

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

Regional Energy Expert Roudi Baroudi Earns Award from Washington Think Tank



Transatlantic Leadership Network Recognizes Author for Contributions to Peaceful Development in Eastern Mediterranean

WASHINGTON, DC November 9, 2023: Doha-based Lebanese author Roudi Baroudi was one of two people presented with the 2023 Transatlantic Leadership Award at a ceremony in Washington this week.

Although circumstances relating to the conflict in the Gaza Strip prevented Baroudi from attending the event, both he and Joshua Volz – the Deputy Assistant Secretary for Europe, Eurasia, Africa, and the Middle East and the Office of International Affairs at the US Department of Energy – were recognized by the Transatlantic Leadership Network (TLN). Each was cited at a gala dinner on Monday for his “valuable contribution in building a peaceful and prosperous Eastern Mediterranean” as part of the TLN’s 2nd Annual Conference on Freedom of the Media.

“I was deeply honored to be named a recipient of this prestigious award, and I will always be grateful for the many ways in which the TLN has supported my work for several years now,” Baroudi said. “I also look forward to working together in the future so that one day, our descendants can know the benefits of peace and coexistence. It is precisely in difficult and trying times that cooler heads must be able and willing to look at the reasons for current bloodshed and recrimination, then envision pathways to a better future.”

Baroudi, who serves as CEO of independent consultancy Energy and Environment Holding in Doha, is a long-time champion of dialogue, cooperation, and practical solutions to both the global climate crisis and recurrent tensions in the East Med. A regular speaker at regional energy and policy conferences, Baroudi’s insights are also avidly sought by local and international media, as well as governments, major energy companies, and investors.

Having advised both public and private sector actors on a wide variety of energy issues, Baroudi is widely credited with bringing unique perspective to all manner of policy discussions. He is the author of several books, including “Maritime Disputes in the Eastern Mediterranean: The Way Forward” (2021), and “Climate and Energy in the Mediterranean: What the Blue Economy Means for a Greener Future” (2022). Together with Notre-Dame University – Louaize, Baroudi has also published a study of the US-brokered October 2022 Maritime Boundary Agreement between Lebanon and Israel, and is currently preparing another volume on Lebanon’s prospects for similar deals with Cyprus and Syria.

The TLN describes itself as “a nonpartisan, independent, international network of practitioners, private sector leaders and policy analysts dedicated to strengthening and reorienting transatlantic relations to the rapidly changing dynamics of a globalizing world.”

Monday's ceremony was attended by a broad cross-section of high-profile figures, including senior officials from the Departments of Energy and State, numerous members of Washington's extensive diplomatic corps, and representatives of both international organizations and various media outlets.

Green power is the first domino



As world leaders convene at the UN Climate Change Conference (COP27), it is obvious to all that bolder action is needed to avert disaster. The UN warns that global efforts to reduce greenhouse-gas (GHG) emissions remain insufficient to limit temperature increases to 1.5C, relative to pre-industrial levels.

To meet this target, decarbonising the power sector is critical. Electricity accounts for about 25% of the world's

GHG emissions, and it also will play a critical role in decarbonising other sectors, such as buildings, transportation, and manufacturing. The challenge, then, is to achieve “24/7 carbon-free energy” (24/7 CFE): the total elimination of carbon from the electricity sector – at every hour of every day, in every grid around the world.

Research in the United States and Europe has shown that 24/7 CFE strategies have a greater impact on the decarbonisation of electricity systems than the current practice of purchasing electricity from renewable sources to match annual consumption patterns. Recent International Energy Agency modelling for India and Indonesia shows that hourly matching strategies lead to more diverse technology portfolios, with the clean, dispatchable generation and storage needed for net-zero transitions in the power sector. Critically, this approach helps electricity systems shift away from fossil fuels by accelerating uptake of the full suite of carbon-free technologies needed to deliver around-the-clock clean power.

Decarbonising energy systems worldwide is possible, but it will require collective action to accelerate the development and deployment of advanced clean-energy technologies. New investments, supportive public policies, and partnerships among stakeholders are all part of the solution. That is why the UN, Sustainable Energy for All (SEforALL), Google, and a diverse group of signatories launched the 24/7 CFE Compact in 2021. The compact represents a growing global community of stakeholders that are committed to providing the support, tools, and partnerships needed to make 24/7 CFE a reality everywhere.

Among the most recent to join the 24/7 CFE Compact is the Scottish government. “Scotland was the first country in the United Kingdom to declare a climate emergency, and indeed among the first in the world to recognise the importance of taking immediate and bold action,” notes Scottish First Minister Nicola Sturgeon. “Governments must hold themselves to account in limiting global temperature rise to 1.5C. We are committed to putting accountability at the centre of all that

we do. Our position is clear that unlimited extraction of fossil fuels is not consistent with our climate obligations.” Similarly, just last month, Google and C40, a network of almost 100 cities, launched a first-of-its-kind 24/7 CFE programme focusing on regional electricity grids. With urban areas accounting for over half the world’s population and more than 70% of global carbon dioxide emissions, cities have a critical role to play in driving the changes needed to tackle the climate crisis.

