California weighs plan to save tropical forests

By Julia Rosen /Los Angeles Times

The smoke is still rising from the Amazon as fires smoulder in the world's largest rain forest. The blazes triggered a wave of global outrage over the loss of precious trees. But California says it has a plan to keep tropical forests standing.

This week, state officials will consider a proposal to protect these forests by steering billions of dollars to countries such as Brazil. The money would fund government efforts to fight deforestation and promote sustainable industries that don't involve chopping down and burning trees. And it would come from companies that offset their own emissions by purchasing carbon credits through markets such as California's cap-and-trade programme.

Preserving tropical rain forests is essential to combating climate change – around the world, roughly a third of the greenhouse gases released each year come from clearing forests. And backers say this plan is the best way to funnel

much-needed cash toward that crucial task.

Others agree on the pressing need to halt deforestation, but they say California's plan is a dangerously misguided way to do it. In their view, it would simply allow polluters to keep on polluting without doing anything about the true drivers of forest loss: rising demand for products such as beef, soy and palm oil.

The issue has divided scientists, environmental groups and indigenous leaders who say the Tropical Forest Standard, or TFS, has ramifications far beyond the Golden State. California is a leader on climate change, and approving the TFS could inspire other states, countries and companies to adopt a similar approach.

"This is a critical moment," said ecologist Christina McCain, who heads the Environmental Defense Fund's climate initiatives in Latin America. "The world is watching."

The TFS wouldn't be the first attempt to fund forest protection through carbon offsets. Several international programmes have employed them as a way to preserve and restore forests while lowering the cost of reducing emissions in wealthy countries and funding sustainable development in poorer ones.

Some of these projects succeeded, but others never came to fruition, leaving the fate of the carbon they promised to store in limbo. Many also spelled disaster for people who live in the forest.

Indigenous groups fell prey to unscrupulous "carbon cowboys" who used questionable methods to secure the rights to native land – and its potentially lucrative carbon. People were kicked out of their territories by governments eager to launch conservation projects without local interference.

In any event, the programmes never attracted enough money to reach their intended scale, said Louis Verchot of the Center for International Forestry Research, who has studied previous initiatives.

"It wasn't what you would call a real enabling environment," he said. "That's where things are stuck right now."

Can the Tropical Forest Standard do better? Its backers certainly think so. They've spent the last decade trying to learn from past mistakes.

The TFS lays out criteria for certifying state, provincial or national governments that want to sell forest offsets, leaving no room for carbon cowboys. Participating governments must commit to reducing deforestation, and they'll only receive credit for the forest they spare beyond their baseline goal.

Plans must be posted publicly, and progress must be closely monitored and independently verified.

"There will be a ton of eyes on it," said Jason Gray, the head of California's cap-and-trade programme.

Governments also have to prove that local stakeholders – especially indigenous groups – have a say in the programme and stand to benefit from it. The Brazilian state of Acre, which has spent years developing partnerships with tribes, is often cited as a model.

"Indigenous peoples are very well-informed and prepared not to let their rights be violated," said Francisca Oliviera de Lima, a member of Shawadawa People who works at Acre's state-run Climate Change Institute. "We are in favour of this California programme."

The TFS tries to address other problems, such as leakage, which occurs when suppressing deforestation in one place simply pushes it elsewhere. That would be difficult to get away with in a state that's part of the programme, said Steve Schwartzman, senior director of tropical forest policy at EDF, a leading supporter of the TFS.

In addition, the TFS mandates that participating states and provinces pony up extra credits as insurance, in case fires or other natural disasters accidentally release carbon that was stored for offsets.

With these safeguards in place, proponents argue the TFS could finally allow real money to flow toward fighting deforestation. Today, less than 1.5% of funding to fight climate change goes to forest protection, according to a new analysis by a coalition of scientific organisations and

environmental groups.
That has bred frustration in countries such as Brazil, where the government had reduced deforestation by upping enforcement of protected areas but where low levels of investment have failed to create new economic opportunities for farmers, loggers and miners who obeyed the rules, said Dan Nepstad, executive director of the Earth Innovation Institute.
With the TFS, offset money could fund things such as community centres, fish ponds for aquaculture and government programme to support sustainable farming practices.
For California, the reward is the chance to drive greenhouse gas reductions far beyond what the state could accomplish at home, Nepstad said: “The TFS lays out the framework for magnifying that tenfold.”
Critics of the TFS object to almost everything about it, starting with the very idea of offsets.
He and other opponents say California’s cap-and-trade programme already relies too heavily on offsets – polluters can use them to cancel up to 8% of their emissions in the state – and argue that the TFS would take things even further in the wrong direction.
Chief among their concerns is the legitimacy of tropical forest credits.
Barbara Haya, who studies offset programmes at the University of California, Berkeley, worries that leakage will still be a problem, since activities shut out of a participating state can still shift to other states or countries.
It’s also hard to ensure that the programme will dole out credit only for carbon savings that wouldn’t have happened anyway. Haya examined two decades’ worth of data and found that a quarter of potential partners would have been able to generate offsets under the TFS’s rules due to declining deforestation rates, even though their progress clearly wasn’t due to the programme (it didn’t yet exist).
Then there’s the fear that, despite the TFS’s insurance provision, the carbon that was supposed to offset a polluter’s emissions will end up in the atmosphere eventually, either in

a bad fire season or after a change in political leadership reverses a country's deforestation policies.

Others contend that the TFS is based on flawed economic reasoning. So far, the price of carbon offsets on exchange markets is just too low to compete against the forces of global commerce, which make land more valuable than trees, said Tracey Osborne, a geographer at the University of Arizona.

And while advocates for indigenous communities applaud the TFS's social safeguards, some of them say it will be nearly impossible to ensure they are being honoured from afar.

Governments in many tropical countries have a long history of corruption, said Alberto Saldamando, an advisor to the Indigenous Environmental Network. He worries the TFS will only heighten the incentive to coerce or threaten indigenous groups to participate in programmes that don't always serve their interests.

"Carbon, instead of being a poison, is a value, and that perspective leads to all kinds of abuses," he said.

Opponents raised all these issues last fall, when California's Air Resources Board first met to consider the standard. It opted to delay a vote and asked legislators to gather input from both sides. If the board endorses the standard when it meets on Thursday, it won't mean that credits generated under the TFS will be used in the state's market right away; governments that want to participate would first have to qualify, and then CARB would have to decide whether to accept tropical offsets, Gray said. The motivation to propose the standard now is "to set a very high bar" for forest offset programmes in general, he said.

Regardless of whether California ever uses the TFS in its own cap-and-trade programme, CARB's approval would be a powerful endorsement of forest offsets and a setback for efforts to zero out greenhouse gas emissions, opponents said.

Critics would rather see the state focus on other strategies for preserving forests, such as empowering indigenous groups to protect their lands and pressuring companies to rid their

supply chains of goods associated with deforestation. (California lawmakers are considering a bill that would require government contractors to do so.)

Haya and more than 100 other researchers laid out their objections to the TFS and submitted them to CARB. Last month, senator Bob Wieckowski, D-Fremont, released his own letter imploring the board to reject it.

But supporters are speaking up, too.

In June, four Assembly members encouraged CARB to approve the standard as long as it commits to "vigorous and proactive monitoring" of any government that uses it. More than 100 scientists also penned an open letter endorsing the TFS. — Tribune News Service

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Germany Inc waits on Merkel's CO2 plan: Here's what's at stake

Bloomberg Berlin/Frankfurt

Chancellor Angela Merkel is working on an investment package worth perhaps €50bn ($55bn) that aims to get German efforts to cut carbon emissions back on track.

Merkel's Christian Democrats are trying to thrash out a common position with their coalition partners, the Social Democrats ahead of a cabinet meeting on September 20. The outcome of those negotiations will have profound consequences for a range of companies from utilities to airlines as well as the chancellor's increasingly controversial balanced budget.

