

# Big Oil is looking to conduct a big power experiment in your house



Big Oil wants to put a box in your hall closet that works like a human brain, can cut the lights, stop the refrigerator and will know how you move about in the privacy of your home better than you do.

Sounds worrying? It's one of the ideas the world's largest oil companies are experimenting with to survive in a low-carbon world.

Companies like Lightsource BP, in which British oil major BP Plc holds a stake, are trialing smart systems in people's homes that will do everything from generating solar power, storing it and managing consumption. Much like Spotify Technology SA gives users instant access to thousands of cool playlists without having to spend years building up their own

collection, Lightsource BP wants to make sophisticated renewable power systems available to average people.

They are figuring out how to go big on electricity as demand surges with rising prosperity around the world while investors and activists put them under immense pressure to adopt green policies. However, concerns over climate mean the power industry of the future will be nothing like the past as focus shifts to efficiency and carbon-free electricity.

Todd Hill, an electrical engineer from Melbourne, lives in a four-bedroom house in a hilly town south of London with his wife and two daughters, represents what Lightsource BP thinks is possible.

After he moved into a new home in 2013, he installed 23 photovoltaic panels on the roof capable of generating 5.3 kilowatts of power, about enough for his family of four. Lightsource BP added a battery to store the electricity the panels generate, an inverter which can be programmed to dispatch the stored electrons when needed, and a diverter to send surplus power to heat the water in his tank.

Hill controls this kit, which he estimates cost about \$13,000, with an app that gives real time information. So he could be camel-riding in Mongolia and the technology will still know the best time to generate power in his England home and charge the battery. At night, when the solar panels are effectively useless, the battery can juice-up his electric car.

“The main aim is to use everything we generate within the home,” Hill, wearing a dark green shirt with a windmill on it, said over a cup of tea in his kitchen. “So anything that goes from the PV to the grid is a wasted opportunity that we can save money on.”

For anyone with less interest in tinkering with their day-to-day power use, Lightsource BP is offering to take control. The company specializes in efficiently generating Hill’s own electricity so he doesn’t produce any surplus which can only

be sold to the grid at discounted prices. And ensures he doesn't end up buying more expensive fossil fuel-generated power.

When the customer moves around the house, the artificial intelligence box learns patterns, like when a person works from home, or is on vacation, with the purpose of closely matching electricity generation with in-house consumption. It can do things like predict the next day's weather, detect individual appliances, collect data on how often and at what times they are used, and help produce a greater share of the power at home.

Hill is one of 200 people who tested a smart energy-management system for Electricity de France SA local unit and Lightsource BP, in whose lab he also works.

Most utilities potentially have a problem on their hands as more people generate their own electricity. In the U.K. about 27% of power is now produced outside of the big and hulking power stations of the past, according to National Grid Plc data. That could jump to as high as 46% by 2030.

A spokesman for EDF's unit EDF Energy said it aims to provide a range of "energy services," to customers to keep them on board. Its trial with Lightsource BP ended in 2018 but it's running other experiments, such as offering discounted batteries to homeowners with solar panels.

"Once you get the customer on your side, it's like an Apple ecosystem; those companies will make it really hard to switch providers," said Elchin Mammadov, a utilities analyst at Bloomberg Intelligence. "It's trying to make this offering more sticky and then you can up-sell other services."

A profitable business for the companies could be managing the power grid itself. A network of homes and businesses with solar panels and batteries could potentially replace some of the giant power stations in the futures. Companies with access to these homes could help balance supply and demand for a fee.

“There’s going to be more and more electricity demand,” said Kareen Boutonnat, Lightsource BP’s chief operating officer. “You can manage that by effectively putting in a lot more generation and having generation on reserve and spending billions on having to upgrade the grid, or you can do that by having this type of smart system.”

More of the biggest oil companies are considering these smart power systems. Royal Dutch Shell Plc, which bought a big U.K. utility in 2017 and wants to be the world’s biggest electricity supplier, will also offer a range of smart home energy devices. It expects its power unit to eventually generate returns of as much as 10%, close to what it gets from producing and selling oil. French major Total SA has also acquired a large company, Direct Energie, and is examining different business models.

