAM DISTRICT

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Gossamer-winged butterflies conjure up images of flowery fields and sunshine-soaked gardens.

Indicators of a healthy environment and ecosystem, butterflies have been widely used by ecologists to study the impact of habitat loss and fragmentation, and climate change. So it is encouraging that 12 new species have been recorded as new to Visakhapatnam district in a research study on butterflies recently published in a scientific journal. It also brought to light some interesting facts.

The study was conducted between 2016 and 2018 by research director Mantha Ramamurthy, STPL Ushasri and Pavani Sagiraju of Dolphin Nature Conservation Society in Visakhapatnam. The research paper titled Butterflies of Visakhapatnam District, Andhra Pradesh, India, was published in the recent edition of the scientific journal, *Zoo's Print*. The 12 species recorded as new to Visakhapatnam district are — *Troides helena*, *Colotis amata*, *Delias hyparete*, *Eurema brigitta*, *E. laeta*, *Ixias pyrene*, *Lethe europa*, *Vanessa cardui*, *Ypthima baldus*, *Y. ceylonica*, *Virachola isocrates*, and *Freyeria trochylus*. The common names are common birdwing, small salmon Arab, painted jezebel, small grass yellow, spotless grass yellow, yellow orange-tip, bamboo treebrown, painted lady, common five-ring, white four-ring, orange-spotted grass jewel and common guava blue.

While the study documented the presence of these species in parts of Eastern Ghats of Visakhapatnam district like Chintapalli, G K Veedhi, Ananthagiri, Paderu, Araku and Sileru, a good number of these butterfly species can be seen flitting about within the city limits as well. The researchers recorded many of these species in the urban environments of Kambalakonda, Thotlakonda, Indira Gandhi Zoological Park, Simhachalam Hills and Biodiversity Park.

There are 20,000 species of butterflies recorded in the world; of them 1,500 are reported from India. The northern part of the Eastern Ghats is an area with significant biodiversity value. However it remains poorly explored, especially with regard to studies of invertebrate diversity, particularly butterflies.

The study highlights the presence of a total of 105 species belonging to six families of which, 12 species were recorded as new to Visakhapatnam district. As many as seven species are legally protected in India under the Wildlife (Protection) Act, 1972. A total of 11 areas were selected from Visakhapatnam district, of which six areas were from Eastern Ghats forests and five from urban environments. Seven species are legally protected in India under the Wildlife (Protection) Act, 1972— *Pachliopta hector* under Schedule I, *Euploea mulciber* and *Appias libythea* under Schedule IV, and *Hypolimnas misippus*, *Lampides boeticus*, *Euchrysops cnejus*, and *Tanaecia lepidea* under Schedule II.

“Identification of butterflies needs very careful study because of seasonal changes, sexual dimorphism, where females look different and polymorphism, where same species exists in different morphological form because of mimicry,” says Ramamurthy.

In the study, 12 species were exclusively found in the Eastern Ghats forests of Visakhapatnam district but not in urban environments — *Troides helena*, *Delias hyparete*, *Ixias pyrene*, *Ariadne ariadne*, *Symbrenthia lilaea*, *Tanaecia lepidea*, *Ypthima baldus*, *Ypthima ceylonica*, *Ypthima*

huebneri, *Caleta decidia*, *Talicauda nyseus*, and *Sarangesa dasahara*.

Two species were found only in urban environments of Visakhapatnam—*Appias libythea* and *Abisara bifasciata suffusa*. “The observations were made through transects, each of 500 metres length with five metres on either side, with one to three transects at every site. Observations were taken in the morning from 8am to noon when the butterflies were most active. Abundance of butterflies in different habitats were recorded,” says Ramamurthy. The encountered butterflies were identified while they were in flight or in resting. Identification of the species was done mostly through photographic evidence. Species which are difficult to identify were caught by hand net and released after examination.

The study also highlighted the butterfly habitats in urban areas that are affected due to pollution, industrialisation and urbanisation. “Vast stretches of plantation of monotypic and exotic species like *Bougainvillea spectabilis*, Madagascar almond, and *Conocarpus lancifolius* in traffic islands and road dividers pose a threat to the native species. Landscaping is seen everywhere for beautification purposes, which leaves no native herbal plants for the butterflies and larvae to flourish. Making every possible inch of urban space with concrete, not only depletes the water table but also reduces wild patches that attract butterflies,” says Ramamurthy.

Creating public awareness by involving students, local people, forest dwellers, and tribals is essential in the conservation of butterflies. “These are an extremely important group of organisms used from centuries to study several areas of biological research, including navigation, pest control, embryology, mimicry, evolution, genetics, population dynamics and biodiversity conservation,” says Ushasri.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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HOW COAL, CLIMATE JUSTICE AND ZERO EMISSIONS CLASHED AT COP26

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

An elderly woman being carried to safety in Palakkad, Kerala, during the 2018 floods | Photo Credit: [K.K. MUSTAFAH](#)

The 26th United Nations Conference of Parties (COP26) ended in tears. President for COP26, Alok Sharma, a Minister of Cabinet rank in the Boris Johnson administration, choked up as he knocked the gavel to signal the end of the two-week conference in Glasgow, Scotland. Sharma, who'd extended the conference proceedings by a day, couldn't get the world to decisively commit to two things: that all countries must cut carbon dioxide emissions so that it doesn't lead to global warming rising beyond 1.5°C by 2100; and that it was time to set a date to guillotine humanity's centuries-old dependence on coal as fuel.

