

Only public-private co-operation can accelerate decarbonisation



As countries around the world experienced record temperatures last year, UN Secretary-General Antonio Guterres declared: “We must turn a year of burning heat into a year of burning ambition.” But to move away from fossil fuels and unlock the green transition’s economic benefits, such as job creation and universal access to clean energy, industry leaders and policymakers must work together to translate the commitments made at the UN Climate Change Conference in Dubai (COP28) into actual renewable gigawatts.

COP28 marked a historic turning point in the battle against climate change. Rallying around the UAE Consensus, world leaders pledged to move away from fossil fuels, agreeing to triple renewable power capacity to at least 11,000 gigawatts

and double energy efficiency by 2030.

But ambition alone is not enough to achieve these targets and limit global warming to 1.5C. Governments must invest in mature, cost-competitive renewable technologies that can be rapidly deployed at scale. When integrated with long-duration energy storage, green hydrogen, and system optimisation, these technologies represent the most reliable and flexible way to accelerate the energy transition.

Renewables will undoubtedly shape the global energy landscape in the coming years. Both solar and wind power are expected to grow significantly, with hydropower serving as the backbone of grid flexibility. Consequently, renewables are poised to become the twenty-first century's dominant source of global electricity.

But as a joint report released by the International Renewable Energy Agency (IRENA) and the Global Renewables Alliance (GRA) ahead of COP28 noted, tripling renewable capacity will require cooperation between the private and public sectors. Partnerships should focus on initiatives that deliver immediate results, such as mobilising low-cost financing, accelerating permitting processes, clearing grid connection backlogs, reforming government auction mechanisms for renewable-energy projects, and diversifying global supply chains. A strong commitment to inclusivity and the active participation of developing economies must be at the heart of these efforts. IRENA and GRA are demonstrating this commitment by collaborating on the annual reports commissioned by the COP28 Presidency to monitor progress toward the global tripling target and facilitate the energy transition.

We must, however, move faster, especially if we aim to ensure that progress is equitably distributed around the world. While renewable power capacity rose by 473 gigawatts in 2023, the economic benefits of the energy transition did not reach every country. Remarkably, 83% of these increases were concentrated in China, the European Union, and the US, leaving many countries in the Global South behind.

In fact, the shift to renewables is alarmingly slow in many

parts of the world. Opportunities to address development and access challenges in Sub-Saharan Africa, where more than 500mn people still lack access to electricity, are being squandered. This sluggish transition can be attributed largely to the lack of affordable financing, adequate planning, and the policy and market frameworks needed to support the adoption of renewable energy. Tellingly, public fossil-fuel subsidies reached \$1.3tn in 2022 – roughly the annual investment needed to triple renewable capacity by 2030.

A critical first step toward fostering greater public-private co-operation in pursuit of COP28's ambitious targets is to reform the global financial architecture. Africa, for example, accounts for 17% of the world's population but has received less than 2% of global investments in renewable energy over the past two decades, underscoring the need to reduce capital costs and attract private investors. Developing industrial clusters and initiating grant programs could also help foster environments conducive to innovation and private-public partnerships.

Recent commitments by world leaders offer glimmers of hope. African leaders at the September 2023 Africa Climate Summit in Nairobi, for example, pledged to increase the continent's renewable capacity to at least 300 gigawatts by 2030. This effort aims to reduce energy poverty and boost the global supply of cost-effective clean energy suitable for industrial use.

Kenyan President William Ruto, a key advocate of the Nairobi agreement, established the Accelerated Partnership for Renewables in Africa, an African-led international alliance of governments and stakeholders that aims to accelerate renewable-energy deployment, increase access, promote green industrialisation, and strengthen economic and societal resilience.

Governments and business leaders should harness the current political momentum to foster co-operation between policymakers and private investors. As governments develop appropriate policy and market frameworks to facilitate the transition to

renewables, the private sector – historically responsible for 86% of global investments in renewable energy – is poised to lead the charge. Together, we can achieve a clean, secure, and just energy future. But to realise this vision, we must act fast. – Project Syndicate

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In the dock: Pivotal climate change testimonies in US



From Mexicans left homeless by rising seas to Colombians affected by coral bleaching, hundreds of people are telling the top human rights court in the Americas what climate change means to them in an historic case that could shape international law.

