

Flaring, or why so much gas is going up in flames



If you take a drive along the well-worn highways of West Texas, orange flames will punctuate your journey. Those are gas flares, and they're lighting up the skies above West Texas oilfields like never before as drillers produce crude faster than pipes can be laid to haul the attendant natural gas away. Oil drillers say flaring is the most environmentally friendly way to get rid of excess gas they can't sell. Environmentalists say that in many cases what flaring is friendly to is oil drillers' profits. They think regulators in states including Texas and North Dakota should be tougher on a practice that harms air quality and contributes to climate change.

1. Why do drillers flare?

When an oil well begins to spew, less-valuable natural gas comes up alongside crude. Pipelines can capture that gas, but when they're not available, producers often get rid of the gas so they don't have to stop pumping oil. They do that by either igniting the gas, in the case of flaring, or releasing it directly into air, known as venting. Flaring is preferred because methane, an especially potent greenhouse gas, is burned off, though carbon dioxide is released into the air.

2. How much gas is flared?

A lot. The World Bank estimated that globally in 2018, 145 billion cubic meters of gas was flared, about as much as Central and South America use in a year. The amount is rising because of the oil boom in the U.S., which is fueled by the use of hydraulic fracturing – fracking – to unlock fuel from shale rock. Increased flaring in the U.S. is concentrated in the shale oil basins known as the Eagle Ford in Texas, the Permian in Texas and New Mexico, and the Bakken in North Dakota. Permian flaring rose about 85% last year, according to data from Oslo-based consultant Rystad Energy. The volume flared in Texas by the end of 2018 was greater than residential gas demand in the entire state.

3. What are the effects?



Gas flaring globally emits more than 350 million tons of carbon dioxide in a year, according to the World Bank. That's the equivalent of the carbon emissions from 90 coal-fired power plants. In the U.S., flaring accounts for an estimated 9% of the greenhouse gas emissions of the oil and gas industry. In addition, the practice spews particulate matter, soot and toxins into the air that have been shown to be hazardous to humans.

4. How does the U.S. regulate flaring?

Flaring is allowed when the gas could cause a safety concern due to high pressure in a well and when pipelines aren't in place to carry the fuel away. In either case, flaring spares drillers from having to suspend production, a costly move that can damage a reservoir's future output. The Texas Railroad Commission, the main oil and gas regulator in the state, has never denied a request for a flaring permit. In a controversial case, it granted one Aug. 6 to Exco Resources Inc. even though the company's wells were already connected to pipelines. Exco successfully argued that it would lose money paying to access the network.

5. Isn't the gas worth something?

The short answer is no, not in oil-dominated basins where what matters is the ability to keep pumping black gold. In the Permian, local gas prices have gone negative multiple times this year, meaning drillers were actually paying customers to haul their gas.

6. Will more pipelines help?

Yes, when prices justify the costs of capturing the gas and transporting it to markets. A new pipeline led by Kinder Morgan Inc. is expected to reduce the pressure to flare. At the same time, pipeline projects in Texas are beginning to attract public opposition, a more common phenomenon in the northeastern U.S. Landowners along the route of another Kinder Morgan line are fighting the project in court, arguing against the company's use of eminent domain to take private property. It's not clear whether the legal battle will affect the project, but the challenge portends a tone shift in a historically industry-friendly state.

7. Are there alternatives to flaring?

Apart from transporting gas to markets via pipeline, oil producers can use it on-site as an energy source or reinject it underground. Both options require investments, however.