Developing and emerging economies will need more energy to bridge energy-access gaps, and to support economic growth and development. But as capacity expands, it must be clean. A 24/7 CFE approach can serve both purposes, providing both greater access and cleaner energy. We therefore must move faster to make 24/7 CFE cheaper and more accessible globally. According to the latest IEA data, the number of people living without electricity will rise by almost 20mn in 2022, reaching nearly 775mn. Most of that increase will be in Sub-Saharan Africa, where the size of the cohort lacking access has nearly returned to its 2013 peak.

The world cannot achieve net-zero emissions without first ensuring universal electricity access. That will require annual investments of at least \$30bn – two-thirds of which will need to go to Sub-Saharan Africa – between now and 2030. Fortunately, not only is 24/7 CFE a moral imperative, but it also represents the most cost-effective option for connecting underserved populations.

Many of these populations will otherwise continue to rely on dirtier sources of energy. Small island developing states such as Nauru, Palau, the Bahamas, and Trinidad and Tobago, for example, all have electricity grids that depend heavily on inefficient, carbon-intensive technologies such as diesel generators. These countries’ experience shows why 24/7 CFE must not be framed merely as a European or North American issue. It is a global one, and it has become increasingly urgent for developing countries on the front lines of climate change.

Implementing 24/7 CFE strategies globally will require not only funding but also measures to scale up the deployment of advanced technologies, to create more favourable market conditions, and to share best practices and data. If we can fully decarbonise our grids, the rest of the green transition should become cheaper and easier.

The 24/7 CFE Compact provides an opportunity to drive the much-needed policy change, investment, and research in this crucial next phase of climate action. We invite all governments, companies, and organisations to join us and help chart a more sustainable path toward a net-zero future. – Project Syndicate

China is doubling down on coal despite its green ambitions



Bloomberg / Beijing

China is building a vast array of new coal-fired power stations, potentially more than the operating capacity of the US, even though it knows the plants will probably never be fully used.

The puzzle of why the world's leading installer of clean energy is investing so much in the worst polluting – and increasingly expensive – fossil fuel shows the depth of Beijing's concern over the global squeeze in energy supplies. But it also reflects planning for a gradual relegation of coal's role, from prime power source to a widely available but often idle backup to China's rapidly expanding renewables fleet.

Work on at least 165 gigawatts of plants powered by coal should begin by the end of 2023, the National Development and Reform Commission told executives at a meeting in September, according to state-backed Jiemian News. The chairman of China Energy Engineering Corp, meanwhile, has forecast the country could add a total of 270 gigawatts in the five years to 2025 – more than currently exists in any other nation.

New coal permits have already increased, and while the final extent of the ramp-up isn't known, adding 270 gigawatts could cost 568bn to 766bn yuan (\$79bn to \$106bn), according to a calculation based on BloombergNEF data. Excluding China, the rest of the world's pipeline of coal power projects stands at about 101 gigawatts, data compiled by Global Energy Monitor show.

China's strategy is designed to avoid the pitfalls that have hobbled parts of the US and Europe, which stopped investing in fossil fuel production and infrastructure before renewables were ready to take over. That's led to an over-reliance on imports in some places, and in others a dependence on grids that can fall prey to the unreliability of sunshine and wind.

At the recent party congress, President Xi Jinping laid out how China's energy transition would be different by following "the principle of building the new before discarding the old."

In practice, that means adding both clean power and more coal to try and eliminate economy-crippling power shortages and create a buffer against volatile global fuel prices, while at the same time advancing the country's long-term climate goals. As China's economy grows, it requires ever more power, and it has said it plans to peak coal consumption only by the middle of the decade.

But even as new plants are built, the intention is for them to be used less and less as they're displaced by increasing amounts of clean energy.

In the context of global energy insecurity, it's not surprising that China would ramp up its coal capacity, said Yan Qin, an analyst in Oslo, Norway, at Refinitiv. "But the push to add more clean energy to the grid hasn't slowed down, meaning that growing renewables will squeeze the running hours of coal plants," she said.

The plan carries big risks. Coal financiers are directing capital to investments that are almost designed to be stranded. If they protest because their projects are being underutilised, it could slow the decarbonisation of the planet's worst polluter. And the world's carbon budget is finite, which means that any coal burned at all in China increases the chances of missing targets to avoid catastrophic warming.

The NDRC's proposal is already facing some pushback from utilities and local lenders, according to a person familiar with the matter. Many coal power generators are losing money amid high fuel prices and aren't enthusiastic about funding and running plants that would only be used during times of peak demand, the person said, declining to be identified because the talks are private.

Still, it's clear that the regulator's tone on coal power has changed since last year's energy crisis, according to the person. More plants will be built in areas that are reliant on hydropower, and near the massive wind and solar farms being built in the desert interior, to ensure reliable supply when intermittent renewables generation stalls, the person said.

China is also making efforts to lessen the burden on coal power generators, in large part by leaning on miners to boost output to record levels and keep the Chinese market well below sky-high international prices. The government has also given utilities leeway to charge higher rates to industrial customers. And, it's making progress in developing a mechanism that would compensate coal plants that sit idle while on backup duty, Refinitiv's Qin said.

In any case, the rate at which clean energy is added will probably be more instructive than power plant spending in determining when coal burning starts to dwindle, said Dave Jones, a lead analyst at the climate think tank Ember in London.