Environmental lawyers also hope the hearings at the Inter-American Court of Human Rights (IACHR), which were requested by Colombia and Chile, will define the duties of states to confront the climate crisis and stop it infringing on human rights.

As well as receiving submissions from climate victims, the Costa Rica-based court, which started its inquiry in Barbados in April, will hear from UN agencies, legal experts, grassroots environmental campaign groups, and youth groups.

The next sessions are due to be held in Brasilia and then Manaus, Brazil at the end of May, and an advisory opinion is expected by May 2025.

"We're hoping that the court's legal opinion is a guide and reference for Mexico, and other states, to develop public policies from a climate justice perspective," said Nora Cabrera, a lawyer and head of Our Future, a Mexico-based youth climate justice campaign group.

"And that it includes loss and damage compensation for affected communities, and adaptation policies for those not yet directly affected by climate change," said Cabrera, who will be speaking at the next hearing in Manaus.

In January, Colombia and Chile asked the IACHR to issue the advisory opinion, saying that they were experiencing the "daily challenge of dealing with the consequences of the climate emergency," including fires, landslides, droughts and floods.

"These events reveal the need for an urgent response based on the principles of equity, justice, co-operation and sustainability, with a human rights-based approach," they said in their petition.

"There is a close relationship between the climate emergency and the violation of human rights," they added.

It is this link between climate change and human rights that the IACHR will seek to define, while also examining how climate change affects migration and looking at the disproportionate effect on children, women and Indigenous people.

Chile and Colombia also asked the court for clarification on a state's duties to protect environmental activists.

Latin America is the most dangerous place in the world for environmental and land defenders, according to advocacy group Global Witness. Around 90% of the 177 killings of environmental activists recorded in 2022 took place in the region.

"The hearing aims to ask for clarity about human rights obligations and the climate crisis," said Jacob Kopas, senior attorney at the Earthjustice environmental group, one of a group of lawyers who spoke at the Barbados hearing on April 26.

"It will help to create a more concise framework to guide state behaviour and policy to confront the climate crisis and protect human rights," said Kopas.

Among those submitting testimonies will be the residents of the El Bosque fishing community in Tabasco, Mexico, where rising sea levels caused by climate change have swept away about 200 meters of coastline.

Since 2019, the school and more than 50 homes have been destroyed, forcing about 200 people to leave.

El Bosque community leader, Guadalupe Cobos, said she and 10 neighbours will probably have to leave within a year and resettle in an area about 12km away, where new homes are being built by the government.

"We depend on the sea but coastal erosion has affected our way of life. It's important for the court to know that we're living climate change now and that this isn't something that will happen in the future in 20 or 50 years' time," said Cobos.

"We want the court to hear our experiences and to know that our rights have been violated, that we have been forced to migrate," Cobos told the Thomson Reuters Foundation.

The court's advisory opinion could have important implications for climate litigation across Latin America and the Caribbean and make it easier for communities living with the effects of global warming to take legal action.

The opinion will apply to all signatories of the American Convention on Human Rights, most of whom are members of the Organization of American States. The United States and Canada have not ratified the treaty however.

The advisory opinion will help shape the region's legal systems as many countries incorporate its jurisprudence into their laws and constitutions.

"We're hoping that the court makes the link between the climate crisis and human rights violations and that it recognises climate displacement," said Cabrera, whose organisation has been supporting the El Bosque community.

The IACHR is known for its progressive stance on climate justice and human rights.

In March, it recognised that citizens in Peru have the right to a healthy environment when it ruled in favor of people living in the Andean mining town of La Oroya, who had suffered from decades of environmental pollution.

Other courts are also breaking new ground in this sphere.

In Colombia in April, in response to a lawsuit filed by a farming couple who were driven out of their home by flooding caused by heavy rains, the country's constitutional court recognised the links between environmental disasters and climate change and people being forcibly displaced.

Across the world, other top courts are also examining the connection between human rights and climate change. On April 9, the European Court of Human Rights (ECHR) ruled that the Swiss government had violated the human rights of its citizens by failing to do enough to combat climate change.