They also have tough competition from existing utilities and Silicon Valley tech companies, who are also trying to find the future’s winning power formula. Mammadov said these experimental businesses will probably be loss-making for the foreseeable future.

Meanwhile, at Hill’s home, they are looking forward to summer. That’s when he generates so much extra power that his family can take hot showers without having to turn the boiler on.

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## **How to Live Better and Stop Destroying the Planet**



May 24, 2019 ANA PAULA AGUIAR , ODIRILWE SELOMANE, PERNILLA MALMER

A recent United Nations-backed report highlighted the scale of destruction humans are inflicting on the natural world. To reverse these trends, humanity must transform its economic models and food system, treat the world's oceans far better, and think carefully about the best ways to tackle climate change.

STOCKHOLM – Earlier this month, a bleak global assessment of the shocking state of life on Earth made headlines worldwide. According to the report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), about 12% of all known animal and plant species are now threatened with extinction. Worse still, humanity is destroying entire habitats, and with them the web of life that supports societies and economies. Unsurprisingly, the findings were greeted with despair.

As IPBES scientific contributors and co-authors of the report, we face this news every day. It is impossible not to react emotionally to the scale of destruction humans are inflicting on the natural world. Yet the report also goes to great lengths – although this has been less widely reported – to

identify ways to reverse this alarming trend. To succeed, however, humans need to undertake four major transformations.

First, we must substantially change our legal, economic, and technological systems. It is true, as the report emphasizes, that protected areas and legislation have prevented the extinction of many species, such as the panda. And further conservation steps are clearly needed. But humans need to make far more fundamental changes.

The IPBES report therefore explores numerous possible economic development paths for the world to 2050, and identifies ways to protect nature while increasing human prosperity. The measures it proposes are not the usual suspects, such as reducing deforestation or curtailing the exploitation of species; instead, they address the causes of these problems.

Here, the report concludes that sustaining Earth's living systems requires us to redefine what a good quality of life means. Societies need to get away from the idea that a good and meaningful life is possible only through ever-increasing material consumption. This is clearly absurd. Wellbeing has been stagnating in many developed countries, even as consumption continues to increase.

Solutions could instead build upon new social and political narratives showing that happiness goes hand in hand with lowering total consumption and cutting waste. Reducing gender and wealth inequalities also improves a society's wellbeing, as Nordic countries have shown. And, as IPBES recognizes, indigenous and local knowledge can reveal other ways of managing ecosystems sustainably.

Undertaking such shifts will not be easy. The world must urgently adopt a new economic paradigm that goes beyond a singular focus on GDP. This is beginning to happen. New Zealand, for example, has announced its first "wellbeing budget," while China is continuing to develop measures of

“green GDP.”

Second, the world must transform its food system. The way we currently produce and consume food is a major cause of ecological destruction. Yet feeding a growing global population a healthy diet without damaging the Earth is not only possible, but will also improve people’s quality of life. The IPBES report highlights several sustainable agricultural practices, such as integrated pest and nutrient management, organic farming, soil and water conservation, and measures to improve animal welfare.

One of the IPBES report’s development paths to 2050 is in line with the findings of the separate EAT-Lancet Commission report on sustainable food systems. That report, released earlier this year, concluded that the world could feed ten billion people a healthy diet – with less meat and dairy products, and more nuts and vegetables – without needing to use more land.

But these actions on their own will not be enough. One-third of all food produced never makes it to the plate. We support calls for food waste to be slashed by 50% by 2030, and, encouragingly, countries including France, Germany, and Italy have taken steps to prevent supermarkets from discarding unsold food.

Third, we must treat the world’s oceans far better. Industrial fishing now extends to 55% of the world’s ocean area, and just 3% is free from human pressure. The ocean is increasingly used as a dumping ground for sewage, plastic, excess fertilizers, and other toxic pollutants. But research shows that managing the oceans sustainably can increase fish stocks and economic value. And the UN aims to reach agreement next year on new international regulations to protect the oceans.

