

Climate change march: From Paris to Glasgow



The latest IPCC report shows that we are dangerously close to 1.5C already. Every fraction of a degree matters

The COP26 climate conference will be a clarifying moment, poised between global co-operation and competition. As one of the key French officials tasked with delivering a deal at COP21 in Paris in 2015, I can attest to the weight of expectations placed upon this year's hosts, Italy and the United Kingdom.

The summit in Glasgow this November is by far the most fraught meeting of governments since Paris. Paradoxically, greater global integration continues alongside emerging fault lines, including the injustices of the Covid-19 pandemic and a growing desire for inward, nationalistic policies.

While global trade is on track to increase by 8% this year, after falling by 5.3% in 2020, the rollout of medical supplies

along global supply chains has exposed deep sources of antagonism and rivalry. The issue of vaccine solidarity – compounded by wealthy countries earmarking trillions for their own economic recoveries – has seriously strained multilateral ties. COP26 is approaching under a cloud of tension.

This year's conference will test the spirit of co-operation that emerged in Paris, where – after several abortive efforts – 196 governments adopted the historic Paris accord and made “net zero” a geopolitical reality. The agreement has since provided the organising principle for all climate action – one that nation states, regions, cities, businesses, investors, civil society, and individuals all had a voice in, and can all act upon. This was people-powered multilateralism at its best. Six years later, we ought to be seeing a positive domino effect of bold pledges from states. Instead, we are watching a nervous game of poker. As with vaccines, wealthier countries are not sharing their wealth and technology.

Tellingly, the international community still has not met the Paris agreement's target of \$100bn per year for supporting climate investments in developing countries. This figure is a threshold, not an end goal: it is essential that we clear this hurdle for all parties at COP26 to know that wealthy countries mean business and are sincere in their solidarity.

Equally concerning is the absence of specifics for how G20 countries intend to meet abstract net-zero targets. Many remain fully locked into fossil fuels. Since these economies account for almost 80% of worldwide emissions, they must start including more concrete, comprehensive decarbonisation planning as part of their Nationally Determined Contributions (NDCs) under the Paris agreement.

The European Commission's new Fit for 55 plan shows how this can be done in a detailed, sector-specific way. Unfortunately, the European Union is the exception. Everyone else is still playing poker, even as the room fills up with water.

Just this year, climate-driven disasters have struck Brazil, Canada, Madagascar, China, Germany, Russia, the United States, and many others. There is no need to recall every cataclysmic

weather event, because it is already sufficient to say that the problem has broken beyond our readiness.

As climate modelling improves, the path to remaining within 1.5C of warming is narrowing before our eyes. In early August, the latest report from the Intergovernmental Panel on Climate Change (IPCC) showed that we are dangerously close to 1.5C already. Every fraction of a degree matters. The differences between a 1.5C world and a 2C world would be dramatic.

When we were negotiating the Paris agreement, the preceding G20 gathering was similarly fraught – some might say disastrous. Many felt the COP21 was doomed to fail as a result. But after weeks of intense work and dialogue, the Paris summit managed to exceed most expectations, mine included.

How can the UK and Italy steer the talks toward another successful outcome? If the parallels with 2015 offer any indication, the key for this final “sprint” is to emphasise that no-one, and no single country, can tackle the climate crisis alone. Because every single party to the United Nations Framework Convention on Climate Change has an equal say, any single signatory can cause negotiations to stumble. Good faith dialogue, concrete plans, and serious means to finance them are the only way forward.

There are some recent positive developments to build on. Earlier this year, South Korea and Japan – respectively the world’s second- and third-largest coal financiers after China – both pledged to end their public coal investments abroad.

But there are also clear areas where governments have more work to do. According to the International Energy Agency, staying on track for net-zero emissions by 2050 requires that no new coal, oil, or gas projects be started after 2021. That means all of the world’s largest emitters must immediately end coal investments abroad and clarify how they will phase out their own use of coal.

Only a sincere spirit of multilateralism can solve the imbalance at the heart of the climate crisis, the impacts of which are profoundly unfair. Countries that are hardly

responsible for the problem's escalation are the ones facing the most severe, often existential risks. Why would small island states negotiate themselves into submersion?

The Paris agreement was only possible because of its commitment to multilateralism, and this remains the best guide to ensuring its relevance. It is telling that soon after a G20 climate meeting delivered few tangible positives this year, the world's Least Developed Countries issued a statement calling on their wealthier counterparts to "take responsibility."

Sovereign, competitive impulses will always strain the space for cooperation. But within that space, there are ample opportunities to achieve positive-sum outcomes – in technological innovation and adoption, for example. These instincts are rooted in the national interest, and thus should be responsive to the fearsome, increasing prospect of overshooting 1.5C.

In this spirit, some concrete steps to defuse tensions at COP26 would include a dedicated item for meaningful discussions on "loss and damage," while this summer's ferocious weather events still loom large in everyone's memory. The conference also must press the issue of financing for climate adaptation efforts as part of the broader drive to meet the minimum \$100bn per year target. Finally, G20 countries that have not delivered their NDCs must do so as soon as possible, demonstrating that their policies are sufficient to keep the world on a 1.5C pathway.

G20 countries anxious to promote their role as climate leaders must listen carefully to the warnings from others, particularly those on the front lines. If we see momentum on these fronts between now and November, the UK and Italy could herald COP26 as a success, keeping the 1.5C goal in our sights. – Project Syndicate

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Cheap imports threaten US solar panel production boom



US companies have announced plans to build dozens of solar panel factories across the country since last year when President Joe Biden's signature climate law unleashed billions of dollars of subsidies, raising hopes a clean energy boom can provide tens of thousands of good paying jobs.

But global solar panel prices have collapsed due to a wave of new Asian production capacity in recent months, leading many in the US solar industry to worry many of these proposed factories may be uneconomical. As many as half may soon be delayed or canceled, a figure not previously reported, according to Reuters interviews with industry analysts, solar companies, and trade groups.

Changing market forces have already derailed solar

manufacturing operations in Europe. In recent days, the US race for a clean energy transition has already been hit by huge writedowns and project cancellations the offshore wind industry.

