

The Dangerous Delusion of Optimal Global Warming



Aug 1, 2019 ADAIR TURNER

The Nobel laureate economist William Nordhaus believes that global warming should be limited to 3.5°C, which is much higher than the 2°C targeted by the Paris climate agreement. But Nordhaus's approach represents a misguided application of sophisticated modeling to decision-making under extreme uncertainty.

LONDON – The United Kingdom is now legally committed to reduce net greenhouse-gas emissions to zero by 2050. Opponents in Parliament argued for more cost-benefit analysis before making such a commitment; and Nobel laureate economist William Nordhaus argues that such analysis shows a much slower optimal pace of reduction.

The 2015 Paris climate agreement seeks to limit global warming to “well below 2°C” above preindustrial levels, while the Intergovernmental Panel on Climate Change recommended in 2018 that the increase be capped at 1.5°C. By contrast, Nordhaus's model suggests limiting warming to 3.5°C by 2100. If that were

the objective, net zero emissions would be acceptable far later than 2050.

But Nordhaus's approach represents a misguided application of sophisticated modeling to decision-making under extreme uncertainty. All models depend on input assumptions, and Nordhaus's conclusions rely crucially on assumptions about the additional harm of accepting 3.5°C rather than 2°C of global warming.

For some types of climate impact, quantitative estimates can be attempted. As the Earth warms, crop yields will increase in some colder parts of the world and decrease in hotter regions. Any estimate of the net economic impact is subject to wide margins of error, and it would be absurd to imagine that benefits in one region will be transferred to others that have been harmed, but at least modeling can help us to think through the possible scale of these effects.

But it is impossible to model many of the most important risks. Global warming will produce major changes in hydrological cycles, with both more extreme rainfall and longer more severe droughts. This will have severe adverse effects on agriculture and livelihoods in specific locations, but climate models cannot tell us in advance precisely where regional effects will be most severe. Adverse initial effects in turn could produce self-reinforcing political instability and large-scale attempted migration.

To pretend that we can model these first- and second-round effects with any precision is a delusion. Nor can empirical evidence from human history provide any useful guidance for how to cope with a world that warmed to Nordhaus's supposedly optimal level. After all, 3.5°C warming above preindustrial levels would take us to global temperatures not seen for over two million years, long before modern human beings had evolved.

Modeled estimates of adverse impacts are also incapable of capturing the risk that global warming could be self-reinforcing, creating a nontrivial risk of catastrophic threats to human life on Earth. Recent Arctic temperature trends confirm climate model predictions that warming will be greatest at high latitudes. If this produces large-scale melting of the permafrost, huge amounts of trapped methane gas will be released, causing climate change to accelerate. The higher the temperature attained, the greater the probability of rapid and uncontrollable further warming. Models always struggle to capture such strongly endogenous and non-linear effects, but Nordhaus's 3.5°C point of optimality could be a hugely unstable equilibrium.

Before the 2008 financial crisis many economists, including some Nobel laureates, believed that sophisticated "value at risk" (VaR) models had made the global financial system safer. Then-US Federal Reserve Chair Alan Greenspan was among them. In 2005, he reassuringly observed that the "application of more sophisticated approaches to measuring and managing risk" was one of the "key factors underpinning the greater resilience of our largest financial institutions."

But those models provided no warning at all of impending disaster. On the contrary, they deluded bank managers, central bankers, and regulators into the dangerous belief that risks could be precisely foreseen, measured, and managed. VaR models could not capture the danger of catastrophic collapse resulting from endogenous self-reinforcing feedback loops within a complex and potentially fragile system. The same is true of supposedly sophisticated models purporting to discern the optimal level of global warming.

The economic costs of achieving carbon neutrality by mid-century are also uncertain. But we can estimate their maximum order of magnitude with far greater confidence than is possible when assessing the costs of adverse effects of climate change.