The COP held in Paris in 2015 is considered historic because nearly 200 countries signed a treaty that bound them to do whatever they could to keep global temperatures from rising beyond 2°C by the end of the century and "pursue all efforts" to keep it at 1.5°C. The difference in half a degree is significant.

Heatwave-hot

The Intergovernmental Panel on Climate Change (IPCC), that has for years been compiling regular updated assessments of scientific literature linking greenhouse gas emissions and climate change, released a report in 2018. Called the *Special Report on Global Warming of 1.5°C*, it summarised evidence on how a 1.5°C world would look like compared to a 2°C. The picture isn't pretty. At 1.5°C, some 350 million people in urban areas will be exposed to severe drought. At 2°C, the figure would be more than 411 million. A 2°C world would mean that Arctic ice would almost certainly melt. About 14% of the world will be exposed to extreme heat compared to 37% in a 2°C world.

'1.5°C' and '2°C' refer to temperatures averaged out over the entire globe, encompassing both oceans and land. Land heats quicker, and much more than the ocean, because the latter is vaster and can mask the amount of heat trapped in the atmosphere. So, a 2°C global rise can mean as much as a 6°C rise in some tropical regions. This is the temperature difference between 'hot' and 'heatwave-hot'. The 1.5°C and 2°C refer to the rise in global temperature compared to the years between 1850 and 1900. Since then, the globe has already heated up by 1°C. And so delegates, activists, industrialists and media flying into editions of COP at different venues annually are working to craft an agreement, and a host of subsidiary documents, to prevent that crucial, additional degree of heating.

Timing matters. The 1.5°C report also argues that because so much carbon dioxide already exists in the atmosphere, global temperatures will ineluctably rise by 1.5°C by the 2030s. In fact, this barrier was already temporarily breached in 2015-16 during a raging El Niño season that first steamed the Central Pacific and triggered knock-off effects globally. But if countries manage to substantially cut emissions, and deploy technology that is admittedly exotic (Direct Air Capture, or technology that extracts carbon dioxide from the atmosphere), or manage to rejuvenate acres of dense forest, it is possible that the earth may stay at the 1.5°C level for a few decades and then cool down, thus keeping temperatures below 1.5°C by the end of the century. This is, however, the most optimistic scenario and requires all countries to make drastic

emission cuts. So much so that all nations, collectively, ought not to be releasing more than 18 billion tonnes of carbon dioxide in 2030. Currently, the world emits around 36-40 billion tonnes every year, and so far, all nations have together pledged to make emission cuts that will still see 33 billion tonnes being emitted in 2030 (however, close to 95% of nations have not legally committed to doing so).

Middle-of-the-road forecasts currently suggest that the world can realistically only hope to keep temperatures from rising to somewhere between 2 and 3°C by the end of the century. The uncertainty of climate science is that a 3°C rise isn't necessarily just twice as bad as a 1.5°C. The oceans, land and atmosphere are all interacting with each other and past emissions along with future ones can cumulatively add up, like karma, to bring on more disasters — that we are already seeing — but at a much greater scale.

Unholy trinity

So what's the best way to do this? Simple answer: cut fossil fuel use. Which ones? And therein lies the dilemma. Coal, natural gas and oil are the unholy trinity that fuel 80% of the world's energy needs. They are responsible for the climate crisis because in fuelling power plants and transport, they emit carbon dioxide. However, all of them emit differently. Kilo for kilo, coal emits nearly twice as much carbon dioxide as natural gas and about 60% more than oil. There are also a host of partially burnt carbon particles from the combustion of coal that contribute to other forms of pollution and trigger respiratory disorders.

Thus, it seems like a no-brainer to get rid of coal as soon as possible. However, keeping in mind how central fossil fuels are in powering economic growth, it's important to see how the world's top three fossil fuel emitters — the U.S., China and India — consume them. India and China, both developing countries with a third of humanity between them, derive half their primary energy from coal. For the U.S., it is just 12%, according to 2020 figures from 'Our World in Data'. Coal constitutes 70% of India's electricity production, 60% of China's, and just 20% of the U.S.'s.

Oil is 40% of the primary source of energy in the U.S. and 30% and 19% of India's and China's, respectively. Gas is 30% of the primary energy source for the U.S. and less than 10% for India and China. The U.S. is a stand-in for the economic development trajectory of the West, having also historically built its economy on the back of coal. It started to rely on other more efficient fossil fuels, such as gas and oil — and even renewable energy sources such as wind, solar and nuclear energy — relatively later. Therefore, say India and China, it is hypocritical for the West to insist on phasing out these cheap, dependable sources of fuel that are critical to India and China's economic development and essential to provide electricity, heat, and jobs to populations that are largely poor.

These numbers are also reflected in another way. The average American individually emits 10 times more carbon dioxide from fossil fuel use than an Indian, and about three times as much as a Chinese. The U.S. and several countries have already peaked on emissions; that is, every year, they are emitting fewer tonnes of carbon dioxide than before and yet it will take them until 2050 to go down to zero. How legitimate is it then to ask the much more populous developing countries to peak sooner and hit zero around the same time? In principle, a massive shift in developing countries towards renewable energy sources could aid this transition, but this requires a complete reimagining of the energy infrastructure. The Industrial Age heralded the building of infrastructure to move fossil fuel around. Dismantling it overnight would be debilitating for the developing world, is the argument.