"The more prices decline in the global market, the more difficult it is to build US local manufacturing," said Edurne Zoco, executive director for clean energy technology at S&P Global Commodity Insights. "If the cost gap between imported modules and locally manufactured modules is too big ... many of these announcements might not happen."

Solar shipments into the US more than doubled through August to \$10bn from about \$4bn a year earlier, according to the US International Trade Commission.

The domestic industry's souring outlook could hurt Biden's climate agenda and hinder reelection efforts for a president who has hailed solar project plans as proof his clean energy policies can create millions of good-paying jobs.

US solar manufacturers and trade groups have said they need more government help at the federal and state levels or those jobs may not materialise, and the US will keep relying on panels made with mainly Chinese components. US officials have repeatedly warned that over-reliance on Chinese clean energy technology could pose a security risk similar to Europe's historical dependence on Russian natural gas.

A White House spokesperson did not respond to questions about recent market challenges facing domestic solar manufacturers, but said Biden's policies had generated a huge wave of investment and were revitalising American manufacturing.

Companies have announced over three dozen solar factories since passage of the Inflation Reduction Act in August 2022 that collectively promised to create 17,000 jobs and bring in nearly \$10bn in investment, according to projects tracked by the clean energy business advocacy group E2.

Of eight solar company representatives, trade groups and researchers who spoke to Reuters, all eight agreed the market has worsened. Energy research firm Wood Mackenzie shared its new forecast that just 52% of the 112 gigawatts of solar

module capacity companies planned will be online by the target date of 2026, a projection it has not previously made public. Mike Carr, executive director of the Solar Energy Manufacturers for America trade group, said factories could be delayed, extending US dependence on China.

"A misunderstanding of the policy opportunity here could really undermine a signature initiative of this administration, which is to restore manufacturing competitiveness to the United States, and particularly in such a key industry," Carr said.

Globally, the solar industry has already absorbed a 26% drop in panel prices this year to about 19 cents per watt, according to S&P Global Commodity Insights. US prices have been more resilient, but SEMA and analysts say spot prices are declining for those without long-term contracts.

The increase in solar imports stems partly from a temporary waiver of tariffs on Malaysia, Thailand, Cambodia and Vietnam, which expires in June, 2024. Imports are also up sharply from India, Mexico and other nations unaffected by that move.

The IRA provides a decade of tax incentives worth 30% of a project's cost. But industry consultant Brian Lynch said that could be outweighed by the glut of cheap panels and worries about rising costs for labor, raw materials and financing.

"It's almost like Dr Jekyll and Mr. Hyde. The incentives to site and open up a US factory are phenomenal," Lynch said. "But if pricing is going to continue to go down, if the continued gamesmanship on the trade is going to continue, they can't justify it."

The US Commerce Department said imported panels and cells remained important to the clean energy transition.

"Commerce is committed to holding foreign producers accountable to playing by the same rules as US producers," a Commerce spokesperson said.

The IRA also contains a 10% bonus credit for panel manufacturers using American-made components. This perk is critical for domestic panels that may command a 40% price

premium to imported alternatives, according to Wood Mackenzie. But so few components are produced domestically that much of the industry cannot secure that bonus. So far, solar module factory announcements have been more than double those for solar cells, the crucial components that transform sunlight into energy.

The industry needs more government help, including “the right tax and trade policies that build on the IRA and similar state laws that create the space for emerging US solar manufacturers to compete on a global scale,” said Danny O’Brien, president of corporate affairs at Hanwha Qcells, which is making one of the largest investments in the domestic solar supply chain.

Meyer Burger, which plans to build a factory in Colorado, said the government needs to help domestic manufacturers deal with “underpriced products that are coming from Asia”.

The Solar Energy Industries Association (SEIA), a large solar trade group that has long opposed tariffs, is also advocating for more support for manufacturers, warning it does not expect that every proposed factory will be built.

Convalt Energy plans next year to open 2 gigawatts of module capacity in New York and Maine followed by a facility for components in 2025. CEO Hari Achuthan said module production lines are already about four months behind schedule because the company’s financiers are waiting for the Treasury Department to issue crucial rules on how to secure the IRA tax credits.

“Our country has done a phenomenal job seeing through the IRA bill. But now it’s going to come down to the details of the IRA and how we execute it and the support that we need to get from the Commerce Department and anybody else with regard to tariffs on imports,” he said. – Reuters

Climate's 'Catch-22': Cutting pollution heats up planet



Air pollution, a global scourge that kills millions of people a year, is shielding us from the full force of the sun. Getting rid of it will accelerate climate change.

That's the unpalatable conclusion reached by scientists poring over the results of China's decade-long and highly effective "war on pollution", according to six leading climate experts.

The drive to banish pollution, caused mainly by sulphur dioxide (SO₂) spewed from coal plants, has cut SO₂ emissions by close to 90% and saved hundreds of thousands of lives, Chinese official data and health studies show.

Yet stripped of its toxic shield, which scatters and reflects solar radiation, China's average temperatures have gone up by 0.7 degrees Celsius since 2014, triggering fiercer heatwaves, according to a Reuters review of meteorological data and the scientists interviewed.

"It's this Catch-22," said Patricia Quinn, an atmospheric chemist at the US National Oceanic and Atmospheric

Administration (NOAA), speaking about cleaning up sulphur pollution globally. "We want to clean up our air for air quality purposes but, by doing that, we're increasing warming."

The removal of the air pollution – a term scientists call "unmasking" – may have had a greater effect on temperatures in some industrial Chinese cities over the last decade than the warming from greenhouse gases themselves, the scientists said. Other highly polluted parts of the world, such as India and the Middle East, would see similar jumps in warming if they follow China's lead in cleaning the skies of sulphur dioxide and the polluting aerosols it forms, the experts warned.

They said efforts to improve air quality could actually push the world into catastrophic warming scenarios and irreversible impacts.

"Aerosols are masking one-third of the heating of the planet," said Paulo Artaxo, an environmental physicist and lead author of the chapter on short-lived climate pollutants in the most recent round of reports by the Intergovernmental Panel on Climate Change (IPCC), completed this year.

"If you implement technologies to reduce air pollution, this will accelerate – very significantly – global warming in the short term."

The Chinese and Indian environment ministries didn't immediately respond to requests for comment on the effects of pollution unmasking.