Achieving a zero-carbon economy will require a massive increase in global electricity use, from today's 23,000 TW hours to as much as 90,000 TW hours by mid-century. Delivering this in a zero-carbon fashion will require enormous investments, but as the Energy Transitions Commission has shown, it is technically, physically, and economically feasible. Even if all those 90,000 TW hours were provided from solar resources, the total space requirement would be only 1% of Earth's land surface area. And in real-world competitive energy auctions, solar and wind providers are already committing to deliver electricity at prices close to and sometimes below the cost of fossil fuel generation.

Total cost estimates must also account for the energy storage or backup capacity needed to cover periods when the wind doesn't blow and the sun doesn't shine, and for the complex challenge of decarbonizing heavy industrial sectors, such as steel, cement, and petrochemicals.

Added up across all economic sectors, however, it's clear that the total cost of decarbonizing the global economy cannot possibly exceed 1-2% of world GDP. In fact, the actual costs will almost certainly be far lower, because most such estimates cautiously ignore the possibility of fundamental technological breakthroughs, and maintain conservative estimates of how long and how fast cost reductions in key technologies will occur. In 2010, the International Energy Agency projected a 70% fall in solar photovoltaic equipment costs by 2030. It happened by 2017.

Rather than relying on apparently sophisticated models, climate-change policy must reflect judgment amid uncertainty. Current trends threaten major but inherently unpredictable adverse impacts. Limiting global warming to well below 2°C will cost at most 1-2% of GDP, and those costs will come down if strong commitments to reduce emissions unleash technological progress and learning-curve effects. Given these realities, zero by 2050 is an economically rational target.

Climate Changed Turbines in Landfill Trigger Debate Over Wind's Dirty Downside



Wind turbines may be carbon-free, but they're not recyclable.

A photograph of dozens of giant turbine blades dumped into a Wyoming landfill touched off a debate Wednesday on Twitter about wind power's environmental drawbacks. The argument may be only beginning.

Fiberglass turbine blades – which in some cases are as long a football field – aren't easy to recycle. And with BloombergNEF expecting up to 2 gigawatts worth of turbines to be refitted this year and next, there could be heaps more headed for dumps.



A technician repairs a wind turbine blade in Adair, Iowa.

Photographer: Daniel Acker/Bloomberg

Cynthia Langston, solid waste division manager for the city of Casper, declined to say where the turbine debris came from. But she's happy to have it. The 1,000 blades will bring in about \$675,000 for the landfill, helping keep trash costs low for local residents. Plus, Langston said, wind-farm junk is less toxic than other garbage.

"It's much cleaner than the contaminated soil and demolition projects from the oil and gas industry," Langston said in an interview. "These are about as non-toxic as you can get."

Wind turbine blades represent a "vanishingly small fraction" of overall waste in the U.S., according to the American Wind Energy Association.

Sachin Shah, chief executive officer of one of the world's largest clean-power operators, Brookfield Renewable Partners LP, said "there will be an aggressive effort to re-use

materials” in the years ahead.

Airlines scramble to overcome polluter stigma



Reuters Seoul/Stockholm/London

In Lorna Greenwood's London home, there is a shelf lined with travel guides.

But the 32-year-old mother and former government employment lawyer has given up flying.

Greenwood, who grew up enthralled by the possibilities offered by plane travel, is part of a growing group of environmental activists in Northern Europe who are shunning flights as concerns about global climate change increase.

"It's a tough pill to swallow, but when you look at the issues around climate change, then the sacrifice all of a sudden becomes small," Greenwood said.

A Swedish-born anti-flying movement is spreading to other

European countries, creating a whole new vocabulary, from “flygskam” which translates as “flight shame” to “tagskryt,” or “train brag.”

A number of famous Swedes have stopped flying, including opera singer Malena Ernman, the mother of teenage activist Greta Thunberg who has thrust climate change into the spotlight.

“Flygskam” was a major topic at a three-day airline summit in Seoul this weekend, with global industry leaders launching a counter-offensive.

“Unchallenged, this sentiment will grow and spread,” Alexandre de Juniac, head of the International Air Transport Association (IATA) told some 150 CEOs.

The industry says it is shrinking its carbon footprint and its sustainability plan is among the most ambitious and globally focused of any industry.