Once renewables are installed they're basically free to produce, which means they'll be prioritised over coal. The moment that new clean energy generation outpaces new power demand is when coal use begins to fall, he said.

China is by far the world's largest renewables market, and its expansion continues to accelerate. Spending in the first half of this year more than doubled to \$98bn, compared to \$12bn in the US. As wind, solar and hydropower all charted strong growth over the period, mostly coal-based thermal power generation dropped 3.5%.

Although the historic drought in the summer curtailed hydropower so much that coal is back on track for a year-on-year increase, it won't be long before new clean energy capacity puts the fuel into permanent decline, Jones said.

"There is so much wind and solar being built and generating clean electricity," he said. "As long as China's not inventing a whole new use for thousands of terrawatt-hours of power, then from a demand perspective it's got to be reducing coal power, because there's nowhere else for that electricity to go."

The EU's carbon border tax could hurt developing nations



By Miriam Gonzalez Durantez And Calli Obern/ Stanford

In July 2021, the European Commission did something that no other major governing body had ever attempted: It tied trade policy to climate policy. Reaching the European Union's goal of cutting net greenhouse-gas emissions by 55% by 2030 will require the EU to reduce emissions both at home and beyond its borders. To this end, the Commission's Fit for 55 initiative, a package of proposals aimed at meeting the bloc's emissions-reduction target, includes a carbon border adjustment mechanism (CBAM) – an import tax designed to corral other countries into tackling climate change.

The CBAM would tax imported goods sold in EU markets on the basis of their carbon content (the emissions required to produce them), which depends on their material and energy inputs. The proposed levy is intended to address so-called

carbon leakage, which occurs when businesses in the EU move production to non-member countries with less stringent emissions rules.

In other words, Europe would no longer ignore the climate effects of foreign goods. But while the measure could help to reduce emissions and level the competitive playing field for EU-based firms, the trade protectionism that it entails risks hurting developing countries.

The CBAM will initially apply to the highest-emitting industries most at risk of leakage – iron and steel, cement, fertilisers, aluminium, and electricity generation – and will likely be expanded to other sectors in the coming years. Currently, EU-made products in these industries are taxed under the domestic carbon price, but those from outside the bloc are not. If a country already has a domestic carbon price, the border tax will be lowered or waived; this is meant to encourage countries to tax carbon in their own markets. Those that cannot or will not institute a carbon tax will have to pay the full levy.

The EU tax will be phased in over the next four years. By 2023, importers will be required to report emissions embedded in the goods they import, though the tax on those emissions will not be imposed until 2026. The €1bn (\$1.1bn) of annual revenue expected from the CBAM, as well as the €9bn in annual revenue expected from the EU Emissions Trading System from 2023-2030 and taxes on multinational corporations, will support the Union's €750bn Covid-19 pandemic recovery fund. These new sources of revenue will embed EU priorities – including the green transition – in the bloc's budget for the first time.

Though not yet approved, the proposed tax is already influencing the decisions of policymakers and companies in the EU's trading partners. For example, Turkey and Indonesia plan to introduce carbon taxes to mitigate the CBAM's effects on their economies. Turkey is highly exposed, because the EU accounts for 41% of its exports. Indonesia exports billions of euros' worth of palm oil and chemicals to the EU – goods that

could fall under a broader border tax. Adopting a domestic carbon price will allow them to avoid some or all of the CBAM and keep the tax revenues instead of transferring them to the EU.

Meanwhile, some EU-based companies in industries such as computer hardware are looking to reshore manufacturing operations ahead of the CBAM's introduction. Their main motive does not reflect the cost of the tax so much as the likely complexity, bureaucracy, and unpredictability of the system. It is easier and cheaper for companies to relocate production to the EU and avoid the administrative hurdles that the CBAM could create.

Such shifts will be a win for the EU's economy and the environment. And Russia's invasion of Ukraine could accelerate the EU's efforts to achieve greater economic self-sufficiency, not least by reducing its dependence on energy-intensive imports of Russian iron and steel.

But developing economies, which often depend on manufactured products, will likely experience an outflow of activity as firms relocate to the EU. Rather than addressing only carbon leakage and leaving developing countries to adapt as best they can, the EU should allocate part of the revenue from the proposed CBAM to help foster a just green transition for poorer countries.

It is not easy or cheap to decarbonise energy-intensive goods like cement and steel. But the EU could prevent negative knock-on effects for developing economies – not only by waiting for lower-income countries to introduce their own carbon taxes (which will be a challenge given their limited administrative capability in the field), but also by supporting those that need the most help to reduce their emissions.