Germany is way behind on its climate efforts and saw a series of protests this year demanding more action to stem emissions and another demonstration is scheduled for Saturday in Frankfurt. With wildfires sweeping the east of the country and record temperatures disrupting summer travel, the governing parties were punished in local elections as support for the Greens surged.

While opinion polls show that climate change has surpassed immigration as the German public's No 1 concern, the government abandoned a self-imposed target to lower CO2 emissions by 40% from 1990 levels by next year. After struggling to rein in coal-fired power generation, emissions

will be just 32% lower in 2018 and Germany risks missing its legally binding EU goals.

Coalition strains

The coalition parties know they need to step up their climate action, but they don't agree on how much or how fast.

The SPD want more aggressive measures, such as a carbon tax and new debt to finance climate projects. Merkel's CDU favours market mechanisms such as the Emissions Trading System, which lets companies buy or sell their carbon allowances. The CDU also wants to tap private capital more heavily to help finance the measures.

The plans announced so far would be enough to derail Merkel's prized balanced budget if the government ended up footing the bill and Sueddeutsche Zeitung reported on Friday that the program could stretch to as much as €75bn.

That's why CDU Economy Minister Peter Altmaier is proposing an investment fund seeded with €5bn of government money. To lure investors and win round the German public, he wants to guarantee a 2% return — that's more than you make from a 10-year Greek bond.

But SPD Finance Minister Olaf Scholz, who's looking at a possible campaign to succeed Merkel, doesn't like the idea and his party has threatened to bring down the government if it doesn't get something it likes.

C-Suite winners and losers

For German executives, there's a lot riding on the outcome.

Electricity producers like EON SE and RWE AG could benefit if the policies encourage households to ditch gas heating and diesel cars in favour of electric options. Firms that use a lot of electricity could also benefit, as well as companies that make electric heaters, cars and energy-efficiency products like smart meters.

Firms that can't easily cut CO2 emissions out of their business model are likely to lose out. While companies like Thyssenkrupp AG and Volkswagen AG already have sweeping

carbon-reduction strategies, dialysis machine-maker Fresenius emitted 1mn tonnes of carbon dioxide last year and doesn't yet have a goal to significantly reduce that.
If the CDU plan to impose a trading scheme instead of a carbon tax wins out, that would give the government flexibility to help out companies and consumers when the economy slows. Officials could increase the supply of the emissions permits during a recession to lower costs for companies, or cut supply during a boom.

Cheap air travel
Merkel's Bavarian sister party, the CSU, is proposing a minimum price on airline tickets and all the parties have signalled they'd like to see airfares rise. That could actually benefit Germany's flagship carrier Deutsche Lufthansa AG. Europe's biggest airline is fighting off low-cost challengers like Ryanair, Easyjet and Wizz Air, and its budget unit, Eurowings, is losing hundreds of millions in euros as it tries to match their bargain-basement fares.
A price floor would be easier for Lufthansa to absorb than for the low cost carriers whose business strategy centres on having aircraft more than 95% full. Indeed, Lufthansa chief executive officer Carsten Spohr has called for an end to loss-leading fares that he said are stoking demand for needless flights that raise pollution and make the industry an easy target for climate campaigners.
"You only have to look at what happened when the first 2011 aviation tax in Germany was introduced," Ruxandra Haradau-Doeser, head of airline research at Kepler Cheuvreux, said. "Ryanair cut capacity by one third."
The CSU also wants to cut the taxes on rail travel.

Europe's climate fight
Merkel wants something to show abroad as well.
Her climate decision comes three days before UN Secretary-General Antonio Guterres holds a summit in New York to encourage countries to make good on their commitments under

the Paris Climate Accord and to make their goals more aggressive. Berlin’s renewed push dovetails with efforts by Ursula von der Leyen, the incoming president of the European Commission, to focus attention on the climate. Von der Leyen, who previously served as Merkel’s defence minister, wants to make Europe the first climate-neutral continent by 2050.

German plans to put a price on emissions from transportation and heating is in line with von der Leyen’s plan to extend the EU carbon market, the biggest in the world, to cover transport and construction.

But more broadly, von der Leyen and Guterres need Germany to deliver. If Europe’s biggest emitter can’t meet its goals, the EU is unlikely to either. And that would be a disaster for the global push to limit climate change.

Deforestation

By Eric Roston New York When it comes to saving the world’s rainforests, governments can make a big diff erence, and fast.

Take Indonesia, which in 2012 surpassed Brazil as the world's leader in tropical rainforest destruction. In 2017, it engineered a 60% drop in tree loss from the previous year by strictly enforcing protections in vulnerable regions. On the other hand, governments can reverse course just as swiftly. Take Brazil, where a decade-long trend of improving forest protections has now gone into reverse. It's a concern both in and beyond the tropics, with multinational companies coming under increasing pressure to stop doing business with suppliers that ravage the environment. Rainforests host half the species on Earth, help regulate global weather patterns and produce much of the planet's oxygen. Their disappearance, through burning or felling, creates about 10% of the greenhouse gases the world produces in a given year that drive climate change.

By one estimate, more tropical tree cover was lost globally in 2016 and 2017 than in any other years this century. The Situation A handful of nations are the guardians of the world's rainforests, with Brazil home to one third and roughly 15% shared by Indonesia and the Democratic Republic of Congo. Critics blame Brazil's relapse on the rollback of environmental protections and enforcement in the Amazon in recent years. One analysis pointed to an 84% year-on-year increase in forest fires to record levels in 2019, many caused by loggers incentivised by the government's disdain for environmental oversight. Brazilian leader Jair Bolsonaro, who relishes criticism of his attitude toward the Amazon and jokingly refers to himself as "Captain Chainsaw," is facing a backlash from trading partners including Germany, Norway and the European Union. In Congo, agriculture, logging and energy projects pushed deforestation to record levels in 2017. The global bright spot was Indonesia, where authorities imposed a moratorium on developing peatlands, carbon-rich areas where the tree canopy shields waterlogged soil. When cleared, peatlands are drained, leaving a vast area of tinder that can smolder under the ground for years. Combined with better

educational campaigns and stricter law enforcement, the moratorium cut primary forest loss to the lowest level in 14 years, notwithstanding setbacks in Sumatra, an island that's home to endangered tigers and orangutans. Tree loss declined yet further in 2018. The Background Although tropical deforestation rates have dropped by more than a third since the 1990s, rainforests remain on course to disappear in about a century. The 2015 Paris agreement to fight climate change recognised forests as part of the solution to curbing carbon emissions. Rainforests absorb prodigious amounts of carbon dioxide and store it in trees, other plants and soil. Forest fires in Indonesia in 2015 pumped out more greenhouse gases than the entire US economy. Tropical deforestation continues mostly because people, both near and far, demand timber as well as commodities – typically soy, palm oil, and beef – that flourish where forests get in the way. Indonesia, for example, delivers about half the world's $50bn palm- oil crop each year. It's cheaper than other vegetable oils, widely used in products from mayonnaise to makeup and a route out of poverty for farmers. Hundreds of international companies have pledged to clean up their supply chains, sourcing commodities only from producers certified as having sustainable practices. The Argument Climate scientists say that preserving rainforests, and restoring former forested land, represents a relatively straightforward and economical way to meet climate change targets. Such measures, they estimate, could help bring humanity about one- third of the way to the Paris goal of limiting warming to below 2 degrees Celsius (3.6 degrees Fahrenheit). Environmentalists argue over the best approach, but targets and protections have proven most eff ective only when strictly applied. On-the-ground strategies include removing roads into sensitive areas or paying rural and indigenous communities to maintain habitats. Activists urge rich nations to follow Norway's lead and off er incentives to countries to curb forest loss (and to withdraw them if necessary).