The link between reducing sulphur dioxide and warming was flagged by the IPCC in a 2021 report which concluded that, without the solar shield of SO₂ pollution, the global average temperature would already have risen by 1.6 degrees Celsius above preindustrial levels.

That misses the world's goal of limiting warming to 1.5C, beyond which scientists predict irreversible and catastrophic changes to the climate, according to the IPCC, which pegs the current level at 1.1C.

The Reuters review of the Chinese data provides the most detailed picture yet of how this phenomenon is playing out in

the real world, drawing on previously unreported numbers on changes in temperatures and SO₂ emissions over the past decade and corroborated by environmental scientists.

Reuters interviewed 12 scientists in total on the phenomenon of unmasking globally, including four who have acted as authors or reviewers of sections on air pollution in IPCC reports.

They said there was no suggestion among climate experts that the world should let-up on fighting air pollution, a clear and present danger that the World Health Organisation says causes about 7mn premature deaths a year, mostly in poorer countries. Instead they stressed the need for more aggressive action to cut emissions of climate-warming greenhouse gases, with reducing methane seen as one of the most promising paths to offset pollution unmasking in the short term.

President Xi Jinping pledged to tackle pollution when he took power in 2012 following decades of coal-burning that had helped turn China into “the factory of the world”. The following year, as record smog in Beijing inspired “Airpocalypse” newspaper headlines, the government unveiled what scientists called China’s version of the US Clean Air Act.

On March 5, 2014, a week after Xi went on a walkabout during another extreme bout of smog in the capital, the government officially declared a war on pollution at the National People’s Congress.

Under the new rules, power plants and steel mills were forced to switch to lower-sulphur coal. Hundreds of inefficient factories were shuttered, and vehicle fuel standards toughened up. While coal continues to be China’s largest power source, smokestack scrubbers now strip out most SO₂ emissions.

China’s SO₂ emissions had decreased from a 2006 peak of at nearly 26mn metric tons to 20.4mn tons in 2013 thanks to more gradual emissions restrictions. But with the war on pollution, those emissions had plummeted by about 87% to 2.7mn metric tons by 2021.

The drop in pollution was accompanied by a leap in warming –

the nine years since 2014 have seen national average annual temperatures in China of 10.34C, up more than 0.7C compared with the 2001-2010 period, according to Reuters calculations based on yearly weather reports published by the China Meteorological Administration.

Scientific estimates vary as to how much of that rise comes from unmasking versus greenhouse gas emissions or natural climate variations like El Nino.

The impacts are more acute at a local level near the pollution source. Almost immediately, China saw big warming jumps from its unmasking of pollution near heavy industrial regions, according to climate scientist Yangyang Xu at Texas A&M University, who models the impact of aerosols on the climate.

Xu told Reuters he estimated that unmasking had caused temperatures near the cities of Chongqing and Wuhan, long known as China's "furnaces", to rise by almost 1C since sulphur emissions peaked in the mid-2000s.

During heatwaves, the unmasking effect can be even more pronounced. Laura Wilcox, a climate scientist who studies the effects of aerosols at Britain's University of Reading, said a computer simulation showed that the rapid decline in SO₂ in China could raise temperatures on extreme-heat days by as much as 2C.

"Those are big differences, especially for somewhere like China, where heat is already pretty dangerous," she said.

Indeed, heatwaves in China have been particularly ferocious this year. A town in the northwestern region of Xinjiang saw temperatures of 52.2C (126F) in July, shattering the national temperature record of 50.3C set in 2015.

Beijing also experienced a record heatwave, with temperatures topping 35C (95F) for more than four weeks.

The effects of sulphur unmasking are most pronounced in developing countries, as the US and most of Europe cleaned up their skies decades ago. While the heat rise from sulphur cleanup is strongest locally, the effects can be felt in far-distant regions. One 2021 study co-authored by Xu found that a decrease in European aerosol emissions since the 1980s may

have shifted weather patterns in Northern China.

In India, sulphur pollution is still rising, roughly doubling in the last two decades, according to calculations by NOAA researchers based on figures from the US-funded Community Emissions Data System.

In 2020, when that pollution plummeted due to Covid lockdowns, ground temperatures in India were the eighth warmest on record, 0.29 C higher than the 1981-2010 average, despite the cooling effects of the La Nina climate pattern, according to the India Meteorological Department.

India aims for an air cleanup like China's, and in 2019 launched its National Clean Air Programme to reduce pollution by 40% in more than 100 cities by 2026.

Once polluted regions in India or the Middle East improve their air quality by abandoning fossil fuels and transitioning to green energy sources, they too will lose their shield of sulphates, scientists said.

"You stop your anthropogenic activities for a brief moment of time and the atmosphere cleans up very, very quickly and the temperatures jump instantaneously," added Sergey Osipov, a climate modeller at the King Abdullah University of Science and Technology in Saudi Arabia.

As the implications of the pollution unmasking become more apparent, experts are casting around for methods to counter the associated warming.

One proposal called "solar radiation management" envisions deliberately injecting sulphur aerosols into the atmosphere to cool temperatures. But many scientists worry that the approach could unleash unintended consequences.

A more mainstream plan is to curb methane emissions. This is seen as the quickest way to tame global temperatures because the effects of the gas in the atmosphere last only a decade or so, so cutting emissions now would deliver results within a decade. Carbon dioxide, by comparison, persists for centuries. As of 2019, methane had caused about 0.5C in warming compared with preindustrial levels, according to IPCC figures.

While more than 100 countries have pledged to reduce methane

emissions by 30% by the end of the decade, few have gone further than drawing up “action plans” and “pathways” to cuts. China – the world’s biggest emitter – has yet to publish its plan.

By targeting methane, the world could mitigate the warming effect of the reduction in pollution and potentially avert catastrophic consequences, said Michael Diamond, an atmospheric scientist at Florida State University.

“This doesn’t doom us to going above 1.5 degrees Celsius if we clean up the air.”

What can COP28 achieve?



COP season is almost here. For the climate-conscious, the annual Conference of the Parties of the UN Framework Convention on Climate Change (UNFCCC) is a fixture of the late-year calendar and an opportunity to take stock of our

goals, needs, and achievements. We spend two weeks preoccupied with a distant event hoping that negotiators will make meaningful progress toward mitigating the climate threat. But to keep our expectations for COP28 realistic, we must understand what a COP can and cannot do.