“Come on, stop calling us polluters,” de Juniac said at a news conference after detailing the global initiative.

The IATA said the CO₂ emission for each CEO’s flight to Seoul was half the amount of a 1990 flight, largely thanks to more fuel-efficient aircraft.

Commercial flying accounts for about 2.5% of global carbon emissions today but without concrete steps, that number will rise as global air travel increases.

The aviation industry has set out a four-pronged plan to achieve carbon-neutral growth from 2020 and halve net emissions from 2005 levels by 2050.

But airline leaders acknowledge they have struggled to articulate their plans in a way that resonates with the public.

When CNN anchor Richard Quest asked a room full of aviation executives whether they had used an often available booking option to offset emissions from their own flights to the South Korean capital, only a handful raised their hands.

The industry’s plan rests on a mix of alternative fuel, improved operations such as direct flight paths and new planes or other technology.

But a widely publicised March study funded by investors

managing \$13tn said airlines were doing too little.

"If we as an industry can provide better, more concrete answers...people will start to feel more comfortable that airlines are serious about this commitment," JetBlue CEO Robin Hayes said in an interview.

Questions remain over how airlines will slow, steady and finally reduce harmful emissions.

Use of sustainable-fuel would have the single largest impact, reducing emissions from each flight by around 80%, according to the IATA.

The problem is that it is in short supply.

"The reality today is there's just not enough and it's too expensive," KLM CEO Pieter Elbers told Reuters.

KLM last week announced a deal to develop and buy biofuels from Europe's first sustainable aviation fuel plant, due to open in 2022.

Still, the IATA targets 2% of total fuel supply from sustainable sources by 2025 and then expects a steady increase.

In Europe, eliminating dozens of national airspaces borders could reduce fuel consumption by around 6%, but lobbying for a Single European Sky has been bogged down for years.

Airlines say small steps like single-engine taxiing and the use of lighter materials are cutting around 1-2% of emissions each year.

In the absence of a quick and substantial reduction its carbon footprint, the industry has committed to a carbon-offset programme.

The global Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) allows airlines to purchase pollution credits from environmental projects.

It's unclear what will count as an "offset" and critics say such schemes hide how much effort is being made by industry and how much is being imported and at what price.

"The risk is that the price airlines are effectively paying for carbon will not be politically acceptable in 5 or 10 years," a senior aviation executive said, asking not to be

named.

European Union Transport Commissioner Violeta Bulc told Reuters she favours reviewing available green technology every five years “and then seeing if we can reach even further.”

For now, trains are benefiting from the anti-flight movement, although airline bosses in Seoul said that option barely exists in their busiest new markets such as Indonesia’s archipelago.

In Stockholm, Susanna Elfors says membership on her Facebook group Tagsemester, or “Train Holiday,” has spiked to some 90,000 members from around 3,000 around the end of 2017.

“Before, it was rather taboo” to discuss train travel due to climate concerns, Elfors said. “Now it’s possible to talk about this on a lunch break...and everybody understands.”

America’s bipartisan climate-policy failure



By Mark Paul

SARASOTA – US President Donald Trump's anti-climate agenda is in full swing. His administration has already taken action 117 times to repeal or weaken climate regulations, and much more deregulation is in the works. By unravelling environmental protections on an unprecedented scale, including through executive orders, Trump is using every tool at his disposal to increase fossil-fuel extraction and the production of dirty energy. Apparently, he is hell-bent on topping his predecessor's own fossil-fuel boom.

That is right, former President Barack Obama presided over a fossil-fuel boom: the domestic shale-energy revolution enabled by the advent of hydraulic fracturing (or fracking). The fact is that neither major party in the United States has been the climate champion that the country and the world needs. While young activists around the world are stepping up to show what true climate leadership looks like, politicians are barely taking note. As Dianne Feinstein, a Democratic US senator from California, dismissively told a group of young people advocating a Green New Deal (GND): "I've been doing this for 30 years. I know what I'm doing."

The longer both parties cling to a policy of "business as usual", the more likely we are to face a climate catastrophe in which millions of people perish or have their lives upended. In reality, though, the responsibility for adopting a new paradigm ultimately rests with the Democrats. While Trump has been disastrous for the planet, his administration's policies are in keeping with a Republican Party that will not change anytime soon.

