Wind Generation in Europe Rises to Record in 2020

Green Boom’s Hottest Trade in 2021 May Turn Out to Be Utilities

(Bloomberg) — After a bumper year for Europe's renewable-energy stocks, underappreciated utilities shares are now gaining support from the market as 2021's hot sector to play the clean power transition.

Helped by government policies such as the European Union's Green Deal and investors' environmental, social and governance concerns, renewable assets have strongly outperformed traditional utilities peers this year in the Stoxx Europe 600 Index. Turbine maker Vestas Wind Systems A/S has almost doubled in value, while U.K. electric company SSE Plc is up less than 3%.

Some strategists warn that opportunities in wind and solar stocks may be more uneven in 2021 as valuations appear stretched. Utilities may be a lower-risk way to buy into green energy growth than renewables equities, said Ursula Tonkin, head of listed strategies at infrastructure investor Whitehelm Capital Pty Ltd.

"Over the long run, the tortoise will likely outperform the hare," she said. "For every new solar, wind or battery installation, the grid has to expand to accommodate it."

While coronavirus-pandemic winners such as tech shares are losing favor in the latest vaccine-fueled stock rally, sustainable companies have stayed in favor, also helped by November's U.S. presidential election victory for Joe Biden, who pledged a clean-energy agenda. Still, utilities as a whole have gained only modestly so far this year.

Many utilities have positioned themselves to capitalize on opportunities in green energy after "cleaning up" their portfolios in the past few years, said Sam Arie, an analyst for the industry at UBS AG.

"We've gone from a world five years ago which didn't really have climate goals in view to one where now those are the most important goals across all the sectors," he said.

Investors will have to be more selective, with next year unlikely to be as "exceptional" as 2020 for the renewables segment, said Louise Dudley, a global equities portfolio manager at Federated Hermes Inc. Stocks such as Orsted A/S trade at about 53 times estimated earnings, versus 19 times for the Stoxx 600 Utilities Index. The Danish offshore wind-farm developer was recently downgraded at Bank of America Corp. and Royal Bank of Canada.

Investors are giving "insufficient credit" to utilities like SSE, Germany's RWE AG, and Portugal's EDP SA that balance spending on renewables with defensive earnings flow from electricity networks, RBC Capital analysts said in a 2021 outlook note for the utilities sector. Analysts tracked by Bloomberg see 16% upside for RWE and 6% for EDP, while average price targets are for at least 11% declines for Vestas and peer Siemens Gamesa Renewable Energy SA.

Another plus is attractive payouts. Investors would struggle to find another industry that delivers utilities' highly predictable, strong earnings growth alongside comparatively high dividend yields, UBS's Arie said.

Still, while 2021 may involve a “bumpier ride” for renewables, valuations for Vestas, Orsted and peers aren’t likely to slide as their business growth forecasts are so positive, Whitehelm Capital’s Tonkin said.

