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COVID-19 and Transport Infrastructure: Airports ↘



Infrastructure As An Asset Class ↘



Energy Transition ↘



ESG ↘

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Editorial Welcome

Karl Nietvelt, Head of Global Research, Infrastructure, S&P Global Ratings

S&P Global Ratings continues to assess the economic and credit effects of the coronavirus pandemic around the world. Our research, insights and ratings actions can be found on our dedicated website.

Visit our Infrastructure Hub

www.spratings.com/

The pandemic is testing the resilience of infrastructure credit quality

Infrastructure assets and projects face a bigger economic and financial test from the coronavirus pandemic than during the financial crisis of 2008-2009, when they proved to be fairly resilient. The effects of unprecedented lockdown measures around the world, uncertainty about when they will end, and what a social-distancing future would look like is bound to have an impact on credit quality. This is likely to differ by asset class (see chart). For a sector-specific summary, see page 4: "Infrastructure assets are facing a bigger challenge now than during the financial crisis."

In this first 2020 edition of the Infrastructure Outlook, we will focus on the coronavirus and infrastructure credit quality, while not ignoring the energy transition and ESG.

In summary, airport and infrastructure assets related to social mobility are most exposed to fallout from measures to combat the outbreak, as people have virtually stopped flying and an end to social-distancing measures will likely take time. Toll roads are severely impacted, but we anticipate a faster return to normal. What's more, the collapse in oil demand and subsequent price decline is a devastating blow for U.S. shale oil producers and will hit midstream players harder and more structurally

than during the financial crisis. Power generation is facing lower industrial demand, leading to severe price declines, though forward price declines are milder. Finally, the burden of fiscal stimulus packages and the global recession may weigh on sovereign credit quality over time which, in turn, could weigh on regulated utility ratings, even if the sector is intrinsically more protected.

Governments' focus on health and economic rescue packages sidelines climate change for the time being

Rescue packages – to address public health issues and the economy – will lead to higher sovereign debt and likely less scope for governments to invest in projects to green their economies. At the end of March, a few members of the European Parliament, for instance, requested the postponement of Green Deal legislation and emphasis instead on the EU's multi-year budget to help member states deal with rebooting their economies. Governments might even delay certain environmentally friendly regulation that would impose additional costs on industries that are suffering in the wake of lockdowns. For instance, we could potentially see a relaxation in strict European CO2 emissions standards for cars, and it is possible that some countries could pull out of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). We believe the drop in the EU



Infrastructure Sensitivity to Covid-19

<u>Low</u>	<u>Medium</u>	<u>High</u>	<u>Very High</u>
Regulated Utilities PF: Availability based roads / projects	Power Generation Ports	Volume toll-roads O&G Midstream (Refining; Gas pipelines) PF: University housing; Parking facilities	Airports PF: Convention center hotels; Stadiums and Arenas

PF = project finance

Emissions Trading System ETS carbon price to €20/ton from €25/ton (even if rebounded from €15/ton in March) also weakens incentives for environmental investments.

Notwithstanding budgetary pressures, we expect governments will likely engage in extraordinary measures to accelerate recovery. The EU could see this as an opportunity to reenergize its pledge to carbon neutrality by 2050, for example, by adding some form of environmental objective to the recovery fund currently under discussion. In the U.S., a proposal was introduced recently (before the coronavirus outbreak hit the U.S.) in the House of Representatives for a \$760 billion, five-year infrastructure package that places a major emphasis on climate change. China’s stimulus has been slow to build but local governments have been given issuance quotas for 2020 of a cumulative RMB 2.29 trillion (about US\$326 billion), which we expect to increase further throughout the year. Consequently, we foresee infrastructure investment in China to grow by about 8-10% in 2020 compared to just 3.8% in both 2018 and 2019

Long-term momentum for the energy transition remains intact.

The most important bright spot remains the structural downward trend in renewable power generation costs, making the need for subsidies less likely (see page 6, Renewable energy matures but with growing complexity).

Also, we expect governments to remain committed to their 2030 goals of combating climate change. The negative effects of climate

change are more gradual than those of the coronavirus, but the pandemic has evidenced the extreme costs when disruption hits as well as the need for a global response.

In addition, it will be interesting to see if lockdown measures accelerate behavioral change in society, including less travel, increased working from home and virtual meetings, policies to promote cyclists or pedestrians over cars in cities, as well as increased local sourcing of primary goods and therefore a pullback in globalization.

Finally, what does the pandemic mean for ESG more broadly?

We believe the pandemic only underscores the increased importance of environmental, social, and governance (ESG) risk factors. At the heart of our ESG Evaluation is an analysis of a company’s ESG preparedness – its ability to recognize vulnerabilities and develop action plans to what-if scenarios. A pandemic is one of those low-probability, high-risk events. Are we prepared for climate change?

S&P Global Ratings has long considered ESG factors in its credit ratings and we capture ESG factors in many areas of our methodology. In February 2020, we published ESG industry report cards – including on infrastructure, energy and project finance – that discuss how these factors affect our credit ratings on more than 1,000 corporate and infrastructure entities. Further research and information on how ESG factors are incorporated into S&P Global Ratings’ analyses and can be found [here](#).

“The energy transition's consequences not only seem pervasive, but are developing at pace.”

Infrastructure Assets Facing A Bigger Challenge Now Than During The Financial Crisis

Karl Nietvelt provides a snapshot analysis of the infrastructure asset class amid the Coronavirus outbreak.

Airports, The Hardest Hit, Brace For A Protracted Recovery

The hardest-hit infrastructure asset class is airports: IATA, the airline-industry body, now expects traffic to contract by roughly 50% this year for most regions. This compares with annual declines of roughly 10% during the 12-month period after 9/11 and during the financial crisis in 2008-2009. It factors in drops of 90% during lockdown months and a slow, three-to-five-year recovery to pre-pandemic levels. Such assumptions take into account that time will be needed to re-establish customer confidence given the public health and social-distancing considerations, governments' likely prudent stance in opening opening-up international air traffic (to avoid repeat viral outbreaks), as well as some downsizing and structural changes in the airline industry.

The Decline In Toll Road Traffic Is Equally Unprecedented; Ports Are More Resilient

For toll roads, we foresee traffic declining this year on average by 15%-25%, after nosediving 70%-80% during the lockdowns in Italy, Spain, and France. In the U.S. and Canada, we see current drops of 40%-70%. However, we assume that road traffic will rebound more rapidly after lockdowns end, notably as drivers resume their daily commute. An important mitigant for toll road operators is the stronger resilience of heavy truck traffic during the lockdown, even if the recession will weigh on future traffic levels. Finally, for most seaports, we anticipate a drop in annualized volumes of 10%-15%, with container goods hit harder than bulk.

Midstream Energy Companies Are Not Immune To Upstream Defaults, Notably In U.S. Shale

We expect to see more downgrades for midstream companies than during the financial

crisis, as the U.S. shale oil sector is fighting for survival amid rock-bottom oil prices. Therefore, they may experience liquidation scenarios rather than Chapter 11 restructurings, such that acreage positions may sit idle rather than be transferred to others to drill. According to forecasts by S&P Global Platts Analytics, U.S. shale oil output may drop by 1.8 million barrels per day (mbpd) by end-2021 under its most likely case, down from 8.3 mbpd at end-2019. However, due to the current global oversupply, which is causing the record-low oil prices, curtailment of U.S. production of up to 3 mbpd may be needed in the next three months, with most of it coming from shale. Although midstream companies have more financial flexibility than during the 2015-2017 downturn, a scenario of lower-for-longer commodity prices will undoubtedly require more extreme steps—for example, cuts to capital spending and dividends.

The Power Sector Is Next In Line, Even If Forward Prices Have Declined Less Than Feared

All ingredients fell into place for a significant tumble in power prices: a recession, lower commodity and carbon prices, and extremely mild weather. This has led to a contraction in electricity demand by 20% in Europe, 15% on average in the U.S. over the last month, and 6.5% in China in the first quarter. Prompt prices have dropped to below €20/MWh in Germany and France. European power generators are more exposed to volumes, bearing in mind a large share of output this year is hedged. The biggest impact will therefore be felt in 2021 as lower prices are contracted, even if base-load forward prices have recovered to about €40-45/MWh, supported by prolonged unforeseen production cuts just announced by EDF (40-50TWh in 2021-2022) and Germany's nuclear and coal shutdowns in 2023. In the U.S., prompt prices also dropped below US\$20/MWh, but the longer-term forward curve is still structurally intact. Finally, a risk for energy suppliers relates to delayed payments of energy bills for most vulnerable customers, especially if mandated by some governments.