Conservation groups say Corps should step up, for instance by including environmental audits in their financial reporting. They are pressing for better systems to certify producers of sustainably grown commodities; these make it easier both for companies to avoid illegal operators and consumers to make eco-friendly choices. There’s some way to go: A 2018 survey by environmental group Greenpeace found that all 16 multinationals surveyed either failed to publicly identify their palm-oil suppliers or used producers that harmed rainforests.

World’s $1tn wealth fund weighs in on Amazon wildfire uproar

Norway’s $1tn sovereign wealth fund, the world’s largest, is adding its clout to a growing number of asset managers across the globe scrutinising supply chains and businesses as wildfires rip through the Amazon. “We have had a focus on deforestation for several years and follow the ongoing serious situation,” Carine Smith Ihenacho, chief corporate governance off icer at Norges Bank Investment Management, said in an emailed com- ment. The wealth fund’s chief governance off icer said that she expects companies to have a strategy for reducing de- forestation from their own activities and supply chains. In 2017, the fund initiated dialogue with companies that buy and sell soy and cattle products in Brazil, Ihenacho said. The Norwegian investor, which holds more than 9,000 companies around the world, has ratcheted up its work on ethics and sustainability over several years. It has taken steps to exclude or put companies under observation on a set

of criteria, and it also engages directly in dialogue with companies to express its views. By the end of 2018, the fund had invested $6.2bn in stocks in Brazil, and about $2.8bn in bonds, according to a hold- ings overview on its website. “We have in previous years divested from one soy produc- er in this region due to links to unsustainable production and deforestation,” Ihenacho said. Not only engaging directly with companies, the Norwe- gian fund has also taken initiative to talk to lenders to get a broader perspective on deforestation and financing, ac- cording to the governance off icer. The fund engaged with banks in Brazil, Colombia, Indonesia and Malaysia last year, Ihenacho said, to understand how they monitor deforesta- tion risk in their credit loan portfolios.

Brazil’s neighbours are also burning, poisoning the Amazon

As the fires ravaging Brazil’s Amazon stoke global outrage, its neighbours are also scorching, ripping up and poisoning their forests – largely under the radar.

Bolivia and Peru have seen faster growth in the number of fires this year than Brazil, as illegal miners, ranchers and cocaine producers continue to wreak havoc.

The 2.5mn square-mile Amazon is being attacked on all sides, with fires claiming an area equivalent to dozens of soccer pitches every hour in Brazil alone. At the deforestation rates

seen in recent years, the whole forest will lose an area about the size of Virginia over the next decade according to Michael T Coe, senior scientist at the Woods Hole Research Center.

That's endangering an eco-system that not only hosts a vast and largely unknown share of the world's biodiversity but also helps regulate the continent's climate.

Fires have multiplied in Brazil as loggers and farmers, emboldened by President Jair Bolsonaro's disdain for environmental oversight, set ablaze land cleared earlier this year. Countries like Colombia, Peru and Bolivia aren't encouraging deforestation, but lack resources and political will to enforce existing regulations, according to Carolina Gil, an attorney for environmental protection group Amazon Conservation.

"The current crisis in Brazil is just the tip of the iceberg," Gil said.

Continued destruction threatens to turn dense forests into scrub-land covered in shrubs and weeds, she added, wrecking a region which provides a home to tens of thousands of animal and plant species, and roughly one-fifth of the world's fresh water.

Colombia, which has the largest swath of the Amazon after Brazil and Peru, lost 530,400 acres (215,000 hectares) of the rainforest in 2017, according to satellite data monitored by Amazon Conservation. Brazil, which has about six times as much of the jungle, has been losing about 1.58mn acres a year.

Meanwhile, cultivation of coca plants, the raw material for cocaine, more than quadrupled in Colombia between 2012 and 2017. Farmers often slash down forest in national parks to plant illegal crops in remote parts of the country where the government's presence is weak or non-existent.

Mercury used by informal gold miners also continually seeps into the rivers in Colombia's Amazon, poisoning fish.

Colombia's environment ministry didn't reply to a written request for comment.

Brazil has experienced more than 83,000 fires so far this year, up 77% from the same period last year, according to the

country’s National Institute for Space Research, known as Inpe. Meanwhile, Bolivia and Peru have seen their number of fires roughly double during the same period.

In Bolivia, where nearly 19,000 fires have destroyed more than 1mn acres of forest this year, left-wing President Evo Morales has mobilized firefighters and used a Boeing 747 Supertanker to fight the blazes.

Bolivia’s environment ministry and presidential press office did not return phone calls and emails seeking comment. Morales on Sunday said he was open to international help to put out fires and called for a summit between countries that make up the Amazon to “coordinate immediate actions and long-term plans,” according to a statement.

Peru’s environment ministry didn’t reply to an email seeking comment.

Brazil’s neighbours don’t share Bolsonaro’s belligerence, or hostility to environmental protection, but their record isn’t much better, said Rodrigo Botero, director for the Foundation for Conservation and Sustainable Development in Colombia.

“You can see across the region that the pressures in countries like Bolivia, which is suffering huge losses, or Paraguay are the same as in Brazil,” he said. “It’s not a question of left or right.”

Can power napping solve electric car charging challenge?

TUTTGART, Germany (Reuters) – Automakers around the world are pushing hard for new networks that can charge electric cars fast. In Europe, some power companies and grid operators are testing whether it might be smarter and cheaper to move into the slow lane.

A 15-month study of electric car charging behavior in Germany has concluded that consumers can be persuaded to accept slow, overnight recharging that could help avoid brownouts from surges in electricity demand or costly upgrades to power grids.

The prospect of millions of EVs hitting the roads as governments gradually ban new diesel and gasoline cars is seen as a major challenge for power companies, especially in Germany which is switching from nuclear and coal to less predictable sources of energy such as wind and solar.

The small study in the wealthy Stuttgart suburb of Ostfildern-Ruit though has helped alleviate the concerns of some grid operators that too many electric vehicles (EVs) charging at

peak times could cause network crashes.

The engineers at Netze BW, the local grid operator behind the trial, found that all the households involved came around to leaving their electric cars plugged in overnight and only half ever charged simultaneously.

“Since the experience with the project we have become a lot more relaxed. We can imagine that, in future, half of the inhabitants of such a street own electric vehicles,” said Netze BW engineer Selma Lossau, project manager for the study.

Still, with limited EV battery ranges for now, slow, overnight charging doesn’t get around the problem of how to persuade drivers to ditch petrol cars altogether.

Without a network of fast-charging stations offering quick refueling, drivers may be wary of using EVs for long trips – which is why some automakers want lots of fast-charging stations to encourage the widespread adoption of electric cars.

‘CHANGED MY OUTLOOK’

Slower, or delayed, charging has already gained traction in Norway, Europe’s leading EV market, where nearly 50% of new car sales are zero-emission vehicles.

A study by energy regulator NVE showed that Norway faces a bill of 11 billion crowns ($1.2 billion) over the next 20 years for low- and high-voltage grids, substations and high-voltage transformers – unless it can persuade car owners to charge outside peak afternoon hours.

The investment cost to the country of 5.3 million people could drop to just over 4 billion crowns if cars are charged in the evening, and may fall close to zero if batteries are only plugged in at night, NVE said.

NVE is now working a tariff proposal which will penalize peak-hours charging. Tibber, a Norwegian power company, already offers cheaper electricity for EV charging if you let it decide when your car is charged while firms such as ZAPTEC offer ways to adjust charging to the available grid capacity.

Some of the 10 households participating in the Stuttgart trial said they initially wanted to keep topping up their cars for fear of running out of juice, but soon adapted to leaving the power company to handle it as it saw fit overnight.