Green Competition

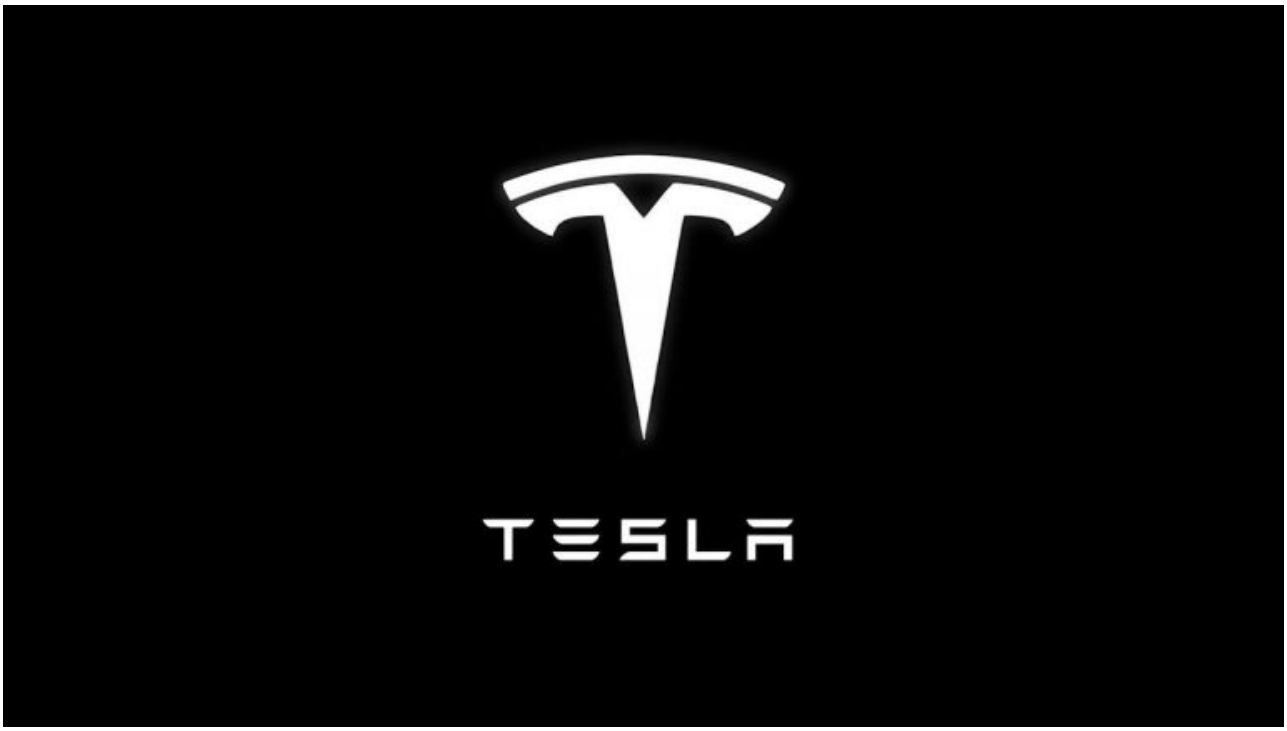
An additional concern for the pure renewables industry in 2021 is increasing competition, both from utilities ramping up spending and oil companies aggressively investing in green energy. This could pose a “real threat” to the economics of wind and solar, said Ulrik Fugmann, co-head of the Environmental Strategies Group at BNP Paribas Asset Management.

Others, however, are sanguine. James Smith, fund manager at the Premier Miton Global Renewables Trust, said oil companies that “seek projects simply for the sake of it” would put returns at risk at a time when the sector must strike a balance between operating core crude-oil assets, executing the shift to renewables and paying dividends.

The energy market “needs to grow very aggressively in the next two decades” to reach regulators’ emission-cutting goals, said Harry Boyle, a portfolio specialist at sustainability-focused fund manager Impax Asset Management. “There should be ample room for all actors.”

Tesla market value tops

$700bn for first time



ew York: Electric carmaker Tesla closed trading on Wednesday with a market value topping $700 billion for the first time.

The latest surge means the company is worth more than General Motors, Ford, Toyota, Honda, Fiat Chrysler and Volkswagen combined.

Tesla’s share price ended with a gain of 2.8 percent to $755.98 for a total value of whopping $717 billion. That came after the stock saw a more than 700 percent ascendance in 2020 – a gain some analysts viewed as inflated.

The auto industry disruptor led by Elon Musk wowed Wall Street yet again over the weekend, reporting annual car deliveries of 499,550, just shy of its 2020 target of half a million, but well above analyst estimates.

The disclosure capped a year that saw Tesla report a series of profitable quarters and join the S&P 500, establishing the company as one of the world’s most valuable businesses and elevating Musk to the second-wealthiest person behind Amazon CEO Jeff Bezos.

While industry analysts do not expect another massive surge in value this year, they remain optimistic about the company’s sales prospects, even if the cars remain out of reach for many buyers.

The optimism comes as construction continues on new Tesla factories in Texas and Germany, which will join existing plants in California and Shanghai that are ramping up production.

Musk has expressed determination to cut the price for Tesla’s electric cars, which currently start at $37,990 in the US market.

The Tesla chief is developing battery design, material and production innovations that combine to cut the cost per kilowatt hour by 56 percent.

That should enable Tesla to field a $25,000 model in “three years-ish,” Musk said in September, adding, “it is absolutely critical that we make cars that people can actually afford.”