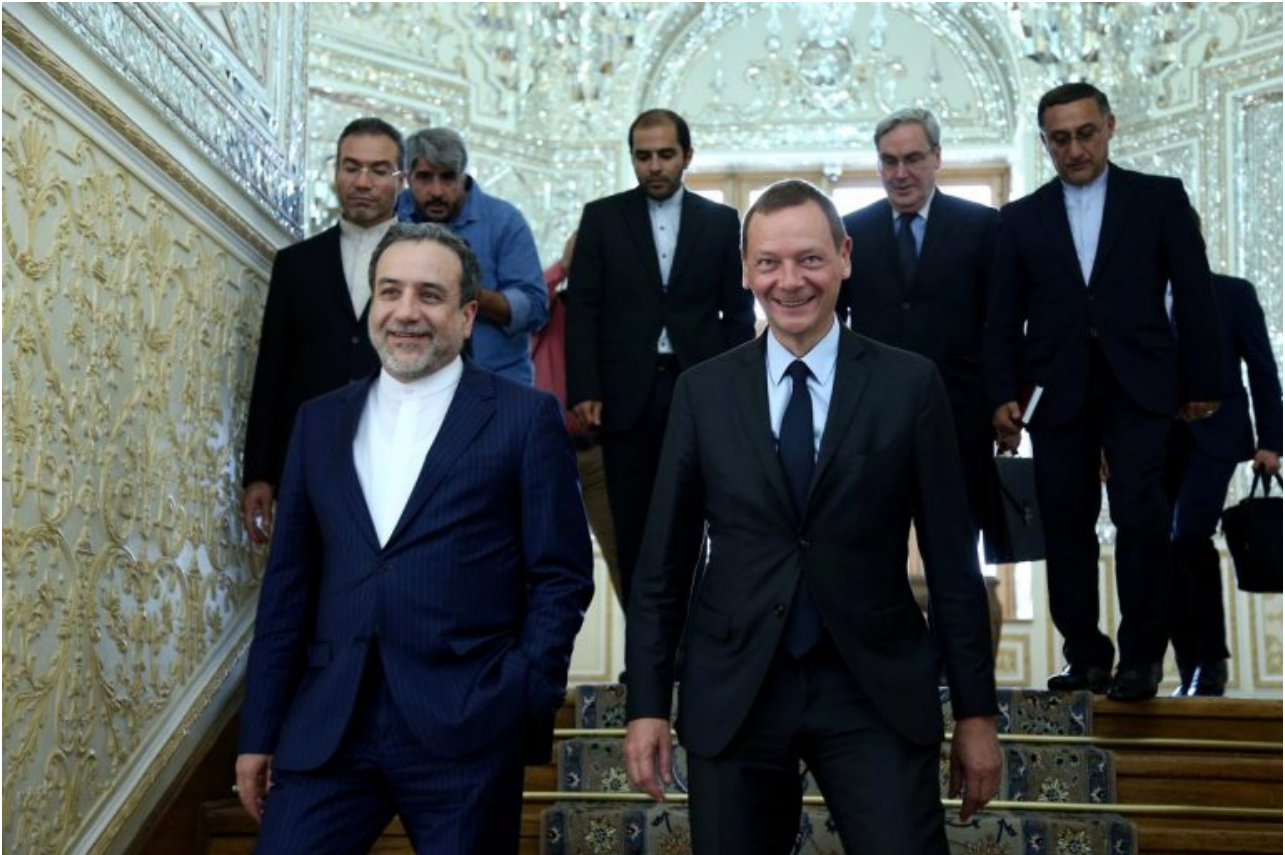
Russia requires oil drillers to make use of 95% of the gas they produce, while Nigeria prohibits flaring, yet the practice is common in both places. That suggests bans may not be sufficient without incentives to curb flaring.

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Iran official says US showing 'some flexibility' on oil sales



DUBAI (Reuters) – A senior Iranian official said on Saturday the United States had shown flexibility on the licensing of Iranian oil sales and this was a sign that Washington’s “maximum pressure” policy against Tehran had been defeated, state media reported.

French President Emmanuel Macron paved the way at a G7 summit a week ago for a potential diplomatic solution to a confrontation between the United States and Iran brewing since President Donald Trump withdrew Washington last year from world powers’ 2015 nuclear deal with Tehran.

“Macron met with ...Trump during the G7 meeting and the U.S. side has shown some flexibility in the licensing of Iranian oil sales,” Iranian Deputy Foreign Minister Abbas Araqchi was quoted by the state news agency IRNA as saying.

“This is a breach in the U.S. maximum pressure policy and a success for Iran’s policy of maximum resistance,” he said.

Araqchi did not elaborate, and there was no immediate French or U.S. comment.

Since ditching the nuclear deal, calling it flawed to Iran's advantage, Trump has reimposed sanctions to strangle its vital oil trade and force Tehran to accept stricter limits on its nuclear activity, curb its ballistic missile program and end its support for proxy forces around the Middle East.

Araqchi said Iran and its European partners in the nuclear deal faced "difficult and complex" talks towards salvaging the pact. He said Tehran was determined to continue reducing its commitments under the accord until it received protection against sanctions on its oil sales and banking transactions.