Finally, the world must think carefully about the best ways to tackle climate change. The timber and agriculture industries –



in particular the production of soy, palm oil, and beef – are causing rapid deforestation, with devastating consequences for the stability of the Amazon rainforest, the world’s climate, and many species. But attempts to combat global warming through large-scale planting of bioenergy crops, along with reforestation and afforestation, could greatly harm biodiversity and fragile ecosystems. Well-planned measures, on the other hand, could enhance biodiversity, improve soil quality, and capture and store carbon dioxide.

Protecting the living world calls for systemic changes that go beyond narrowly focused policies on biodiversity or climate. Fighting poverty and inequality are essential parts of the solution, too. But these transformative steps will happen only if we start treating the situation like the crisis it is, as Swedish climate activist and student Greta Thunberg has urged.

In recent weeks, both the UK and Irish parliaments have declared climate and nature emergencies, and we urge other countries to do the same. In 2020, a “superyear” for international environmental policy – with major summits on biodiversity, climate, and the oceans – the UN should mark its 75th anniversary by declaring an emergency for the planet to accelerate action to ensure long-term sustainability.

<https://www.project-syndicate.org/commentary/united-nations-report-nature-destruction-four-changes-by-ana-paula-aguiar-et-al-2019-05>

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**Focus on EU's 2019-2024**



# strategic agenda



As the European Parliament election approaches, Europe is abuzz with speculation over who will lead the main European Union institutions for the next five years. Among the positions up for grabs are those currently held by European Commission President Jean-Claude Juncker; European Council President Donald Tusk; Federica Mogherini, the EU High Representative for Foreign Affairs and Security Policy; and European Central Bank President Mario Draghi. Personnel issues are hardly trivial. In politics, personality matters, and it has often played a pivotal role in determining the EU's trajectory. Still, the leadership name game should not be the main focus.

Far more important is the debate over the EU's 2019-2024 strategic agenda. After an informal summit in Sibiu, Romania, earlier this month, European leaders will return to this issue in earnest later in June. And for all of the attention paid to the EU's institutions, it is EU heads of state who will craft the bloc's agenda. In other words, member-state governments, operating through the European Council, will be the actors to watch after the election results are in. When the European Economic Community, the precursor to the EU, was established in 1957, its primary objective was to secure the peace between France and Germany, starting with a customs union for industrial goods (for the Germans) and a common agricultural policy (for the French). This arrangement anchored the European agenda for decades.

Then, when the Soviet Union and its empire collapsed, countries that had been trapped behind the Iron Curtain wanted to “return to Europe.” In the years since, the EU has undergone a massive expansion to include them. Its goal has been twofold: to aid the newer member states in their post-communist economic and political development, and to maintain continental peace and stability by bringing Central and Eastern Europe into the fold of EU institutions. The immediate post-Cold War period was a time of self-confidence and optimism for the EU. Gradually, its strategic mission expanded beyond merely keeping the peace, to projecting the European model of shared sovereignty and integration abroad. The EU model, it was said, would lead to more stable governance for the entire world. Over the past decade, however, the EU’s effort to project its model outward has collapsed. Following the 2008 financial crash, the euro crisis, and recurrent migration imbroglios, the EU has turned inward. At the same time, the EU’s immediate neighbourhood has transformed from a circle of potential friends and partners into a ring of fire. Now, rather than trying to export stability, Europe’s strategic priority is to protect itself from the wider world. In trying to breathe new life into the EU after years of inward-looking crisis management, French President Emmanuel Macron has pushed for “a Europe that protects.” Following Macron’s call to arms, published by Project Syndicate this March, the EU leadership in Brussels has taken up that mantra and bundled various initiatives under the theme of protecting Europe in an age of global tumult. Such protection is undoubtedly necessary. Migration pressures, the constant threat of terrorism, and escalating economic disputes all demand a stronger policy response.