An electric car parks next to a charging station in Ostfildern near Stuttgart, Germany, August 19, 2019. Picture taken August 19, 2019. REUTERS/Ralph Orlowski

“At the start, I did not want to take any risks and charged frequently in order to feel secure. Over time, I changed my outlook,” said Norbert Simianer, a retired head teacher who drove a Renault Zoe during the trial. “I grew used to the car and became more at ease in handling the loading process.”

Simianer and his neighbors were given electric cars and 22 kilowatt (kW) wall-boxes for their garages, alongside two charging points in the street, all free of charge.

In return, they gave up their normal cars and allowed Netze BW, which is a subsidiary of German utility EnBW (EBKG.DE), to monitor and carry out a deferred and down-scaled charging process during a seven-and-a-half-hour period overnight.

Netze BW tried various options, either slotting cars in at the maximum 22 kW charging flow one after another, or lengthening the charging time for individual cars by adjusting the power flow, or combining both methods, Lossau said.

The participants, who used apps to check the status of their car batteries, grew accustomed to the lack of instant charging capability because their vehicles could always handle their everyday commutes of up to 50 km (31 miles).

EnBW said nine of the 10 households in the trial on Ostfildern-Ruit's Belchenstrasse had opted to keep the wall-boxes and most were exploring leasing electric car.

TWO-WAY STREET

Lossau said monitoring 10 households did not in itself provide the "empirical mass to draw conclusions for the load profile of all of Germany".

She also said there would need to be better two-way communication between EVs, the grid and consumers for the system to function efficiently on a large scale.

"There will have to be more exchange of information between e-cars and the grid to update the loading status in real-time, because otherwise, there can be the wrong impression about the speed of loading," she said.

Utility companies developing so-called vehicle-to-grid (V2G) services, however, are struggling to persuade some automakers to use technology that allows two-way flows of information, and power, between batteries and grids.

Carmakers such as Volkswagen (VOWG_p.DE), Daimler (DAIGn.DE) and Ford (F.N), for example, are prioritizing one-directional fast-charging instead to overcome consumer resistance to EVs.

Japan's Nissan (7201.T) has been leading the way among carmakers exploring V2G though Germany's BMW (BMWG.DE) has now decided to develop it too, saying cooperation between cars and grids will be key to making e-mobility ready for mass markets.

"It is about making sure there is enough supply for the electric cars and that the lights do not go out elsewhere," a BMW spokesman said. "The cars don't just load when it's best for the market, but they can also supply power back to the grid to help even out demand spikes."

"There has to be more progress on the data exchanges, however.

It is not yet the standard," he said.

Nevertheless, the Ostfildern-Ruit trial has raised hopes that power grids might be able to cope with an influx of electric cars, especially if the consumers play ball.

Even if drivers resist overnight charging, suppliers of software and equipment to power grids, such as Germany's Siemens (SIEGn.DE), are also looking at safer and more efficient ways to manage how and when power is used to charge cars.

MORE DATA PLEASE

The German city of Hamburg, for example, started a three-year pilot project this month with Siemens to pre-emptively identify overloads on transformers and along cables, and manage EV charging points accordingly.

"Loading processes offer so much flexibility that the overload on the networks can be reduced by deferring loading times or reducing the load that is supplied," said Thomas Werner, expert at Siemens Digital Grid.

"This happens through the digitization of hardware and software and with communication technology," he said.

Using software to help protect aging power networks from predictable surges could also avoid costly hardware upgrades to parts of the 1.7 million km of distribution grids in Germany.

With few than 100,000 electric-only cars in Germany at the moment, there is little threat of blackouts from over-demand. But the Transport Ministry in Berlin envisages up to 10 million electric cars on the roads by 2030.

The number of charging points across the country also only stands at 21,000. That's up 50% over the last year but still

barely a fraction of future needs.

Next up for Netze BW is a trickier test.

Managing the power for 10 households with electric cars in a suburban street of 22 homes is one thing, now the power company is launching a study of car charging behavior in an apartment block with 80 flats, where quarrels over access are likely.

It is also looking at a study in rural areas, where the longer cables required present challenges in maintaining stable voltages for charging.

But that’s still only part of the story. Lossau said power companies would have to work more closely with carmakers to fill knowledge gaps and exchange information.

“It can only work if we get more data from each other.”

Additional reporting by Lefteris Karagiannopoulos in Oslo; editing by David Clarke

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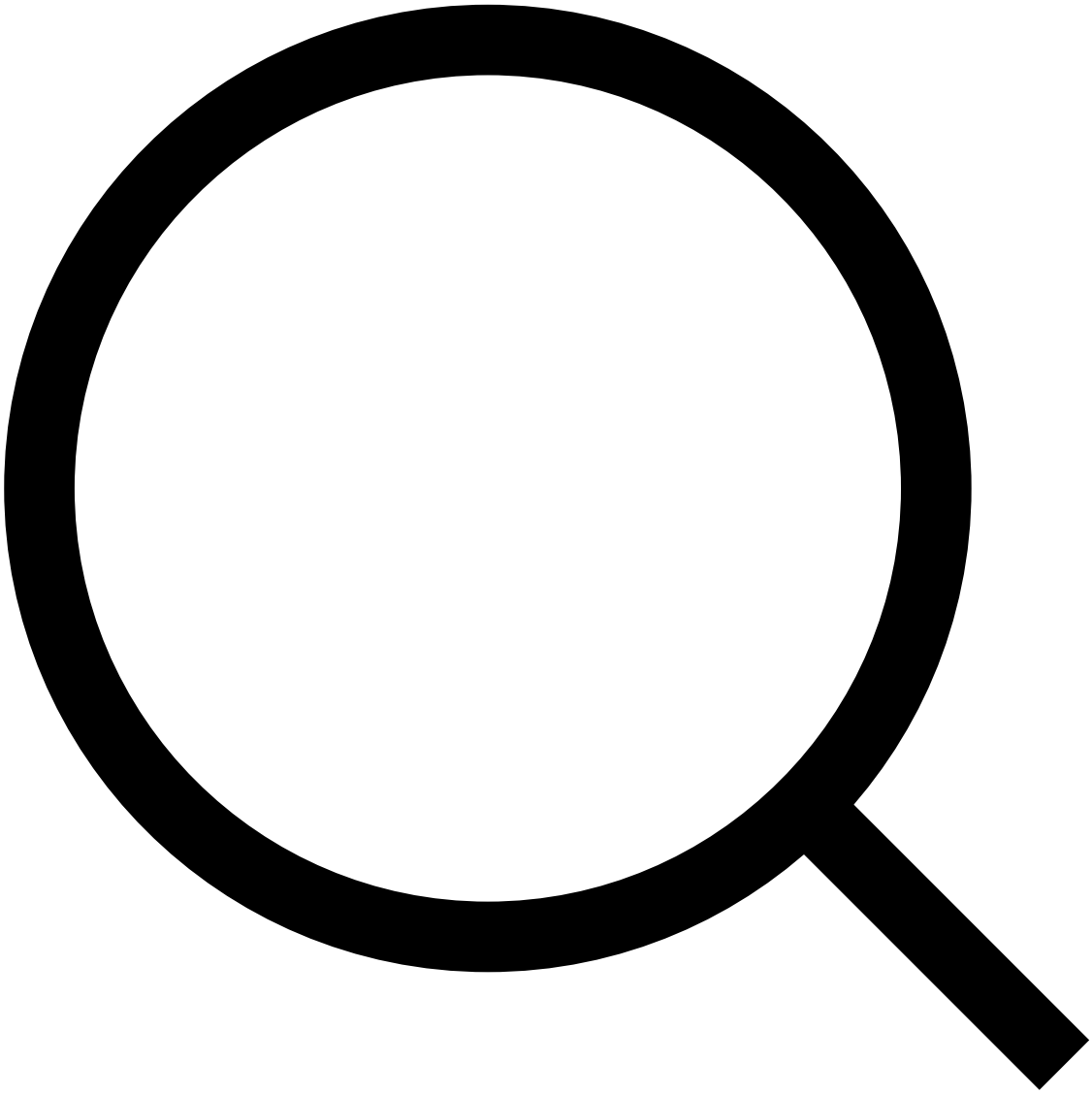
High above Greenland glaciers, NASA looks into melting ocean ice