And US sales could be helped by President-elect Joe Biden’s commitment to green technology to combat climate change.

Countries seen needing to invest $55tn to reach emissions target

Global economies will need to invest as much as $55tn through the middle of the century to meet an emissions goal and contain warming of the planet, according to a report by a group of executives from energy-intensive companies including ArcelorMittal SA, BP Plc and Royal Dutch Shell Plc. Reaching the net-zero carbon emissions target by 2050 will require large-scale electrification of industries, buildings, and transport, as well as the use of hydrogen and biofuels in areas that can’t be electrified, according to the Energy Transitions Commission. Using less energy to produce more and recycling material will aid the efforts. Building renewable power plants will take up a bulk of the estimated investment.

More frequent and severe natural calamities across the world have heightened the need to contain climate change and end the use of coal and other fossil fuels while expanding clean energy. That’s forcing some of the biggest fossil fuel users to recast their energy mix and adopt greener sources of power. The Intergovernmental Panel on Climate Change said in a 2018 report that reaching net-zero CO2 emissions by mid-century will be key to limiting global warming to 1.5 degrees Celsius above pre-industrial levels. Humanity is on course to miss that mark, with the World Meteorological Organization saying

there is a 20% chance that global temperatures will breach the limit in at least one of the next five years. The decarbonization strategy will involve phasing out of coal-fired plants, according to the report. Those that remain should be used as a peaking or a seasonal back-up to renewable power and should be retrofitted with carbon capture and storage. The report highlighted some challenges on the way. China, the world's biggest coal user, "is not yet on a clear path towards a net-zero economy and new coal investments are continuing despite evidence that renewables are now highly competitive on a new-build basis in most of China's provinces," it said. The nation can become a fully developed, rich economy with net-zero emissions by 2050 by rapidly deploy- ing renewable power projects and reducing its dependence on coal, according to the report. The country needs to double annual investments in solar and as much as quadruple investments in wind energy, along with accelerating the use of clean energy in industries and residential heating. India, the second-biggest coal user, is likely to see consumption of the fuel peak between 2027 and 2030, before gradually sliding down, Ajay Mathur, a co-chair at Energy Transitions Commission, said in a phone interview.

BP Clean Energy Push Starts With 5-Year Dash on Solar, Wind

BP Plc’s journey from oil major to clean energy giant will start with a five-year sprint to dramatically boost wind and solar power.

By 2025, the company intends to have approved more than 20 gigawatts of renewable energy projects, an eightfold increase from 2019, Dev Sanyal, BP’s executive vice president of gas and low-carbon energy, said in a online presentation on Tuesday.

Most of that would be solar — putting BP on a par with today’s biggest generator of electricity from the sun. The company also plans big investments in wind, following on from last week’s $1.1 billion deal with Equinor ASA.

“With falling costs comes real growth,” Sanyal said. “Renewables have become the fastest growing source of energy and we see this continuing over the next decade and beyond.”

This rapid expansion would just be the start of the London-based oil giant‘s transformation into a low-carbon integrated energy company. Chief Executive Officer Bernard Looney has

pledged to eliminate all net greenhouse gas emissions from BP and its customers by 2050.

A series of presentations this week aims to show he can achieve this while still delivering competitive returns. Investors may need some convincing, after seeing their dividends cut in half last month.

Trading Gains

BP's in-house trading operations are at the heart of Looney's pledge to move away from fossil fuels without sacrificing profits. Renewable energy projects typically gives returns of 5% to 6%, Looney said, but the company's expert traders can add about 2 percentage points to that.

Lightsource BP, which currently manages about 2 gigawatts of solar plants, is already achieving returns of 8% to 10% and "we actually believe it can do better," Looney said. Access to low-cost funds, and integration with the rest of BP and its project management experience can boost returns, said Sanyal and Looney.

BP will gradually expand its electricity trading over the next five years, increasing the amount of power it buys and sells annually by about 40% to 350 terawatt hours.

Of the 20 gigawatts of renewable energy capacity BP intends to begin developing over the next five years, 83% will be solar, 15% wind and 2% bio-energy, Sanyal said.

That much solar would give BP about the same capacity as is currently owned by the world's biggest operator, China's State Power Investment Corp. Ltd, according to data from BloombergNEF.