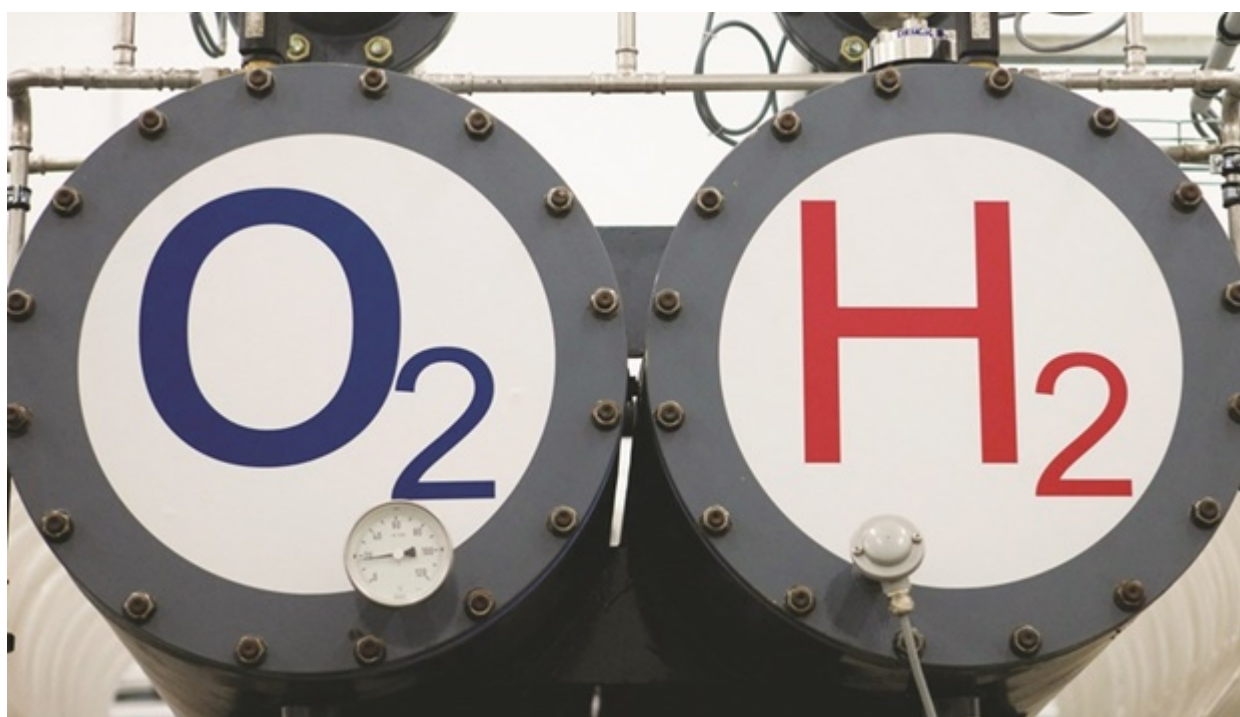
Such support could be provided by dedicating resources and technology to improve the efficiency of industrial processes, financing renewable energy projects, and exempting the poorest countries from the CBAM where necessary. The EU should also dedicate part of the CBAM revenue to help developing countries

adopt cleaner technologies – to produce greener cement in Vietnam or chemicals in Indonesia, for example – and thus reduce emissions in the long run.

Europe sees itself as a global leader in the race to net-zero emissions. By helping to finance the developing world's green transition, the EU could mitigate the protectionist threat in its own climate agenda. – Project Syndicate

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The coming green hydrogen revolution



By Jean Baderschneider/ Washington, DC

Human-induced climate change is causing dangerous and widespread environmental disruption and affecting the lives of billions of people around the world. According to the Intergovernmental Panel on Climate Change, the world faces unavoidable climate hazards over the next two decades. But, with average annual global greenhouse-gas emissions reaching their highest levels in human history between 2010 and 2019, we are simply not doing enough to limit global warming to 1.5C.

The IPCC report released in April recommended that the world rapidly reduce fossil-fuel supply and demand between now and 2050: by 95% in the case of coal, 60% for oil, and 45% for natural gas. But how can we possibly achieve such ambitious targets?

The answer is by switching to green hydrogen, which can be produced from all forms of renewable energy, including solar, wind, hydro, and geothermal. Green hydrogen is a zero-emissions fuel; when produced through electrolysis, the only “emission” is water. It is a practical and implementable solution that, by democratising energy, decarbonising heavy industry, and creating jobs globally, would help revolutionise the way we power our planet.

A rapid acceleration of the green-energy transition can also fundamentally alter the geopolitical landscape, since countries will no longer be powerful simply because of the fossil fuels they produce. In 2021, Russia provided 34% of Germany’s crude oil and 53% of the hard coal used by German power generators and steelmakers. Russian-piped natural gas was Germany’s largest source of gas imports in December 2021, accounting for 32% of supply. Since Russian President Vladimir Putin launched his horrific, unjust war in Ukraine in February, fossil-fuel exports to Europe have been earning Russia roughly \$1bn a day.

But since the start of the invasion in February, European Union countries in particular have moved quickly to reduce their energy dependence on Russia, recently agreeing to ban all seaborne imports of Russian oil. These new sanctions

against Putin's war machine could cut the amount of oil the EU buys from Russia by 90% this year. The United States has declared a complete ban on Russian oil, gas, and coal imports, while the United Kingdom is phasing out imports of Russian oil by the end of 2022.

These policies have sent fuel prices soaring. But sharply higher prices have also highlighted the opportunity to drive down energy costs by investing in renewables and the production of green hydrogen.

New research suggests that green hydrogen will be competitive with fossil fuels over the next decade. The cost of green hydrogen is expected to decline significantly by 2025 and to fall to \$1 per kilogram by 2030 in favourable locations such as Australia. For comparison, grey hydrogen, which is made using polluting liquefied natural gas, currently costs around \$2 per kilogram.