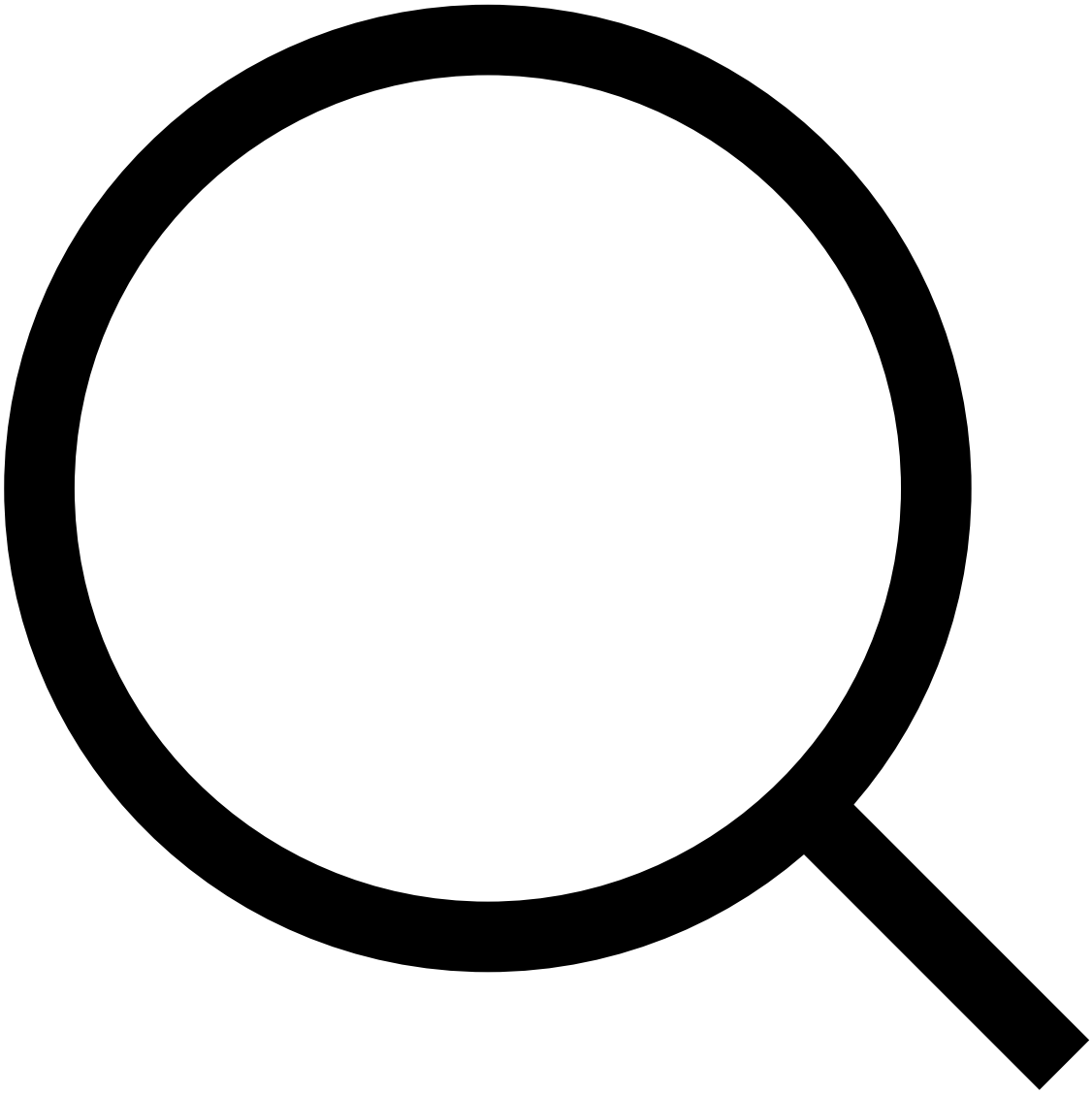
Skimming low over the gleaming white glaciers on Greenland’s coast in a modified 1940s plane, three NASA scientists, led by an Elvis-impersonating oceanographer, waited to drop a probe into the water beneath them.

They are part of Oceans Melting Greenland – or OMG – a mission that has flown around the vast island for four summers, dropping probes to collect data on how oceans contribute to the rapid melt of Greenland’s ice.



Willis is investigating how warmer layers of water off the coast come into contact with glaciers.

Dressed in a blue jumpsuit and with thick sideburns that give a hint of his occasional pastime impersonating Elvis, Joshua Willis, 44, is the oceanographer from NASA’s Jet Propulsion Laboratory behind the project – and, along with his wife, its name.