In a recent review of more than 1,000 climate-related bills introduced in the US Congress since 2000, we found that, in the past decade alone, Republicans presented 187 that would increase greenhouse-gas (GHG) emissions. Most of these bills have sought to advance the interests of the fossil-fuel industry over those of everyone else. The Republicans' purported rationale is to achieve "energy independence,"

which, in practice, has meant offering special treatment to the oil, gas and coal companies that spend exorbitant amounts on campaign contributions.

Not long after coming to office, Trump promised that by unleashing America's fossil-fuel reserves, his administration would "create countless jobs for our people, and provide true energy security to our friends, partners and allies all across the globe". Following the same logic, Don Young, a Republican congressman representing Alaska, has introduced the American Energy Independence and Job Creation Act, which would allow exploration and extraction of oil and gas reserves in Alaska's Arctic National Wildlife Refuge. Adding insult to injury, the bill would direct half of the tax revenues generated by the exploitation of public resources to a pot of incentives for the fossil-fuel industry.

But the real insult is the behavior of Democratic leaders, who continue to abide by what James K. Boyce of the University of Massachusetts calls "climate-change denial lite". Consider the case of the Democratic National Committee (DNC). Last year, the DNC decided that it would no longer accept contributions from political action committees affiliated with the fossil-fuel industry, only to reverse course and embrace an "all-of-the-above" energy policy just months later.

Though congressional Democrats have introduced modest proposals to curtail GHG emissions, they have not made any major push for climate legislation since the failed American Clean Energy and Security Act of 2009 (the Waxman-Markey bill). And even that bill would not have reduced emissions fast enough, relative to what the climate crisis demands.

Among the more meaningful climate bills introduced by Democrats in recent years is the 100 by '50 Act, which includes provisions to "achieve 100 per cent clean and renewable energy by 2050". But, again, this falls far short of

what is needed to limit global warming to 1.5°C above pre-industrial levels, the threshold beyond which the Intergovernmental Panel on Climate Change forecasts devastating consequences.

Fortunately, a growing chorus of Democrats has begun to demand genuine action that would start to make up for decades of climate-change denialism lite. They understand that without significant, comprehensive action by the US, the climate cannot possibly be stabilised at a level that is still conducive to human flourishing.

Rather than talking about what people must give up to reduce emissions, the climate realists are trying to sell voters on a new vision of the economy, one that offers long-term economic security and environmental stability. The GND resolution introduced earlier this year has rapidly shifted the window of discourse, such that once-radical proposals are now garnering public support and being debated seriously.

Though the details of the GND still need to be fleshed out, Democratic presidential contenders such as Washington Governor Jay Inslee are already offering concrete proposals in accordance with its prescriptions. The GND could be the “north star” of the country’s decarbonisation path. But much will depend on Democratic congressional leaders such as Speaker of the House Nancy Pelosi, who has scoffed at ambitious climate proposals as a “green dream.” Either that changes, or we will all find ourselves in an environmental nightmare.

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<http://jordantimes.com/opinion/project-syndicate/americas-bipartisan-climate-policy-failure>

Europe's tough emissions rules come with \$39bn threat



Time is running out for car makers in Europe. Just six months out from stiff new emissions rules, the industry is facing up to an estimated €34bn (\$39bn) in penalties as well as eroding profits from selling more electric cars. Starting in 2020, car fleets in Europe will need to meet more stringent regulations on how much carbon dioxide they're allowed to release. The industry is ill prepared for the looming change, and the huge fines pending for subverting the new rules could prompt some brands to abandon the European market and test the mettle of those that remain. The threat is part of a broader pileup: vehicle sales are falling in key markets around the world, and the US is exchanging blows on trade with China and the European Union, threatening to raise costs and rattle the global economy. Worse yet, automakers have been unable to pry buyers from the highest-emission cars, such as the Mercedes-AMG GLE 63 S sport utility vehicle that spouts more

than three times the car maker's targeted CO2 fleet level from 2020. "In an industry that is already suffering from global trade issues, from Brexit, from peaking sales, that's a very, very dangerous cocktail," Evercore IS auto analyst Arndt Ellinghorst said on a call earlier this month regarding the EU emissions issue.