Some advocate using LNG to "solve" the current energy-security crisis, but "natural gas" contains methane, and the IPCC says that we must reduce use of natural gas by almost 45% by 2050; adding more to the energy mix now would be a catastrophic mistake.

So, there is now a global race for green energy, and specifically for green hydrogen. Dozens of countries that have abundant renewable-energy sources can develop energy independence by producing green hydrogen at scale. And energy importers will not have to rely only on the few countries (such as Russia) that have a natural endowment of fossil fuels.

In a recent report, the International Renewable Energy Agency said that (green) hydrogen can bolster energy security in three main ways: by reducing import dependence, mitigating price volatility, and boosting energy systems' flexibility and resilience through diversification. As technologies improve, the cost of green hydrogen will fall. We must do everything we can to accelerate this process.

Companies like Fortescue, where I am a board director, are investing significantly in green hydrogen and will help to

replace Russian fossil fuels with green energy. Fortescue recently announced an agreement with Germany's largest energy distributor, E.ON, to supply Europe with 5mn tonnes of green hydrogen a year by 2030 – the equivalent of one-third of the calorific value of the energy that Germany currently imports from Russia.

But while rapid changes in the energy and geopolitical landscape present a clear opportunity to address the energy and climate crises simultaneously by investing in green energy, there is a clear perception of unfairness when developed countries claim that relatively low-emitting developing economies need to shut down fossil-fuel use. Why should they risk slowing their development to address a problem they played no part in causing?

It's a valid question. Policymakers will need to account for developing countries' interests during the green transition and enhance funding and incentives for them to move to clean energy as the basis of industrialisation.

The world is clearly at a fork in the road. We can remain locked into a costly, polluting future that is hideously inefficient and empowers only a handful of fossil-fuel-rich countries. Alternatively, we can choose a green revolution of low-cost energy for all that keeps our future secure from pollution, global warming, and dictators. Given that green energy has the power to democratise global supply as more countries achieve energy independence, the choice is not difficult. – Project Syndicate

- *Jean Baderschneider is a non-executive director of Fortescue Metals Group.*

Cheaper, changing, crucial: the rise of solar power



AFP/Paris

Generating power from sunlight bouncing off the ground, working at night, even helping to grow strawberries: solar panel technology is evolving fast as costs plummet for a key segment of the world's energy transition.

The International Energy Agency says solar will have to scale up significantly this decade to meet the Paris climate target of limiting temperature rises to 1.5 degrees Celsius above pre-industrial levels.

The good news is that costs have fallen dramatically.

In a report on solutions earlier this year, the Intergovernmental Panel on Climate Change said solar unit costs had dropped 85 percent between 2010 and 2019, while wind fell 55%.

"There's some claim that it's the cheapest way humans have ever been able to make electricity at scale," said Gregory Nemet, a professor at the University of Wisconsin-Madison and a lead author on that report.

Experts hope the high fossil fuel prices and fears over energy security caused by Russia's invasion of Ukraine will accelerate the uptake of renewables.

Momentum gathered pace last Sunday with the ambitious US climate bill, which earmarks \$370bn in efforts to cut greenhouse gas emissions by 40% by 2030.

An analysis by experts at Princeton University estimates the bill could see five times the rate of solar additions in 2025 as there were in 2020.

Nemet said solar alone could plausibly make up half of the world's electricity system by mid-century, although he cautioned against looking for "silver bullets".

"I think there really is big potential," he told AFP.

Rapid changes

The "photovoltaic effect" – the process by which solar cells convert sunlight to electrical energy – was first discovered in 1839 by the French physicist Edmond Becquerel.

After decades of innovations, silicon-based solar cells started to be developed in the United States in the 1950s, with the world's first solar-powered satellite launched in 1958.

The IPCC said of all energy technologies, small-scale ones like solar and batteries have so far proved quicker to improve and be adopted than bulkier options like nuclear.

Today, almost all of the panels glimmering on rooftops and spreading across vast fields are made in China using silicon semiconductors.

But the technology is changing quickly.

In a recent report, the IEA said these new solar cells have proven to be one-fifth more efficient in converting light to energy than standard modules installed just four or five years ago.

There are also a host of new materials and hybrid cells that experts predict could supercharge efficiency.

These include cheap, efficient and lightweight "thin film" technologies, like those using perovskites that can be printed

from inks.

Experts say they raise the prospect of dramatically expanding where solar energy can be harvested – if they can be made durable enough to withstand a couple of decades of use.

Recent research has raised hopes that it could be possible.

In one study, published in the journal *Science* in April, scientists added metal-containing materials to perovskite cells, making them more stable with efficiency near traditional silicon models.

Other research mixes materials for different purposes.

One study in *Nature* used “tandem” models, with perovskite semiconductors to absorb near-infrared light on the solar spectrum, while an organic carbon-based material absorbed ultraviolet and visible parts of the light.

And what happens after sunset?

Researchers from Stanford said this year they had produced a solar cell that could harvest energy overnight, using heat leaking from Earth back into space.

“I think that there’s a lot of creativity in this industry,” said Ron Schoff, who heads the Electric Power Research Institute’s Renewable Energy and Fleet Enabling Technologies research.