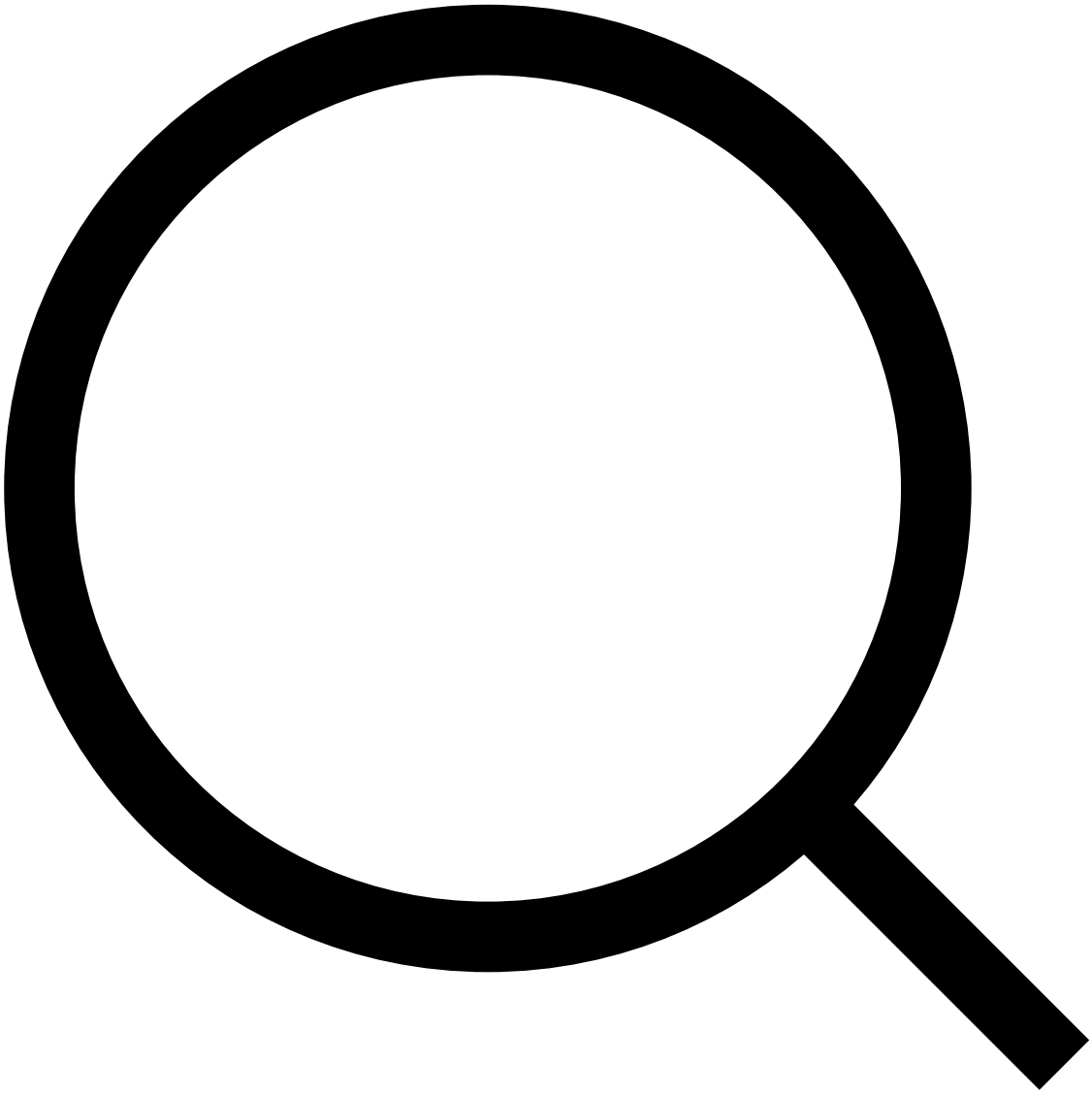


Three NASA scientists drop probes into the Arctic to measure the impact of the oceans on ice melt.

‘Ice cube under a hair dryer’

Willis is investigating how warmer layers of water off the coast come into contact with glaciers and how this effects how quickly they melt.

“A lot of people think of the ice here as melting from the air warming, sort of like an ice cube under a hair dryer, but in fact the oceans are also eating away at the ice’s edges,” Willis said.

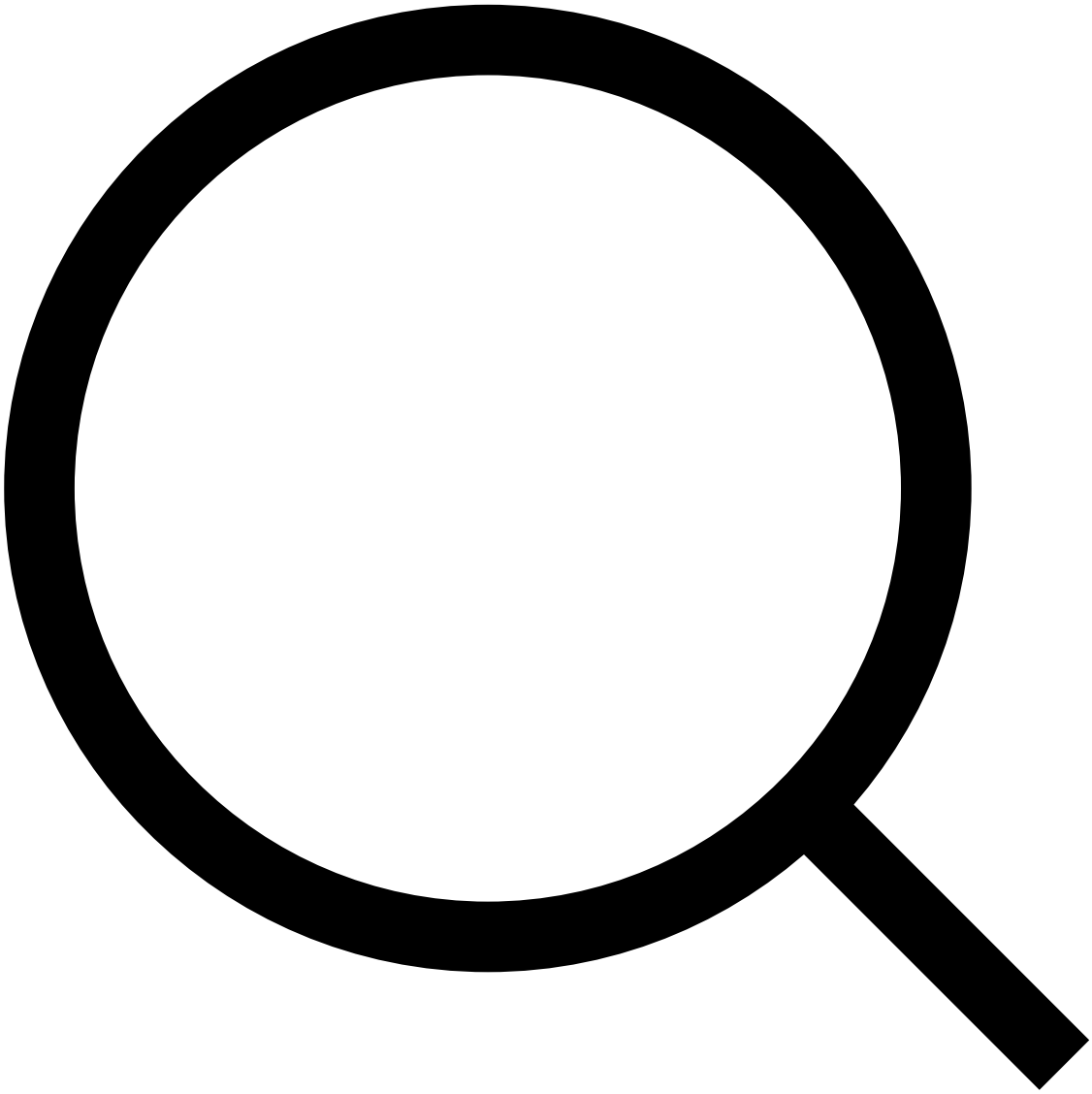


The scientists are part of Oceans Melting Greenland or OMG.

OMG surveys Greenlandic glaciers in the winter, comparing it with the data they collect about the oceans in the summer over a five-year period, which Willis hopes will allow researchers to better predict sea-level rise.

Greenland ‘a challenge’

NASA – best known for the moon landings and space travel – started to study the earth’s climate in greater depth from the 1970s when its inter-planetary exploration budget was reduced, using its satellites to look at the earth.

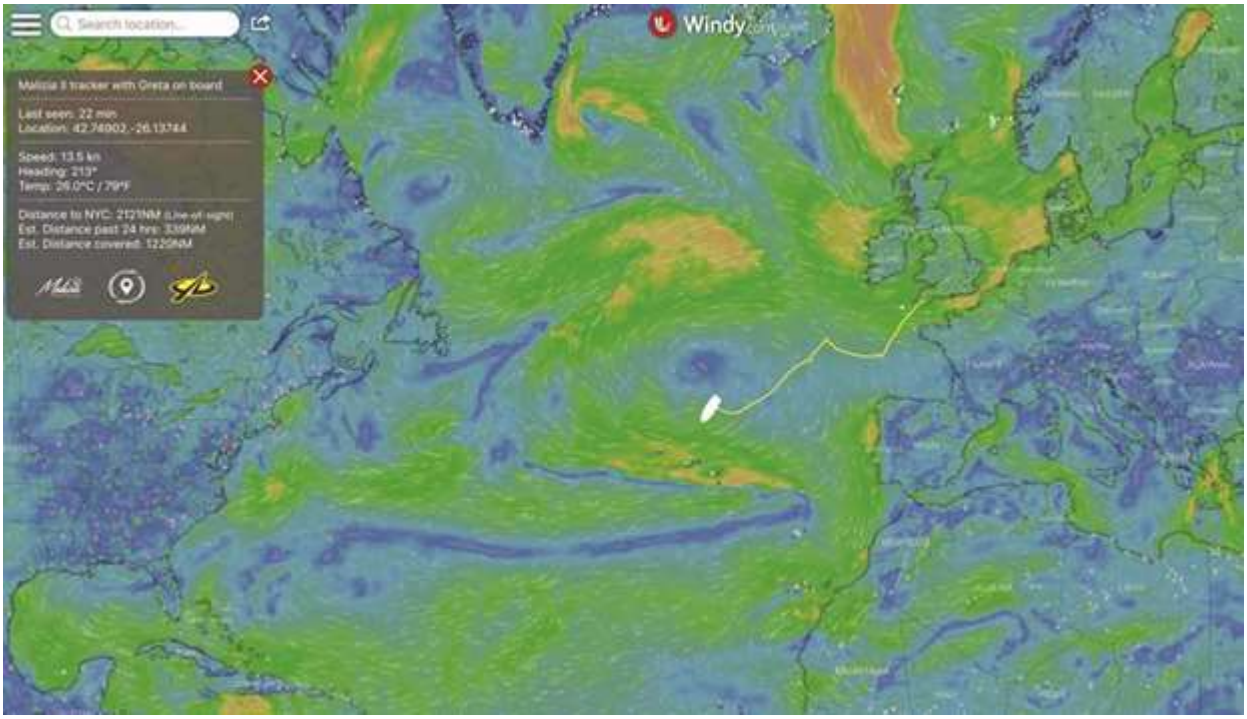


With OMG, Willis hopes they can provide data to give better predictions of sea-level rise.