Regulated Utilities Are A Safe Haven, As Long As Sovereign Credit Ratings Hold

While ratings on regulated utilities are less sensitive to a recession, they are often constrained by sovereign ratings in emerging markets and lower investment-grade rated countries. A key risk therefore is potential downward pressure on sovereign ratings, which have already lead to a number of rating actions on utilities in Mexico and Brazil.

“We expect to see substantially more rating downgrades for midstream pipeline operators than in the financial crisis.”



Coronavirus Pandemic Could Reduce Global Passengers By Up To 50% In 2020

Karl Nietvelt, Tania Tsoneva and Julyana Yokota explain why global air traffic demand may not fully recover until 2023.

S&P Global Ratings believes fallout from the pandemic is likely to have an unprecedented impact on global air travel compared with previous pandemic or epidemic events, such as swine flu in 2009 or SARS in 2003. The most recent forecast by IATA is for global air passenger traffic to drop by roughly 50%. For 2021 we believe air traffic could remain 20-30% below 2019 levels and several airline executives expect air traffic to recover to pre-pandemic levels only in three to five years. This will also be influenced by how airlines will restructure and downsize their fleets. Although a vaccine will ultimately protect populations, the risk of renewed outbreaks over the next 12-18 months is real and likely makes governments prudent about lifting international travel restrictions. China, for instance, has prohibited re-entry of foreigners and requires mandatory quarantine measures for Beijing.

Pressure For Airports

Though the credit quality of airports tends to be significantly more resilient than that of airlines, we have lowered ratings on a number of them. This is explained by the sheer drop in air traffic numbers as well as the uncertain pace of a recovery for the industry. Moreover, airports may suffer from the debilitated credit quality of airlines. This could add pressure on airports to alleviate aeronautical charges at a time when non-aeronautical charges will drop because of lower numbers of visitors who, in turn, have less purchasing power. Finally, in theory, single-till regulatory regimes allow for charges to be reset to adjust for drops in volumes, albeit with a time lag to the next reset. However, the system has not been designed to adjust tariffs in the face of a massive drop in volume, not to mention to determine whether airlines could afford them.

What Government Support Will Be Left For Airports, If Most Is Directed To Airlines?

With airlines under significantly more pressure than airports, it is not surprising to see the bulk of government rescue measures going in their direction. In the U.S., for example, the Treasury Department announced \$25 billion in funding, comprising 70% grants and 30% loans. The U.S. industry trade group Airlines For America welcomed the federal aid, but noted that its members were collectively consuming an estimated US\$10 billion-US\$12 billion a month. This alarming total, which could imply that the initial US\$25 billion of grants and loans would last less than three months, should be considered with caveats. Notably, the cash burn refers to current lockdowns, as airlines process refunds to passengers for canceled flights. The refunds will slow as an increasing proportion

of total trips booked but not yet flown are settled. Still, the estimate shows the scale of the challenge facing U.S. airlines.

So what support will be directed to airports? Grants will probably be limited, as our rated international airports start from a position of strong financial strength, but smaller regional airports may have a higher need. The most important area will be to ensure that the current level of airport charges can continue to be applied. Support measures in this respect could include a reduction in passenger-based taxes and the massive support packages provided to airlines. Airport-specific tax relief or waivers of airport concession fees are other areas of potential support. Finally, similar to other industries, airports are benefiting from wage subsidy or furlough schemes that should allow for a rapid return to full operations.

We Don't See Secular Change To The Airport Industry, Except Perhaps For Business Travel

No doubt the aviation industry will come out of this historic moment with different ways of operating, as social distancing may require less crowded security checks, queues, and seating on planes, together with heightened health and sanitation measures. A critical element to the industry's recovery will be international coordination about rules and restrictions, including in the case of a resurgence of the virus. This is particularly challenging because the pandemic and related lockdowns are not proceeding simultaneously around the world. The road to bringing back consumer confidence will therefore take time. However, we believe that commercial air travel – as the fastest, most affordable way to move people globally – will remain the preferred mode of transportation for long-haul trips. One in 10 jobs are linked to tourism, which accounts for 10% of global GDP. Hence we don't anticipate the airport industry faces secular change – even if a world that prepares for pandemics makes it more exposed. That said, business travel may well fall off due to greater reliance on remote meetings: during its Q1 earnings call, S&P Global's CFO assumed that at least 15% of current discretionary savings – notably travel – will continue in the future as working habits evolve.

“Several airline executives expect air traffic to recover to pre-pandemic levels only in three to five years.”



Renewable Energy Matures... But With Growing Complexity

With renewables at the heart of the energy transition, Trevor d'Olier-Lees outlines our 10 notable trends in the global market.

“Renewable capacity additions are outpacing fossil fuel, with solar emerging as the dominant technology.”

Unsurprisingly, the global renewables market has undergone a raft of change during the past two decades. Beginning with the credit landscape, we've seen often-high-priced power purchase agreements (PPAs) and favorable feed-in tariff (FIT) policies – and even cases of FIT policies being reversed. And, just earlier this year, California-based Pacific Gas and Electric Company (PG&E), which procures 7.8 gigawatts (GW) of renewable energy as part of its supply, filed for bankruptcy.

Indeed, falling technology costs have, in some instances, dissuaded governments from continuing subsidies. Instead, many governments have favored competitive auctions and leaned towards merchant pricing – which has, in turn, increased counterparty risk. With de-risking becoming a greater priority for renewable development, lending margins have thinned and returns for investors have fallen. Technological challenges and operating cost underestimations, too, have resulted in reduced cash flows – as well as rating actions.

And yet, during the past two decades, renewables have come of age. We expect the asset class to grow in capacity and with improving efficiencies and cost competitiveness. The complexities surrounding this market – and its role in the energy transition – are ever-growing and evolving. To understand why, we summarize the 10 key trends driving this market.

1. Renewables Growth Is Transitioning From Sprint To Long Distance

Worldwide investments in renewable energy infrastructure assets have become astronomical – totalling US\$2.6 trillion from 2010 through 2019, according to research by BloombergNEF and the United Nations Environment Programme.

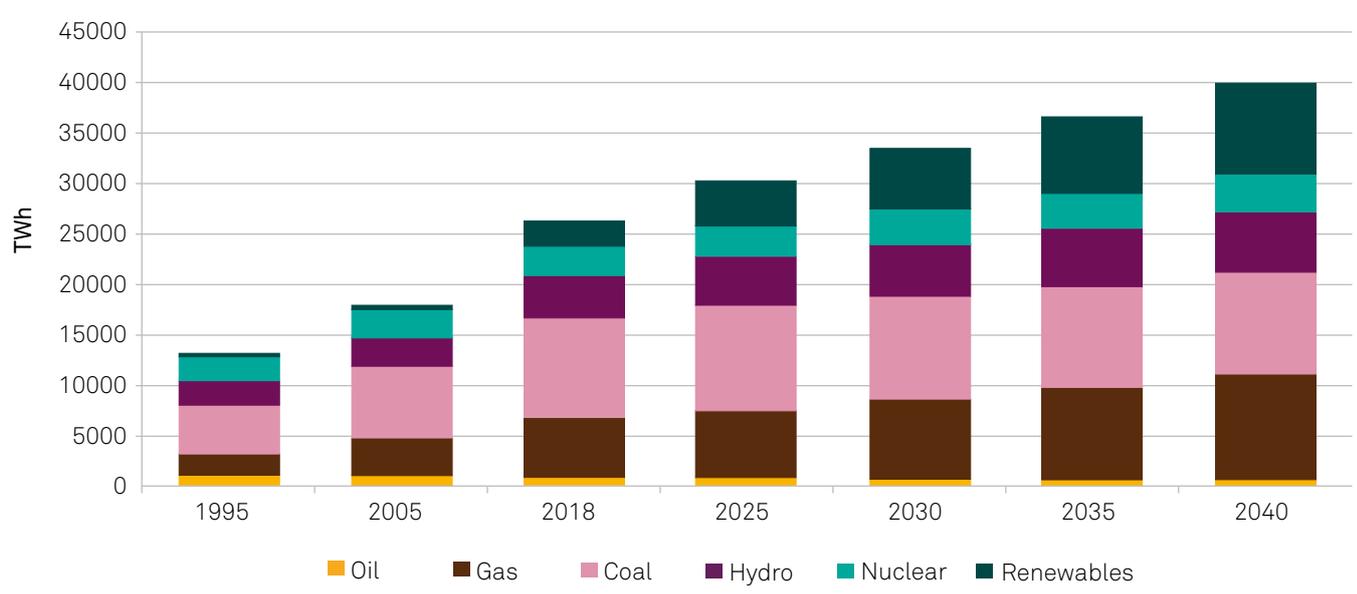
Globally, renewable capacity additions are outpacing fossil fuel, with solar emerging as the dominant technology. Among the drivers have been government and corporate policies to meet clean energy goals, as well as declining installation costs.