Fines could mount to €34bn through 2021, according to research firm Jato Dynamics, whose projection tracks with other industry estimates. While the new regulations are expected to be painful for the industry to adjust to, past precedent suggests the EU is unlikely to allow Europe-based carmakers to be driven to ruin. Volkswagen AG, the world's biggest car-maker, faces the largest penalty at about €9bn based on 2018 reported emissions, followed by Peugeot maker PSA Group and Fiat Chrysler Automobiles NV – the company with the single largest gap between actual performance and the new targets. BMW AG and Daimler AG could see earnings drop sharply due to their heavy reliance on high-emission SUVs. Toyota Motor Corp, maker of the Prius and several other hybrids, was the only automaker to see its emissions fall last year in Europe, according to Jato. While its calculation doesn't take into account a blitz of upcoming electric models like Volkswagen's ID.3 hatchback and Porsche Taycan, European Environment Agency data show emissions rising – not falling – for the past two years to a four-year high in 2018. Fumes are emitted from the exhaust pipe of an Audi in London. A Volkswagen spokesman reiterated recent comments by officials including chief executive officer Herbert Diess that it's the company's goal to meet European emission limits. A spokesman for BMW said paying fines wasn't a strategic option, and the company on Tuesday brought forward its planned rollout of electric cars by two years. Daimler said its plan to reach the targets also depended on customer decisions. "It's not quite an existential problem yet, but there are going to be questions of how do you explain to shareholders that I'm losing so much money, and it's going to create immense pressure," Michael Schweikl,

managing consultant responsible for automotive at PA Consulting Group, said in an interview. Starting January 1, all but 5% of the EU's car fleet can emit no more than 95 grams of carbon dioxide per kilometre driven. One year later, no new vehicle can exceed that level.

Fines of 95 euros per gram for each car over the target will add up quickly, driving automakers to speed up the electrification of their lineups by offering more gasoline-electric hybrids and cars fully powered by batteries. "I have never seen such a material event risk in my career," Evercore's Ellinghorst warned in a research note to clients last month under the subject line "The 2020 CO2 cliff ." Automakers aren't panicking – yet. PSA expects to be compliant from day one and won't pay any fines, a spokesman said. However, in 2018, sales of EVs and hybrid vehicles accounted for less than 1% of PSA's registered sales. The quandary on CO2 doesn't end there, because in addition to being less popular, low-emission cars are much less profitable than the rest of automakers' fleets. At Volkswagen, less than 1% of sales were plug-ins or battery cars last year, and about 6% at BMW. An analysis by UBS last year estimated Ebit margins on Tesla Inc's Model 3 sedan were, at best, half those of BMW's gasoline-powered 330i model.

The push for electrification in Europe means selling mass-market vehicles there will be unprofitable "for a decade or two," John Murphy, an auto analyst for Bank of America Merrill Lynch, said during a presentation this month in Detroit. The 2020 limits were agreed to in 2014 after years of back-and-forth on balancing a reduction in emissions while not costing carmakers too much. What no one foresaw was the extent of consumers' love affair with gas-guzzling SUVs and Volkswagen's diesel-emissions cheating scandal that surfaced the following year. Diesels, which emit about a fifth less CO2 than equivalent gasoline cars, were a key plank in carmakers meeting the tighter regulation. But some European cities have

started to ban diesels, leaving the cars to languish on dealer lots. "The top automakers will face trouble as none of them are currently on track to meet the target," Jato Dynamics said in an April blog post. "The incoming CO2 targets can be seen as the apocalypse of the car industry in Europe." The new rules may prompt some brands without a strong presence in Europe to abandon the market altogether, said Ellinghorst, though he declined to specify which might do so. General Motors Co already effectively withdrew in 2017 when it sold the Opel brand to PSA. Companies without fully-electric vehicles in Europe such as Ford Motor Co and Japan's Mazda Motor Corp face steep challenges. Honda Motor Co does too, but it plans to launch a small battery-electric model later this year. Ford said in a statement it expects to meet the 2020-2021 targets, but that its longer-term strategy in Europe through 2030 "assumes a strong uptake of electrified vehicles" by consumers. Representatives for Mazda had no immediate comment. If the industry fails to clear the new bar set by regulators, it won't be the first time.