And while addressing some of these issues has proved controversial and difficult, the larger protection agenda is being carried out. Yet, looking ahead, it is clear that the current measures won’t be enough. The EU finds itself in a world dominated by great-power rivalries, Chinese

assertiveness, and revisionist Russian belligerence. Worse, in confronting these threats, it can no longer count on the United States as an unconditional friend and ally. The EU now must choose between securing its own place on the global stage and becoming a playground for other powers. This is a strategic decision of the first order – all other policy choices will follow from it. If Europe ignores or checks out of the dramas roiling the world from Amritsar in India to Agadir in Morocco, it will fail to ensure peace in its neighbourhood and betray its promise to its citizens to protect them from external danger. For the EU to uphold its original mission – peace and stability at home – it must become a global player.

The choice, then, is clear. Europe's strategic mission in the coming years must be to secure its position on the world stage, and all matters of policy and personnel should be settled in a way that advances that objective. Obviously, a strong European Council president, working closely with a strong high representative, will be essential. Both will need to mobilise the resources and talents of all EU member states to prevent the EU's constituent parts from being pulled in different directions by global forces. If the EU's member states embrace this mission, Europe will be positioned to act as a global player for years to come. Otherwise, they – and the EU as a whole – will find themselves on a merry-go-round over which they have no control. – Project Syndicate zCarl Bildt is a former prime minister and foreign minister of Sweden.

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# Salvini Vows to Change EU Tax Rules as Aide Turns Fire on PM



Italian Deputy Premier Matteo Salvini vowed to change European Union rules in order to push through his promise of a 15% flat tax for everyone, as his top aide turned against Prime Minister Giuseppe Conte.

Salvini and his rightist League kicked off the week by opening fire on several fronts ahead of the European Parliament vote May 26, as tensions within the populist government escalated over immigration and other issues.

Salvini pledged at a pan-European rally of 12 nationalist parties in his hometown Milan on Saturday to push through the flat tax, a measure likely to raise concerns both in Brussels and among investors on how the government will draft the 2020

budget against the backdrop of a sluggish economy.

“The only way to create jobs is to reduce taxes, so we need to change some European rules and some limits imposed by Brussels,” Salvini told La7 television on Monday.

Changing deficit and debt caps would mean altering EU treaties, which in turn requires unanimity between member states and possibly referendums in some countries. Salvini has nonetheless continued to call those limits into question.

The deputy premier stayed on topic throughout the day on Monday, saying in a video interview on Facebook that tax cuts should initially be financed with a higher deficit, and that rules imposed by Europe are flawed.

Quarreling between the League and coalition partner the Five Star Movement, including over Salvini’s threat last week to challenge the EU limits, has spooked financial markets, widening the yield spread between Italian and German government bonds last week.

Now, Giancarlo Giorgetti, who’s also cabinet secretary, is adding fuel to the fire, voicing long-running frustration among League lieutenants about Five Star, which picked Conte a year ago.

“Conte is no longer impartial,” Giorgetti told newspaper La Stampa. The premier tries to act as a mediator between the League and Five Star but “when the clash becomes tough and he has to take a side, he goes for the stand of those who put him forward,” Giorgetti said. “The situation cannot last for ever.”

Questioning the premier’s neutrality “is not a serious allegation, it’s a very serious one,” Conte said later Monday in comments to reporters. The premier also acknowledged that clashes between the two parties in the coalition are becoming increasingly heated.

Conte, a former law professor, was plucked from obscurity by

Salvini and fellow Deputy Premier Luigi Di Maio of Five Star last year. While never a Five Star member himself, Conte was loosely affiliated with the movement in the past and Di Maio once named him as a possible candidate to head the Public Administration Ministry.

Salvini backed Giorgetti's remarks. "If everyone keeps their word and keeps their promises, we keep going for five years," Salvini said in the La7 interview. "The problem is the 'no's' on autonomy, the flat tax, unblocking construction projects."

## **Unprecedented Tensions**

Both Salvini and Di Maio have repeatedly insisted the government won't collapse despite unprecedented tensions before the European elections. The partners have squabbled about everything from security and immigration to more powers for regions in the League's northern stronghold.

Senior officials in both the League and Five Star have said the infighting is mainly due to the election campaign, although uncertainty remains on the coalition's future.

Salvini, who has campaigned on an "Italy First" platform, also took a swipe at Chinese telecommunications giant Huawei Technologies Co. "China is surely not a democracy," he said on La7, adding that "sensitive data, what there is on our phones, the medical data of Italians, of our current accounts, must be Italian."