Peaked emissions

India, by virtue of its long coastline and tropical climate, must also bear the brunt of warming, with hotter oceans already fuelling intense cyclones and unexpectedly prolonged spells of rain. In light of this, it is only fair that rather than ask developing countries to quickly slash emissions, the U.S. and developed countries — many of which have already peaked emissions and are prosperous enough to shift to more expensive renewable energy sources — take on far more drastic cuts expeditiously than what they have committed to. “This would be in keeping with principles of climate justice and equity, principles that are already in the United Nations Framework Convention on Climate Change [the guiding document governing all COP meetings],” environment minister Bhupender Yadav said in Glasgow. This also chimes in with demands by India and a much broader group of African countries and island nations that are almost certain to be deluged by rising seas and in need of compensation for damages and funds for adaptation.

Given that shifting from fossil fuel before 2050 is near-impossible, shouldn't there be more emphasis and money to prepare for a world where disasters are inevitable, they ask. As an analogy, it's impossible to predict the exact hour of a massive earthquake but it's perfectly possible to know how to build a house to withstand one and estimate its cost. A 2°C rise in global temperature would be a “death sentence” for island and coastal communities, as Prime Minister of Barbados, Mia Mottley, said at COP26. “We do not want that dreaded death sentence, and we have come here today to say, ‘try harder,’” she said. Her suggestion was a \$25 trillion global push towards adaptation and mitigation. Vaibhav Chaturvedi, a climate-economist at the Council on Energy, Environment and Water, said that it wasn't really the size of such a push that mattered, but that it required a complete overhaul of the banking system. “The trillions of dollars would just be added to a country's overall debt, however this would mean new ways of valuing assets and those can't be done overnight.”

Prior to COP26, Sharma, U.S. Senator John Kerry, and prominent leaders of the European Union made multiple trips to several countries, including India, to coax them to sign on to net zero by 2050; or slash emissions such that there was no carbon released, in balance, by mid-century. This was the best shot at a 1.5°C world. That, however, didn't happen. The attempt to mark time on coal, in the final version of the Glasgow agreement, read that countries would ‘phase down’ but not ‘phase out’ coal. The COP collectively accepted that the Perfect ought not to be the enemy of the Good, and thus COP26 ended the way it did. In optimism, but also in tears.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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EXPLAINED

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Coal is used to meet over 70% of India's power needs. Most of this comes from domestic mines.
| Photo Credit: [AFP](#)

The story so far: On the final day of the [UN Climate Change Conference held in Glasgow](#), India's Minister for Environment Bhupender Yadav [read out a statement promising to "phase down" rather than "phase out" the use of coal](#). This caused many to raise questions about India's commitment to tackling climate change. Earlier, during the COP26 (Conference of Parties) summit, Prime Minister Narendra Modi had committed to turning India carbon neutral by 2070.

Glasgow climate summit | Coal 'phase-down' is a right, says Environment Minister

Since carbon emissions are considered the main culprit in global warming, countries have been committing themselves to turning carbon neutral by various dates. One key way to achieve carbon neutrality, wherein countries compensate for their carbon emissions by capturing an equal amount of carbon from the atmosphere, is to reduce dependence on coal. Coal is the most polluting among fossil fuels, and hence, its use in particular has come under scrutiny.

India refutes allegations on 'weakening' Glasgow climate pact

Coal is used to meet over 70% of India's electricity needs. Most of this coal comes from domestic mines. In FY 2020-21, India produced 716 million tonnes of coal, compared with 431 million tonnes a decade ago. Since FY 2018-19, domestic production has stagnated and has been unable to meet the rising domestic demand, leading to a rise in imports. Most of the country's coal production is limited to Chhattisgarh, Odisha, Jharkhand and Madhya Pradesh with a total production of over 550 million tonnes, contributing to over 75% of the country's total coal production. The Prime Minister promised to increase non-fossil fuel energy capacity to 500 GW by 2030, meet 50% energy needs from renewable sources and reduce carbon emissions by 1 billion tonnes in a decade. According to an estimate by the Centre for Science and Environment, the promise to reduce emissions by 1 billion tonnes means that India would need to reduce its carbon output by 22% by 2030. India now meets about 12% of its electricity needs from renewable sources, and increasing it to 50% by 2030 will be difficult. While some renewable energy sources like solar are cheap, they are unreliable because of the intermittency problem. They thus require the use of storage batteries, which adds to the cost. It should be noted that many low-income countries with low savings may not even possess the capital required to invest in renewable energy. Further, the damage that coal causes to commonly owned resources like the environment is not factored into its cost.

India has fought attempts by developed countries to impose a cap on its emissions. It has argued that adopting stringent steps to reduce carbon emissions can drag down growth and affect efforts to reduce poverty. It should also be noted that per capita carbon emissions of countries such as India and China are still lower than those of many developed countries. According to World Bank data of 2018, India produces 1.8 metric tonnes of carbon emissions per capita against 15.2 metric tonnes produced by the U.S. Experts believe India's commitment to phase down coal and become carbon neutral may actually be a rather generous commitment than what developed countries have committed themselves to. Critics have also pointed out that the focus on ending the use of coal deflects attention from other fossil fuels such as oil and natural gas that are heavily used by developed countries. They also say developed countries have not made good on their promise made at COP15 in Copenhagen to offer \$100 billion every

year to developing countries to achieve net zero emissions.