Renewable proliferation – perhaps best illustrated as a sprint, to date – could become a long-distance event in the future. Despite historically strong growth, renewables additions plateaued in 2018, according to the International Energy Agency (IEA) – signalling the first time there had been no year-on-year growth in renewable proliferation since 2001.

2. Corporate PPAs Are On The Rise Globally

This trend is helping companies to pursue their stated sustainable policies, while they also seek competitive terms, reliability of supply, and the cost benefits from subsidy programmes – such as production tax credits in the U.S. or the Renewable Portfolio Standard requirements in the U.K.

Global Electricity Supply Growth: Renewables Lead The Way Yet Fossil Fuel Still Grows



TWh--Terawatt hours. Source: S&P Global Platts Analytics, Scenario Planning Service (September 2019). Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.



There are still speed bumps to enabling growth of corporate PPAs in some jurisdictions. For example, FITs (where the government supports certain technologies by offering to purchase their generated power at rates higher than the market prices) are a disincentive to the development of corporate PPAs. Furthermore, by law, some jurisdictions require all power to be bought from national utilities – while some limit large corporate purchasers from buying power from a single supplier over an extended timeframe.

The structuring of corporate PPAs remains complex as projects cannot readily absorb the variance of generation due to resource risk (at least not on a short-period delivery basis). Buyers, meanwhile, need certainty of supply. Consequently, outsourcing the balancing needs to a utility, traders, or aggregator, remains fundamental. Other challenges are the lengthening of corporate PPAs to tenors above 10 years, allowing for a higher share of debt-funding.

3. Great Reliance On Merchant Financing Could Increase Credit Risk

Historically, renewable financing was supported by stable cash flows from FITs and traditional PPAs, with a tenor in line with the rated-debt maturity. Stable cash flows from investment-grade off-takers were a key support to the investment-grade ratings we assigned.

Increasingly, though, FIT schemes are no longer seen as the most efficient way to support renewables, as tariffs were not always aligned with the technology changes (and costs declines). Additionally, FITs resulted in increasing the burden on end-user electricity prices.

As the renewable sector becomes increasingly cost-competitive against thermal sources – and with more jurisdictions meeting their sustainable goals – some markets are tilting towards a market-driven approach, including merchant assets.

With greater exposure to merchant risk, we have observed structures with lower leverage and other risk mitigants such as cash sweep

structures, whereby further debt is paid off if electricity prices are above or below forecasted scenarios. Without mitigants, greater reliance on merchant cash flows (market risk) will likely lead to an erosion of credit and even potentially undermine growth of renewables.

4. Financing Structures Continue To Innovate

The flow of capital to fund renewables in developed markets has been torrential – and we expect continued growth. As the sector matures in developed markets (and expands in emerging ones) we anticipate increased financial innovation in this space.

So far, we have rated a wide variety of vehicles being used to channel capital into renewable assets, including project, corporate, securitization, and fund structures. In addition to the traditional providers of capital, such as banks and institutional investors, we are seeing new types of financial institutions provide capital.

While there are mega-sized renewable projects, some – such as distributed generation projects – are typically quite small. In these cases, governments and sponsors have often used bundling as a strategy to create the scale needed to achieve more efficient or alternative forms of financing, both in developed and emerging markets.

5. Growth In Emerging Markets Brings Additional Credit Risk

Renewables are on the rise in emerging markets. Of course, emerging market countries can range from investment-grade countries (like Mexico and India) to speculative-grade countries. Some have local capital providers able to finance renewable assets – although even in these markets we see a desire to tap into larger pools of international money to optimize financing costs and flexibility. Take, for example, the cross-border financing of Adani Green Energy Ltd.'s 25 operational solar assets – equivalent to 930 megawatts (MW) of installed capacity – spread across eight states in India. Although there is significant capital interest in infrastructure, the credit risk of emerging

“As the renewables sector matures in developed markets, we anticipate increased financial innovation.”

“Not all technological innovations have gone smoothly.”

markets makes it less attractive to institutional investors. Such elevated risks include political and regulatory uncertainty, embedded risks in government concessions, currency exchange rate risk, and policies that are often less developed and somewhat unpredictable.

To facilitate private capital deployment, we believe that multilateral development banks could increase engagement with the private sector using credit enhancements.

6. Emerging Risks in Asia

Regulatory uncertainties and political risks may reduce project returns unexpectedly and dampen investor confidence, especially in developing burgeoning renewable energy markets, as seen in Taiwan. Following local elections in November 2018, the island's regulator proposed a cut of offshore wind tariffs from 2019, and a production cap of annual full-load hours, which may hamper the efficient use of wind farms.

Last year, under the mounting pressure of funding renewable subsidies, China's government unexpectedly suspended the quota for new solar projects and further lowered the subsidy levels five months after the last cuts. This policy led to slumping solar growth in China from the historic 53 GW new capacities in 2017 to 44 GW in 2018, with the hardest hit being on the upstream and midstream manufacturers due to worsening capacity glut.

Though payment delays in India are common, we are witnessing rising political risk for discoms (state-owned distribution companies) under the new state government. Andhra Pradesh's administration is attempting to renegotiate executed contracts, re-evaluate the must-run status of renewables, and is resorting to curtailment in order to avoid payment under the pre-existing PPAs. This puts the fundamental longstanding credit protections for the Indian power sector at risk.

Trade protectionism, too, may create headwinds for renewable growth. The U.S. is likely to continue with import tariffs on crystalline-silicon photovoltaic (PV) cells and modules, inverters, and other materials from China. India also significantly raised import tariffs on PV modules from China and Malaysia; the potential increase in investment costs casts some doubt over whether India can meet its ambitious 100 GW solar-generated power target by 2022.

7. Grid Parity In Sight In China And India

Grid parity is achieved when levelized costs of electricity (LCOE) of renewables are on par with or even lower than the incumbent sources of generation, and government subsidies are no longer needed. When grid parity is achieved, deployment of renewables tends to become more sustainable. We have seen this in some or most renewable projects that are awarded through competitive bidding in many areas of the world, including India and China.

Technological innovation has been behind the drastic decline in construction costs, improving efficiency (such as solar conversion rate) and utilization. On top of that, the decrease in financing costs and other non-technical, "soft" costs are important to achieving grid parity, which is positive for the long-term sustainability of the industry.

China, as the largest market of wind and solar power, is likely to remove the subsidy on new capacities of onshore wind power and utility-scale solar power from 2021, and offshore wind power from 2022.

8. Technological Innovations (And Challenges) Emerge

In the quest for grid parity, and thanks to enormous expenditure, technological innovation is vibrant in many corners of the renewable sector. And technological change has been both incremental (where costs have been driven down or efficiencies driven up) and radical (where new types of technology have been introduced).

Yet not all innovations have gone smoothly. The rapidly evolving offshore wind industry has had setbacks along the way, for instance, where some turbine models have undergone major repairs. In such cases it remains unclear whether normal wear-and-tear has been the cause.

Another issue has been the erosion of turbine blades' leading edges – a fault that can not only disrupt generation but increase costs in the long term if the subsequent reconditioning was not originally forecasted. Although projects can benefit from contractual obligations from the turbine's manufacturer, it is not entirely clear if these will cover all costs, which can result in negative credit implications.

9. Lifetime Extensions, Repowering And Decommissioning

As the renewable energy industry matures, asset owners must decide which of these options to pursue for their seasoning assets.

Lifetime extensions for wind farms and solar plants are becoming a trending topic of discussion. This is particularly true because the choice to decommission might mean disregarding some clear benefits, including the extensive operational track record and associated performance data, connection to the grid and, most probably, the small amounts of debt outstanding.

The alternatives to decommissioning carry some advantages. Lifetime extensions require significantly less investment compared to repowering, which therefore offers asset owners greater financial flexibility. That said, an upside of repowering is that it often leads to greater asset capacity and lifespan. Wind turbine repowering has improved output by up to 25% while extending turbines' lifespans by as many as 20 years, according to General Electric.

In turn, repowering wind turbines (by replacing either components or, indeed, the entire turbine) is regularly viewed by operators as a viable option to face the rising operation and maintenance expense of aging equipment. And in both the U.S. and Europe, repowering projects are generally supported by the tax code and the shortage of attractive locations for greenfield wind projects, respectively.

10. The Need For Battery Storage And Hybrids

Finding a solution to the intermittent nature of renewable sources is yet another part of the puzzle – and has encouraged battery storage solutions. Today there are only a few large-scale

batteries projects worldwide: in the U.S., storage is already cost competitive for short-duration solutions, particularly in markets like California where the possibility of building new peaking gas assets to support the renewables on the grid has largely disappeared.