Today it has more than a dozen satellites in orbit monitoring earth’s seas, ice, land and atmosphere, along with missions like OMG, which Willis hopes will provide data to give better predictions of sea-level rise around the globe.

Agence France-Presse

Planetary thinking



By Erik Berglof London

The Swedish climate truthsayer Greta Thunberg has set sail for the United States in a zero-emissions racing yacht to generate waves in a different part of the world – including at next month's United Nations Climate Action Summit in New York. She will arrive in America at a time of growing transatlantic awareness of the threat posed by climate change. But whether shifts in public opinion will translate into concrete action remains to be seen.

Taking sustainability seriously means that we can no longer ignore our planetary boundaries. We need to start designing tools and policies to make all aspects of society more sustainable, before the costs of doing so become so large as to impoverish us. This has increasingly become a task not just for academics who specialise in the field, but for scholars and researchers generally. Sustainability should now be the lens through which we approach all policy-related empirical

questions. We need challenge-driven, mission-oriented research, and that calls for a broad multidisciplinary effort.
To that end, Michael Grubb of the University of Cambridge, along with two co-authors, made a monumental contribution with his 2014 book Planetary Economics: Energy, Climate Change, and the Three Domains of Sustainable Development. Grubb marshals a broad range of tools from within the economics discipline to chart the way to a sustainable society. That framework will need to be broadened beyond economics, but it provides a useful starting point.
The “three domains” in the book’s subtitle concern human behaviour, and how it can be influenced through regulation, traditional market-based pricing, and innovation. Transforming a system requires action in all three areas. For example, better regulation can change human behaviour in a way that reduces prices and spurs innovation, in turn yielding even better regulation and lower costs.
Unfortunately, these three traditional domains within economics have each evolved separately, developing their own languages, evidence, policy recommendations, professional societies, and journals. The goal of a “planetary economics” is to integrate the domains within a single community, whose sole objective is to build a civilisation that can exist within Earth’s boundaries.
This is already happening on the margins. Evolutionary and institutional economists are talking to organisational and behavioural economists about how individual social and economic choices make up complex systems over time. Complexity economists like W Brian Arthur have been studying such questions for decades. And, in parallel, “Solow Residual” economists have drawn on all three domains to make sense of unexplained factors in economic growth.
But this multidisciplinary intermingling is not happening nearly fast enough. What we need is a new field of planetary social science to unite different perspectives, conceptual frameworks, and analytical tools – from political science, sociology, anthropology, and psychology. Just as we cannot

ignore the climate science, nor can we ignore the geopolitical and security challenges that will confront a warming planet.
Beyond the participation of individual consumers, private corporations, and civil society, building a sustainable global economy will require active state intervention. Governments urgently must adjust regulatory frameworks, reset market incentives, and expand the hard and soft infrastructure needed for innovation to thrive. Moreover, policymakers should be prepared to take calculated risks, and to recalibrate policies based on feedback.
The sub-discipline that has perhaps come closest to integrating other disciplines, including medicine and environmental science, is public health. In Survival: One Health, One Planet, One Future, George R Lueddeke, the chair of the One Health Education Task Force, shows how public health can be incorporated into a wide range of fields to address individual, population, and ecosystem health.
Another crucial area, of course, is education. In 2015, the international community adopted the UN's 2030 Agenda and the 17 Sustainable Development Goals, one of which (SDG 4) regards high-quality universal education as a key to building "peaceful, just, and inclusive societies." Yet progress toward this goal, particularly in developing countries, is being hampered by inequality, poverty, financial shortfalls, extremism, and armed conflict.
In advanced economies, education systems need to prepare students for a world that is undergoing fundamental social, economic, and technological change. Young people today will need the skills not just to cope with the ongoing transformation, but to lead it. That means education policy, too, must become challenge-driven. In practical terms, every university should consider creating a compulsory course on systems thinking and cross-disciplinary approaches.
Meanwhile, public- and private-sector organisations around the world are being asked to integrate the SDGs into their daily operations. In Survival, 17 organisations, ranging from the US Centres for Disease Control and Prevention to the World

Wildlife Fund, tell Lueddeke how they are adopting a more multidisciplinary approach. But, in general, it is clear that many – if not most – countries have yet to consider the costs of implementing the SDGs fully. Without their active participation, success is unlikely.

In fact, most national finance ministries have not fully bought into the 2030 Agenda. In advocating sustainability, we must not create new vulnerabilities in the form of over-indebtedness. Recent experience shows that financial crises can rapidly undermine economic and political achievements, sometimes reversing decades of development or jeopardising future economic growth and stability.

As Greta Thunberg steps onto new shores, those in power should consider their responsibility to all generations. We urgently need to create the conditions for the emergence of a planetary social science that can inform our policy decisions. Ultimately, the planet will carry on. But whether humanity survives will depend on the leadership shown today, and on the systems of governance and scholarship that we build for the future. There is nothing like the prospect of extinction to focus the mind. – Project Syndicate

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The real obstacle to climate action

By Kemal Dervis And Sebastian Strauss/Washington, DC

Climate change is probably the biggest threat facing humanity today. According to the United Nations Intergovernmental Panel on Climate Change, the world must cut its carbon dioxide emissions to net zero by 2050 in order to prevent global warming of 1.5°C, or likely more, above pre-industrial levels in this century. The challenge calls for drastic immediate action, because the infrastructure investments the world makes today will determine the carbon intensity of its growth path for decades.

Yet despite widespread recognition of the size and urgency of the climate challenge, emissions continue to increase, land is "under growing human pressure," and the Amazon has never been more threatened.

Much of the early climate debate revolved around whether the world should take drastic immediate action to mitigate global warming, or adopt a more gradual approach. The gradualists argued with some success that drastic immediate measures would impose heavy short-term economic costs.

But three recent developments have altered the course of the debate. First, the various feedback loops triggered by global warming now threaten to cause greater and more imminent damage

than previously thought.

Second, the cost of clean energy has declined much faster than previously assumed. According to the International Renewable Energy Agency, renewable-energy sources are already the cheapest power option in much of the world, with solar and wind technologies leading the way. Moreover, the cost of "greening" could fall even faster in the future through learning-by-doing. This is also likely to be the case in urban design, transportation, agriculture, and forest protection, all of which need to undergo a green transition.

Finally, the immediate negative externalities of the world's current high-carbon growth model, such as air pollution, are now better recognised as adding to the short-term cost of climate change. Reducing them would therefore partially offset the upfront cost of mitigation.

These shifts greatly strengthen the case for pursuing much faster and bolder forms of mitigation. As the 2014 New Climate Economy Report concluded, there need not be a tradeoff between growth and forceful climate action, even in the short term.