We are steadily decarbonising our economies. Within a decade, wind and solar power will be the major sources of electricity, and sales of electric vehicles (EVs) are likely to overtake those with internal combustion engines. According to the International Energy Agency, the world's fossil-fuel consumption will start falling by 2030. Though this is probably too late to limit the global temperature increase to 2C, let alone 1.5C, above pre-industrial levels, it is sooner than one would have expected only a short time ago.

But little of this progress is directly attributable to COPs, including COP21 in 2015, from which the Paris climate agreement emerged. In fact, the Paris agreement specifies nothing about EVs or wind or solar power. Instead, it is Tesla that is responsible for the growth of EV sales: the commercial success of the company's Model S drove other high-end automakers to develop the competitive products which are now debuting.

Is there any connection between COPs and Tesla's success? If there is, it is not direct. During its early growth stages, Tesla benefited greatly from the United States' Corporate Average Fuel Economy (CAFE) regulations, which enabled it to sell zero-emissions credits to other manufacturers. The revenues from ZEC sales sometimes surpassed those of car sales.

The CAFE regulations date back to 1975, two decades before the first COP was held. They have, however, been tightened over time, a process that might partly reflect increased awareness, fostered by the COPs, of the climate challenge. Similarly, the COPs might have encouraged the subsidies, in both the US and the European Union, from which Tesla has benefited more recently, after it had already become a major force in the auto industry.

As for solar and wind, the sharp decline in costs has driven their dramatic growth. From 2009 to 2019, the cost of solar power fell from \$0.36 per kilowatt-hour to \$0.03. This decline is attributable to two main factors: economies of scale, which lowered the costs of producing each silicon wafer, and learning by doing, which led to more efficient – and thus cheaper – manufacturing processes. Both factors sustain a virtuous cycle: as the use of solar power increases, costs come down, further accelerating the adoption of solar power. This process was kicked off by Germany's adoption of generous feed-in tariffs for solar power in 2000. The Chinese government subsequently began investing heavily in solar, which it identified as a strategically important industry. Again, these important policy moves could have been encouraged by the increased awareness of climate change that they generate at COP meetings.

For offshore wind, the decline in costs has been driven largely by Ørsted and Equinor, two Scandinavian companies that leveraged their offshore oil and gas expertise to develop offshore wind farms, which use many of the same technologies. Government subsidies helped the nascent technology to become commercially viable.

In short, progress on decarbonisation has primarily reflected technological breakthroughs brought about by for-profit ventures with the help and guidance of supportive government policies. Those policies might have been crystallised by the discussions at, and publicity surrounding, the COPs, though they were not the result of specific directives from those meetings or contained in the Paris agreement.

So, what should we hope emerges from COP28? COPs can produce two types of positive outcomes. The first are “big picture” outcomes, such as maintaining pressure on governments and corporations to reduce emissions. Here, it is important not only to reiterate the importance of reaching zero emissions and highlight how far we have yet to go, but also to recognise the progress that has already been made.

The second type of outcome is more granular. This year's COP

must mark the beginning of a process that will clarify what constitutes a valid carbon offset. Many corporations are currently expecting to reduce, but not eliminate, their emissions, on the assumption that they can buy carbon offsets to take them to net-zero. But the world obviously cannot get to zero emissions – the ultimate goal – if anyone is still emitting.

Equally important, it has lately become clear that many voluntary carbon offsets are worthless, as they do not meet the standard of additionality (the guarantee that the relevant emissions reductions would not have occurred without support from carbon credit sales) or avoid leakage (the shifting of emissions elsewhere). An international body must set clear standards for the validity of offsets and impose limits on their use, and the UNFCCC is the obvious candidate.

COP28 has the potential to encourage further climate action, including the introduction or strengthening of policies that can lead to emissions-reducing technological breakthroughs, as well as to deliver a much-needed rulebook on important technical issues, such as the use of offsets. Whether it succeeds depends entirely on execution. – Project Syndicate

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Human-centric globalization: Taking G20 to the Last Mile,

Leaving none behind



Vasudhaiva Kutumbakam – these two words capture a deep philosophy. It means ‘the world is one family.’ This is an all-embracing outlook that encourages us to progress as one universal family, transcending borders, languages and ideologies. During India’s G20 presidency, this has translated into a call for human-centric progress. As One Earth, we are coming together to nurture our planet. As One Family, we support each other in the pursuit of growth. And we move together towards a shared future – One Future – which is an undeniable truth in these interconnected times.

The post-pandemic world order is very different from the world before it. There are three important changes, among others.

First, there is a growing realization that a shift away from a GDP-centric view of the world to a human-centric view is needed.

Second, the world is recognizing the importance of resilience

and reliability in global supply chains.

Third, there is a collective call for boosting multilateralism through the reform of global institutions.

Our G20 presidency has played the role of a catalyst in these shifts.

In December 2022, when we took over the presidency from Indonesia, I had written that a mindset shift must be catalyzed by the G20. This was especially needed in the context of mainstreaming the marginalized aspirations of developing countries, the Global South and Africa.

The Voice of Global South Summit in January 2023, which witnessed participation from 125 countries, was one of the foremost initiatives under our presidency. It was an important exercise to gather inputs and ideas from the Global South. Further, our presidency has not only seen the largest-ever participation from African countries but has also pushed for the inclusion of the African Union as a permanent member of the G20.

An interconnected world means our challenges across domains are interlinked. This is the midway year of the 2030 Agenda and many are noting with great concern that the progress on SDGs is off-track. The G20 2023 Action Plan on Accelerating Progress on SDGs will spearhead the future direction of the G20 towards implementing the SDGs.

In India, living in harmony with nature has been a norm since ancient times and we have been contributing our share towards climate action even in modern times.

Many countries of the Global South are at various stages of development and climate action must be a complementary pursuit. Ambitions for climate action must be matched with actions on climate finance and transfer of technology.

We believe there is a need to move away from a purely restrictive attitude of what should not be done, to a more constructive attitude focusing on what can be done to fight climate change.

The Chennai High-Level Principles for a Sustainable and Resilient Blue Economy focus on keeping our oceans healthy.