From this low base, we expect applications of battery storage to dramatically increase over the next five years – helped by falling costs, as well as carbon emission reduction policies and the growing popularity of distributed generation.

A Complex Picture

Of course, the energy transition towards renewables is filled with complexities to surmount. We believe government policies will need to remain dynamic and supportive to stimulate investment, grant permits, and reduce risks. Even if the asset class remains attractive, the need for investment is huge and the pace of transition cannot be taken for granted if returns become too thin (notably if current abundant liquidity decreases), or material merchant risk is on the rise, and, finally, if the consumer is not on board in terms of affordability and access to land and location.

Importantly, massive investments are ongoing and renewables are set to play a more prominent role in global energy production over the decades ahead. Equally important, though, is global power demand growth. S&P Global Platts Analytics (an S&P Global Platts company) forecasts that demand will increase by 40% over the next two decades – and under its most likely scenario, fossil fuels will still generate over 50% of power by 2040 (compared to close to two-thirds today). Ultimately, the energy transition is more complicated than merely swapping thermal for renewable sources.

For more information please read the research article available on Capital IQ entitled: "Energy Transition: Renewable Energy Matures With Blossoming Complexity".

“We expect applications of battery storage to dramatically increase over the next five years...”



Offshore Wind: A European Story

While offshore wind development is accelerating, market trends could reduce returns. Massimo Schiavo examines what this means for the credit quality of the world’s largest participants.

Offshore wind is largely a European story for now: by year-end 2018, about 80% of the world’s offshore wind capacity in operation was in Europe. What’s more, most of the substantial pipeline of planned projects and those under construction are in the region (see table). Indeed, seven European utilities dominate the global offshore wind sector: Orsted, RWE, Vattenfall, Iberdrola, EnBW, EDF, and SSE.

The past decade saw significant value creation in the offshore wind sector, supported by favourable pricing mechanisms, lower cost of capital, and excellent operator execution, allowing for markedly lower-than-expected construction and operating costs. Prices in near shore offshore wind auctions in the North Sea have reached close to US\$50/MWh (including transmission costs). The International Energy Agency (IEA) projects 1,000 gigawatt (GW) in offshore shallow-water wind potential in Europe at US\$60/MWh-US\$80/MWh.

Accelerated Growth Expected

With about 20GW installed at year end 2019, offshore wind accounts for a meagre 1% of the European energy mix. But this share is increasing in places where there is already high concentration, particularly in the North and Baltic seas. There, weather conditions are optimal, with superior average capacity factors as high as 45%-65%, and reduced environmental constraints. Indeed, in 2019, offshore accounted for 4% of the capacity mix in the U.K., 15% in Denmark, and 3% in Germany. We see penetration of offshore wind increasing rapidly given the EU's target of carbon neutrality by 2050 and the support of the recently agreed European Green Deal.

Unlike for onshore wind and solar, land scarcity and local opposition will likely be less of a hurdle for growth in Europe. Nonetheless, we acknowledge the growing body of research on the environmental impacts of offshore wind energy. Certain projects, such as some in France, have faced significant local hostility.

We anticipate accelerated development on the back of the EU's policy target of increasing installed capacity dramatically to 90 GW by 2030. This figure emerges from recently updated national energy policies, government commitments and election promises across several key countries.

The End Of Double-Digit Returns?

Henrik Poulsen, Orsted’s CEO, was realistic when he said the "era of double-digit returns for offshore wind in Europe would soon be over". Intensifying competition, more stringent auction processes, technological advances, and maturing project management may result in lower returns and thereby affect credit quality. Compounding the issue is that construction and execution risks on large projects are emerging that could jeopardize profitability going forward.

Historically, offshore wind projects were supported by feed-in tariffs or other non-competitive pricing mechanisms, covering a relatively long period. This led to double-digit equity returns as evolving technology ushered in more efficient and cheaper equipment.

Now that the technology is maturing and costs are falling, governments are adopting more advanced and competitive ways of supporting development. It has become commonplace to award contracts for offshore-wind projects through reverse auctions in which bidders compete by accepting lower and lower subsidies.

Fixed-Price Structures Remain Necessary

Current auctions are still being signed under a secured fixed price remuneration mechanism, which does not mean subsidized, as the price is set through a competitive process, and can be seen as a floating to fixed 'swap'.

We continue to see pure merchant risk as limited for offshore projects given the large, upfront capital investment, lack of predictability of long-term power prices, and need to keep financing costs – and thus risks – low.

Further information is available on the Capital IQ portal in the research piece entitled: "The Energy Transition: Is Offshore Wind Done Or Going For Other Bids?" and on the Global Renewables Market webcast.

“The past decade saw significant value creation in the offshore wind sector.”

European Policies Target Up To 90GW Installed Capacity by 2030

Country	Policy	Capacity target
UK	UK Offshore Sector Deal	Up to 30GW by 2030*
Germany	Climate Action Plan 2019	20GW by 2030
Netherlands	The Offshore Wind Energy Roadmap	11.5GW by 2030
Denmark	Energy Agreement	5.3GW by 2030
Poland	Draft National Energy & Climate Plan	Up to 9.6GW by 2030
France	Multi-Annual Energy Plan	10GW by 2028
Belgium	Draft National Energy & Climate Plan	4GW by 2030
Ireland	Climate Action Plan 2019	3.5GW by 2030
Italy	Draft National Energy & Climate Plan	0.9GW by 2030

* 40GW is the target communicated as part of the Conservative party's election campaign.

Source: Governments, IEA, and S&P Global Ratings

Tailwinds for U.S. Offshore Expansion?

There's tremendous investor interest in U.S. offshore wind, says Aneesh Prabhu. Yet infrastructure-related risks remain significant.

Offshore wind in the U.S. is gathering momentum. The country might have only one operational offshore wind farm, but beyond the 30-megawatt Block Island plant, the aggregated project pipeline has more than 26 gigawatts (GW) in offshore wind capacity in federal lease areas. Of this pipeline, developers expect 14 offshore wind projects totalling 9.1 GW to be operational by 2026. Market consultants agree that capacity could exceed 12 GW by 2030.

U.S. Offshore Wind Is Uneconomical – For Now

Nonetheless, the risks of venturing into deeper waters remain meaningful. While state mandates for offshore development continue to build momentum, offshore in the U.S. remains uneconomical for the time being. Our estimate for the levelized cost of energy (LCOE) for U.S. offshore wind, excluding an investment tax credit (ITC), is about \$85/MWh. A 30% ITC lowers our estimates to about US\$65/MWh. Our major assumptions for overnight capital costs and capacity factors are US\$3,600 per kilowatt (kW) and 44% respectively, for the initial projects.

By comparison, European offshore wind farms have had success in achieving lower LCOEs. Sceptics point to offshore wind projects' current economics and the infrastructure needs and costs, while proponents allude to a rapid pace of innovations in the industry.

According to the International Energy Agency (IEA), global average overnight capital costs (including transmission) are projected to decline to US\$2,500/kW by 2030 from US\$4,350/kW in 2018. The industry expects that roughly half of the savings will come from efficiency gains by using larger turbines, which will reduce the number of turbines to be installed and serviced.

Tremendous Investor Interest

The economics aren't yet favourable. But investor interest is high due to the complementary nature of offshore wind generation with its onshore counterpart. At a recent industry forum, a banker noted that there were more than 50 financing entities that have a "real interest" in lending to offshore wind projects in the U.S.

We believe investors' interest stems from several factors: the potential for a dramatic decline in costs once the industry scales up, risk-offsetting features compared with on-shore wind generation and resource characteristics mitigating other types of risk. We also expect merger and acquisition (M&A) activity to ramp

up – both at company and asset level. Developers are forging partnerships with incumbent utilities to ease the way in winning offtake contracts. And it's no coincidence that a number of oil majors – including Royal Dutch Shell, Statoil and Eni Spa – are also offshore wind developers. The IEA estimates that about 40% of the full lifetimes costs of an offshore wind project, including construction and maintenance, have synergies with oil and gas.

Comparison Among Power Sources

We expect offshore wind output in the U.S. to be largely contracted, but such facilities will bear construction and operation and maintenance risks. As a rule of thumb, the industry expects offshore wind capacity factors of 40%-50%, about 10% higher than those of onshore wind farms. At these levels, offshore wind matches the capacity factors of gas or coal-fired generation in many regions. Importantly, offshore wind's hourly variability is markedly lower than that of solar assets. These metrics point to offshore wind's potentially higher efficiency than that of onshore wind and photovoltaic (PV) generation.