Solar power will be crucial for achieving the breakneck pace of growth BP laid out. It is relatively quick to install, taking as little as 18 months from concept to construction,

Sanyal said. That’s much faster than massive offshore wind farms, which can take a decade to plan and construct.

By 2030, BP plans to have taken the final investment decision on 50 gigawatts of low-carbon energy capacity, and be trading 500 terawatt hours of power each year.

On bio-energy, the company says it will more than double its 2019 production to 50,000 barrels a day by 2025, and 100,000 by 2030. These fuels will help sectors that are hard to electrify, like aviation, marine and heavy goods vehicles, Sanyal said.
BP currently makes biofuels in a joint venture with Bunge Ltd. in Brazil, produces biogas in the U.S. and processes some renewable fuels within its refining portfolio.

“We see these businesses as generating returns of around 15% or higher,” Sanyal said. “It competes well within our disciplined financial framework.”

The Solar-Powered Future Is Being Assembled in China

On a recent morning in central China, workers in blue jumpsuits and white masks placed clamps around a bar of shiny metal and fed it into a powerful cutting machine. The bar was an ingot made of polysilicon, a heavily refined cousin of the same material that makes up sand. Inside the cutter, it was sliced into thousands of small squares slightly larger than a CD case and thinner than a thumbnail. These wafers would then be shipped on to other factories to be infused with conductive elements such as phosphorous and boron, then wired into cells and assembled into panels—the base unit of solar energy generation.

The owner of this factory, Longi Green Energy Technology Co., is the world's largest producer of solar wafers and the world's largest solar company by market value. As of the end of last year it created about 1 of every 4 wafers made anywhere on the planet, and since then it's announced at least five projects to expand its factories or build new ones. Despite a pandemic that may slow the growth of new solar power installations for the first time in decades, Longi expects its production capacity by the end of 2020 to have increased by two-thirds compared with 2019.

Longi and the other Chinese companies that dominate

solar—collectively they control at least 60% of global capacity for every step in the supply chain—are playing a risky game. The short history of the solar industry is a tale of repeated boom and bust, with abrupt technological and policy developments rendering multibillion-dollar investments obsolete. Industry leaders one day have, again and again, become bankruptcy filers the next.

The bet in China is that this time is different. Plunging costs have left solar the cheapest form of energy in parts of the world. Subsidies are disappearing as it becomes more competitive with other forms of electric generation, making demand less dependent on political decisions. And advances in energy storage are opening a tantalizing possibility: that solar could, in the near future, replace fossil fuels in many places. “We believe the solar market will maintain the trend of rapid growth,” says Li Zhenguo, Longi’s billionaire president. A physicist by training, he founded the company in 2000, naming it for a university principal who’d impressed Li with his academic rigor. “Current global production capacity, including Longi’s, is nowhere near enough to meet the coming demand.”

Longi dates to a time when Chinese solar manufacturers were relying primarily on cheap labor to undercut more established players from the U.S. and Europe. That strategy can collapse once wages rise, as they have in China. But, in Li’s telling, Longi was focused on coming up with a product that could compete in the longer term.

That aim led the company to make a momentous choice early on. There are two ways to make the blocks that solar wafers are sliced from: by cooling molten silicon into one homogeneous structure or encouraging it to crystallize from different points. The first approach, known as mono-crystalline, provides greater conductivity and efficiency. But it’s more expensive than multi-crystalline products, which most manufacturers favored in their efforts to compete with cheap

fossil fuel generation.

Li decided that Longi, which in its early years relied on other companies to turn its wafers into cells and panels, would focus on mono fabrication, even if it meant losing out on short-term sales to less-expensive producers. For a long time the choice was eccentric; as recently as 2014, mono made up only 20% of the market. But around that time, China began to heavily subsidize solar installations, turbocharging demand and providing manufacturers with an incentive to compete on technology, not just cost. As its clout grew, Longi expanded vertically, and now it competes in nearly every part of the supply chain. The subsidies "transfused blood to the manufacturing sector," says Yali Jiang, a BloombergNEF analyst in Hong Kong.