Iranian President Hassan Rouhani urged his people on Wednesday to unite to overcome Washington's "economic war" while his government said it would use diplomacy to try to solve the standoff even though it distrusted Trump.

IRANIAN TANKER BLACKLISTED

On Friday, the U.S. Treasury Department blacklisted the Iranian oil tanker *Adrian Darya*, with Secretary of State Mike Pompeo saying Washington had reliable information the vessel was headed to Syria, an ally of Tehran.

The ship was detained by Britain off Gibraltar in July due to suspicions it was carrying Iranian oil to Syria in violation of European Union sanctions. It was released in mid-August after Iran gave assurances that its cargo was not destined for Syria.

Turkey said on Friday the ship was headed to Lebanese waters after changing course several times. Beirut said it was not informed of the plan, but Turkey's information suggested that a ship-to-ship transfer of cargo might be attempted once it nears the coast of Lebanon, which borders on Syria.

A senior Iranian military commander vowed that Iran would retaliate if any of its vessels was stopped in international waters, according to Fars news agency.

“Piracy against Iran can’t be easily overlooked. It is natural for us to act when Iranian ships are stopped in any part of the world’s waters. Iran’s armed forces will certainly retaliate,” Brigadier General Kiumars Heydari, the head of Iran’s regular ground forces, told Fars.

Reporting by Dubai newsroom; Editing by Mark Heinrich

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Opec posts first 2019 oil output rise despite Saudi cuts: Survey



LONDON (Reuters) – OPEC oil output has risen in August for the first month this year as higher supply from Iraq and Nigeria outweighed restraint by top exporter Saudi Arabia and losses caused by U.S. sanctions on Iran, a Reuters survey found.

The 14-member Organization of the Petroleum Exporting Countries has pumped 29.61 million barrels per day (bpd) this month, the survey showed, up 80,000 bpd from July's revised figure which was the lowest OPEC total since 2014.

The survey indicates Saudi Arabia is not deviating from its plan of restraining output by more than called for by an OPEC-led supply deal to support the market. Despite calls this year from U.S. President Donald Trump on OPEC to raise output, the producers renewed the supply pact in July.

OPEC's supply curbs should eventually start to support the price of crude LC0c1, which has fallen from a 2019 high above \$75 a barrel in April to \$61 on Friday on concern about slowing oil demand and economic growth, analysts at Commerzbank said.

"Even the moderate demand growth that can be expected is likely – given the considerable production discipline shown by OPEC – to result in an ongoing tightening of supply and to support rising prices," Commerzbank analyst Eugen Weinberg said.

OPEC, Russia and other non-members, known as OPEC+, agreed in December to reduce supply by 1.2 million bpd from Jan. 1 this year. OPEC's share of the cut is 800,000 bpd, to be delivered by 11 members and exempting Iran, Libya and Venezuela.

In August, the 11 OPEC members bound by the agreement, which now runs until March 2020, achieved 136% of pledged cuts, down from 150% in July, the survey found. Two of the three exempt producers pumped less oil.

The biggest supply boost of 80,000 bpd came from Nigeria,

Africa's largest exporter, which is seeking a higher OPEC quota and in August continued to produce above its target by the largest margin.

The second-largest rise of 60,000 bpd came from Iraq, which boosted exports from both its northern and southern outlets according to the survey.

Smaller increases came from Libya, where the country's largest oilfield, El Sharara, resumed output on or around Aug. 8 following an outage. Kuwaiti output climbed slightly while remaining below its quota, the survey found.

Saudi Arabia, which in July cut supply even further below its OPEC target in a bid to reduce inventories, has kept output at a similar rate in August. The survey pegged Saudi production at 9.63 million bpd, down from its quota of 10.311 bpd.

Fellow Gulf producer the United Arab Emirates also kept output flat and below its target.

Among countries with lower output, Iran posted the largest decline of 50,000 bpd.

The United States reimposed sanctions on Iran in November after pulling out of a 2015 nuclear accord between Tehran and six world powers. In a bid to cut Iran's sales to zero, Washington in May ended sanctions waivers for importers of Iranian oil.

In Venezuela, supply fell slightly due to the impact of U.S. sanctions on state oil company PDVSA and a long-term decline in production, according to the survey.

July's output was the lowest by OPEC since March 2014, excluding membership changes that have taken place since then, Reuters surveys show.