Although offshore wind has a long way to go to challenge other energy sources, interest has increased dramatically at U.S. state level in recent years. In addition to helping states in attaining RPS targets, offshore wind generation helps wean these states away from natural gas, enabling them to reach their regional greenhouse gas initiative (RGGI) targets.

Behind Europe

Offshore wind has changed the European power landscape, but it remains to be seen if sweeping changes are replicated in the U.S. power industry. From discussions with industry experts and acknowledging the potential for significantly lower costs, we're cautiously optimistic about prospects for offshore wind energy output. Given our LCOE estimates – which are subject to variables – the onus is on the industry to convince us of offshore wind's potential from a credit perspective.

Further information is available on the Capital IQ portal in the research piece entitled: "Foresight Is 2020: Tailwinds For U.S. Offshore Expansion".

“Investor interest is high due to the complementary nature of offshore wind generation with its onshore counterpart.”



Nuclear Generation: Dead And Alive?

Elena Anankina and Karl Nietvelt explain how, despite current challenges, nuclear can play a key role in the energy transition over the next two decades.

Understandably, renewables proliferation and coal phaseouts can dominate discussions around the energy transition – leaving nuclear assets somewhat overlooked. This prompts the question: is nuclear dead or alive?

The answer is nuanced. Of course, the global nuclear industry – accounting for 10% of global power generation and closer to 20% in the U.S. and Europe – is facing a host of challenges: safety and waste concerns, tightening regulations post-Fukushima, aging asset bases, and increasingly volatile energy markets.

Moreover, renewables enjoy political support and offer quicker payback on scalable investments. Furthermore, new nuclear build is not competitive with renewables at least in Europe and the U.S. (where costs at new build projects have soared to close to US\$10,000/kW).

This gloomy picture contrasts with a continuous growth outlook we see in developing markets, notably China and Russia where domestic reactor build costs are budgeted for US\$2,000-2,500/kW). Consequently global nuclear output could still marginally increase over the next two decades in absolute terms. In addition, one needs to recognize nuclear is a reliable energy source for baseload generation, with huge CO2 savings while promoting grid stability.

In Western Europe And North America, Nuclear Is Structurally Challenged, But Life Extensions May Smooth The Transition

Nuclear retirements across parts of western Europe and the U.S. will reduce nuclear capacity in advanced economies by two-thirds before 2040, according to International Energy Agency (IEA) forecasts.

The world’s most nuclear-reliant nation, France, has set a target of lowering its nuclear-generated output from 75% to 50% by 2035. In Germany, the nuclear phaseout program will be completed much sooner, with final closures of nuclear operations required in 2022.

Home to the largest nuclear-driven power generation fleet is the U.S. – with 98 nuclear reactors producing about 19% of the country's total generation output in 2018. Although there are no official phaseout policies in the U.S., some smaller and less efficient nuclear plants face early closures before their technical useful life under pressure from low-cost gas and renewables.

This raises the question whether a too rapid phase out of existing capacities can put CO2 targets at risk. The IEA estimates the average cost of nuclear extensions in North America and Western Europe in a range of US\$40-55/MWh. In itself this is not out of sync with the averaged levelized cost of electricity (LCOE) for newly built green energy projects forecast to be in the order of US\$50-60/MWh in North America.

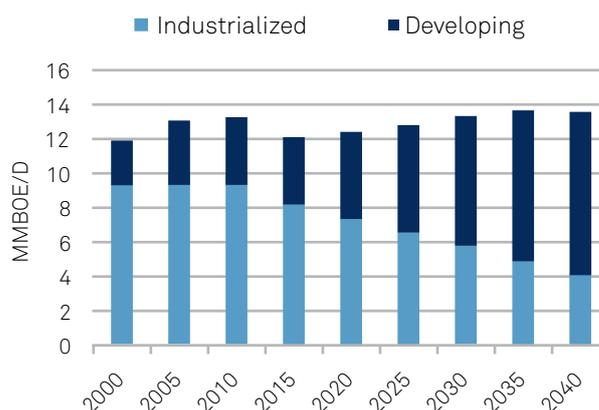
Even so, the high upfront capital costs and unpredictability of long-term power prices -- with a rising share of zero marginal cost capacities from renewable additions -- mean that extensions may only see the day if supported by public policy (e.g. zero emission certificates in the U.S. or re-regulating prices as envisaged in France).

Production Gradually Shifts To Emerging Markets

In contrast, in many developing markets, governments see nuclear generation as a means to meeting this soaring energy demand, while

“The share of nuclear capacities in developing markets will increase to two thirds by 2040 from one third today.”

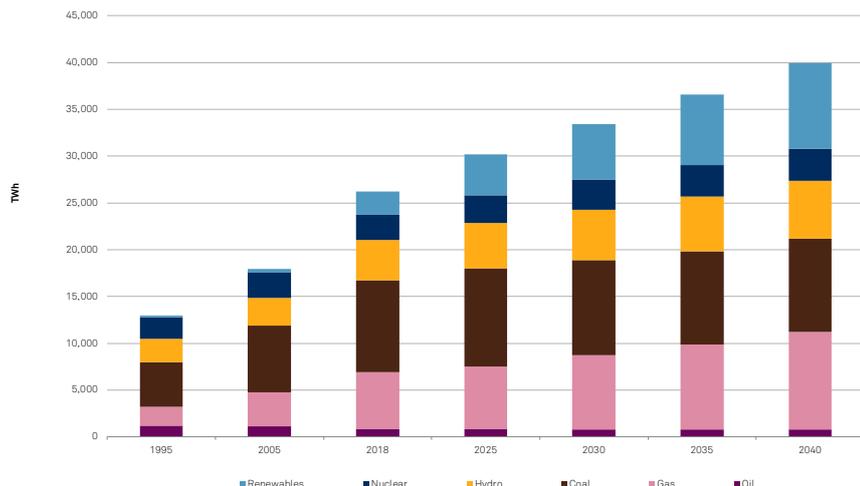
Nuclear Power: Future Growth



MMBOE/D -- Million barrels of oil equivalent per day

Source: S&P Global Platts Analytics, Scenario Planning Service (September 2019)

Structure Of Global Power Generation Output: "Most Likely" Scenario



TWh--Terawatt hours. Source: S&P Global Platts Analytics, Scenario Planning Service (September 2019). Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

also reducing carbon emissions. Several Eastern European countries envisage new nuclear projects, given their currently high share of coal-fired generation, and often limited potential for solar and wind.

Importantly, nuclear economics are much more attractive in China and Russia as stated above. Key reasons for this are the lower construction costs and less stringent local regulations, although all countries are subject to standard International Atomic Energy Agency (IAEA) safety requirements. Serial and learning curve effects from many recent new-builds further have helped reduce costs and time of construction. Vertical integration through the nuclear supply chain, R&D ability, and over 80% localization of nuclear power equipment helps to control costs and manage execution risks.

Finally, state support, risk mitigation through fixed price or capacity mechanisms and attractive financing packages are key as project returns will strongly diverge depending on the weighted average costs of capital applied.

The Post-2040 Outlook

Whether nuclear can sustain its position – and credit credentials – after 2040 will largely depend on the progress of broad-scale energy storage solutions and smart grids, as well as on continually supportive national energy policies and state support. Just as the global energy mix is changing, the very make-up of global nuclear capacity is in transition too.

For more information, read our latest reports: "The Energy Transition: Different Nuclear Energy Policies, Diverging Global Credit Trends"; and "The Energy Transition: Nuclear Dead And Alive"

“For the next few decades, the carbon-free generation that nuclear assets provide will continue to be important for climate targets.”

ESG Industry Report Card: Power

- We see environmental risks for the power industry as well above average, bearing in mind the sector accounts for 40% of global carbon dioxide (CO2) emissions, and even though it has been at the forefront of the energy transition as renewable generation has grown over the past decade.
- We expect power utilities will need to continue decarbonizing their generation mix to mitigate the likelihood of stricter regulations and rising emissions costs, even more so under a 2-degree scenario.
- Coal generation is by far the most exposed subsector, even if the pace of carbon reduction is not uniform globally, and we expect that coal generation will still represent over 25% of total generation by 2040 (though some countries will eliminate it).
- We view natural gas plants as having above-average exposure even if they emit about half the CO2 of coal-fired power. Gas-fired generation will likely act as a bridge fuel, notably in the U.S., but there's a push in Europe to reduce it as the renewable transition gains momentum with the zero-carbon 2050 objective.
- The power sector equally bears above-average social risk given its considerable influence on local communities, including on customers' electric bills, as a local employer, as a significant contributor to local taxes, and by ensuring safe operations at generating facilities. The nuclear sector in particular has higher social exposure, not just because of safety and storage, but because of existing support or potential shifts in support from communities and politicians toward renewables.