It's now clear that Longi's bet paid off. Li estimates mono will account for 90% of the market in 2020—a development that's helped the company establish a commanding position. Part of the explanation is that, as costs have fallen, planners have placed a higher priority on mono's superior efficiency. This preference is reflected in Longi's $37 billion market capitalization on the Shanghai stock exchange, by far the highest of any solar company. Its success, Li says, came from picking a technological horse early, sticking with it, and "looking for measures to rapidly put it into production."

As dominant as Longi might appear, no one stays on top of the solar industry for long. Yingli Green Energy Holding Co. was the world's biggest maker of solar panels as recently as 2013, but aggressive borrowing to fund new production combined with a plunge in solar equipment prices drove it to the brink of collapse. In all, about 180 solar manufacturers have exited the industry or gone bankrupt in the past four years, according to Jiang.

Longi is trying to avoid their fate by not overextending

itself financially. It’s managed to keep a lid on labor costs by boosting productivity, sometimes at the cost of the so-called green jobs that politicians in China and the West love to promote. At a wafer plant not far from Longi’s headquarters in the ancient imperial capital of Xi’an, producing 350 megawatts’ worth of product required about 1,000 people in 2010. Today its output is equivalent to 6,000 megawatts, with the same number of employees. At a nearby panel plant, the company’s smallest, only 100 or so workers are needed to operate a facility the size of 10 basketball courts. During a recent visit, the company was testing a packaging system that could allow it to get rid of forklift drivers and other logistical staff.

Cost-cutting can’t fully neutralize the other major threat to China’s solar industry: politics. The U.S. and European Union have periodically targeted Chinese manufacturers with anti-dumping tariffs since the early 2010s, claiming that subsidies allow them to sell below cost. The U.S.-China trade war kicked off in 2018 with duties on panels, and India, which is trying to reduce the economic influence of its giant neighbor, recently extended tariffs that had been set to expire on Chinese solar products.

China’s solar industry is nonetheless growing rapidly. According to BloombergNEF data, at the end of 2019 Chinese panel factories had an annual capacity of 193 gigawatts, 60% more than was installed worldwide in that year. Planned expansions could increase that total by more than half.

There’s an argument to be made that Chinese solar leadership is at worst benign and at best a source of considerable innovation. The raw materials for panels are inexpensive and abundant, and it would be easy for companies in places such as Malaysia and Vietnam to set up factories if Chinese producers raised prices. The hothouse atmosphere of China’s industry, meanwhile, has encouraged manufacturers to drive down costs. Measured per watt of output, the average price of panels has

plunged 91% since 2010.

Solar optimists believe developments such as these might leave the world on the verge of an inflection point. In many places, generating electricity from the sun is now significantly less expensive than doing so from coal or natural gas. (Picking a location with sunny weather, as well as cheap land and financing, helps a lot, too.)

There's also been significant progress on the technology's biggest problem: that it can only generate electricity when the sun is out. When solar was primarily a supplement to traditional power plants, that wasn't a major concern, because power demand tends to peak in daytime. But it becomes a serious constraint as more panels are installed, creating a daytime surplus that's not useful at night. Engineers are refining a huge range of storage technologies, from improved batteries to "pumped storage" systems, which use solar electricity to send water uphill during daylight hours, releasing it through turbines when needed.

None has yet emerged as a game-changing solution, but Li is bullish on batteries, and he expects that a combination of live generation and storage will be enough to replace fossil fuels around the clock in at least some locations within a decade. He predicts that demand for solar installations will triple by 2025, to 300 gigawatts a year, before hitting 1,000 gigawatts in 2030. Those projections are wildly optimistic, however: BloombergNEF expects the 2030 figure to be closer to 200 gigawatts annually.