Location, location

Generating more energy from each panel will become increasingly crucial as solar power is rolled out at greater scale, raising concerns about land use and harm to ecosystems.

Schoff said one efficiency-boosting design that is becoming more popular for large-scale projects is “bifacial” solar.

These double-sided units absorb energy not just directly from the sun’s rays, but also from light reflected off the ground beneath.

Other solutions involve using the same space for multiple purposes – like semi-transparent solar panels used as a protective roof for strawberry plants or other crops.

India pioneered the use of solar panels over canals a decade ago, reducing evaporation as they generate power.

Scientists in California have said that if the drought-prone US state shaded its canals, it could save around 63bn gallons. Construction on a pilot project is due to begin this year.

All shapes, sizes

Experts say solar will be among a mix of energy options, with different technologies more suitable for different places.

Schoff said ultimately those energy grids with more than 25% solar and wind need ways to store energy – with batteries or large-scale facilities using things like pumped water or compressed air.

Consumers can also play their part, said Nemet, by shifting more of their energy use to daytime periods, or even hosting their own solar networks in an Airbnb-style approach.

He said the modular nature of solar means it can be rolled out in developing countries with sparse access to traditional grids.

“You could have solar on something as small as a watch and something as big as the biggest power plants in the world,” he said.

“I think that’s what’s making people excited about it.” – Reuters

No net zero without nature



By Nigel Topping And Mahmoud Mohieldin/ London

Businesses, investors, and governments that are serious about fulfilling net-zero emissions pledges before 2050 should be rushing to protect, conserve, and regenerate the natural resources and ecosystems that support our economic growth, food security, health, and climate. Yet there appear to be worryingly few trailblazers out there.

Worse, we are quickly running out of time. The science makes clear that to avoid the most catastrophic effects of climate change and to build resilience against the effects that are already inevitable, we must end biodiversity loss before 2030. That means establishing lasting conservation for at least 30% of land and sea areas within eight years, and then charting a course toward living in harmony with nature by 2050.

Though the challenge is massive, ignoring it makes no sense from a business perspective. A World Economic Forum white paper estimates that nature-positive policies “could generate an estimated \$10tn in new annual business value and create 395mn jobs by 2030.” Among other things, such policies would use precision-agriculture technologies to improve crop yields – diversifying diets with more fruit and vegetables in the process – and boost agroforestry and peatland restoration.

A nature-positive approach can also be more cost-effective. For example, the Dasgupta Review (the Final Report of the United Kingdom's Independent Review on the Economics of Biodiversity) finds that green infrastructure like salt marshes and mangroves are 2-5 times cheaper than grey infrastructure such as breakwaters.

Nonetheless, private-sector action is lagging, including in economic sectors where the health of value chains is closely tied to that of nature. That is one key finding from an analysis just released by the UN Climate Change High-Level Champions, Global Canopy, Rainforest Alliance, and others.

Out of 148 major companies assessed, only nine – or 6% – are making strong progress to end deforestation. Among them are the Brazilian paper and pulp producer Suzano and five of the largest consumer goods companies: Nestlé, PepsiCo, Unilever, Mars, and Colgate-Palmolive.

Unilever, for example, is committed to a deforestation-free supply chain by 2023, and thus is focusing on palm oil, paper and board, tea, soy, and cocoa, as these contribute to more than 65% of its impact on land. Nestlé has now made over 97% of its primary meat, palm oil, pulp and paper, soy, and sugar supply chains deforestation-free. And PepsiCo aims to implement regenerative farming across the equivalent of its agricultural footprint by 2030, and to end deforestation and development on peat.

These are positive steps, but they represent exceptions, rather than any new normal. Moreover, the financial sector has also been slow to turn nature-positive. Since the COP26 climate-change conference in Glasgow last year, only 35 financial firms have committed to tackle agricultural commodity-driven deforestation by 2025. The hope now is that more firms will join the deforestation commitment by COP27 this November. Under the umbrella of the Glasgow Financial Alliance for Net Zero, 500 financial firms (representing \$135tn in assets) have committed to halving their portfolios' emissions by 2030 and reaching net zero by 2050. And now, the Alliance has issued new net-zero guidance that includes

recommended policies for addressing deforestation.

Nature functions as a kind of global capital, and protecting it should be a no-brainer for businesses, investors, and governments. The World Economic Forum finds that “\$44tn of economic value generation – over half the world’s total GDP – is moderately or highly dependent on nature and its services.” But this profound source of value is increasingly at risk, as demonstrated by the current food crisis, which is driven not just by the war in Ukraine but also by climate-related disasters such as drought and India’s extreme heatwave, locust swarms in East Africa, and floods in China.

Businesses increasingly have the tools to start addressing these kinds of problems. Recently, the Science Based Targets initiative released a methodology for targeting emissions related to food, land, and agriculture. Capital for Climate’s Nature-Based Solutions Investment platform helps financiers identify opportunities to invest in nature with competitive returns. And the Business for Nature coalition is exploring additional moves the private sector can make.

Governments have also taken steps in the right direction. At COP26, countries accounting for over 90% of the world’s forests endorsed a leaders’ declaration to halt forest loss and land degradation by 2030. And a dozen countries pledged to provide \$12bn in public finance for forests by 2025, and to do more to leverage private finance for the same purpose. They can now start meeting those commitments ahead of COP27 in Sharm El-Sheikh, by enacting the necessary policies, establishing the right incentives, and delivering on their financial promises.