Shining A Light On Solar ABS

Amid growing interest in rooftop solar assets, Kate Scanlin summarizes S&P Global Ratings’ global methodology for solar ABS transactions.

In recent years, rooftop solar for homeowners and businesses has increasingly made its case as a credible alternative to fossil fuel-powered electricity generation. In 2018 alone, nearly 315,000 American households had installed solar systems, according to the Solar Energy Industries Association.

Aside from falling installation costs and favorable policy frameworks, unlocking further growth in this segment has, in part, relied on expanding the availability of various financing outlets to the technology’s developers. A capital-intensive industry by nature, rooftop solar development requires access to long-term and efficient capital sources.

And one such financing method garnering interest in the segment is asset-backed securitization (ABS). This structure entails aggregating pools of photovoltaic solar systems (PV systems), leases and loans, customer agreements including power purchase agreements (PPAs), as well as other hybrid products such as solar contracts. Once aggregated, a structuring process can transform future cash flows relating to these assets into a security. And, by doing so, ABS offerings can deliver the scale, structure, and homogeneity that investors often seek.

The Global Methodology

Though an asset class in its nascency, investor interest has risen ever since the first U.S. solar ABS in 2013. In the U.S., we have rated five distributed generation solar ABS securitizations. In turn, we published earlier this year our global methodology for solar ABS transactions – according to which we now assess our solar ABS portfolio. The methodology came into effect on May 16, 2019 – except for those markets that

require prior notification to and/or registration by the local regulator. Importantly, it does not apply to property-assessed clean energy (PACE) bonds, corporate rated financings and project finance transactions.

So, how exactly does the methodology work? Our solar ABS analysis considers the risks associated with five key areas, which not only help to assess the credit quality of the securitized assets, but also to derive cash flow assumptions for a portfolio of solar assets.

The analysis of operational and administrative risks focuses on key transaction parties to determine whether they can manage their duties related to a securitization over its entire lifespan. Key transaction parties may include a transaction’s servicer, operations and maintenance (O&M) provider, the trustee, the paying agent, or any other transaction party. Then, to assign ratings to solar ABS deals we evaluate the ability and willingness of the applicable pool of solar assets to generate sufficient cash flows so that solar ABS investors are paid timely interest and principal by the legal final maturity date.

This evaluation requires that we apply various rating-specific stress scenarios, including: voluntary and involuntary defaults; residential moves or contract prepayments; solar production; and equipment performance. Given that solar ABS has a relatively short underlying performance history to date, we will consider the performances of related asset classes to develop involuntary default assumptions for solar contracts.

Analysing Performance

And this is an important aspect of our analysis. So far, the solar ABS transactions that we rate have displayed a steady performance – with cash flows generally aligned to our expectations. Nonetheless, since solar ABS made its debut in 2013, we have seen relatively benign economic conditions, in the U.S. at least.

That’s to say, we have yet to see how these assets perform through a period of economic deterioration. With this in mind, we maintain a ‘BBB+’ category cap on solar ABS transactions backed by PPAs and leases. Meanwhile, transactions backed by solar loans are capped at an ‘A’ rating. While the introduction of these criteria hasn’t impacted current ratings, we are keeping a keen eye on any performance changes for our solar ABS rating portfolio going forward.

This article provides a snapshot of the full global methodology. You can read the full article, “Global Methodology For Solar ABS Transactions” via Capital IQ.

“ABS offerings can deliver the scale, structure, and homogeneity that investors often seek.”



Led By Green Bonds, Sustainable Debt Surges

The sustainable debt market is evolving rapidly both in scope and composition. Noemi De La Gorce looks at what has been achieved so far and how it might develop further.

The energy transition, with its promise of sweeping changes, brings with it new attitudes to sustainability. Changing attitudes in finance are clear to see in the rise of sustainable debt, which saw issuance double in 2019. The bulk of this issuance is composed of green bonds, which will likely remain the main type of sustainable debt instrument. However, we also expect the sustainable debt market to continue to diversify and innovate, as investors look for alternative ways to contribute to sustainability objectives.

And the market shows few signs of abating. In our view, strong market fundamentals along with persisting positive credit conditions in the private sector are likely to support further green issuance growth. Growth in annual green bond issuance rebounded to 39% after a temporary slowdown in 2018, indicating the market's underlying strength.

While green bonds still represent a minor part of global issuance, this share is increasing – up to about 3.5% from less than 1.0% five years ago. We expect this growth to be a long-term phenomenon, with sovereign and regulatory interventions acting as a catalyst for private issuance. This is especially true in Europe. However, we believe this growth is insufficient to achieve the scale of investment needed to transition to a low-carbon and climate-resilient economy, which the U.N. estimates to be at least US\$60 trillion by 2050.

Sustainable Debt Market To Diversify Further

While green bonds remain dominant, other sustainable debt instruments are emerging. Social bonds, says the International Capital Market Association, are bonds whose proceeds fund new and existing projects with positive social outcomes such as improving food security and access to education or health care. Sustainability bonds on the other hand target both environmental and social benefits, while sustainability-linked loans provide incentives for borrowers to set and achieve sustainability performance targets. Sustainability-linked bonds, which follow the same principles, emerged for the first time in 2018. Since they tie funding to specific environmental, social and governance (ESG) targets, these sustainability-linked loans and bonds are seen by some as stronger drivers of change.

Europe Consolidates Its Lead

Reflecting its unique political push for green and sustainable finance, Europe has been leading the way in both regulation and issuance. Indeed, in 2019, the Continent represented close to half of new issuance. Indeed, the European Commission recently announced its ambition to create the first 'carbon-neutral continent' by 2050 through its European Green Deal. Last year's EU Green Taxonomy represents another important milestone – defining activities compatible with a green economic vision and addressing fears of greenwashing.

In the financial services sector, green issuance from European banks surpassed that of Chinese banks for the first time in 2019, with French banks such as Société Générale and Credit Agricole leading the way.

Looking Ahead

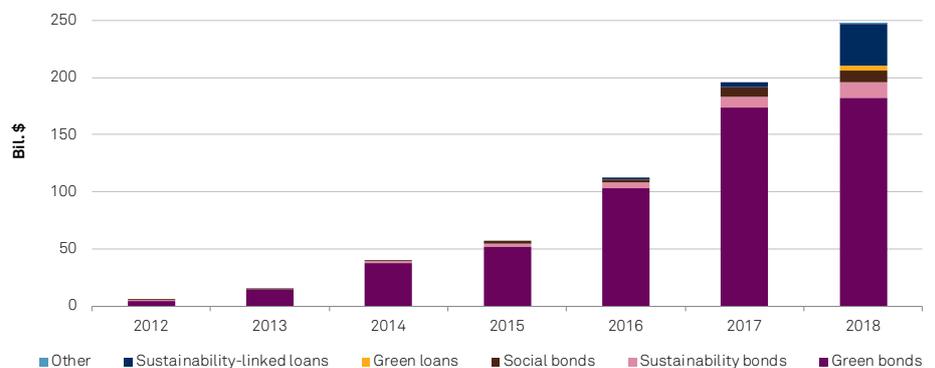
We expect the private sector to keep driving growth. Public issuers also have a key role to play. In some cases, we believe sovereign issuance could act as a catalyst for private green-labelled issuance.

In the case of France, the largest sovereign issuer, private issuance from banks and corporates in 2019 surpassed the amount of sovereign issuance for the first time since the government started issuing sovereign green bonds.

Further information is available on the Capital IQ portal in the research piece: "Led By Green Bonds, The Sustainable Debt Market Looks To Surge Ahead".

“We expect the sustainable debt market to continue to diversify and innovate, as investors look for alternative ways to contribute to sustainability objectives.”

Growth Of Sustainable Finance Instruments



Source: BloombergNEF. Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

The EU Green Deal: Why Greener Growth Doesn't Necessarily Mean Lower Growth

Marion Amiot believes the EU's proposed Green Deal may mean less climate-related shocks and, in turn, better longer-term economic prospects.

“The Green Deal should boost the bloc's long-term economic prospects.”

Today, the European Union accounts for 9% of global carbon emissions and contributes a further 2% through imports. But the bloc has recently set the ambitious goal of becoming carbon neutral by 2050. To finance the EU's Green Deal, the European Commission (EC) has presented the Sustainable Europe Investment Plan, which foresees €1 trillion in sustainable investments over the next decade.

Much has been said of what this means for economic growth. To date, there have been few attempts to measure the economic impacts of the broader question of climate change. But, our view is the Green Deal should boost the bloc's long-term economic prospects by reducing the likelihood of climate-related shocks to GDP – while improving the bloc's resilience to those climate-related shocks.