So, why is more not being done? For starters, although the green transition may have a small net aggregate cost, it is certain to generate losers (as well as winners). And as is often the case with such transitions (for example with trade liberalisation), the gains will be spread across large parts of the population, while the losses will be more concentrated on specific groups, making them more visible and politically disruptive.

When advocating policies that result in aggregate welfare gains, economists often fail to give enough consideration to their likely distributional impact. Instead, they often implicitly assume that the winners will compensate the losers. But if such compensation does not actually occur, the losers are left worse off and can often block change, as the "yellow vest" protesters (gilets jaunes) have done since 2018, when the French government proposed a new climate-friendly fuel tax.

The de facto coalition that is currently resisting climate

action consists of the vested interests that own carbon-intensive assets (such as oil companies) and the mostly lower-income groups that would be short-term losers in a rapid transition. Compensating the latter and isolating the former is politically essential.

Unfortunately, it is not clear whether, say, the young German urbanites who voted for the Greens in the European Parliament elections this year would happily compensate the older auto workers – let alone Polish coal miners – who would suffer in a rapid transition. And complicating matters further, the groups at risk of short-term losses from green policies are often bearing the brunt of digitisation and globalisation, too.

Another hurdle to bold action is that climate protection constitutes an "additive" global public good, because there is only one atmosphere and the emissions of any one country add to global greenhouse-gas concentrations as much as those of any other country. This causes the free-rider problem of "carbon leakage." Europe may well reduce its emissions in line with (or even beyond) the aims of the 2015 Paris climate agreement, but if India and China's emissions keep increasing – or if Brazil allows the Amazon to collapse – those efforts will have been futile.

Clearly, the whole world would benefit from a co-operative solution. But without a binding international agreement or a supranational authority that can impose global green policies, few countries have an incentive to engage in sufficient mitigation efforts – leaving everyone worse off.

One possible measure to deter free riding is a carbon border tax, as recently proposed by the incoming president of the European Commission, Ursula von der Leyen. Governments that tax carbon could levy a border tax equal to the implicit subsidy given to their "dirty" exports by governments who do not have such a tax. This would effectively impose a kind of shadow carbon price on free riders, prompting them to produce fewer carbon-intensive goods.

Provided that it is non-discriminatory, such border pricing would enhance global welfare and be compatible with World

Trade Organisation rules. But calculating the appropriate tax would be very difficult in practice. It would, for example, necessitate calculating the tax equivalent of regulatory ceilings. The measure may also invite countries like the United States to retaliate with distortive measures, making it somewhat perilous. Moreover, the tax would likely have regressive distributional consequences, hurting poor countries the most. A better strategy, then, is to increase green investment in developing countries substantially, with multilateral development banks catalysing private financing in addition to their own funds.

Distributional issues – not aggregate costs – are the real obstacle to the ambitious policies needed to avert possibly catastrophic climate change. Similar challenges, at both the national and international level, also affect the transitions entailed by the so-called Fourth Industrial Revolution.

Neo-nationalist populists are already feeding on the fears created by disruptive change. Ambitious carbonisation could further fan these flames if it is not accompanied by social policies that effectively ease the process. Progressives everywhere must therefore unite in support not only of a rapid green transition, but of one that is politically feasible and desirable for the vast majority of citizens – even in the short run. – Project Syndicate

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The case for carbon tariffs

By backing tariffs that would reflect the carbon intensity of key imports, more than 3,500 US economists have broken with the free-market orthodoxy that national environmental policies should not impede global trade liberalization. They were right to do so.

AVIGNON – This January, 3,554 US economists – including 27 Nobel laureates, four former Chairs of the Federal Reserve, and two former Treasury Secretaries – proposed a previously heretical policy. The United States, they said, should combine a domestic carbon price with a "border carbon adjustment system." By backing tariffs that would reflect the carbon intensity of key imports, they broke with the free-market orthodoxy that national environmental policies should not impede global trade liberalization.

They were right to do so. Absent carbon tariffs, concerns about industrial "competitiveness" will continue to constrain vital action to counter harmful climate change.

The fundamental obstacle to decarbonization is the apparent paradox that the costs are trivial at the final consumer level, but large for an individual company. As the Energy

Transitions Commission's recent *Mission Possible* report emphasizes, the technology to achieve total decarbonization of the global economy by around 2050-60, with very small effects on households' living standards, already exists. If all steel used in car manufacturing were produced in a zero-carbon fashion, the price of a typical car would increase less than 1%. The total cost to decarbonize all the harder-to-abate sectors – heavy industries such as steel, cement and chemicals, and long-distance transport (trucking, aviation, and shipping) – would not exceed 0.5% of global GDP. Viewed from this perspective, there is no excuse for national policymakers failing to adopt policies that can drive progress to a zero-carbon economy.

But, viewed from the perspective of an individual company, the costs of decarbonization can be daunting. Producing zero-carbon steel could add 20% to total production costs, and producing zero-carbon cement might double cement prices. So any individual steel or cement company that committed to zero-carbon emissions, or was forced to do so by regulation or carbon pricing, could be driven out of business if its competitors did not face equivalent constraints.

This conundrum has so far stymied the effective use of explicit carbon prices to drive decarbonization. Almost all economists who accept climate science believe that carbon taxes, or prices set in an emission-trading scheme, must be part of any optimal policy response. But even in places where this theoretically desirable policy has been deployed – for example, within the European Emissions Trading System – carbon prices have played a less important role than either regulation or direct subsidization of renewable energy in driving decarbonization. The reason for this is either that carbon prices have been too low to make a major difference, or that the most energy-intensive heavy industries have been exempted. And those weak policies reflect the fear that higher carbon prices and more complete coverage will make domestic

industry uncompetitive with imports from countries without such policies.

The obvious response is to impose carbon taxes in one country, or in a customs union of multiple countries, with an equivalent tariff per ton of carbon on carbon-intensive imports, combined with rebates of the tax for exporters. Ten years ago, when I was Chair of the UK Committee on Climate Change, we debated this possibility. But it was met by a wall of opposition. Such policies, it was said, violated WTO rules, were undesirable in principle, and would unleash tit-for-tat tariff increases justified by whatever environmental priority each country wished to pursue.

Since then, we have successfully used other policy levers to drive large-scale deployment of renewable electricity systems, with costs falling dramatically as a result. But in the industrial sectors, the multiplicity of alternative possible routes to decarbonization, and the fact that different routes will likely be optimal in different circumstances, makes it essential to use the price mechanism to unleash a market-driven search for least-cost solutions. And to do that, we need an answer to the competitiveness problem.

That's why the ETC's *Mission Possible* report argues for the inclusion of border carbon adjustments (carbon tariffs) in policymakers' tool kit, and why so many leading US economists have reached the same conclusion. They now argue for a carbon price within the US, combined with border adjustments for the carbon content of both imports and exports. Such a scheme "would protect American competitiveness and punish free riding by other nations."

But while the economists couch their argument in language designed to play well in the US, the policy could equally be applied by other countries to defend their industries against carbon-intensive imports from America, should the US choose to be a free rider in efforts to tackle global climate change.

Indeed, no country committed to addressing climate change should regard this policy proposal as a threat to its economy. If one country applies a tax of, say, $50 per ton of carbon dioxide emitted, with an equivalent border tax on imports and with a rebate for exporters, any other country doing the same will leave its industries in exactly the same relative competitive position as before either country introduced the policy. But companies in both countries would now face an effective carbon price.

Global political agreement on carbon pricing has proven to be elusive. A carbon tariff could unleash a sequence of independent national decisions that drive a beneficial “race to the top” in which roughly equal carbon prices spread around the world.

Sometimes, intellectual taboos should be dropped. Border carbon adjustment is an idea whose time has come. It could play a major role in driving progress toward the zero-carbon economy that is technologically and economically possible by mid-century.