It is highly unlikely that developing countries like India and China will reduce their coal consumption or even stop it from rising further. Coal, after all, is the cheapest and most reliable way to meet their rising energy needs. Some leaders have proposed a carbon tax as an alternative to ensure that the price of coal reflects the cost of the damage it causes to the environment. This may turn out to be a more effective approach towards reining in carbon emissions. Coal on average is priced at \$2, while experts believe that it should be priced in the range of \$30 to \$70 to reflect its true cost. But such high carbon taxes can cause a drastic fall in coal output and severely affect living standards unless alternative sources of energy step in to fill the gap. India also faces its own set of structural problems in the power sector that will make the transition towards clean energy harder.

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Sands of time: The giant finds in western Rajasthan are estimated to be 200 million years old

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WHO TIGHTENS GLOBAL AIR QUALITY NORMS

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Morning haze envelops the skyline on the outskirts of New Delhi. File | Photo Credit: [AP](#)

The World Health Organisation (WHO) in its first-ever update since 2005 has tightened global air pollution standards in a recognition of the emerging science in the last decade that the impact of air pollution on health is much more serious than earlier envisaged.

The move doesn't immediately impact India as the National Ambient Air Quality Standards (NAAQS) don't meet the WHO's existing standards. The government has a dedicated National Clean Air Programme that aims for a 20% to 30% reduction in particulate matter concentrations by 2024 in 122 cities, keeping 2017 as the base year for the comparison of concentration. These are cities that don't meet the NAAQS when calculated from 2011-2015.

However, experts say the WHO move sets the stage for eventual shifts in policy in the government towards evolving newer stricter standards.

"This will soon become part of policy discussions — much like climate targets to reduce greenhouse gas emissions keep getting stricter over time — and once cities and States are set targets for meeting pollution emission standards, it could lead to overall changes in national standards," said a senior official, who's part of a high level commission to monitor air quality standards. The person declined to be identified as he isn't authorised to speak to the media.

The upper limit of annual PM2.5 as per the 2005 standards, which is what countries now follow, is 10 microgram per cubic metre. That has now been revised to five microgram per cubic metre.

The 24-hour ceiling used to be 25 microgram but has now dropped to 15. The PM10, or particulate matter of size exceeding 10 microgram, upper limit is 20 microgram and has now been revised to 15 whereas the 24-hour value has been revised from 50 to 45 microgram.

India's NAAQs — last revised in 2009 — specify an annual limit of 60 microgram per cubic metre for PM 10 and 100 for a 24-hour period. Similarly it's 40 for PM 2.5 annually and 60 on a 24-hour period. There are also standards for a host of chemical pollutants including sulphur dioxide, lead and nitrogen dioxide.

Environmental organisation Greenpeace in a statement said the new guidelines meant that among 100 global cities, Delhi's annual PM2.5 trends in 2020 was 16.8 times more than WHO's revised air quality guidelines, while Mumbai's exceeded 8-fold, Kolkata 9.4, Chennai 5.4, Hyderabad 7 and Ahmedabad exceeded 9.8 fold.

"Air pollution is a threat to health in all countries, but it hits people in low- and middle-income countries the hardest," WHO Director-General Tedros Adhanom Ghebreyesus said in a statement. "WHO's new Air Quality Guidelines are an evidence-based and practical tool for improving the quality of the air on which all life depends. I urge all countries and all those fighting to protect our environment to put them to use to reduce suffering and save lives."

Every year, exposure to air pollution is estimated to cause 7 million premature deaths and result in the loss of millions more healthy years of life. In children, this could include reduced lung growth and function, respiratory infections and aggravated asthma. In adults, ischaemic heart disease and stroke are the most common causes of premature death attributable to outdoor air

pollution, and evidence is also emerging of other effects such as diabetes and neurodegenerative conditions. This puts the burden of disease attributable to air pollution on a par with other major global health risks such as unhealthy diet and tobacco smoking, the WHO noted.

“There is a body of scientific evidence to prove that air pollution is leading to severe health impacts and 90% of the entire global population is breathing polluted air. Air pollution is a severe health crisis and WHO’s revised air quality guidelines bring back the focus to the issue,” said SN Tripathi, Professor, IIT Kanpur & Steering Committee Member, National Clean Air Programme, India.

Both PM2.5 and PM10 are capable of penetrating deep into the lungs but PM2.5 can even enter the bloodstream, primarily resulting in cardiovascular and respiratory impacts, and also affecting other organs. PM is primarily generated by fuel combustion in different sectors including transport, energy, households, industry and from agriculture. In 2013, outdoor air pollution and particulate matter were classified as carcinogenic by WHO’s International Agency for Research on Cancer (IARC).