Work To Do

However, there's much to be done if the EU is to become carbon neutral by 2050. Country-level climate change policies are currently insufficient to achieve interim goals set for 2030 and renewables' contributions to energy supply must increase (see chart).

One key challenge is that policymakers continue to avoid meaningfully higher carbon prices. Although this would be the most effective way to tackle climate change, it is difficult to implement due to its social impacts since it's widely believed to fall harder on lower-income households. That said, studies have showed no net job losses from higher carbon taxes. And following the Gilets Jaunes movement in France, which was prompted by additional taxes on fuel, we believe countries are unlikely to follow that route anytime soon.

Instead, the EU favors a €1 trillion climate finance plan – seeking major improvements in sectors such as energy, agriculture,

construction, and real estate. The plan includes commitments to climate and environmental spending and for co-financing of green investments with national governments and the private sector. In addition, there are subsidies for high emitters with the Just Transition Fund. That said, of the €1 trillion in the fund, only €7.5 billion is fresh funding – equivalent to less than 0.1% of EU GDP.

Wider Participation Needed

Clearly, then, the EU cannot achieve its goals alone: it still needs other participants such as national governments and the private sector to prioritize climate-friendly investments. Another way the EU is nudging investors towards greener investment strategies is through the EU Taxonomy, which will help increase transparency and prevent green washing. The taxonomy may be not be constraining enough, however: it can only work if consumers and investors are pushing the market in the same direction.

Central banks are playing their part by looking into reducing climate risk through monetary policy. The Bank of England and Banque de France have already announced they will start stress-testing banks and insurance portfolios for climate risk. Also driving progress in this area is the Network for Greening the Financial System, a forum bringing together central banks and supervisors committed to better understand the financial risks and opportunity of climate change.

Greener, Not Lower Growth

As things stand, however, we believe the EU will have to introduce more climate-friendly policies if it wants to reach its 2050 commitments. A higher price for carbon would be more challenging for more polluting sectors but might ultimately be necessary to push the market into action. Filling the huge investment gap to meet these ambitions will require EU countries to invest more. Relaxing fiscal rules to exclude green investments from the 3% of GDP budget deficit cap would be a potential game changer. Indeed, reaching investment targets may prove difficult without this revision.

Nonetheless, our research confirms that the EU's Green Deal can boost the bloc's long-term growth prospects. So, while it's true that lower GDP can often lead to lower emissions, greener growth doesn't necessarily mean lower growth.

Further information is available on the Capital IQ portal in the research piece entitled: “EU Green Deal: Greener Growth Doesn't Necessarily Mean Lower Growth”



EU Drive For Carbon Neutrality By 2050 Undeterred By COVID-19

Amid concerns that the COVID-19 pandemic could stymie progress for climate goals, Anna Liubachyna believes that the EU's green ambitions remain in place for now.

As countries grapple with the immediate consequences of the COVID-19 pandemic and EU policy focus shifts to short- and medium-term tools to alleviate the aftermath, there is a risk that long-term climate goals may be cast aside. Should this happen, the concern is that resistance to climate-change targets in some industries may emerge.

For now, however, the EU has confirmed that its green ambitions remain intact. The European Commission's temporary framework for state aid measures to support the economy in the COVID-19 outbreak, adopted on March 19, 2020, stresses that measures should keep in mind the importance of the EU objectives for green and digital transitions. Moreover, the EU is currently on track with its Green Deal legislative roadmap and has also revealed an updated EU green taxonomy. As such, we believe the overall goal of achieving carbon neutrality by 2050 across the EU remains intact despite the pandemic, although there may well be some short-term delays to specific policy actions toward achieving this.

Relief To EU CO2 Accumulation Only Temporary

It's our current expectation that the EU economy may contract by around 7% this year following the COVID-19 pandemic. Lower economic activity could, in turn, reduce EU greenhouse gas (GHG) emissions by around 14%.

Reduced emissions may only be temporary, however. To achieve long-term emission reductions, therefore, Europe would need to go through a fundamental transition to greener production systems. The EU could achieve this if it implements the policies outlined in its December 2019 Green Deal.

While some are concerned that development of stronger long-term climate policy could be pushed aside in favour of short-term economic stimulus, we have not yet seen any indications that this is actually occurring on the EU level. Climate policymaking is still moving forward at this stage. Indeed, despite resistance from sectors severely battered by the virus outbreak, the EU Commission is still determined to make the stronger 2030 emission-reductions target a reality. It still plans to publish an impact assessment plan this September on increasing the EU's emissions-reduction target for 2030 to at least 50%, from 40% at present.

Aside from policy, the widespread fiscal support measures unveiled during these past weeks show that countries are mobilizing all of their fiscal space to fight the spread of COVID-19 and limit the ensuing economic damage. As a result, we believe EU countries will have higher government debt after the crisis and possibly less scope for investing in projects to green their economy, especially in countries in which fiscal space is already limited. We also expect EU countries to tap the balance-sheet space and social and environmental mandates of supranational institutions, such as the European Investment Bank or the Council of Europe Development Bank to help fight the pandemic while pursuing environmental objectives.

Transportation Provides Mixed Outlook

The automotive sector has been severely affected by lockdowns that have reduced vehicle usage as well as people's ability to buy new cars. Already, a number of industry bodies have signed an open letter to the European Commission asking for a delay to climate-change mitigation and protection of the environment laws due to COVID-19. Passenger cars and vans account for around 14.5% of total EU emissions of CO₂, so delays in the implementation of the law would likely put countries' environmental targets at risk.

Crisis Could Lead To Greener Behaviors

Although current wealth losses could end up negatively affecting green investments, some environmentally positive behavioural changes may arise from this crisis. Structural changes to travel, including commuting, flying, and waterborne travel habits, would reduce oil demand, and therefore emissions. What's more, as companies have successfully experienced working remotely across the world, they might choose to cut back on business travel and increase remote working. Equally, citizens might be more aware and less tolerant of polluted environments after experiencing a few months of clean air – something we see already, as some cities favor pedestrians and cyclists over cars in their gradual exit of lockdowns. Finally, globalization more broadly might slow as a result of this crisis as some companies seek to set up more of their supply chains in the same location.

More information can be found on the Capital IQ portal in the research commentary entitled: "The EU's Drive For Carbon Neutrality By 2050 Is Undeterred By COVID-19"

“For now, the EU has confirmed that its green ambitions remain intact.”



ESG Evaluations: COVID-19 Update

Noemie De La Gorce explains why S&P Global Ratings' portfolio of ESG Evaluations has for now remained unchanged since the COVID-19 outbreak.

“We consider the COVID-19 pandemic a social risk that could affect our view of an entity’s ESG profile.”

S&P Global Ratings has reviewed its portfolio of six public Environmental, Social, And Governance (ESG) Evaluations in light of the COVID-19 pandemic and has left all scores unchanged for now. We will continue to monitor the portfolio. ESG Evaluations are our view of an entity's capacity to operate successfully in the future and, therefore, may be affected by the risks and disruptions caused by COVID-19.

The ESG Evaluation comprises two assessments: the ESG profile considers near-term and observable risks and opportunities, and an entity's preparedness considers its ability to manage emerging, disruptive, and strategic risks. We consider the COVID-19 pandemic a social risk that could affect our view of an entity's ESG profile – particularly the social profile – as well as a disruption that could affect our view of an entity's preparedness. We may revise our opinion of an entity's ESG profile and preparedness, and therefore adjust our ESG Evaluation score appropriately. These adjustments could be either negative or positive.

We could revise our ESG profile score if the pandemic has:

- Revealed strengths or deficiencies in the entity's management of social factors (relative to its global peers), including:
 - 1) Workforce, especially in case of layoffs or reduced productivity;
 - 2) The health and safety of the entity's workforce, suppliers, contractors, and other key stakeholders;
 - 3) Changing consumer behaviors and preferences;
 - 4) Activities that support communities or diminish the company's social license to operate.
- Hampered or accelerated the entity's ability to deliver on its ESG policy, commitments, or expected performance relative to its global sector peers.
- Caused substantial disruption to the company's supply chain that resulted or could result in financially material consequences revealing better or worse management compared to industry peers.

- Affected, either negatively or positively, the entity's reputation.
 - Revealed strengths or deficiencies in board oversight including financial reporting on COVID-19, executive compensation, board-level engagement, and communication with investors and stakeholders.
 - Revealed an entity's narrow stakeholder approach, which could manifest as a disproportionate allocation of value between the entity's stakeholders.
- We could revise our opinion of preparedness if the pandemic has:
- Resulted in a significant change in the entity's strategy, and how effectively the entity executed its new strategy.
 - Revealed any weaknesses or strengths in the entity's ability to adapt and react to sudden changes resulting from emerging and disruptive risks.