A global ecosystem for clean and green hydrogen will emerge from our presidency, along with a Green Hydrogen Innovation Center.

In 2015, we launched the International Solar Alliance. Now, through the Global Biofuels Alliance, we will support the world to enable energy transitions in tune with the benefits of a circular economy.

Democratizing climate action is the best way to impart momentum to the movement. Just as individuals make daily decisions based on their long-term health, they can make lifestyle decisions based on the impact on the planet's long-term health. Just like yoga became a global mass movement for wellness, we have also nudged the world with Lifestyles for Sustainable Environment (LiFE).

Due to the impact of climate change, ensuring food and nutritional security will be crucial. Millets, or Shree Anna, can help with this while also boosting climate-smart agriculture. In the International Year of Millets, we have taken millets to global palates. The Deccan High Level Principles on Food Security and Nutrition is also helpful in this direction.

Technology is transformative but it also needs to be made inclusive. In the past, the benefits of technological advancements have not benefited all sections of society equally. India, over the last few years, has shown how technology can be leveraged to narrow inequalities, rather than widen them.

For instance, the billions across the world that remain unbanked, or lack digital identities, can be financially included through digital public infrastructure (DPI). The solutions we have built using our DPI have now been recognized globally. Now, through the G20, we will help developing countries adapt, build and scale DPI to unlock the power of inclusive growth.

That India is the fastest-growing large economy is no accident. Our simple, scalable and sustainable solutions have empowered the vulnerable and the marginalized to lead our development story. From space to sports, economy to entrepreneurship, Indian women have taken the lead in various sectors. They have shifted the narrative from the development of women to women-led development. Our G20 presidency is working on bridging the gender digital divide, reducing labor force participation gaps and enabling a larger role for women in leadership and decision-making.

For India, the G20 presidency is not merely a high-level diplomatic endeavor. As the Mother of Democracy and a model of diversity, we opened the doors of this experience to the world.

Today, accomplishing things at scale is a quality that is associated with India. The G20 presidency is no exception. It has become a people-driven movement. Over 200 meetings will have been organized in 60 Indian cities across the length and breadth of our nation, hosting nearly 100,000 delegates from 125 countries by the end of our term. No presidency has ever encompassed such a vast and diverse geographical expanse.

It is one thing to hear about India's demography, democracy, diversity and development from someone else. It is totally different to experience them first-hand. I am sure our G20 delegates would vouch for this.

Our G20 presidency strives to bridge divides, dismantle

barriers and sow seeds of collaboration that nourish a world where unity prevails over discord, where shared destiny eclipses isolation. As the G20 president, we had pledged to make the global table larger, ensuring that every voice is heard and every country contributes. I am positive that we have matched our pledge with actions and outcomes.

Carbon Capture and Delay



As long as coal plants are still operating, it is a good idea to require them capture their carbon dioxide emissions. But those designing policies to hasten such practices must tread carefully, lest they unwittingly extend the life of dirtier energy sources.

NEW YORK — In May, the US Environmental Protection Agency proposed new power-plant rules that would effectively require every existing coal- or gas-fired plant in the United States either to capture and store most its carbon dioxide emissions, or to switch to burning low-emissions “green hydrogen.” Yet it would be cheaper to replace America’s more

than 200 coal-fired plants with new solar or wind facilities, and then to do the same with its gas plants soon thereafter.

This claim will surely be met with cries of: "It's not that simple! You also have to account for the Earth's rotation, cloud cover, and a lack of wind." Indeed, one also must acknowledge ever-present NIMBYism, long-term energy contracts, and other complexities that stand in the way of immediately swapping coal for solar. But nobody is seriously suggesting shutting down every fossil-fueled power plant everywhere all at once. The transition will take time.

Time, of course, is relative. Even the new EPA rules would be phased in gradually, with the real bite coming only in the next decade. But we can't wait for the EPA's rules to bite and force the changes, nor should we. And the "we," in this case, includes everyone from consumers to local energy regulators to utility executives and banks planning their investment decisions.

Carbon capture and storage (CCS) is a godsend, and green hydrogen has the potential to be one, too. But, looking to the next decade and beyond, we also will be deploying many other advanced climate-tech solutions, from better batteries to smarter grids. Given the urgency of the climate crisis and all the new technologies coming down the pike, it makes little sense to wait for the EPA's new rules to force changes years from now.

Power-plant economics are changing fast. In 2019, the think tank Energy Innovation published its first "coal cost crossover" report, which found that 62% of US coal plants were more expensive to run than to replace with local solar or wind generation. By 2021, that figure had risen to 72%; and as of earlier this year, it was 99%. With the exception of one coal plant in Wyoming, it would be cheaper to produce electricity with solar or wind, plus battery storage, than to keep the existing coal fleet up and running.

While the 2023 figure accounts for the expanded solar and wind tax credits under the Inflation Reduction Act, it does not include additional incentives like those provided by the IRA's loan program, which utilities can tap to help finance renewables. More to the point, it came before the new EPA proposals, raising the question of what effects these rules might have.

For the most part, the EPA's rule changes are standard regulatory fare, reflecting the need to pass muster with a Supreme Court that is intent on curtailing federal regulators' powers. Instead of allowing for flexibility in achieving carbon-reduction goals, the EPA is taking a more direct approach, essentially mandating that existing coal plants capture and store their released carbon. But especially in connection with generous IRA subsidies for CCS technology, US policymakers may be unwittingly throwing a lifeline to coal plants that would otherwise be economically unviable.

When considered in isolation, the EPA rule is clearly good for the environment and for public health, since it would significantly decrease particulate matter and ozone pollution. But assessments of CCS tend to get murky fast. Lest we forget, Donald Trump and his advisers were big fans of the technology, which they saw as a way "to help coal and still help the climate."

Since combining CCS with coal will always be more expensive than burning coal outright, mandating CCS, in theory, should indeed make coal even less competitive than it already is. But CCS mandates do not operate in a vacuum.

In practice, operating licenses for coal plants are not issued by the same people writing federal rules. These decisions are made at the state and local level, primarily through state-level public utility commissions that have many competing priorities. Even if they are committed to decarbonizing, one important goal is to keep the lights on. That goal, in turn,

has all too often been interpreted as keeping current generation capacities profitable. When faced with new CCS mandates and accompanying subsidies, they may simply see an opportunity to maintain coal-plant profitability for longer.