Meanwhile, the UN-backed Race to Zero and Race to Resilience campaigns will continue working in parallel, helping businesses, investors, cities, and regions put conservation of nature at the heart of their work to decarbonise and build resilience. The five strong corporate performers on deforestation are in the Race to Zero, and the campaign’s recently strengthened criteria will pressure other members to do more to use biodiversity sustainably and align their

activities and financing with climate-resilient development. The world is watching to see if the latest promises of climate action are robust and credible. By investing in nature now, governments and companies can show that they are offering more than words. – Project Syndicate

• *Nigel Topping is the United Kingdom's High-Level Climate Champion for COP26 in Glasgow. Mahmoud Mohieldin is Egypt's High-Level Climate Champion for COP27 in Sharm El-Sheikh.*

Why Biden's climate agenda has faltered



Instead, he has seen his legislative ambitions defeated by Congress, the Supreme Court has delivered a hammer blow to the federal government's ability to regulate greenhouse gasses, and the Ukraine crisis has been a boon for fossil fuels.

As the Democrat is poised to announce a series of new executive measures, including additional funding to help protect communities from extreme heat and boosting wind production, here is an overview of his term so far.

– What's at stake –

Shortly after taking office, Biden announced he was targeting a 50-52 percent reduction from 2005 levels in US economy-wide net greenhouse gas pollution in 2030, before achieving net zero in 2050, as part of the country's Paris Agreement goals.

"Biden has said he thinks that climate change is the existential issue of our time," and has been more emphatic than any of his predecessors including Barack Obama, Paul Bledsoe of the Progressive Policy Institute told AFP.

The president has framed the issue as key to the economic and national security of the United States, as well as public safety – and climate scientists are sounding the alarm now more than ever.

"I think that more and more people are realizing that we're living through what could eventually cause us to lose everything in terms of habitability and everything that we value in life," climate scientist Peter Kalmus told AFP.

Europe's punishing heatwave serves as a timely reminder that warming won't be an issue confined to the Global South, but instead threatens civilization as we know it, he added.

– Congress, the Supreme Court, and Ukraine –

The main legislative plank of Biden's agenda was to have been the Build Back Better bill, which would have plowed \$550 billion into the clean energy and climate businesses – much coming from tax credits and incentives.

That effort is now in tatters after Democratic Senator Joe Manchin, a fossil fuel booster who wields outsized power in

the evenly split Senate, walked away last week from the bill that he'd promised to back.

At the end of June, the conservative supermajority Supreme Court found that the federal Environmental Protection Agency cannot issue broad limits on greenhouse gasses, such as cap-and-trade schemes, without Congressional approval.

"So we're on two strikes," said Bledsoe, who served as a climate aide to former president Bill Clinton.

What's more, the oil industry has pushed for more drilling in the wake of Russia's invasion of Ukraine, casting the issue as one of energy security.

A recent analysis by the Institute for Energy Research said that Biden's government picked up the pace of drilling permits on public land from March onward "to mollify the political pressure rising along with pump prices."

Biden had vowed to end new drilling on public lands, but his "pause" was overturned by a Trump-appointed judge in 2021.

On the other hand, there have been some partial wins: the administration has promulgated tighter emissions standards for vehicles, and toughened regulations on super-polluting methane emissions, said Bledsoe.

The bipartisan infrastructure law, passed last November, also contained some climate provisions, including \$7.5 billion for a nationwide network of electric vehicle chargers and investments in carbon capture and hydrogen technologies.

– What's next? –

But without the big ticket items, the United States is falling far short of its goals.

The Rhodium Group, an independent research firm, finds that "as of June 2022, we find that the US is on track to reduce

emissions 24 percent to 35 percent below 2005 levels by 2030 absent any additional policy action.”

The White House has not ruled out declaring a “climate emergency,” which would grant Biden additional policy powers, but given a hostile judiciary, this would likely be subject to legal challenge.

Bledsoe said to achieve real change, Biden should instead push for broad public backing.

“Democrats should make popular consumer clean energy tax br

No trash goes to waste on recycling Greek islands



By Sebastien Malo/ Tilos

Before the tiny Greek island of Tilos became a big name in recycling, taverna owner Aristoteles Chatzifountas knew that

whenever he threw his restaurant's trash into a municipal bin down the street it would end up in the local landfill.

The garbage site had become a growing blight on the island of now 500 inhabitants, off Greece's south coast, since ships started bringing over packaged goods from neighbouring islands in 1960.

Six decades later, in December last year, the island launched a major campaign to fix its pollution problem. Now it recycles up to 86% of its rubbish, a record high in Greece, according to authorities, and the landfill is shut.

Chatzifountas said it took only a month to get used to separating his trash into three bins – one for organic matter; the other for paper, plastic, aluminium and glass; and the third for everything else.

"The closing of the landfill was the right solution," he told the Thomson Reuters Foundation. "We need a permanent and more ecological answer."

Tilos' triumph over trash puts it ahead in an inter-island race of sorts, as Greece plays catch-up to meet stringent recycling goals set by the European Union (EU) and as institutions, companies and governments around the world adopt zero-waste policies in efforts to curb greenhouse gas emissions.