The Reuters survey aims to track supply to the market and is based on shipping data provided by external sources, Refinitiv

Eikon flows data and information provided by sources at oil companies, OPEC and consulting firms.

Additional reporting by Rania El Ghamal; Editing by Edmund Blair

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Deforestation



By Eric Roston New York When it comes to saving the world's rainforests, governments can make a big difference, 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 effective 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 offer 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 officer at Norges Bank Investment Management, said in an emailed comment. The wealth fund's chief governance officer said that she expects companies to have a strategy for reducing deforestation 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 holdings overview on its website. "We have in previous years divested from one soy producer in this region due to links to unsustainable production and deforestation," Ihenacho said. Not only engaging directly with companies, the Norwegian fund has also taken initiative to

talk to lenders to get a broader perspective on deforestation and financing, according to the governance officer. The fund engaged with banks in Brazil, Colombia, Indonesia and Malaysia last year, Ihenacho said, to understand how they monitor deforestation 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.”

The Slow Greening of Finance



Aug 28, 2019 ANDREW HIGHAM

Although the world is not reducing greenhouse-gas emissions to

the extent needed to limit catastrophic global warming, major financial players are finally starting to make the shift away from fossil fuels. With recent divestment decisions now rippling across economies, hope of achieving a carbon-free energy future is not lost.

OXFORD – Some of the most influential players in the global economy are spearheading the shift toward a clean, green, emissions-free world, even while key governments stand idle. Financial giants from Europe, China, Japan, the United States, Australia, and elsewhere can see the looming risks and rewards, and they are not waiting on policymakers to signal what needs to be done. By setting immediate bans on new fossil-fuel investments, labeling clean and dirty energy producers, and dumping unappealing stocks, the financial industry is redirecting huge flows of money from fossil fuels to low-carbon technology.

Such decisions can ripple across economies. Consider, for example, the split between state and private energy finance in India. According to the Delhi-based Centre for Financial Accountability, primary finance for coal-fired power plants dropped by 93% between 2017 and 2018, while finance for renewables rose by 10%. Among the loans for coal projects in 2018, most came from government-controlled financial institutions, whereas three-quarters of renewables financing came from private commercial banks.

Similarly, banks and traders in Japan are abandoning coal projects in favor of renewables, even though the government has resisted setting a phase-out date for coal-powered energy. Three Japanese coal-plant projects have been canceled or delayed this year. And at the global level, the International Energy Agency (IEA) reports that investments in coal-power plants hit a century low in 2018, while more coal generators were retired.

This trend will become more pronounced as the number of

financial firms shifting from fossil fuels continues to grow. Consider the headlines since March. Norway's sovereign wealth fund has won parliamentary approval to divest \$13 billion from fossil-fuel stocks, as part of the largest fossil-fuel selloff to date. Japan's Mitsubishi UFJ Financial Group, one of the world's largest banks in terms of assets, ceased financing new coal-fired power projects. And Chubb became the first major US insurer to announce a ban on coal coverage, while Suncorp became the last Australian insurer to end coverage for new coal-mining and coal-power projects.

Moreover, the London Stock Exchange has recategorized oil and gas stocks as "non-renewable energy" and classified green-energy stocks as "renewable" instead of "alternative." And the world's largest investor in overseas coal projects, the Oversea-Chinese Banking Corporation, said it would end financing for coal-power plants (once it finishes two final projects in Vietnam), while China's State Development & Investment Corporation announced plans to stop investing in new coal-fired plants and focus on new energy sources.

More broadly, the Investor Agenda for a low-carbon world has attracted 477 signatories, representing around \$34 trillion in assets under management. These investors are calling on governments not just to limit rising temperatures, but also to meet the Paris climate agreement's more difficult goal of limiting global warming to 1.5°C above pre-industrial levels.

Meanwhile, the Institute for Energy Economics and Financial Analysis has found that those who ignored climate-change warnings have already taken a financial hit. BlackRock, the world's largest fund manager, lost around \$90 billion over the last decade, three-quarters of which was due to its holdings in ExxonMobil, Chevron, Shell, and BP. And investors in General Electric, including BlackRock, lost a whopping \$193 billion in the three years leading up to 2018, because the company misjudged the pace of the shift to green energy and the collapse in demand for gas turbines and thermal power

stations.

Although the shift away from fossil fuels is already monumental, a potential tsunami awaits. Those divesting from fossil fuels are the early adopters who have sensed a change in wind direction and readjusted their sails. But far more needs to be done. Because those firms' competitors have yet to take any steps toward divestment, trillions of dollars in carbon assets remain on investors' balance sheets.