How can federal policymakers get around this problem? Broadly speaking, the focus should be on pushing cheaper solar and wind power into the system, as that will force coal- and gas-plant operators' hands. We also need better, nimbler planning and investment processes, to allow for grid-connection rights to be reassigned from coal plants to renewables that would be built in their stead. As matters stand, most US states do not give consumers a choice about how their electricity is generated. That needs to change.

As long as coal plants are still operating, it is a good idea to make them capture their CO₂ emissions. But that does not mean it is a good idea to be helping them continue to operate. The sooner that coal is replaced by renewables, the better it will be for the planet, consumers, and even utility companies.

Climate science beats climate fatalism



The Paris climate agreement's goal of limiting global warming to 1.5C is in the headlines again. According to the latest projections from the World Meteorological Organisation, "There is a 66% likelihood that the annual average near-surface global temperature between 2023 and 2027 will be more than 1.5C above pre-industrial levels for at least one year." A supercharged El Niño cycle means that record-breaking temperatures are almost certain.

But, as concerning as these warnings are, it would be even more worrying if one year above 1.5C was taken as a sign that the 1.5C target has been missed. Drawing that erroneous conclusion would lead us to abandon the Paris agreement's goal just when we should be doubling down on it.

The 1.5C goal will not be lost with just one or a few years of extreme temperatures. The Paris goal refers to human-caused temperature increases that are measured over the course of decades. We must keep this firmly in mind to stave off the dangerous climate fatalism that has been gaining momentum in recent years.

Yes, now that the planet has warmed roughly 1.2C above pre-

industrial levels, “once-in-a-century” heatwaves, forest fires, and floods are becoming more familiar to us. In some low-lying regions, rising seas are already forcing people to relocate. But there is still a massive difference between 1.2C and 1.5C – let alone between 1.5C and 2C – and the science shows that it is still possible to end this century at or below 1.5C.

Recent climate research has affirmed the importance and necessity of the 1.5C guardrail. As the Intergovernmental Panel on Climate Change warned last year, extreme weather events, ecosystem collapse, and planetary tipping points can happen at markedly lower levels of global warming than previously thought. Since the IPCC’s last reporting cycle in 2014, we have amassed much more evidence to show that even a 1.5C warmer world would be immensely challenging, and that temperature increases above that level would be truly devastating.

With every additional tenth of a degree of warming, more people will be exposed to life-threatening heatwaves, water shortages, and flooding. Worse, various studies show that the likelihood of reaching tipping points, like the potential collapse of the West Antarctic ice sheet, increases exponentially above 1.5C. These represent red lines. The world would not fall off a cliff, but there would be a fundamental shift in which planetary systems start moving irreversibly down the path toward more ice melt, marine-ecosystem change, and rising sea levels.

The only sensible approach is to mitigate that risk by reducing greenhouse gas (GHG) emissions as fast as possible. Though we still might overshoot the 1.5C limit in the short term, we can return to it in the long run. But that will be possible only if we have cut fossil-fuel emissions to zero. This is the crucial first step toward achieving net-zero GHG emissions.

It is no less important to preserve and restore the natural land and ocean systems that absorb and store carbon. And if we distort the Earth’s carbon cycle (through the thawing of

permafrost, for example), we will undermine our ability to reverse global temperature increases.

Limiting warming to 1.5C this century requires that we halve our emissions by 2030. This is not an arbitrary figure. Only if we halve our emissions this decade will we halve the pace of warming in the 2030s and bring it to a halt in the 2040s. Think of it as the difference between tackling climate change ourselves, or passing a civilisational time-bomb to our children.

Slowing the warming process also buys us precious time for adaptation. Even a rich country like the United States will be limited in how fast and fully it can adapt to the consequences of climate change. For those in more vulnerable places, the situation is incomparably worse. Disasters like the flooding in Pakistan last year can derail a country's economy and leave it in a downward spiral of rising debt and poverty – all of which will be compounded by future climate disasters for which it could not afford to prepare.

Moreover, many of the net-zero commitments made by governments, companies, and cities around the world are premised on the 1.5C limit. Phaseout plans for coal (such as those in Germany, Vietnam, and the United Kingdom) are based on 1.5C-aligned modelling, which shows that OECD countries need to stop using coal by 2030, and that non-OECD countries need to do so by 2040. Gas must follow shortly thereafter.

With the clock ticking down, these 1.5C-based models are telling us how to prioritise. We must decarbonise electricity first, then electrify as much transportation, buildings, and industry as we can, while also reducing demand. Beyond this low-hanging fruit, we also will need to scale up technologies for carbon removal.

Investments have been moving in this direction. Since the Paris agreement was concluded in 2015, the costs of solar, wind, and batteries have plummeted. Electric vehicles and heat pumps are going mainstream. These are market-driven responses to government incentives. Public policy has been crucial for instilling confidence and supporting clean-energy growth.

To give up and start looking beyond 1.5C would let big emitters off the hook. Rather than instilling confidence, it would signal to everyone that they should expect less – and betray all those who live in places that lack the resources and possibilities to adapt to a warmer world.

If we don't keep pushing for the most ambitious science-based targets, those with vested interests in the status quo will exploit our fatalism. Following a massively profitable year, owing to Russia's war in Ukraine, BP recently signalled that it will divert much of its intended investments in decarbonisation toward oil and gas.

The best science we have tells us that 1.5C is still feasible, and it tells us how to get there. As the British climate-change diplomat Pete Betts puts it, "If we do go above 1.5C, the message is not to give up. It's to double down." – Project Syndicate

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l Bill Hare is a founder and CEO of Climate Analytics.

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ABU DHABI – Faced with mounting pressure over planet-heating pollution, Gulf Arab energy giants are turning to humble tech start-ups as they search for ways to remove emissions while keeping oil flowing.

Oil producers have for years touted capturing carbon before it goes into the atmosphere as a potential global warming solution, against criticism from climate experts who say it risks distracting from the urgent goal of slashing fossil fuel pollution.

With little investment and few projects in operation around the world so far, the technology is currently nowhere near the scale needed to make a difference to global emissions.