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The extension was approved by the Central Drugs Standard Control Organisation

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THE ROAD TO A HIMALAYAN BLUNDER

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Tree cover is rampantly cut in order to widen roads under the Char Dham Project near Rudraprayag in Uttarakhand. File | Photo Credit: [The Hindu](#)

The [Char Dham road project](#), inaugurated by Prime Minister Narendra Modi in 2016, is an ambitious attempt to widen nearly 900 kilometres of hill roads at the cost of 12,000 crore. The project, which will be executed by the Ministry of Road Transport and Highways (MoRTH), aims to provide all-weather connectivity to the four major shrines of Yamunotri, Gangotri, Kedarnath and Badrinath. In the enthusiasm for an infrastructural project that will increase pilgrimage tourism from the Indian plains and provide attendant local economic dividends, the government has ignored the facts proven by the many tragic incidents in the hills of Uttarakhand over decades. Rampant construction and its complex interaction with climate change has led to massive landslides and floods in the fragile Himalayan range.

The project began as a road connectivity project for pilgrim tourists. Now the [government argues](#) that it is essential to back up troop and arms movement towards the India-China border. The case is in the Supreme Court. The Attorney General argues that wide roads are necessary for the sake of national security in the Garhwal region. The petitioners, residents of the valleys in the Garhwal region, stress on the need for a regulated and narrower intermediate road width with a walking footpath.

When the mountains had a meltdown in Uttarakhand

Let's look at the timeline of the case. In 2018, the road-expansion project was challenged by an NGO for its potential impact on the Himalayan ecology. The Supreme Court [constituted a high-powered committee](#) (HPC) to examine the issues. [In an order in September 2020](#), the Court said that the carriageway width of the roads cannot exceed 5.5 metres. The Court went by March 2018 guidelines issued by the MoRTH for mountain highways, which set a standard specification of a carriageway width of 5.5m with two-lane structures (7m). In doing so, the Court upheld [the minority recommendation of the HPC](#). In November 2020, the Ministry of Defence (MoD) filed an appeal in which, quoting the MoRTH Affidavit, it asked for "a double-lane road having a carriageway width of 7m (or 7.5m in case there is a raised kerb) with 8-10m formation width" to "meet the requirement of the Army". On December 15, [the MoRTH amended its 2018 circular](#) and raised the 5.5m width limit to 10m. The new circular read: "For roads in hilly and mountainous terrain which act as feeder roads to the Indo-China border or are of strategic importance for national security, the carriageway width should be 7m with 1.5m paved shoulder on either side." Why did MoRTH amend the circular way beyond the requirement placed by the MoD?

These wide roads are being sought to be built in Uttarakhand, which has been a victim of several disasters in the last two decades. It is crucial to note that the terrain of the Himalayas in Uttarakhand is different from the terrain in Ladakh. Valleys in Uttarakhand are narrow and close-ended with steep slopes of 60-70 degrees. On the other hand, the valleys in Ladakh have a slope elevation of 30 degrees. Just this year, we saw how the [floods in the Dhauliganga](#), Rishi Ganga and Alaknanda rivers claimed over 200 lives. During the monsoons, owing to the massive hill-cutting for the Char Dham road project, several landslides have occurred in the region. Such is the condition of the State that the national highways of the Char Dham project, including ones leading to the border, were closed repeatedly and sometimes for months this monsoon season.

And so, the question is, why did the MoRTH enter such a fragile terrain with this massive, ambitious project without even doing a basic environment impact assessment, as is mandated? Violations of the intermediate road width of 5.5m were said to be happening even after the Supreme Court reprimanded the MoRTH. Then, the MoD was brought in to justify the demand for double-lane paved shoulder roads.

Security must trump green concerns: Supreme Court

When reprimanded, the MoRTH informed the Supreme Court that the project had been taken up under a different category which is why the 2018 circular was not being followed. Such a bizarre submission should be — and was — rejected by many. However, some toed the line of the government and agreed to the double-lane paved shoulder road width. Later, it was revealed that the project proponents intend to install toll booths along the Char Dham roads, and that is feasible only with the double-lane paved shoulder road width. Is it the intent of the government to levy a tax on Char Dham yatris?

In its November 2020 appeal, the MoD had requested a 7m carriageway width with 8-10m formation width. This was supported by the MoRTH in its affidavit. The petitioners and the small minority within the Supreme Court-appointed committee recommended an intermediate road width of 5.5m tarred surface which facilitates easy bilateral movement, with a 1.5m walking footpath, which pilgrims and residents of the valley need. The formation width of this design is the same as that proposed by the MoD (8-10 m) with the only difference being a walking footpath. What then is the difficulty? When the judges raised this question, the government had no answer. Several violations of the MoRTH came tumbling out and the fact that the MoD was being used to justify the new road width became clear.

No link between Char Dham road-widening project in Uttarakhand and flash floods, govt. says in SC

It is often argued that landslides are a natural consequence of the construction of roads and can be mitigated. Similar arguments were made in court about this project too. However, the rainfall this year showed that the mitigation measures are no match to nature's fury. Prevention and regulation of activities seem to be the only effective way of mitigation in these fragile mountains.

Disaster-resilient, safe and stable infrastructure is the only solution for commuting by road in the hills. But double-lane paved shoulder roads are excessively wide and render the slopes vulnerable. The unique Himalayan landscape with steep slopes and sharp gradients is not amenable to human engineering. Any human-induced change beyond the Himalayas' carrying capacity will have an impact on stream run-offs and erosional or depositional processes. Considering such vulnerabilities, we need to keep the scale of human-induced disturbances to the minimum level possible. The Char Dham project in its current form goes against all environmental safeguards.