When many automakers missed the boat on the switch to new emissions testing in September, it was nearly enough to send Europe's largest economy into recession. Employees work on BMW i3 electric cars on the assembly line at a factory in Leipzig, Germany. Simply selling more small cars won't help, as even the most fuel-efficient gas-powered vehicles also face tougher mandates. Carmakers aren't likely to be able to pass along the added costs for equipping those cars with cleaner technology, Bernstein analyst Max Warburton wrote in a recent report. He said that may lead to "the death of the small car" in Europe. The regulations do allow for some creative ways to lower average fleet emissions and mitigate penalties, at least during a phase-in period. Cars that emit less than 50 grams CO2 per kilometre will count for two cars in 2020, and slightly less each year after. Fiat Chrysler has also made use of the option to pool fleets of high-emission autos with low- or zero-polluting cars, pairing up with Tesla Inc in a

deal that likely will involve paying the US company several hundred million dollars. Mazda and Toyota are also forming a pool. "I think that 2020 is doable. The concern is about customer acceptance for new technology," said Antonio Massacesi, head of fuel economy and greenhouse gas compliance for Fiat Chrysler's European business. "That risk is one of the reasons why we decided to enter into a pool with Tesla."

Large Exxon Shareholder Starts Divesting Over Climate Change



(Bloomberg) – One of Britain's biggest fund managers started selling shares in Exxon Mobil Corp., saying America's largest oil company isn't doing enough to address climate change.

Legal & General Investment Management, which oversees about \$1.3 trillion and is one of Exxon's top 20 shareholders, said some of its funds have already divested from the company and will ask its clients if it can withdraw more money.

The global oil industry has become increasingly unfashionable for investors as the transition away from fossil fuels raises doubts about its long-term future. Energy stocks currently make up 5% of the S&P 500 Index, down from 13% a decade ago.

The divestment affects a small portion of Exxon's equity – Legal & General owns about 0.6% of the company, and the divesting funds hold just a fraction of that – but it intensifies pressure on the Texas firm, once the world's largest public company. It will also be a fillip for campaigners who want investors to divest from the most polluting companies.

Divestment is a way to “hold Exxon accountable for something that's really material for their future,” said Meryam Omi, head of sustainability at Legal & General Investment Management. “People in the street who have their own pension that's going to mature in 30 years time don't get a chance to talk to Exxon themselves.”

Exxon is the only oil major Legal & General is divesting, as competitors including Chevron Corp. and Royal Dutch Shell Plc meet or exceed the insurer's basic standards on climate change action. It would also use its remaining shareholding in the company to vote next year against the reappointment of the chairman, a role currently held by Chief Executive Officer Darren Woods.

Exxon is the largest of 11 companies that Legal & General said it will exclude from its “Future World” funds because of climate change risk. Others include MetLife Inc., Subaru Corp., Hormel Foods Corp., Sysco Corp. and Rosneft PJSC. Two companies it withdrew capital from last year for the same

reason, Occidental Petroleum Corp. and Dominion Energy Inc., will be added back to the funds because they addressed concerns raised by the insurer.

While standards differ by sector, Legal & General said it expects oil and gas companies to set targets to cut pollution in their own operations as a bare minimum. It also wants the company to disclose the volume of greenhouse gas emissions its operations and customers are responsible for each year.

“We’re on track to meet greenhouse gas reduction measures we announced last year which are expected to help significantly to improve emissions performance,” Exxon spokesman Scott Silvestri said in an email. “They include a 15% decrease in methane emissions and a 25% reduction in flaring by 2020.”

Exxon already publishes an annual tally of emissions from its operations and is “providing solutions to consumers to help them reduce their emissions,” Silvestri wrote.