Two other courts – the International Court of Justice (ICJ) and the International Tribunal for the Law of the Seas (ITLOS) – are also expected to give advisory opinions on international legal obligations of states regarding climate change.

Kopas said the IACHR ruling could lead the way by delivering a "forward-reaching and progressive" advisory opinion.

"It's historic because of the climate crisis we are in. This is the crisis of our lifetime and of all future generations."

– Thomson Reuters Foundation

Climate Leadership from the Global South



Mar 14, 2024OMAR ANDRÉS CAMACHO and SOIPAN TUYA

With vast solar, wind, hydro, and geothermal resources, Africa and Latin America have a central role to play in the clean-energy transition. But while countries like Colombia and Kenya have made impressive progress, additional financing – and thus reforms to the international financial system – is sorely needed.

BOGOTÁ/NAIROBI – Last month, the International Energy Agency’s ministerial gathering took place in Paris, while the African Union, which recently joined the G20, held its annual summit in Addis Ababa. Both fora recognized the urgent need to fulfill the commitments made at last December’s United Nations Climate Change Conference (COP28) in Dubai, not least to triple installed renewable-energy capacity by 2030. But the challenges ahead are substantial.

COP28 identified many actions that are crucial to achieving net-zero emissions by 2050. Beyond the sharp increase in renewable-energy capacity, these include doubling the rate of energy-efficiency improvements by 2030, phasing down the “unabated” use of fossil fuels, and providing financial support to developing countries as they work to expand energy access and advance economic development.

Africa and Latin America have a central role to play in fulfilling the world's net-zero ambitions. Both regions boast abundant renewable-energy potential, thanks to vast solar, wind, hydro, and geothermal resources. By leveraging these, Africa and Latin America can make rapid progress in reducing their carbon emissions, enhancing energy access, and stimulating sustainable economic growth.

Our countries, Colombia and Kenya, are already making significant strides toward a cleaner energy mix. Though Colombia has massive oil and gas reserves, hydropower generation accounts for nearly 70% of its electricity production. And the government is committed to increasing the share of renewables in the energy mix further by 2030. By harnessing wind, solar, biomass, and geothermal, Colombia can diversify its renewable-energy portfolio and further reduce its reliance on fossil fuels.

Colombia is also taking direct action to accelerate the phaseout of fossil fuels. The government recently announced a ban on the issuance of new licenses for oil and gas exploration, and has signaled its intention to address the negative effects of fossil-fuel extraction. These measures will not only curb carbon emissions, but also help protect the country's vulnerable ecosystems and rich biodiversity.

As for Kenya, it is emerging as a renewable-energy success story in Africa. Using its vast geothermal, wind, solar, and hydroelectric resources, Kenya has raised the share of renewables in its electricity generation to a whopping 94%. Its geothermal sector has achieved remarkable growth, making it Africa's leading producer of geothermal power. And now, Kenya is helping its neighbors, Ethiopia and Djibouti, to harness their own geothermal resources as well.

Underpinning Kenya's progress are government efforts to implement supportive policies and create an enabling environment for private investment. The Kenyan government's

forward-thinking approach has not only resulted in expanded energy access for its people; it has also created jobs and local industries, thereby advancing economic development and opening up opportunities to collaborate with others. Kenya is a founding member of Accelerated Partnerships for Renewables in Africa, an initiative that aims to bolster the energy transition in African countries, with support from Denmark, Germany, and the United Arab Emirates.

Colombia and Kenya's achievements should be highlighted and celebrated to motivate and guide other countries in their own clean-energy transitions. Those with fossil-fuel resources, for example, must follow Colombia's example in limiting oil and gas exploration.

But Colombia and Kenya are not only passive models for others to follow; they are also active global leaders. If their clean-energy transitions didn't already make their commitments apparent, their recent decision to join the Beyond Oil & Gas Alliance – an international coalition of governments and partners working to facilitate the fossil-fuel phaseout – should make them so.