Now, major players from Saudi Aramco to the United Arab Emirates' state oil and gas firm Abu Dhabi National Oil Company (Adnoc) say that is about to change, as the UAE hosts climate negotiations this year with a message of cutting emissions rather than fossil fuels.

“For the industry and for countries as well to achieve net

zero by 2050, I don't see us achieving this without embracing carbon capture," Mr Musabbeh Al Kaabi, Adnoc's executive director of low-carbon solutions, told Agence France-Presse.

"I would love to see more wind and solar energy, but to be practical and transparent, it's not going to solve the problem."

Carbon capture was a hot topic at a recent climate tech conference in Abu Dhabi, UAE's capital.

Start-ups displayed their advances in carbon capture and storage (CCS), which removes carbon dioxide (CO₂) as it is pumped from power plants and heavy industry.

There were also companies presenting their plans for direct air capture, a newer technology that extracts CO₂ directly from the atmosphere.

The United Nation's Intergovernmental Panel on Climate Change (IPCC) says the existing fossil fuel infrastructure – without the use of carbon capture – will push the world beyond the Paris deal's safer global warming limit of 1.5 deg C above pre-industrial levels.

Industrial smokestacks

The debate between whether to primarily target fossil fuels or emissions is shaping as a key battleground at the COP28 climate talks, which will be held in UAE financial hub Dubai.

Citing the IPCC, the COP28 president-designate, Sultan Ahmed Al Jaber – Adnoc's chief executive and his country's climate envoy – last week said it was time to "get serious about carbon capture".

But environmentalists are sceptical about the central role that big energy companies are seeking in climate solutions, saying they have a vested interest in maintaining fossil fuel

sales.

Greenpeace Mena (Middle East and North Africa) programme director Julien Jreissati labelled it a “distraction”.

Adnoc’s Mr Kaabi, however, argued that the oil giant’s engineering capabilities and deep pockets make them best placed to propel climate tech.

“The world has two options: We could leave it to the small players or have the big players accelerating this decarbonisation,” Mr Kaabi said.

In 2016, Adnoc launched the region’s first commercial-scale CCS project, Al Reyadah, which has the capacity to capture 800,000 tonnes of CO₂ per year.

Globally, there are only around 35 commercial facilities using carbon capture utilisation and storage globally, according to the International Energy Agency, which says even those planned until 2030 would capture only a fraction of the emissions needed.

‘We need to move quicker’

The entrepreneurs at the UAE conference included Omani company 44.01, a winner of Britain’s Earthshot Prize for its technology that permanently removes CO₂ from the air by mineralising it in peridotite rock.

“Climate change is an urgent challenge and for us to be able to tackle that challenge we need to move quicker,” said 44.01 CEO Talal Hasan.

“The oil and gas partnerships help us move quickly,” he told AFP.

Mr Hasan’s 44.01 has partnered Adnoc to develop a carbon capture and mineralisation site in Fujairah, one of the UAE’s

seven emirates – the first such project by an energy company in the Middle East.

“In one tonne of peridotite, you could probably mineralise 500 to 600 kilograms of CO₂... this means that with the rocks just in this region, you could potentially mineralise trillions of tons,” he said.

For Mr Hasan, energy companies are good partners because “we use a lot of the same equipment, infrastructure, people and resources”.

“That will help us accelerate scaling,” he said, arguing that the speed of execution is “very important”.

State-owned Saudi Aramco, one of the world’s richest companies, has invested in Carbon Clean, a British-based company that has developed compact technology that captures carbon from industrial smokestacks.

The company, which has 49 sites around the world, will deploy its latest technology in the UAE this year – its first project in the Middle East.

When asked about the logic of working with big oil, Carbon Clean CEO Aniruddha Sharma said: “If I were a fireman and there was a fire – a big fire and a small fire – where would I go first? Obviously, the big fire.” AFP

Climate crisis won't solve on its own: need to walk the

talk



We need all governments to step up and agree to phase out unabated fossil-fuel use. We need reforms to make our financial institutions and systems fit for purpose. And we need to take climate action seriously

Last year in Berlin, the great Kenyan long-distance runner Eliud Kipchoge broke the world marathon record, clocking 02:01:09 and beating his previous time by 30 seconds. His success has made him a legend not only in Kenya but globally. It offers a useful lesson for everyone involved in the fight against climate change. Kipchoge's winning strategy is rooted in the science of running (as well as 120 miles of hard work every week), and our own approach to the climate crisis must involve the same level of commitment and focus.

As temperatures keep rising and emissions soar, the planet, too, continues to break (dangerous) new records. But with determination and follow-through, we – together with institutional partners and other governments – can start to

run faster to get ahead of the climate crisis. Success will depend on following the latest science and mobilising a joint, broad-based effort of governments and citizens.

In March, the world's top climate experts and governments signed off on the latest Intergovernmental Panel on Climate Change synthesis report. Once again, the IPCC's message was stark: Humans have permanently changed the planet, and global warming is already killing people, destroying nature, and making the world poorer. Though African countries have contributed the least to the problem, they are bearing the brunt of the damage.

According to the International Energy Agency (IEA), Africa accounts for less than 3% of the world's energy-related carbon dioxide emissions, and 600mn Africans – an outrageous figure – still do not have access to electricity.

Climate change is a shared problem that the global community must solve by working together, especially given the disproportionate burden being placed on those who are least responsible. During his recent visit to Kenya, German Chancellor Olaf Scholz and I held talks on ways to address the climate crisis. Through the Germany-Kenya Climate and Development Partnership, our two countries have committed to deepen our collaboration on climate-resilient development and renewable energy, including by supporting green-hydrogen production and sustainable agriculture.

We are currently a long way from limiting global warming to 1.5C or even 2C, as envisaged by the Paris climate agreement. The climate crisis will not solve itself. On the contrary, we must ensure that global greenhouse-gas (GHG) emissions peak before 2025 at the latest, and then fall by at least 43% by 2030.

This is the year to drive that transformation. The United Nations Climate Change Conference this November-December (COP28) offers an opportunity to accelerate the energy transition, supercharge the growth of renewables, and commit to phase out all fossil fuels – starting with coal.