If the government does not desist from widening the roads under this project, it will be a Himalayan blunder. It will significantly reinforce mass wasting processes and erosion rates given the steepness of the slopes, earthquake activity and erosivity of increased monsoonal precipitation. The Himalayas need to be preserved as a nature reserve for future generations. That is why they are known as the 'abode of Gods'. So, why desecrate them?

Mallika Bhanot is a member of Ganga Ahvaan, a citizen forum working towards conserving the Ganga and the Himalayas; C.P. Rajendran is an adjunct professor at the National Institute of Advanced Studies, Bengaluru and author of a forthcoming book Earthquakes of the Indian Subcontinent

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The State's fall from grace can be reversed if voter behaviour is shaped by development

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SETTING THE TONE AT GLASGOW, THE JOB AHEAD IN DELHI

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

With current per capita emissions that are less than half the global average, [India's pledge to reach 'net zero' emissions by 2070](#) has cemented India's credentials as a global leader. The emissions of all others who have pledged "net zero" by 2050 are above the global average.

At [COP26 in Glasgow](#) (October 31-November 12, 2021), India successfully challenged the 40-year-old frame of global climate policy that pointed a finger at developing countries with the alternate frame of 'climate justice', that unsustainable lifestyles and wasteful consumption patterns are to blame. The political implication of the date 2070 is that the world should get to 'net-zero' by 2050. For that, the rich countries will need to do more and step up closer to their share of the carbon budget. India's stand also signals that it will not act under external pressure, as requiring equal treatment is the hallmark of a global power, and will have an impact on other issues.

How coal, climate justice and zero emissions clashed at COP26

The problem, as Gandhiji had also observed, is really western civilisation; it also accounts for the spate of criticism of India's open challenge in the plenary, and getting global agreement on a "just" transition to phase down, and not phase out, coal. The subject of oil was not touched, even as automobile emissions are the fastest growing emissions, because it is a defining feature of western civilisation. Coal is the most abundant energy source, essential for base load in electrification, and the production of steel and cement. Its use declines after the saturation level of infrastructure is reached. The irony of the host country pushing other nations to stop using coal — an energy resource which powered its own Industrial Revolution — was not lost on the poor countries who called out "carbon colonialism". That India and China working together forced the G7 to make a retraction has signalled the coming of a world order in which the G7 no longer sets the rules.

The Prime Minister's stand in the opening plenary, pushing 'climate justice', and the Environment Minister, Bhupender Yadav's constant reminder that the negotiating text is not balanced as there is little advance on financial and other support, gave courage to the others to also successfully question the negotiating frame which focused on emissions reduction. After 40 years there is more specific language on both finance and adaptation finally recognising that costs and near-term effects of climate change will hit the poorest countries hardest.

The debate has now shifted to the national level, with questions on the feasibility of the goal of 'net-zero' by 2070. Here again, most of the concerns mirror those raised in the West without appreciating the significance of 'climate justice'. Seeing the challenge in terms of the scale and the speed of the transformation of the energy system assumes that India will follow the pathway of western civilisation where the energy system and lifestyles that evolved over a century have to be transformed over the next 30 years.

India refutes allegations on 'weakening' Glasgow climate pact

India is urbanising as it is industrialising, moving directly to electrification, renewable energy and electric vehicles, and a digital economy instead of a focus on the internal combustion engine. Most of the infrastructure required has still to be built and automobiles are yet to be bought.

India will not be replacing current systems and will be making investments, not incurring costs.

There is sufficient evidence in the literature that the consumption of affluent households both determines and accelerates an increase of emissions of carbon dioxide. This is followed by socio-economic factors such as mobility and dwelling size. In the West, these drivers have overridden the beneficial effects of changes in technology reflected in the material footprint and related greenhouse-gas emissions. Climate change has to be addressed by the West by reducing consumption, not just greening it.

Glasgow climate summit | Coal 'phase-down' is a right, says Environment Minister

For India, in parallel with the infrastructure and clean technology thrust, the focus on a decent living standard leads to behavioural change in the end-use service, such as mobility, shelter and nutrition — for change modifying wasteful trends.

First, consumption patterns need to be 'shifted away from resource and carbon-intensive goods and services, e.g. mobility from cars and aircraft to buses and trains, and nutrition from animal and processed food to a seasonal plant-based diet'.

Second, along with 'reducing demand, resource and carbon intensity of consumption has to decrease, e.g. expanding renewable energy, electrifying cars and public transport and increasing energy and material efficiency'.

COP26 deal | U.N. chief says 'not enough', warns 'catastrophe' close; Greta Thunberg denounces it

Third, equally important, will be achieving a 'more equal distribution of wealth with a minimum level of prosperity and affordable energy use for all', e.g., housing and doing away with biomass for cooking. Indian civilisational values already lay stress on vegetarianism, frown on wastage; mobility-related consumption is not disproportionately increasing with income. National acceptance of a 'floor' as well as 'ceiling' of sustainable well-being is feasible.