Moreover, according to the IEA, while coal investments have fallen, capital spending on oil, gas, and coal nonetheless bounced back in 2018, and investment in energy efficiency and renewables stalled. Worse, the consultancy Wood Mackenzie finds that the renewables boom has translated into only 2% of global energy demand. As matters stand, coal, oil, and gas could still supply 85% of primary energy by 2040, down only slightly from 90% today.

To complete the transition away from fossil fuels will require drilling down to the core of the global economy. It does not help that financial institutions in China funneled at least \$1 billion in "green" financing to coal-related projects in the first half of this year. Companies cannot keep producing oil, gas, and internal combustion engines while gradually shifting to cleaner technologies; they need to make a clean break.

Moreover, financiers need to look beyond coal and withdraw support for all fossil fuels. Equally important, governments must set an ambitious trajectory for their economies that impels adherence to the 1.5°C limit on warming. Our current path will lead to warming of 3°C or more, which would have catastrophic consequences.

The United Nations Climate Action Summit on September 23 offers the opportunity for financial institutions and governments to do what is necessary. Secretary-General António Guterres has called for gold-standard leadership, in the form

of government and private-sector commitments to slash emissions to net zero, with interim targets every five years.

Guterres's call to action is echoed by all who have been demonstrating and striking for the same goal. Investors need to rise to the occasion, by structuring portfolios in such a way as to achieve net-zero emissions by 2050. That means pushing the companies in their portfolios to change, too, or risk being cut off and left behind. But setting long-term aspirations won't be enough. Actionable steps for the coming months and years must accompany the commitments made today, to ensure that progress remains on track.

To that end, Mission 2020 is collecting stories of progress from across the global economy. Our 2020 Climate Progress Tracker Tool, an open-access database, is updated regularly with climate commitments by countries, businesses, cities, and others. The bigger the divestment movement grows, the harder it will be to hide in the shadows, clinging to the past.

**Can power napping solve
electric car charging
challenge?**



TUTTIGART, 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 Orłowski

“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."

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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

Opec+ expects to drain oil stocks as it makes supersized cut



Opec and its allies expect to deplete the global surplus in oil stockpiles sharply as demand holds up and the coalition cuts production by far more than initially planned.

Saudi Arabia, Russia and other producers in the Opec+ alliance have slashed crude output this year to shrink the glut amid faltering economic growth and soaring US shale output. Results have been mixed, with oil prices down more than 20% from this year's peak, trading at about \$59 a barrel in London.

In response, Saudi has reduced output by far more than pledged under the terms of the deal, and the coalition's overall implementation rate last month was 59% above target, according to a statement posted on its website yesterday. That means the alliance cut supplies by about 1.9mn barrels a day.

Opec signaled that the deeper-than-anticipated cutbacks had been necessary because of the extreme upheaval in the global economy.

"This high level of overall conformity has offset uncertainty in the market due to ongoing economic-growth worries," according to the statement from the Joint Ministerial Monitoring Committee, a body set up by Opec and its allies to oversee implementation of their strategy.

"Along with healthy oil demand," the supply restraints have "arrested global oil-inventories growth and should lead to significant draws in the second half of the year," the committee said.

World financial markets have been buffeted this year as the US and China become ever more entangled in a trade dispute that's weighing on growth in both nations, the two biggest oil consumers.

Collectively, the 24 countries in the Opec+ coalition –

comprising the 14 nations of the Organisation of Petroleum Exporting Countries and 10 non-members – pump about half of the world's oil.

The burden for going the extra mile, however, has rested almost entirely on Saudi Arabia, the biggest Opec member. The kingdom reported that it lowered output to 9.58mn barrels a day in July, which means it's cutting more than twice as much as agreed.

The JMMC will meet to review the strategy on September 12 in Abu Dhabi, and then the full coalition will gather in December to consider any measures for next year.

The committee said that forecasts by major institutions are for "robust" oil-market fundamentals for the rest of this year and 2020.

While it is the case that leading organisations like the International Energy Agency see world oil demand continuing to grow next year in line with recent trends, expectations for another surge in supply create a fragile outlook.

Both the IEA and Opec itself expect that oil supplies, driven by the US, will expand by roughly twice as much as the growth in consumption next year.