Legal & General declined to disclose the exact value of its divestment from the oil company. At the end of March, the stock made up 0.7% of one of the asset manager’s funds, according to its website. The overall value of that fund at the time was about 4.4 billion pounds (\$5.5 billion), suggesting the Exxon stake was worth more than \$350 million.

Several other companies are “on the cusp” of divestment when it comes to climate action, according to Sacha Sadan, the director of corporate governance at the insurer’s investment unit, without saying which ones. And even those that were named as particularly strong on sustainability compared to their peers, such as Equinor ASA and French bank BNP Paribas SA, will be expected to continuously move their businesses away from polluting activities or risk being divested.

“This engagement is not about picking up the laggards, it’s about pushing up the whole industry,” said Omi. “We need to keep the pressure on.”

Returns at Legal & General's Future World funds will suffer very little as a result of the divestments, Omi said. The difference between what the funds would return without divesting and what they will return otherwise, which she called a "tracking error," will be less than 0.3%.

The insurer is hoping to convince all clients to follow its advice around companies lagging in climate action, partly by demonstrating it doesn't sacrifice returns. That could lead to further capital outflows.

A campaigner at ShareAction, a London non-profit that helps investors engage with companies on climate change and other issues, said the move could also inspire other asset managers to reconsider their holdings.

"We expect this to signal to markets the huge risk of investment inaction on the climate emergency ahead of us," Jeanne Martin, senior campaigns officer at ShareAction, said.

Veering away from companies that are performing well is a major departure from its peers and Legal & General's own past. The insurer has held Exxon stock for about 20 years, and it's the asset manager's seventh-largest equity holding overall, worth about \$2 billion at the end of March. Since the day it started its investment in Exxon, the shares have returned 200% in total, according to data compiled by Bloomberg.

(Updates with an estimate of divestment value in 11th paragraph.)

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European Council conclusions on the MFF, climate change, disinformation and hybrid threats, external relations, enlargement and the European Semester, 20 June 2019



II. Multiannual financial framework

2. The European Council welcomed the work done under the Romanian Presidency and took note of the various elements of the MFF package. It called on Finland's Presidency to pursue the work and to develop the Negotiating Box. On that basis the

European Council will hold an exchange of views in October 2019, aiming for an agreement before the end of the year.

III. Climate change

3. The European Council emphasises the importance of the United Nations Secretary General's Climate Action Summit in September for stepping up global climate action so as to achieve the objective of the Paris Agreement, including by pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. It welcomes the active involvement of Member States and the Commission in the preparations.

4. Following the sectoral discussions held over recent months, the European Council invites the Council and the Commission to advance work on the conditions, the incentives and the enabling framework to be put in place so as to ensure a transition to a climate-neutral EU in line with the Paris Agreement [1] that will preserve European competitiveness, be just and socially balanced, take account of Member States' national circumstances and respect their right to decide on their own energy mix, while building on the measures already agreed to achieve the 2030 reduction target. The European Council will finalise its guidance before the end of the year with a view to the adoption and submission of the EU's long-term strategy to the UNFCCC in early 2020. In this context, the European Council invites the European Investment Bank to step up its activities in support of climate action.

5. The EU and its Member States remain committed to scaling up the mobilisation of international climate finance from a wide variety of private and public sources and to working towards a timely, well-managed and successful replenishment process for the Green Climate Fund.

IV. Disinformation and hybrid threats

6. Further to the Presidency report and the contributions from the Commission and the High Representative on lessons learnt with regard to disinformation and securing free and fair elections, the European Council calls for sustained efforts to raise awareness, increase preparedness and strengthen the resilience of our democracies to disinformation. It welcomes the Commission's intention to conduct an in-depth evaluation of the implementation of commitments undertaken by online platforms and other signatories under the Code of Practice. The evolving nature of the threats and the growing risk of malicious interference and online manipulation associated with the development of Artificial Intelligence and data-gathering techniques require continuous assessment and an appropriate response.