The Government now needs to set up focused research groups for the conceptual frame of sustainable well-being. It should analyse the drivers of affluent overconsumption and circulate synthesis of the literature identifying reforms of the economic systems as well as studies that show how much energy we really need for a decent level of well-being.

China defends joining with India on coal 'phase down' instead of 'phase out' at COP26

The West has yet to come out with a clear strategy of how it will remain within the broad contours of its carbon budget. The political problems of a scaling-down of economic production and lifestyles will provide useful lessons. It is becoming difficult for the West to use international trade that is shifting manufacturing and the burden of emissions to developing countries with the rise of a digital economy. And increasing inequality and a rise of protectionism and trade barriers imposing new standards need to be anticipated. This knowledge is essential for national policy as well as the next round of climate negotiations.

Explained | [Why is India's coal usage under scrutiny?](#)

After the Stockholm Declaration on the Global Environment, the Constitution was amended in 1976 to include Protection and Improvement of Environment as a fundamental duty. Under Article 253, Parliament has the power to make laws for implementing international treaties and agreements and can legislate on the preservation of the natural environment. Parliament used

Article 253 to enact the Environment Protection Act to implement the decisions reached at the Stockholm Conference. The decisions at COP26 enable a new set of legislation around ecological limits, energy and land use, including the efficient distribution and use of electricity, urban design and a statistical system providing inputs for sustainable well-being.

Mukul Sanwal is a former civil servant, climate negotiator and Director in the United Nations Framework Convention on Climate Change (UNFCCC)

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Sri Lanka's decision to ban imports on chemical fertilizers was not backed by scientific evidence

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WERE THERE DOMESTIC HORSES IN ANCIENT INDIA?

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Genetic key: Horses with the modern domestic DNA profile lived in the Western Eurasian Steppes; by around 2200–2000 BCE, these horses spread out. | Photo Credit: [FatCamera](#)

A recent report in *Nature* by Ludovic Orlando and his group from the Paul Sabatier University in Toulouse, France (P. Librado et al., *Nature* 598, 636-642; 2021) has been able to collect bones and teeth samples of over 2,000 such ancient specimens from regions from where domestic horses could have originated, namely in the Iberian Peninsula in the southwestern corner of Europe, or the western-most edge of Eurasia (Spain and its neighbours), Anatolia (which is modern Turkey), and the steppes of Western Eurasia and Central Asia. As Tosin Thompson writes in his commentary in *Nature* of October 28, 2021, Dr. Orlando's team analysed the complete genome sequences of about 270 samples from these regions, and also gathered information from archeology. In addition, they also dated radioactive Carbon 14, which decays at a fixed rate, to determine the age of these horse samples. These collective data have led them to decide that until about 4200 BCE, many distinct horse populations inhabited various regions of Eurasia.

A similar genetic analysis has also found that horses with the modern domestic DNA profile lived in the Western Eurasian Steppes, particularly the Volga-Don River region.

By around 2200–2000 BCE, these horses spread out to Bohemia (the Czech Republic of today and Ukraine), and Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, Iran and Afghanistan) and Mongolia. These horses were bred by breeders from these countries to sell them to countries that demanded them. Riding on horses became popular in these nations by around 3300 BCE, and armies were built using them, for example, in Mesopotamia, Iran, Kuwait and the 'Fertile Crescent' or Palestine. Thompson notes that the first spoke-wheeled chariots emerged around 2000-1800 BC.

Now, when did horses come to India, and were they domestic or foreign? Was horse native to India? The answer seems to be 'no'. The "World Atlas" says that the only animals native to India are the Asian elephant, snow leopard, rhinoceros, Bengal tiger, Sloth bear, Himalayan wolf, Gaur bison, red panda, crocodile, and the birds peacock and flamingo. The website ThoughtCo cites, in the article '11 domestic animals that originated in Asia', lists the antelope, Nilgiri tahr, elephant, langur, Macaque monkey, rhinoceros, dolphin, Garial crocodile, leopard, bear, tiger, bustard (heaviest flying bird), squirrel, cobra, and peacock. Thus, it seems clear from these sources that horse is not native to India. Horses must have come into India through inter-regional trading between countries. Indians might have traded their elephants, tigers, monkeys, birds to their neighbours and imported horses for our use.

So, when did India get its horses? Wikipedia points out that horse-related remains and artefacts have been found in Late Harappan sites (1900-1300 BCE), and that horses did not seem to have played an essential role in the Harappan civilisation. This is in contrast to the Vedic Period, which is a little later (1500-500 BCE). (The Sanskrit word for horse is *Ashwa*, which is mentioned in the Vedas and Hindu Scriptures). These are roughly towards the end of the late Bronze Age.

It is also worth noting that two recent scholarly books, one by Tony Joseph, titled 'Early Indians: The Story of our Ancestors and Where we Came From', and the other by Yashaswini Chandra, titled, 'The Tale of the Horse'. Dr. Joseph's recent article in December 2018 in *Firstpost* examines the evidence to the 'Aryan' migrations to India. This would suggest that the horses

found in India came from the 'Stans' mentioned above.

And Dr. Yashaswini Chandra's posting in *The Print* of January 17, 2021 suggests that Indian native horses disappeared by 8000 BCE.