The Current Effect Of COVID-19 On Selected ESG Evaluations

TenneT

We view TenneT's preparedness for emerging and strategic risks as strong. During the early stages of the COVID-19 outbreak, the company responded swiftly to mitigate risks by deploying well-rehearsed contingency plans. The company is strongly positioned to continue to provide its essential service of electricity supply, and maintain the safety of its overall workforce. We scored the company's assessment of risks as excellent, and TenneT continues to support this opinion through its articulation of the stresses placed on its workforce, its risk tolerances, and its awareness of workforce safety. As such, we uphold our ESG Evaluation score of 83 with Strong Preparedness.

Unilever

We uphold our ESG Evaluation for Unilever at 89 with Best-in-Class preparedness. This is our highest published score to date. Unilever has a large, global workforce and communicated its policy on COVID-19 on its public website. We view safety management at Unilever as strong due to its solid track record of reducing safety incidents. While

Our Portfolio Of Public ESG Evaluations Remain Unchanged

	Unilever	NextEra	TenneT	Renewi	Repsol	Masmovil
ESG Evaluation	89	86	83	75	68	67
Preparedness	Best-in-class	Best-in-class	Strong	Adequate	Strong	Adequate
Social Profile Factor Scores						
Workforce & Diversity	Good	Good	Good	Good	Strong	Good
Safety Management	Strong	Strong	Strong	Good	Good	Lagging
Customer Engagement	Strong	Leading	Good	Good	Strong	Strong
Communities	Strong	Strong	Strong	Good	Good	Good

occupational illness rates could spike this year, we expect the risk to be well-mitigated given the health and safety culture in place. Unilever's strong community engagement and full value chain approach is further supported by its recent announcement of support: donations of €100 million in soaps, sanitizer, and bleach, and food donations, and €500 million in payment relief to its suppliers.

Renewi

Our ESG Evaluation score of 75 with Adequate preparedness for Renewi remains unchanged. Renewi provides essential services in the Netherlands, Belgium, and the UK, and is close to fully operational at present albeit with certain segments significantly lower for example restaurants, shops, bars, offices, amongst others. The operational workforce are key workers and continue to provide services with additional safety measures and altered routines to manage the risk of exposure to COVID-19. We feel that the company's safety management is in line with other waste services companies around the world. The company has disclosed its response, which includes following government guidelines, and it will take advantage of government support, where available, to protect its workforce. Some waste management companies are strongly positioned to handle additional demand in treating medical waste. Renewi is coordinating logistical support in collaboration with a decontamination expert to reuse medical masks at hospitals in the Netherlands.

Repsol

Repsol's ESG Evaluation score, unchanged at 68, continues to reflect our view of the company's strong preparedness and better-than-peers' management of its environmental and social risks in a highly exposed industry. We believe the current pandemic is exposing Repsol to two main risks: the first relates to the health and safety of its stakeholders, including its employees, customers and contractors, especially in operations that cannot be performed remotely. We note that the company has developed a country-specific action plan to ensure the safety of its employees and has engaged with the Spanish government to support its current policy response. We believe this is in line with other major European oil and gas, and exploration and production, companies. The second risk combines COVID-19 travel stoppages with unfettered crude oil supply and discounting on oil prices and refining margins, resulting in capital spending cuts across the industry. In this context, Repsol has announced that it will maintain investments allocated to low-carbon technologies, which is an important factor in our strong preparedness score. We will continue to monitor the effects COVID-19 may have on Repsol's business. At this point, our score of 68 with Strong preparedness remains unchanged.

More information is available via the Capital IQ portal in the research piece entitled: "ESG Evaluations Remain Unchanged For Now In Light Of COVID-19"

ESG

Tideway

On April 8, 2020, Bazalgette Tunnel Ltd., trading as "Tideway", scored 74 in its ESG Evaluation. On our scale, 100 indicates the lowest risk and 0 the highest. The company's ESG Evaluation score is the result of an ESG profile of 74 combined with adequate preparedness.

Tideway is a U.K.-based independent regulated infrastructure provider responsible for designing, financing, constructing and commissioning the Thames Tideway Tunnel in London. The construction of the 25 kilometer (16 mile) tunnel is underway and aims to manage the amount of sewage discharged into the river Thames and the growth in water and sewerage demand associated with London's growing population.

Tideway's ESG evaluation score of 74 reflects our view that sustainability is well embedded in Tideway's strategic objectives and operations. We expect the tunnel to have significant environmental benefits in terms

of increasing sewage storage capacity and reducing the amount of combined sewer overflows (CSOs) discharged into the Thames.

Our assessment also incorporates the company's own sustainability credentials, including Tideway's high governance and social standards. We also factor in the company's strong safety track record, although we believe that it remains exposed to safety risks given the complex and risky nature of tunnel construction.

Our assessment of Tideway's adequate preparedness reflects the company's unique purpose and ability to capitalize on future opportunities as it will transfer the daily operations of the tunnel to Thames Water upon completion. Therefore, our preparedness opinion has a neutral impact on Tideway's ESG evaluation score.

More information can be found via the Capital IQ portal in the ESG Evaluation entitled "Tideway Scored 74 On ESG Evaluation; Preparedness Adequate"

EP Infrastructure

On April 8, 2020, S&P Global Ratings announced that EP Infrastructure scored 65 in its ESG Evaluation. The company's ESG Evaluation score is the result of an ESG profile of 62 combined with preparedness at the upper end of the adequate category.

EP Infrastructure (EPIF) is a Czech-based diversified energy infrastructure group that operates across four core business segments: gas transmission, gas and electricity distribution, gas storage, and heat generation and distribution.

Its ESG evaluation score of 65 reflects the moderate environmental and relatively high social risk exposures from the sectors in which EPIF operates, while governance is supported by

the EU's relatively high governance standards. The company's approach to environmental risk focuses on regulatory compliance along with monitoring and modernizing assets, which aligns with regular industry practices.

The social profile reflects standard safety and customer engagement efforts but is limited by a nascent group-level talent management and diversity strategy. And its Governance score reflects a strong shareholder agreement between EPIF and MIRA, which enables effective and balanced oversight and creates a degree of insulation between EPIF and parent EPH.

More information can be found via the Capital IQ portal in the ESG Evaluation entitled "EP Infrastructure Scored 65 On ESG Evaluation; Preparedness Adequate"

American Water Works Co. Inc.

On April 7, 2020, S&P Global Ratings gave American Water Works Co. Inc. (American Water) an ESG Evaluation score of 87. American Water is a publicly traded utility holding company that provides, through its subsidiaries, water and wastewater utility services to about 15 million people in about 1,600 communities across 16 U.S. states.

American Water's ESG Evaluation score of 87 reflects our view that the company prioritizes commitments to safety, environmental stewardship, and public health in its strategy, and that ESG goals are a natural fit for and align well with its business model. Examples include the company's commitment to providing safe drinking water to customers and safe workplace conditions to employees. The

company's governance benefits from strong structure and oversight, as demonstrated through its board structure and remuneration policies.

American Water's preparedness assessment of best in class reflects its ability to identify, assess and act on risks and opportunities its business faces, including climate change, infrastructure replacement, water contamination and an aging workforce. The company fosters an effective culture to contend with sustainability-related risks, and prioritizes safety and compliance with mandated regulations to protect and enhance its financial and reputational standing.

More information can be found via the Capital IQ portal in the ESG Evaluation entitled "American Water Works Co. Inc. Scores 87 In ESG Evaluation"

Royal Schiphol Group

On April 1, 2020, S&P Global Ratings said that it scored Netherlands-based Royal Schiphol Group's €750 million green bond E2/71 under its Green Evaluation. E2 is the second-highest score on our scale of E1 (highest) to E4 (lowest).

Schiphol will use the proceeds to improve the energy efficiency of its airport terminals and pier buildings, commercial and other real estate, build new energy-efficient buildings, as well as invest in clean transportation assets and infrastructure in the Netherlands.

The excellent Governance score reflects the procedures that Schiphol has to ensure the transaction complies with its green finance framework, including tracking and auditing the allocation of proceeds to eligible projects, measuring the environmental impact of these projects, and certifying green building projects against high industry standards. The solid Transparency score reflects the strong level of disclosure of Schiphol's green bond framework. Both the Governance and Transparency scores are capped at the Mitigation score.

More information can be found via the Capital IQ portal in the Green Evaluation entitled "Royal Schiphol Group's €750 Million Green Bond Scores E2/71 On Green Evaluation"



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