7. The EU must ensure a coordinated response to hybrid and cyber threats and strengthen its cooperation with relevant international actors. The European Council welcomes the adoption of a new framework for targeted restrictive measures, and the work on coordinated attribution at EU level in the context of the cyber diplomacy toolbox, to better deter and respond to cyber-attacks. It invites the EU institutions, together with the Member States, to work on measures to enhance the resilience and improve the security culture of the EU against cyber and hybrid threats from outside the EU, and to better protect the EU's information and communication networks, and its decision-making processes, from malicious activities of all kinds.

V. External relations

8. On the occasion of the Eastern Partnership's 10th anniversary, the European Council reaffirms the importance of

this strategic partnership and invites the Commission and the High Representative to evaluate existing instruments and measures and, on the basis of appropriate consultations, to present by early 2020, with a view to the next Eastern Partnership Summit, a further set of long-term policy objectives.

9. The European Council welcomes the peaceful transfer of power in the Republic of Moldova and invites the European Commission and the High Representative to work on a set of concrete measures to support the Republic of Moldova, based on its sustained implementation of reforms under the Association Agreement / DCFTA.

10. The European Council underlines the crucial importance of the EU's strategic partnership with Africa. We are committed to developing it further with a shared ambition to face together common and global challenges.

11. The stability, security and prosperity of the countries on the southern shore of the Mediterranean are of crucial importance for the EU. In this context, peace and long-term stability in Libya are a common priority. The EU reiterates its support for the UN-led process for the cessation of hostilities and an inclusive political solution.

12. The European Council welcomes the renewed impetus in EU-Morocco relations and looks forward to the upcoming EU-Morocco Association Council.

13. The European Council reiterates its call on Russia to release the captured Ukrainian sailors unconditionally, return the seized vessels and ensure free passage of all ships through the Kerch Straits, in accordance with international law.

14. The European Council expresses its utmost concern about the Russian presidential decree of 24 April, enabling the simplified issuing of passports in certain areas of Ukraine's

Donetsk and Luhansk regions, which runs counter to the spirit and the objectives of the Minsk agreements.

15. The European Council will continue to monitor the situation in eastern Ukraine and stands ready to consider further options, including non-recognition of Russian passports issued in contradiction to the Minsk agreements, in close coordination with its international partners. The European Council calls for an urgent resumption of negotiating efforts with a view to the implementation of the Minsk agreements and for measures aimed at rebuilding confidence among the parties.

16. 17 July will mark five years since the downing of flight MH17, which claimed 298 lives. The European Council reiterates its full support for all efforts to establish truth, justice and accountability for the victims and their next of kin, in accordance with UNSC Resolution 2166. In this context, it welcomes the announcement by the Joint Investigation Team on 19 June 2019 that criminal charges will be brought in the Netherlands against four individuals, calls on Russia to cooperate fully with the ongoing investigation, and expresses its full confidence in the independence and professionalism of the legal procedures that lie ahead.

17. The European Council recalls and reaffirms previous Council and European Council conclusions, including the European Council conclusions of 22 March 2018 strongly condemning Turkey's continued illegal actions in the Eastern Mediterranean and the Aegean Sea. The European Council expresses serious concerns over Turkey's current illegal drilling activities in the Eastern Mediterranean and deplores that Turkey has not yet responded to the EU's repeated calls to cease such activities. The European Council underlines the serious immediate negative impact that such illegal actions have across the range of EU-Turkey relations. The European Council calls on Turkey to show restraint, respect the sovereign rights of Cyprus and refrain from any such actions.

The European Council endorses the invitation to the Commission and the EEAS to submit options for appropriate measures without delay, including targeted measures. The EU will continue to closely monitor developments and stands ready to respond appropriately and in full solidarity with Cyprus. The European Council will remain seized of the matter and will revert accordingly.

VI. Other items

18. The European Council endorses the conclusions on enlargement and stabilisation and association process adopted by the Council on 18 June 2019.

19. In the context of the European Semester, the European Council held a discussion on the basis of a horizontal report on Country-Specific Recommendations.

[1] For a large majority of Member States, climate neutrality must be achieved by 2050.