Whatever the rate of growth, the economics of the solar market "have significantly improved in the past decade," Li says. Now, "energy is going to be more electrified, and electricity will be cleaner." *—With Dan Murtaugh and Feifei* Shen

Green energy’s $10tn revolution faces oil crash test

In 2014, when the price of oil last crashed, the world’s governments had no agreement in place to fight climate change. The following year leaders signed the Paris accord. Green investments have soared since then. Some $1.2tn has been poured into renewable energy, and global electric vehicle sales reached 2mn last year. Bloomberg NEF expects as much as $10tn poured into clean energy by 2050. The accord also marked a cultural watershed, with emissions targets now policed by a growing environment movement that’s shaping politics from Germany to India. In a sign of the times, activist Greta Thunberg and Tesla Inc founder Elon Musk are now two of the most famous people in the world. So when this week Saudi Arabia and Russia joined in a price war that wreaked havoc on global markets already rattled by the coronavirus, it looked like the major oil-producing nations reasserting their supremacy in the short term. Instead, it may prove to be another step in a longer-term trend towards ending oil’s power

to hold the world to ransom. The price of a barrel of oil remains an important economic indicator. But the relentless push to move away from fossil fuels suggests that its geopolitical impact is likely to be softer than in the past, with the imperative to combat global warming assuming its place. “The impact of the oil price on broader economic growth has been decoupling ever since the 1980s,” said Shane Tomlinson, deputy chief executive officer at environmental think tank E3G. “We could see exceptional movements in the oil price in the next few months, but I don’t think that changes the fundamental need to address climate change.” Oil’s fall to some $35 a barrel from $55 just last week has major implications for addressing climate change. Low prices incentivise more use of oil; it squeezes the budgets of oil companies, putting clean-energy projects in doubt; and some governments feel pressured to prop up struggling oil companies. All that drives up emissions, which is bad news for global warming. However, if low prices are sustained this time, there might be big positives for fighting climate change. Renewable energy is a more mature industry than five years ago. As it becomes a less risky investment, it has attracted big investors who are showering a lot of cash and building some projects that rival the capacity of conventional power plants. At the same time, oil exploration is becoming less viable economically, with an increased risk that even those projects that go ahead no longer yield good returns and with worries about stranded assets growing. “Now it doesn’t make sense to reduce your investment in renewables if the oil price crashes,” said Mark Lewis, head of sustainability at BNP Paribas Asset Management. “It’s more logical to reduce your investment in oil.” That reality points to a broader change in investor sentiment since Paris that aff ects companies and governments alike. A number of large investors have come together under groups such as Climate Action 100+ to demand companies put sustainability at the heart of their business models, and that isn’t likely to change. Tesla has eff ectively become a proxy for how the green economy is viewed by

investors. Musk has demonstrated that a mass-market electric car is viable, prompting all the major carmakers to follow his lead. He's building his latest plant outside Berlin, in a show of his intention to take the fight to the heart of Europe's leading luxury car producer. Tesla is after all the world's second-most valuable carmaker by market value after Toyota Motor Corporation. For governments worldwide, pressure for policy measures has mounted as the issue increasingly resonates, in part due to the kind of direct action and media campaigning espoused by Greta Thunberg. Low oil prices off er one reason to heed that voter call, since it's a good time to end fossil-fuel subsidies or to raise taxes on consumption of fossil fuels. Such a move can also help avoid the sorts of destabilising anti-government protests seen in France, Iran and Ecuador when energy-price increases were proposed. It could even be done in a way that "protects or even benefits poorer households and communities," said Helen Mountford, vice president of climate and economics at the World Resources Institute. The goal of reaching out to "left-behind" communities is a dynamic driving policy from the post-Brexit UK to South Africa and swaths of Latin America that suff ered waves of unrest late last year. During the last down cycle, between 2014 and 2016, when oil briefly dipped below $30 per barrel, India cut annual fossil-fuel subsidies from $29bn to $8bn and even raised taxes on consumption. Some of the money raised was diverted to renewable-energy subsidies, after setting an ambitious goal to deploy as much as 175GW of mainly solar and wind power by 2022 — about twice the power generation capacity of the UK. "Many countries are pursuing electrification and decarbonisation to make them less dependent on the volatility of oil markets," said Adnan Amin, former director general of the International Renewable Energy Agency. "This kind of event will only reinforce that momentum." Also since 2014, the power of Opec's 14 nations to shape the market has been weakened by the impact of US shale production. (Opec's Vienna base is home to an Austrian government that now includes the Greens as junior coalition