"We know how to win races," said Tilos' deputy mayor Spyros Aliferis. "But it's not a sprint. This is the first step (and) it's not easy."

The island's performance contrasts with that of Greece at large. In 2019, the country recycled and composted only a fifth of its municipal waste, placing it 24th among 27 countries ranked by the EU's statistics office.

That's a far cry from EU targets to recycle or prepare for reuse 55% of municipal waste by weight by 2025 and 65% by 2035.

Greece has taken some steps against throwaway culture, such as making stores charge customers for single-use plastic bags.

Still, "we are quite backward when it comes to recycling and reusing here," said Dimitrios Komilis, a professor of solid

waste management at the Democritus University of Thrace, in northern Greece.

Recycling can lower planet-warming emissions by reducing the need to manufacture new products with raw materials, whose extraction is carbon-heavy, Komilis added.

Getting rid of landfills can also slow the release of methane, another potent greenhouse gas produced when organic materials like food and vegetation are buried in landfills and rot in low-oxygen conditions.

And green groups note that zero-waste schemes can generate more jobs than landfill disposal or incineration as collecting, sorting and recycling trash is more labour-intensive.

But reaching zero waste isn't as simple as following Tilos' lead – each region or city generates and handles rubbish differently, said researcher Dominik Noll, who works on sustainable island transitions at Vienna's Institute of Social Ecology.

"Technical solutions can be up-scaled, but socioeconomic and sociocultural contexts are always different," he said.

"Every project or programme needs to pay attention to these contexts in order to implement solutions for waste reduction and treatment."

Tilos has built a reputation as a testing ground for Greece's green ambitions, becoming the first Greek island to ban hunting in 1993 and, in 2018, becoming one of the first islands in the Mediterranean to run mainly on wind and solar power.

For its "Just Go Zero" project, the island teamed up with Polygreen, a Piraeus-based network of companies promoting a circular economy, which aims to design waste and pollution out of supply chains.

Several times a week, Polygreen sends a dozen or so local workers door-to-door collecting household and business waste, which they then sort manually.

Antonis Mavropoulos, a consultant who designed Polygreen's operation, said the "secret" to successful recycling is to

maximise the waste's market value.

"The more you separate, the more valuable the materials are," he said, explaining that waste collected in Tilos is sold to recycling companies in Athens.

On a June morning, workers bustled around the floor of Polygreen's recycling facility, perched next to the defunct landfill in Tilos' arid mountains.

They swiftly separated a colourful assortment of garbage into 25 streams – from used vegetable oil, destined to become biodiesel, to cigarette butts, which are taken apart to be composted or turned into materials like sound insulation.

Organic waste is composted. But some trash, like medical masks or used napkins, cannot be recycled, so Polygreen shreds it, to be turned into solid recovered fuel for the cement industry on the mainland.

More than 100 tonnes of municipal solid waste – the equivalent weight of nearly 15 large African elephants – have been sorted so far, said project manager Daphne Mantziou.

Setting up the project cost less than € 250,000 (\$254,550) – and, according to Polygreen figures, running it does not exceed the combined cost of a regular municipal waste-management operation and the new tax of €20 per tonne of landfilled waste that Greece introduced in January.

More than ten Greek municipalities and some small countries have expressed interest in duplicating the project, said company spokesperson Elli Panagiotopoulou, who declined to give details.

Replicating Tilos' success on a larger scale could prove tricky, said Noll, the sustainability researcher.

Big cities may have the money and infrastructure to efficiently handle their waste, but enlisting key officials and millions of households is a tougher undertaking, he said.

"It's simply easier to engage with people on a more personal level in a smaller-sized municipality," said Noll.

When the island of Paros, about 200km northwest of Tilos, decided to clean up its act, it took on a city-sized challenge, said Zana Kontomanoli, who leads the Clean Blue

Paros initiative run by Common Seas, a UK-based social enterprise.

The island's population of about 12,000 swells during the tourist season when hundreds of thousands of visitors drive a 5,000% spike in waste, including 4.5mn plastic bottles annually, said Kontomanoli.

In response, Common Seas launched an island-wide campaign in 2019 to curb the consumption of bottled water, one of a number of its anti-plastic pollution projects.

Using street banners and on-screen messages on ferries, the idea was to dispel the common but mistaken belief that the local water is non-potable.

The share of visitors who think they can't drink the island's tap water has since dropped from 100% to 33%, said Kontomanoli.

"If we can avoid those plastic bottles coming to the island altogether, we feel it's a better solution" than recycling them, she said.

Another anti-waste group thinking big is the nonprofit DAFNI Network of Sustainable Greek Islands, which has been sending workers in electric vehicles to collect trash for recycling and reuse on Kythnos island since last summer.

Project manager Despina Bakogianni said this was once billed as "the largest technological innovation project ever implemented on a Greek island" – but the race to zero waste is now heating up, and already there are more ambitious plans in the works.

Those include CircularGreece, a new €16mn initiative DAFNI joined along with five Greek islands and several mainland areas, such as Athens, all aiming to reuse and recycle more and boost renewable energy use.

"That will be the biggest circular economy project in Greece," said Bakogianni. – Thomson Reuters Foundation