The impact of the Trump administration's threats to choke Huawei reverberated across the global supply chain on Monday, hitting some of the biggest component-makers. Alphabet Inc.'s Google cut off the supply of hardware and some software services to Huawei, a person familiar with the matter said.

Salvini, who's also interior minister and has insisted Italian ports remain closed to humanitarian ships carrying rescued migrants, protested on La7 Sunday night as he watched migrants disembark at a Sicilian port.

“Someone must have given the order,” Salvini said, as Five Star officials insisted no minister of that party had granted access to the ports. “That person has to account for his action.”

Salvini said he’ll propose giving his ministry powers over migrant vessels in territorial waters at a cabinet meeting he said will take place later Monday. Conte’s office said no time has been set for the meeting.

– *With assistance by Nikos Chrysoloras, Dan Liefgreen, and Marco Bertacche*

(Updates with Salvini on Facebook in sixth paragraph.)

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## **Opec signals intention to keep limits on oil supply all year amid Russia doubts**





Bloomberg Moscow/London

Key producers in Opec signalled their intention to keep oil supplies constrained for the rest of the year, while pledging to prevent any genuine shortages.

It was less clear how far Russia, their main partner in the wider Opec+ producers' coalition, shared that view. While most nations at a meeting in Saudi Arabia on Sunday supported extending production cuts to the end of 2019, Russian Energy Minister Alexander Novak talked about potentially relaxing the curbs and wanted to wait and see what happens in the next month.

"We need to stay the course, and do that for the weeks and months to come," Saudi Energy Minister Khalid al-Falih told reporters after the meeting in Jeddah.

The contrasting messages underscore the uncertainty in the global market. If ministers don't agree to an extension next month, the production cuts that ended the worst oil-industry downturn in a generation will expire. Yet their decision is clouded by the impact of US sanctions on Iran and the risk to demand from President Donald Trump's trade war with China.

In a market where the preponderance of risks are on the supply side – with Venezuela and Libya also facing disruptions – what Saudi Arabia chooses to do with its ample spare production capacity may be a crucial factor in the coming months.

On Sunday, al-Falih gave a strong indication that prices were the priority and he wasn't about to open the taps.

Benchmark Brent crude rose as much as 1.7% yesterday, and traded up 0.5% at \$72.58 a barrel as of 10.40am in London.

Continuing the Opec+ accord into the second half wouldn't rule out a production increase. Saudi Arabia has been cutting far deeper than required under the deal and could boost output by about 500,000 barrels a day – equivalent to almost half Iran's exports – without breaching its limit.

Yet al-Falih said production in May and June will be held at the current level of 9.8mn barrels a day. Regardless of what Opec+ decides next month, output in July won't exceed the

kingdom's limit in the deal of 10.3mn barrels a day, he said. The meeting of the Joint Ministerial Monitoring Committee, which oversees the deal between the Organization of Petroleum Exporting Countries and its allies, was generally supportive of an extension, and nobody rejected the idea, Nigerian Oil Minister Emmanuel Ibe Kachikwu said in an interview.

Even so, the committee didn't make a formal recommendation to prolong the supply curbs, concluding instead that further monitoring of the market was necessary, with a focus on managing inventories and keeping supply and demand in balance. The fate of the group's production cuts, which amounted to about 2% of global supply last month, will be decided on June 25 to 26 in Vienna, just days before they expire. That's a volatile situation for the oil market, giving traders very little time to adjust if there's an unexpected shift in policy.

Russia's Novak affirmed his commitment to the historic alliance, saying the production cuts have "proved very efficient." But before and after the meeting he also spoke of the possibility of relaxing the cuts. "We need to promptly react to the situation now and potential developments in the second half," Novak said before the meeting. "If the demand grows, if a deficit is there, we are ready to consider a relaxation of the current parameters, partial output recovery."

Extending the deal is also on the table, and Russia would comply with any agreed output limit in the second half of 2019, Novak said.