partner.) The US – which is not a member of the group – became an oil exporter again on the back of its shale revolution, surpassing Russia and Saudi Arabia in 2018 to regain its status as the world's biggest producer. President Donald Trump has cheered America's energy resurgence as an example of taking back control. However, the collapse in oil prices weakens the shale industry's ability to pump at a profit and even pushes some of the producers toward bankruptcies, adding to economic uncertainty surrounding the virus that may hurt Trump's re-election bid, says Amin. Since Trump unilaterally pulled the US out of the Paris agreement, it could yet tilt the presidential race in favour of a candidate more in favour of climate action. In Brussels, meanwhile, European Commission President Ursula von der Leyen doubled down on European Union plans to achieve climate neutrality by 2050, despite the emergence of what she called "unforeseen challenges." "Today it's no longer the question if there will be a European Green Deal or whether the EU will become climate- neutral but the question is how we're proceeding and how far-reaching will the transition be," Von der Leyen said on Monday. That stance is understandable given that EU citizens say they want the bloc to focus on tackling climate change and preserving the environment as its No 1 priority, according to a recent Eurobarometer survey for the European Parliament. "Clearly we cannot ignore what's going on globally," said EU Environment Commissioner Virginijus Sinkevicius on Bloomberg TV. The global "climate emergency didn't go anywhere."

Clean energy is also

resilient energy

NASSAU — The Caribbean and its surroundings are on the front lines of climate change. The Bahamas, the archipelago that stretches over the crystal-blue waters between Florida and Cuba, have been battered in recent years by devastating hurricanes, which have increased in severity and frequency as a result of global warming. As is the case worldwide, there is an element of injustice to this. Given that the Bahamas and Caribbean countries emit relatively minuscule amounts of carbon dioxide, their residents bear very little of the blame for the climate crisis.

But the people of the region are now flipping the script, transforming themselves from victims of climate tragedies into global leaders in clean, secure energy. The Caribbean countries have compelling economic reasons for embracing the green-energy transition. For generations, they have relied on imported fossil fuels to power their economies, which means they have long had to deal with the uncertainties of world oil markets and thus significant cost fluctuations for electricity.

Thanks to advances in renewable energies, that economic challenge has created an opportunity. Unlike imported fossil fuels, which are subject to rising costs, the prices of solar power and other clean energy sources, along with the necessary battery storage systems, continue to fall. As these technologies have become more affordable and competitive with older, dirtier fuels, they have created a powerful incentive for island countries to move away from conventional fossil fuel-fired power plants. Moreover, this trend will only grow more pronounced from here on out, as the cost advantages of newer, cleaner energies make them increasingly attractive relative to fossil fuels.

For regions like the Caribbean, solar and battery storage systems do more than simply reduce the costs of electricity; when deployed in the right way, they also improve climate resilience. As the Bahamas and other countries across the region have demonstrated over the past few years, solar- and battery-powered microgrids can provide critical services for island communities during and after severe weather events that otherwise would knock traditional energy sources offline.

But in order for these new energy solutions to provide real resilience, they themselves need to be able to withstand the storms, which tend to ravage power lines and disconnect communities from centralised sources of energy generation. Thus, in the case of solar, much depends on the methods used to secure solar panels to the ground and to rooftops.

We already know that it is possible to construct photovoltaic (PV) systems capable of surviving even the most severe category of hurricane. Through a collaboration between the Rocky Mountain Institute, the government of the Bahamas and the country’s national utility, the Bahamas Power and Light Company, we have developed and installed a solar parking canopy at the National Stadium in Nassau that can withstand the winds of a category-five hurricane. We have also built the country’s first category-five resilient solar and battery

storage microgrid on Ragged Island, and are now focusing on designing and delivering sustainable and resilient microgrids for critical facilities on Abaco, following the destruction wrought by Hurricane Dorian in September 2019.

As the planet continues to warm, increased moisture in the air will translate into even more severe and frequent tropical storms and hurricanes. What we saw with Dorian and Hurricane Maria in Puerto Rico in 2017 is likely to become commonplace. Fortunately, as the partnership in the Bahamas shows, many of the same measures needed to build resilience are also those needed to limit greenhouse-gas (GHG) emissions and slow the pace of global warming. Far from requiring a tradeoff, resilient PV systems check both boxes.