Perhaps the clearest analysis of the debate comes from an article by the historian Michel Danino of IIT Gandhinagar. He writes in his paper titled, 'The horse and the Aryan debate', in the *Journal of Indian History and Culture*, 2006, September 13:33-59, and in the book "History of Ancient India" in 2014, that the archaeologist Sandor Bokonyi studied samples of horse teeth from Baluchistan dating to pre-Harappan era from Allahabad (2265-1480 BCE), in Chambal Valley (2450-2000 BCE) and the upper molar sample from Kalibangan, and concluded that they came from real domesticated horses. These papers by Professor Danino sets to rest several conflicting claims about domestic horses in India, and we are thankful to him.

Given this background, it will be interesting to check whether in the Harappan sites, there are any remnant bones, teeth or skulls of horses, and perform DNA sequencing on them, just as Orlando's group did in their *Nature* article on Eurasian samples.

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COP26 PLEDGES NEED A NEW CLIMATE OF COOPERATION

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

As world leaders converged in Glasgow for the [COP26 \(October 31-November 12, 2021\)](#), there were some notable absentees. The Presidents of China and Russia, Xi Jinping and Vladimir Putin, leaders of the world's second and fourth largest carbon emitters, failed to make it to Glasgow. Hence, understandably, all eyes fell upon India, the [world's third largest carbon emitter](#), and which included what kind of commitment Prime Minister Narendra Modi would be making.

There was cautious optimism when [India finally announced its net zero target](#), even though India's pledged deadline is 2070 – two decades after than the desired deadline of the year 2050. After the net zero target, the United States and Europe led the next biggest climate goal, the [Global Methane Pledge](#), to bring down global methane levels significantly by 2030; this was signed by as many as 104 countries. Despite being the third-largest methane emitter, [India was not signatory](#). India also was not part of the pledge to deforestation despite hosting the world's largest contiguous mangrove forest: the Sundarbans.

Climate change: ICMR for shift away from coal, change in cattle rearing practices

India has been [a promoter of green energy](#) to reduce carbon emission. Although the country is yet to significantly transit to renewable energy, accounting only 22.5% of nationwide electricity production, India has been leading the global movement towards solar power. The country cofounded the International Solar Alliance (ISA) along with France – an alliance with more than 120 countries to promote solar energy. To strengthen India's stand for renewable energy like solar energy, India has signed to the Glasgow Breakthrough Agenda in this year's COP26 along with over 35 other nations to promote clean energy and make it more affordable.

Compared to China's 28.4%, the U.S.'s 19.8% and some North European country's 100% transition to renewable energy for power, there is much room for improvement in India. However, there are two key struggles that India has to deal with when transitioning to green energy: the consumption of the world's second largest population base and the lack of adequate available renewable energy options. Countries such as Iceland and Norway have the privilege to depend almost entirely on hydroelectricity adequate enough for a small population such as theirs. Countries with a similar population scale to India such as China and the U.S. have been relying significantly on nuclear power to cut down on carbon emissions which India cannot facilitate due to not being a member of the Nuclear Suppliers Group. India did commit to transiting to green energy for meeting at least half of nation-wide power consumptions. However, the country requires significant measures to do so, which includes bringing down the cost of renewable energy to make it more affordable and attractive to the general public and private businesses.

The Indian government has been promoting green energy to abide by its COP21 climate commitments. The Government plans to make wide use of hydrogen fuel as a better substitute of fossil fuels and is promoting renewable energy such as solar powered energy production by reducing tariffs and even providing for subsidising which are falling. The Indian renewable energy industry is up against an immense financial challenge with a recent report estimating the requirement of 2.61 trillion to install a balance capacity to achieve its target of 175 gigawatts of renewable power by the year 2022.

India's 450GW renewable energy goal by 2030 doable, says John Kerry

India has faced numerous economic adversities in recent years. The country is still reeling from the impact of demonetisation in 2016 that left GDP growth rate falling ever since. Foreign investment in India has also been declining since 2018.

The COVID-19 pandemic that hit in early 2020 further pushed down GDP growth, severely impacting several industries. Scarce resources are being used for economic survival. The Government is desperately trying to aid its economy by subsidising various industries during the COVID-19 pandemic as well as vaccinating its population to prevent another wave as worse as the COVID-19 Delta variant wave that had hit India earlier. The country is going through a resource constraint, having to choose between priorities.

Setting the tone at Glasgow, the job ahead in Delhi

Meeting climate goals with a population of 1.3 billion while combating the novel coronavirus pandemic has been a challenge for the world's largest democracy. India does not have privilege like its peers from the developed world to financially support all of its economy, people and the climate. It is no surprise that Mr. Modi had to ask the international community for a new financial commitment to achieve the climate goals. More so, since the annual \$100 billion pledge by developed countries to the developing countries and Least Developed Countries (LDCs) back in COP16 is yet to be disbursed.

If powerful developing economies such as India are to play a constructive role in tackling climate change and achieving net zero target, the developed North needs to shore up its support by taking a common responsibility to help developing countries and LDCs to pursue climate goals as they already face the daunting tasks of fighting poverty, providing basic health-care services, and ensuring access to education. People without food when they are hungry, medicine and doctors when they are ill, and schools for their children cannot be expected to either relate or appreciate the adversities of climate change being debated in a place and country which most of them have not even heard of and leaders they hardly know.

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Amul's success does not seem to have become a catalyst for similar movements across other agricultural commodities

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