Still, financing is key if the world is to realize its clean-energy ambitions. Low investment in Africa is a major challenge. A recent BloombergNEF report shows that in 2021, just 0.6% (\$2.6 billion) of the \$434 billion invested in renewable-energy projects went to African countries. A sharp increase in funding flows from rich countries to clean-energy sectors in both Africa and Latin America is urgently needed.

Beyond direct financial support from rich countries, the global financial system – including the International Monetary Fund and multilateral development banks – must urgently be reformed, so that it is fairer and more efficient. Only then can this system deliver enough financing to meet the growing needs of developing economies. Coordinated action to ease the debt burdens on developing economies is also vital.

At COP28, the Global South demonstrated solidarity and a commitment to cooperation. By sharing knowledge and best practices, developing economies can drastically accelerate the clean-energy transition. But, if the world is to succeed at combating climate change and safeguarding our collective future, bold action to ensure adequate financing is essential.

US gas pipeline accidents pose big, unreported climate threat



Last October, an Idaho farmer using a backhoe punched a hole into a 22-inch pipeline buried under a field, sending more than 51mn cubic feet of natural gas hissing into the air.

While the incident on Williams Companies' Northwest Pipeline

was big, it was no anomaly along the roughly 3mn miles of natural gas pipelines crisscrossing the US.

Accidental pipeline leaks – caused by things like punctures, corrosion, severe weather and faulty equipment – happen routinely and are a climate menace that is not currently counted in the official US tally of greenhouse gas emissions, according to a Reuters examination of public data and regulatory documents.

Pipeline mishaps unintentionally released nearly 9.7bn cubic feet of gas into the atmosphere between 2019 and late 2023, according to a Reuters examination of incident report data maintained by the US Pipeline and Hazardous Materials Safety Administration (PHMSA).

That is the climate equivalent of running four average-sized coal-fired power plants for a year, according to an Environmental Defence Fund (EDF) online calculator.

Those emissions are currently not included in the nation's official greenhouse gas count because federal rules exempt large, unexpected leaks, and mainly only capture emissions from regular operations, according to the US Environmental Protection Agency (EPA).

The Biden administration aims to change that as early as next year under a set of rules proposed by the EPA to crack down on methane emissions from the oil and gas sector, and which would punish emitters with fees of \$900 to \$1,500 per metric tonne when they exceed a certain threshold.

Reuters relied on PHMSA data and interviews with researchers, company officials and regulators to provide new detail on the scale of greenhouse gas emissions from accidental pipeline leaks that could soon be added to the official greenhouse gas tally, as well as the potential cost to companies under the looming fees.

"I don't think the public or regulators have realised just how much methane has been lost from pipeline infrastructure," said Kenneth Clarkson, a spokesperson for the Pipeline Safety Trust, a non-profit watchdog. "Newer studies have come closer to capturing the true amount of emissions and this has started

catching the attention of policymakers.”

Accidental leaks reported from PHMSA by the five biggest US pipelines between 2018 and 2022 showed that those incidents could have significantly increased the facilities’ overall reported emissions, potentially resulting in fees of up to \$40mn under the proposal.

The operators of the five biggest pipelines include Berkshire Hathaway, TC Energy and Kinder Morgan.

Berkshire Hathaway’s 14,000-mile Northern Natural Gas pipeline, for instance, reported unintended releases of natural gas to PHMSA during the five year period that were the equivalent of about 30% of the methane the facility reported to EPA during the period.

Williams, the owner of the pipeline that leaked in Idaho in October, reported unintended gas releases that amounted to about 15% of the methane it reported to EPA.

Berkshire Hathaway and Williams did not respond to requests for comment on Reuters’ analysis or the EPA proposal.

TC Energy said reducing its methane emissions was a critical part of its business, but did not comment directly on the EPA proposal or Reuters’ analysis.

Kinder Morgan said it does not exclude unintended emissions from its reports to EPA, even though it is not required to include them.

The Biden administration unveiled its batch of final rules aimed at cracking down on US oil and gas industry releases of methane at the United Nations COP28 climate change conference in Dubai in December, part of international efforts to curb releases of the gas.

Piped natural gas is typically around 90% methane, a greenhouse gas which is several times more potent in warming the planet than carbon dioxide during the relatively short time it remains in the atmosphere.