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## **Climate-action delay to cost**

# investors more than \$1tn in 15 years



Delays in tackling climate change could cost companies about \$1.2tn worldwide during the next 15 years, according to the UN. That's the preliminary analysis of a UN Environment Finance Initiative project that brought together 20 global fund managers to measure the impact of climate change on 30,000 of the largest listed companies. The group has created a guide for investors to assess how their holdings would respond to different levels of global warming and policy making. "Investors have a central role to play in moving the world to a low-carbon future," said Maurice Tulloch, chief executive officer of Aviva Plc, one of the participants in the project. "This collaboration shows how we can all take better decisions, for our customers and for the environment." Extreme weather events, including floods, tropical cyclones, and extreme hot and cold days are already hitting business operations. Should governments install tougher policy in the push for cleaner technology, emission-intensive companies will increasingly struggle to compete. As well as Aviva, the investor group included companies such as Manulife Asset Management, M&G Prudential Ltd and DNB Asset Management

AS. The work was guided by advisory and modelling firms Carbon Delta AG and Vivid Economics Ltd. Investors are playing an increased role to protect financial stability against climate change. The research work will enable them to better understand climate-related risks and opportunities, in line with the recommendations of the Task Force on Climate-related Financial Disclosures, a part of the Financial Stability Board global regulator, the UN said. The task force is chaired by Michael Bloomberg, the majority owner of Bloomberg LP. To cut investor risks, governments probably need to put in place consistently rising carbon taxes or markets that will spur a shift to cleaner technology, Christopher Hope, a policy modelling expert at the University of Cambridge, told funds managers gathered in London on Friday.

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**Hungary will have to buy Russian natural gas if Exxon waits on offshore project, says minister**



HOUSTON (Reuters) – Hungarian Foreign Minister Peter Szijjarto said on Wednesday his country would again turn to Russia for natural gas supplies if Exxon Mobil Corp has not decided by September whether to invest in a massive Black Sea offshore project.

Romania's Black Sea reserves pose a potential challenge to Russian Gazprom's dominant role supplying Central and Eastern Europe, according to consultancy Deloitte. Tapping those fields could diversify the region's gas supplies and bring the Romanian government revenue of \$26 billion by 2040.

"Exxon Mobil can be the game changer in the energy supply of Europe. But they should finally make their final investment decision," Szijjarto told Reuters during an interview in Houston where he was opening a consulate office.

"If they don't make that decision until September, I will have to make another long-term agreement with the Russians."

Exxon and Austrian energy group OMV's Romanian subsidiary, OMV Petrom SA, have put on hold a decision on tapping the natural

gas field pending legal framework revisions. The field has been estimated to hold 1.5 trillion to 3 trillion cubic feet (42 billion to 84 billion cubic meters) of natural gas.

Exxon is weighing several factors while deciding whether to invest in the Neptun Deep project in Romania, spokeswoman Julie King said on Wednesday.

A decision would require “competitive and stable fiscal terms, a liberalized Romanian gas market that enables free trade, and sufficient interconnectivity with neighboring free and liquid markets, in each case, for the duration of our concession agreement,” King said.

Hungary’s landlocked location in Central Europe puts it at a disadvantage in getting access to needed imports of natural gas, which is used by 85 percent of the households in the country, Szijjarto said.

“The question of whether we will be able to diversify gas resources depends on four allies of ours: Croatia, Romania, the United States and Austria,” he said. “It’s a strange situation where we are encouraged by our friends and allies to diversify, but basically it’s up to them.”

Development of a liquified natural gas (LNG) terminal on the Croatian island of Krk, would help it diversify from the current, east-to-west logistics system established during the Cold War when the Soviet Union dominated Eastern and Central Europe, Szijjarto said.

Reporting by Erwin Seba; Editing by Peter Cooney

Our Standards: The Thomson Reuters Trust Principles.