The Caribbean and Atlantic are hardly the only regions that will need to build more resilient energy infrastructure to prevent power disruptions. Communities around the world are increasingly confronting the challenges posed by severe and extreme weather, including the devastating fires in Australia, Indonesia and the western United States.

In all of these cases, clean, localised energy solutions offer unique advantages in terms of reducing emissions and keeping the lights on after a disaster. They point the way to a better future for our electricity system. By embracing the clean-energy transition, the Bahamas is setting an example for the rest of the world – and particularly for those countries that are responsible for the overwhelming share of global GHG emissions.

Jules Kortenhorst is CEO of the Rocky Mountain Institute. Whitney Heastie is CEO of Bahamas Power and Light.

US caves to Europe over broaching climate change at G20

The US gave into pressure from Europeans over environmental concerns, allowing the word “climate” into a joint communique at a conference overshadowed by a viral outbreak that’s shaken the global economy.

Delegates at the G20 meeting in Riyadh spent much of their time talking about a global slowdown exacerbated by the coronavirus outbreak, but struggled to come up with a united response, according to people familiar with the deliberations. Countries such as Japan, and institutions including the Organisation for Economic Co-operation and Development, have been pushing for those with surpluses to spend more.

One of the main addressees of the calls for more spending is Germany. So far, the export-driven country has showed little interest in significantly boosting expenditures, arguing fiscal stimulus can’t bolster foreign demand.

On climate change, differences of opinion in the Saudi capital were more stark. The US, represented by Treasury Secretary

Steven Mnuchin, objected to including a reference to the subject, according to four people familiar with the communique-drafting process. The Saudi delegation, which is hosting the event, didn't show much enthusiasm for it either, according to two of them.

After several days of heated debate, including France finance chief Bruno Le Maire cornering Mnuchin late on Saturday in Riyadh as the G20 economic leaders dined, the US reluctantly agreed to a mention of climate change, according to two people familiar with the matter.

A Treasury spokeswoman didn't reply to a request for comment.

As of Sunday morning in Riyadh, it was also looking unlikely that representatives would leave Saudi Arabia with any breakthroughs on a global taxation system that would apply to multi-national companies including tech giants like Alphabet Inc's Google and Facebook Inc, according to the people.

Europeans have baulked at a US proposal that new global rules should be a "safe harbour" regime. Mnuchin sought to reassure his counterpart by insisting such a system would not mean the rules would be optional, but Europeans said they still needed to fully assess the proposal.

If there's no agreement, several European nations will go ahead with taxes on revenues of multinational digital firms. That could spark a transatlantic trade war as the US says such measures are discriminatory and has already threatened France with tariffs.

France and the US have held tense discussions on the subject since France introduced a 3% levy last year on the digital revenue of companies that make their sales primarily online. The move was supposed to give impetus to international talks to redefine tax rules, and the government has pledged to abolish its national tax if there is agreement on such rules.

In introducing a so-called global minimum tax – a measure intended to prevent large companies from shifting profits to low-tax locales to avoid paying them at home – the sides are closer to compromise as there's little difference among current corporate tax rates among major economies, and little

concern that the minimum tax would be too low, one person said.

Electrical tape on speed limit signs tricks Tesla vehicles into violations

McAfee security researchers were able to trick Tesla vehicles into breaking the law by placing electrical tape on speed limit signs, in a demonstration of another vulnerability for self-driving cars.

In findings disclosed by McAfee through its official blog, the security company revealed that it fooled 2016 models of Tesla's Model X and Model S, which used camera systems by Intel's Mobileye, into breaking speed limits with the strategic placement of electrical tape.

Researchers applied a single piece of black electrical tape to extend the middle line in the “3” of a 35-miles-per-hour speed limit sign. This tricked the MobilEye camera into reading the sign as 85 miles per hour, forcing the Tesla vehicle’s cruise control system to accelerate the car beyond the true speed limit.

Intel disputes that the trick was an adversarial attack, as the tape may also have fooled some human drivers into thinking that the tampered sign said 85 miles per hour.

Tesla, however, stopped using Mobileye’s camera systems in 2016, which means that the newer Tesla vehicles are not affected by the electric tape trick. In addition, other vehicles using newer versions of Mobileye technology also appear to be resistant to the manipulation.