The new policies would ban routine flaring of natural gas produced by newly drilled oil wells, require oil companies to monitor for leaks from well sites and compressor stations and establishes a program to use third party remote sensing to

detect large methane releases.

The new reporting requirements for large leaks, meanwhile, are likely to be finalised later this year and take effect in 2025, the EPA told Reuters.

Under the proposal, companies will be required to report abnormal leaks of about 500,000 cubic feet of pipeline gas or more starting next year, a threshold significantly lower than what PHMSA requires.

The new reporting rules would also apply to big, unplanned emissions from other parts of the oil and gas industry, such as drilling operations, EPA said.

The fact that some large methane leaks have never been accounted for in US greenhouse gas inventories underscore concerns among environmental groups and scientific researchers that emissions from the fossil fuel sector have been vastly understated.

An Environmental Defense Fund analysis last year, for instance, estimated US pipelines leak between 1.2mn and 2.6mn tons of methane per year, or 3.75 to 8 times more than EPA estimates.

The EDF figure includes not just large mishaps but also pervasive smaller leaks on tiny distribution lines.

“The failure of EPA to account for these large events is a big driver of that discrepancy,” Edwin LaMair, an EDF attorney who focuses on oil and gas regulations, said in an interview.

The Interstate Natural Gas Association of America, a pipeline industry trade group, said most incidents reported to PHMSA relate to safety systems operating as intended.

The group also pointed to an EPA analysis showing that most transmission and storage facilities may not meet the 25,000 metric tonnes of carbon dioxide equivalent per year emissions threshold required to pay the methane fee.

The EPA analysis said, however, that it was not yet possible to accurately estimate “the magnitude of emissions that will be reported and which facilities will report those emissions.”

The pipeline industry has also said in public comments to the EPA about the new reporting rules that they could lead to

double-counting of some emissions. – Reuters

Greece Spearheads a Dynamic Energy Transition



Countries have different energy priorities due to factors like the availability of energy resources, geopolitics, the population size, environmental considerations and excessive use of energy, the needs of industry, and the availability of technology.

The most representative energy priorities among countries, including Greece, revolve around energy security, reduction of greenhouse gas emissions, affordability, and avoidance of deforestation. Construction of additional energy infrastructure and charging energy consumers with more taxes

for excessive energy use constitute additional energy priorities. According to a market survey conducted by IPSOS in late 2022 that engaged 24 thousand people in 28 countries, the top energy priority was that of energy security followed by the development of cleaner energy sources, like wind and solar, and the affordability of energy.

The war on Ukraine brought energy security to the forefront of concerns for many regions, particularly Europe. Directly impacted countries, like Germany, have had to reactivate coal production and extend the operational lives of nuclear power plants to ensure efficient supply of energy to consumers.

Electricity Generation from Renewables

Despite challenges associated with the war on Ukraine, Greece has emerged more resilient by enhancing reform of its energy market and accelerating deployment of renewables in accordance with the National Climate Law of 2022. The Climate Law signals concrete milestones for Greece's energy transition with most prevalent the reduction of greenhouse gas emissions by 55 percent by 2030 and, achievement of net zero emissions by 2050.

The Climate Law also foresees a total phase-out of lignite generated electricity by 2028. Notably, Greece ranks 2nd out of the 27 EU member states in the reduction of electricity generation from certain solid fossil fuels; lignite generated electricity decreased by 57,7 percent in the first 8 months of 2023 compared to the same period of 2019 according to the Greek Independent Power Transmission Operator (IPTO).

The reduction of the use of solid fossil fuels has been offset by the accelerated development of renewable sources of energy, construction of critical energy infrastructure, and promotion of plans for Greece to position itself as key hydrogen hub in Europe. It is only in four years that Greece enhanced the installed capacity of renewable energy plants, accounting for

50 percent of electricity generation, with a clear target for electricity generation from renewables to reach 80 percent by 2030. The Greek solar photovoltaic market has gained most traction with 1.4 GW of new photovoltaic projects connected to the grid in 2022 and with anticipation of 10.9 GW to be added during the period of 2024-2027 according to the latest report by industry association Solar Power Europe.