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# A carbon dividend is better than carbon tax



By Mark Paul And Anthony Underwood/Sarasota

Climate change is the world's most urgent problem, and in the United States, the left, at least, is taking it seriously. Earlier this year, Representative Alexandria Ocasio-Cortez of New York and Senator Edward Markey of Massachusetts, both Democrats, introduced a Green New Deal (GND) resolution, which offers a blueprint for decarbonising the US economy. But while a growing number of Democratic presidential contenders have endorsed their proposal, centrist Democrats and Republicans continue to cling to a different climate-policy approach. The key centrist proposal, in keeping with the prevailing neoliberal dispensation, is a carbon tax. The idea is simple: if you tax fossil fuels where they enter the economy – be it at a wellhead, mine, or port – you can fully capture the social cost of pollution. In economic parlance, this is known as a Pigovian tax, because it is meant to correct an undesirable outcome in the market, or what the British economist Arthur Pigou defined as a negative externality – in



this case, the greenhouse-gas emissions that are responsible for global warming.

As a response to climate change, a carbon tax is immensely popular among economists from across the political spectrum, and it does have an important role to play. But it is far from sufficient. Rapidly decarbonising the economy in a way that is economically equitable and politically feasible will require a comprehensive package on the order of the GND. That means combining some market-based policies with large-scale private- and public-sector investments and carefully crafted environmental regulations.

Even in this case, including a standard carbon tax involves certain risks. Just ask French President Emmanuel Macron, whose country has been roiled by months of demonstrations that were initially launched in response to a new tax on diesel fuel. The lesson from the weekly “yellow vests” protests is clear: unless environmental policies account for today’s high levels of inequality, voters will reject them.

Nonetheless, as progressives push for more green investment, they will look to the carbon tax as a source of revenue. After all, depending on the size, it could raise almost a trillion dollars per year. But rather than a straightforward levy, they should consider implementing a carbon dividend, whereby carbon would be taxed, but the proceeds would be returned to the people in equal shares. Yes, this would preclude one option for funding the GND; but it would ensure that the transition to a carbon-free economy remains on track, by protecting the incomes of low- and middle-class households.

A common objection to a carbon dividend is that it would defeat the original purpose of a carbon price, which is to encourage people to reduce emissions. But this isn’t true. To see why, suppose you are a low-income American, currently spending \$75 per month on gas. Assuming that your driving behaviour does not change, a carbon tax of \$230 per ton – the level needed just to put us on a path toward limiting global warming to 2.5° C above pre-industrial levels – would raise your monthly fuel expenditure by \$59, to \$134, or 79%. In this

case, you unquestionably will feel poorer. This is what economists call an "income effect."

Now imagine that a carbon dividend is in place: you would receive a monthly payment of \$187, more than offsetting the price increase, and leaving you feeling richer. But wouldn't this also leave you with a greater incentive to use gasoline? Economic theory suggests not.

Just because the price of gas increases does not mean that everything else in the economy will follow suit. Rather, goods and services that produce a lot of carbon dioxide emissions will become relatively more expensive than those that do not. Hence, you would have a choice between using the dividend to drive more and using it to increase your consumption of other things, from dinners with friends to new running shoes. Those social gatherings and shoes are your incentive to use less carbon. This is what economists call the "substitution effect."

In this way, a carbon dividend would gradually nudge people, large businesses, and the government away from carbon-intensive consumption and toward activities and investments that reduce their emissions. Equally important, a carbon dividend would protect the poor. A straightforward carbon tax is inherently regressive, because it imposes the same cost on the poor as it does on the rich. But a carbon dividend inverts this effect, because every dollar that is returned will be worth more to a low-income household than it will be to a wealthy one.

Moreover, it is the rich who fly all over the world, heat and cool enormous homes, and drive inefficient sports cars. Because they lead far more carbon-intensive lifestyles than everyone else, they would contribute far more per capita to the carbon dividend. More to the point, they would pay in much more than they get back, while the poorest 60% of Americans would get back more than they put in.

In short, a carbon dividend would distribute money from predominantly wealthy high polluters to predominantly low- and middle-income low polluters, all while reducing CO<sub>2</sub> emissions.

On its own, it would represent a smart step in the right direction – one that wouldn't invite a "yellow vest" reaction. But don't let anyone tell you it's a silver bullet. When it comes to climate change, there isn't one. – Project Syndicate

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<https://www.gulf-times.com/story/631897/A-carbon-dividend-is-better-than-carbon-tax>