Kenya is on track to meet these goals. We already generate 92%

of our power from clean sources and we have committed to achieving a 100% clean electricity network by 2030. Similarly, renewables generated 46% of Germany's electricity in 2022 and the government has committed to increase that to 80% by 2030. Critically, these commitments will not only ensure clean power and a safer environment; they will also create jobs, attract investment, and make our economies more secure and resilient in the face of volatile oil and gas prices.

But it is important that we run this race as a team. According to the IEA, the global ratio of clean-energy investments to dirty-energy investments must increase sixfold by 2030 (from 1.5:1 to 9:1).

With a strong partnership between Africa, Europe, and the rest of the international community, Kenya, with its abundant resources, can make significant contributions to decarbonisation and the global transition to a net-zero economy. We must unlock climate finance and investment, so that we can harness our potential for green economic growth. But to do that, we will need to fix the current international financial system, which has proven inadequate for dealing fairly with multifaceted global crises, from the Covid-19 pandemic and the climate emergency to debt distress across the Global South.

Next month's Summit for a New Global Financial Pact, in Paris, provides an opportunity for Europe to galvanise support for reforming the international financial system. The international community must recognise our potential to help solve global problems and take steps to ensure win-win outcomes. That means providing access to affordable, adequate, and sustainable financing that is delivered in a timely manner.

As we reduce emissions, we also need to prepare our people and our housing, agriculture, and food systems for rising temperatures and extreme weather events. Meeting the 2021 COP26 commitment to double global climate-adaptation financing by 2025 remains crucial for protecting people and nature. The latest IPCC report is clear: climate change and insufficient

adaptation and mitigation efforts are reversing development gains and undermining economic stability.

But we also must remember that adaptation has limits, and that climate change is already threatening millions of peoples' lives today. As the IPCC shows, reducing GHG emissions by 43% this decade and stabilising global warming at or below 1.5C is still our best chance to keep the problem at a manageable scale. Kenya's climate summit in September will provide a key opportunity to showcase the continent's commitment, potential, and opportunities to deal with the climate crisis. We need all governments to step up and agree to phase out unabated fossil-fuel use. We need reforms to make our financial institutions and systems fit for purpose. And we need to take climate action seriously. In the words of Eliud Kipchoge, the key to success is to "walk your talk." – Project Syndicate

▪ *William Ruto is President of Kenya.*

The Climate Elephants in the Room



May 19, 2023 PINELOPI KOUJIANOU GOLDBERG

As tempting as it is to rely on multilateralism to solve a shared global problem like climate change, the world simply does not have the time for such an approach. A far more pragmatic and effective strategy is to focus on the biggest polluters that contribute disproportionately to total greenhouse-gas emissions.

NEW HAVEN – Now that the falsehoods and obfuscation of climate denialism have finally been silenced, addressing climate change has become the world's top priority. But time is running out, and the International Monetary Fund warns that any further delays on implementing policies to mitigate global warming will only add to the economic cost of the transition to a low-emissions economy. Worse, we still lack a concrete, pragmatic strategy for tackling the problem. Although economists have made a robust case for why carbon taxes are the best solution, this option has proven politically infeasible, at least in those countries that account for some of the highest emissions (namely, the United States).

Commentators have also stressed that climate change is a shared problem involving important cross-border externalities that must be addressed through a multilateral approach to global coordination. But, as with carbon taxes, this argument

has fallen on deaf ears. And, given the current geopolitical climate and the increasing fragmentation of the global economy, there is little hope that the message will get through anytime soon.

Having committed to assisting developing economies as they confront climate change, the World Bank finds itself limited by the country-based model underlying its financing operations. It is earnestly weighing its options and considering how it could coordinate climate-related financing across borders. But while such efforts are well meaning and consistent with the spirit of multilateralism, they inevitably will delay concrete action. World Bank financing would have to be completely restructured, and coordinating action across multiple countries that have limited financial resources and often conflicting interests seems an impossible task. For example, while some developing economies are rich in fossil fuels, others are starved for energy sources.

Given these limitations, pragmatism dictates focusing on the biggest polluters. Global carbon dioxide emissions are concentrated among only a handful of countries and regions. China, the US, the European Union, Japan, and Russia collectively account for 63% of the total, and none of these top polluters is a low-income country anymore. China, the poorest of the group, represents around 30% of all emissions, making it by far the world's largest current polluter in absolute terms. But its government is taking steps to accelerate the transition to green energy – a winning strategy, given the country's abundance of rare earth metals.

India, the third-largest emitter, currently accounts for approximately 7% of global CO₂ emissions, and its size and growth trajectory imply that it could easily surpass China as the leading polluter, barring stronger climate policies. In fact, when it comes to helping developing countries decarbonize, considerable progress could be made simply by

targeting India alone. The big advantage of this strategy is that it would avoid the paralysis associated with attempts to adopt a multilateral approach in an increasingly fragmented world.

This does not mean that we should eschew projects aimed at climate mitigation or adaptation in other countries. But we would not need to wait until everyone is on board before doing anything. Those insisting on a multilateral approach should learn from the experience of the ultimate multilateral institution: the World Trade Organization. Its requirement that every single provision in every multilateral agreement gain unanimous support has left it increasingly paralyzed, prompting demands for institutional reform.

Of course, India is not low-hanging fruit. It is rich in coal and has little incentive (beyond the health of its citizens) to hasten the transition to green energy. In focusing on India, we would need to employ the carrot, not the stick.

Since the stick generally takes the form of pressure to implement carbon taxation, it is a non-starter. A tax would be ineffective, because it would incite massive domestic opposition (as has been the case in the US). It would also be morally objectionable, because it is unfair to ask a lower-middle-income country to bear the burden of reducing CO₂ emissions when rich countries (like the US) have failed to do the same. Moreover, even if China and India are now two of the world's biggest polluters, they bear little responsibility for the past, cumulative emissions that led to the current climate crisis.

That leaves the carrot, which would come in the form of tax incentives or subsidies to support green energy. When paired with other policies, these can ease firms into adapting to higher environmental standards (such as those associated with a cap-and-trade program). But such policies are expensive, which means that tackling climate change will require richer

countries to help finance them. Whether or not India becomes the new China, it is still in our power to ensure that it does not become the new outside polluter.

<https://www.project-syndicate.org/commentary/climate-change-prioritize-top-emitters-over-multilateralism-by-pinelopi-koujianou-goldberg-2023-05>