The Offshore Wind Challenge

Wind energy in Greece has been surpassed by photovoltaics in new and total installations primarily due to delays in the licensing process. The largest onshore wind power plants include the 336 MW onshore Evia Wind Farm of Ellaktor located in Evia, Central Greece; the 330 MW Kafireas wind farm of Terna Energy on the island of Evia; and the 153MW Imathia Kozani Wind Farm under development by 547 Energy LLC, located in West Macedonia. Greece's revised National Energy and Climate Plan (NECP) sets a clear target of 2 GW for onshore wind capacity and 2.7 GW for offshore wind capacity by 2030.

Greece swiftly moves forward to tap for the first time ever its offshore wind potential in pursuance of the national offshore wind farms development program that incorporates 25 eligible development areas in the Ionian, Aegean, and the East Mediterranean Seas.

An environmental impact assessment that has been completed by the Hellenic Hydrocarbons and Energy Resources Management Company includes maritime zones of over 2,712 square km where floating technology will be employed for the offshore wind farms in full compliance with environmental safeguards striking a balance between offshore wind energy, national security, and tourism.

Offshore wind energy falls under the creation and development of new markets along with carbon dioxide CO2 capture and green hydrogen production.

Unlocking the CO₂ Storage Potential

Clean hydrogen can prove to be commercially viable due to the use of CO₂. CO₂ can be transported from where it is produced, via ship, truck or in a pipeline, and be used in commercial applications such as food and beverage production, metal fabrication, and cooling.

The majority of commercial applications center on the direct use of CO₂ by turning it into chemicals and construction materials. Liquid CO₂ can also be transported to an underground site where it can be permanently stored under strict environmental standards. The capture and storage of CO₂ contribute to the decarbonization of heavy industries and the development of clean hydrogen.

It is in this context that Greece swiftly moves to identify potential areas for CO₂ storage, with the most mature option being that of Prinos basin. Specifically, under Greek and European legal contexts, an exploration permit has been awarded to medium-sized Energean Oil & Gas for CO₂ storage in the depleted Prinos field evaluated as the best option because of its depth and structure.

Prinos is scheduled to be operational from the fourth Quarter of 2025 as small-scale project with capacity of up to 1 million tons (MT) of CO₂ annually and with plans to increase capacity from the fourth Quarter of 2027 up to 3 MT of CO₂ annually. Areas with saline aquifers, mafic rocks and oil and gas fields throughout Greek territory are evaluated as potential storage sites.

Prospects of a Hydrogen Hub for Europe

Green hydrogen production and transportation falls within the priorities of the Greek National Energy and Climate Plan. It is estimated that little investment is required, primarily in the form of developing compression stations, for the conversion of the existing national network to transport

hydrogen. Extensive cross-border pipelines like Interconnector Greece-Bulgaria (IGB) and Trans Adriatic Pipeline (TAP) have the potential to transport hydrogen.

Proper energy infrastructure can guarantee that massive imports of hydrogen from the Middle East and North Africa are directed to Europe via Greece. The European Union has declared that as the Ukraine war goes on it will have to import 10 MT of renewable hydrogen annually until 2030.

The first major hydrogen project that meets demands of industrial production has been launched in the north-west of Saudi Arabia, in a region called NEOM, that has been declared an exclusive renewable and hydrogen zone. The Neom Green Hydrogen Company project constitutes an 8.4-billion-dollar green hydrogen and green ammonia production facility that will integrate 4 GW of wind and solar energy to produce 600 tons of carbon-free hydrogen per day. Large-scale production of renewable hydrogen from the NEOM region is expected to begin in 2026, and green hydrogen will be exported in the form of green ammonia.

Overall, Greece fosters an effective energy transition with a blend of renewable energy pathways and a match of CO₂ storage and hydrogen transportation. It is with no doubt that important targets and deliverables are on the horizon.

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Developing Countries Need Debt Relief to Act on Climate Change



While developed economies have pledged to increase climate financing sharply by 2030, developing-economy policymakers are struggling to cover the costs of action. With medium-term strategies being used to address a short-term threat, progress on the green transition will be undermined, with potentially catastrophic implications.

WASHINGTON, DC/PARIS – If developing economies found it hard to manage their debts in 2023, they are likely to face even more formidable challenges this year. Though most possess relatively small debt stocks and are not considered insolvent, many are in dire need of liquidity. As long as this remains true, they will struggle not only to manage their debts, but also to invest in the green transition.

Developing economies have faced a series of external shocks in recent years, including the COVID-19 pandemic, war-related disruptions of food and energy supply chains, and an uptick in global inflation. Moreover, their access to capital

markets has been curtailed, preventing them from rolling over maturing loans, as they would do in normal times. As a result, countries have been forced to channel a large share of their tax and export revenues to service their debt, avoiding default at the cost of priorities like infrastructure investment, social-welfare programs, and climate action.

The outlook for these countries is likely to worsen in the next few years. According to estimates by the Finance for Development Lab (FDL), large debt payments are coming due in 2024 and 2026 for at least 20 low- and lower-middle-income countries. As countries hit this “debt wall,” their already fragile fiscal positions will deteriorate further. This does not bode well for climate action.

Climate change is not some distant menace; its effects are already being felt worldwide, especially in climate-vulnerable developing economies. But international summits on the topic last year sent a disappointing message: while developed economies pledged to increase climate financing by 2030, developing-economy policymakers are struggling against severe fiscal constraints. With medium-term strategies being used to address a short-term threat, developing and emerging economies have been expressing frustration, including at the Summit for a New Global Financing Pact that was held in Paris last June.

Multilateral development banks can provide an essential lifeline, but their capacity would have to be strengthened – and quickly. According to World Bank data, the new concessional loans the world’s poorest countries received from MDBs in 2022 were smaller than these countries’ debt-service payments, a large share of which went to private and bilateral creditors. Increasing capital flight from the developing world – driven not least by monetary tightening in advanced economies – will intensify the needs of illiquid lower-income countries.

But it is not only a matter of financial capacity. MDBs have

so far been inconsistent, at best, when it comes to supporting countries struggling to repay their debts. For example, both Kenya and Ethiopia have been under pressure to repay their private and Chinese creditors, which are now collecting more in debt-service payments than they are providing in new loans. But only Kenya received enough support from the International Monetary Fund, the World Bank, and others to refinance its debt that is maturing this year.

By contrast, assistance to Ethiopia has declined in recent years. As a result, Ethiopia recently defaulted on its external debt, even though it amounts to just 25% of GDP. While the Kenya approach is not the solution – providing similar levels of support to all illiquid countries would require a tripling of MDB flows – this is clearly unacceptable.

A better approach would focus on closing the gap between short-term debt concerns and long-term investment needs, by unlocking net-positive inflows for countries facing liquidity constraints. As the FDL has proposed, an agreement among debtors, creditors, and MDBs to permit countries to reschedule debts coming due – delaying maturities by 5-10 years – would create fiscal space for climate-friendly investments, financed by MDBs.

For this liquidity bridge to work, MDBs would have to accelerate progress on implementing existing reform plans and increase funding substantially, while the IMF helps manage debt-rollover risks. Importantly, private and bilateral creditors would have to agree to the rescheduling. That is why, compared to the Debt Service Suspension Initiative that the G20 introduced in 2020, the proposal includes stronger incentives for private-sector creditors to participate, in addition to longer time horizons.

There are good reasons to believe that creditors can be convinced to join the program voluntarily. It is, after all,

in their best interest to remain invested in solvent countries with strong growth prospects; no one benefits from debt crises like those that have ensnared Zambia and Sri Lanka. In any case, creditors would continue receiving interest payments, and as global interest rates fall and economic-growth prospects improve in the coming years, debtors may well be able to return to capital markets and resume repayment of the principal.

Shaping a workable blueprint along these lines is a task for upcoming international gatherings, such as the G20 summit in Brazil later this year. Logistical and financial coordination will be needed to ensure sufficient liquidity. Coordination among the IMF, the World Bank, and regional development banks will also be essential to ensure that participating debtor countries pursue investments that genuinely support green growth.

If nothing is done to help countries facing liquidity crises, the world will risk a wave of destabilizing debt defaults, and progress on the green transition will be severely undermined, with catastrophic implications for the entire world. Because promising solutions like the liquidity bridge can prevent such outcomes, they deserve broad global support.

UN climate chief calls for \$2.4tn in climate finance



The world needs to mobilise at least \$2.4tn to keep global climate change goals within reach, the United Nations climate chief said in a speech yesterday.

Simon Stiell, executive secretary of the UN Framework Convention on Climate Change (UNFCCC), addressed a group of students at the Azerbaijan Diplomatic Academy in Baku, host of the COP29 climate summit in November, laying out the steps that need to be taken this year to turn the commitments made at last year's summit in Dubai into reality.

This was Stiell's first major speech since the UN gathering in Dubai, where nearly 200 countries agreed to begin a transition away from fossil fuels to avert the worst impacts of climate change.

"It's clear that to achieve this transition, we need money, and lots of it – \$2.4tn, if not more", excluding China, Stiell said in prepared remarks, citing a report released in December from the High-Level Expert Group on Climate Finance.

"Whether on slashing emissions or building climate resilience, it's already blazingly obvious that finance is the make-or-break factor in the world's climate fight – in quantity, quality, and innovation," he said. "In fact, without far more finance, 2023's climate wins will quickly fizzle away into more empty promises."

Climate finance will be the main focus of the Azerbaijan-

hosted talks, where governments will be tasked with setting a new target post-2025 for raising money to support developing country efforts to cut emissions and adapt to the worsening impacts of climate change.

Setting a new financial goal will be challenging given that countries only met last year a goal set in 2009 to mobilise \$100bn a year in climate finance by 2020.

"It's already blazingly obvious that finance is the make-or-break factor in the world's climate fight," he said, adding that without more finance, the wins achieved at the COP28 Dubai summit will fizzle out.

Stiell said that the year should be spent ensuring that the global financial system and multilateral banks can meet the task of ramping up climate finance, and urged banks to triple the amount of climate grants and concessional finance by 2030 and triple the rate of private capital they mobilise.

More broadly, he cautioned against taking "victory laps" after the UAE agreement, saying that the political agreement reached in Dubai enables countries to hide behind "loopholes".

"The action we take in the next two years will shape how much climate-driven destruction we can avoid over the next two decades, and far beyond," he said.

The world is currently far off track in delivering on its cornerstone climate deal, agreed in Paris in 2015.

Under the Paris Agreement, world leaders pledged to keep the rise in Earth's average temperature to "well below" 2.0°C above the pre-industrial level and preferably the much safer threshold of 1.5°C.

The 2020s are critical for keeping that 1.5°C target in view, with UN climate experts estimating that planet-heating greenhouse gas emissions need to be slashed by some 43% by 2030.

There is progress, with a surge in clean energy technologies like solar, wind and batteries, as well as electric vehicles.

However, emissions continue to rise.

A key challenge that is likely to take centre stage at this

year's climate talks in Baku, as well as meetings of the World Bank and International Monetary Fund (IMF), is how to support emerging economies manage and pay for their transition to clean energy.

Many of these nations are currently mired in debt and facing a raft of challenges, from inflation to growing climate impacts. Meanwhile global warming continues, with 2023 confirmed as the hottest ever recorded and experts warning 2024 could be even hotter.

The Earth is now about 1.2°C warmer than it was in the 1800s. This is already having an accelerating impact on people and ecosystems across the planet, from heatwaves and droughts, to devastating floods and storms.

A damning appraisal of countries' decarbonisation efforts so far, released last year, showed the world heading for catastrophic planetary heating.

Stiell conceded it would take an "Olympian effort" to get the world on track.

One key task for countries will be to outline a new round of national climate targets for 2035 ahead of a pivotal COP30 meeting, due to be held in Brazil in 2025.

These pledges should be strengthened to align with the 1.5°C goal, cover the whole economy and all greenhouse gases, Stiell said.

"The action we take in the next two years will shape how much climate-driven destruction we can avoid over the next two decades, and far beyond," he added.

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

1 Laurence Tubiana, a former French ambassador to the United Nations Framework Convention on Climate Change, is CEO of the European Climate Foundation and a professor at Sciences Po, Paris.

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.”