



The world after Covid-19



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The world after Covid-19: Scenarios for the future of energy

The Covid-19 pandemic has hit the world economy harder than any event since World War 2. As governments around the world have shuttered businesses and restricted freedom of movement, demand for energy has plunged. Oil consumption in Q2 2020 is down more than 12%.

The ultimate impact of the pandemic is still uncertain and will depend heavily on whether an effective vaccine can be developed. Political decisions, including the US elections in November, will also shape the consequences for energy.

However, some clear trends are already emerging. Governments are intervening more actively to control businesses and the public; international trade and travel are being restricted; and the use of new technologies to adapt to life under lockdown is surging.

As a framework for thinking about the long-term effects of the pandemic, we present three scenarios based on these trends and consider the implications for energy and natural resources. One scenario models a full recovery in the world economy, the second explores the impact of a widespread rejection of globalisation, and the third considers the consequences of governments using economic stimulus to accelerate the energy transition.

The scenarios suggest a lasting impact on energy demand, which could persist for decades. Oil demand in particular is at risk, potentially taking years to regain its levels before the pandemic, and growing only slowly thereafter.

How will corporate strategy shift? Oil and gas companies are super risk-averse following the plunge in prices. But they need to prepare for the changing world that lies ahead and map out a strategic direction to thrive post-crisis. If the global response supports a more rapid transition to the green economy, metals and mining companies may see the downturn as an opportunity. Power companies will continue to shift away from coal and towards renewables, but the pace of change will depend on the policy environment.



How the coronavirus will change the world

Earlier pandemics have changed the world, and so will Covid-19. The impact will be often be greatest when it reinforces shifts that are already under way, but it is also driving innovation in ways that can create radical changes in corporate and individual behaviour. Periods of crisis always encourage the rapid deployment of new technologies, and the adoption of the latest advances in data analytics and automation is likely to be accelerated.

The changes we expect include:

An expanded role for government

To limit the spread of the coronavirus, governments have adopted measures with no peacetime precedent, imposing restrictions on businesses and the public covering almost 4 billion people.

The attempt to cushion the economic blow from those lockdowns has also meant greatly increased intervention by the public sector, with huge fiscal and monetary programmes launched to prop up businesses and financial systems. Some of those programmes can be expected to last for many years.

Measures to limit the risk of Covid-19 re-emerging will also involve governments taking on more powers, restricting mobility and collecting more personal data.





A retreat from globalisation

The pandemic has exposed the risks in some critical extended supply chains, most urgently for medical equipment. The longer the crisis lasts, the more governments and businesses will seek to source commodities, components and goods that are less distant and more secure.

The rhetoric in some countries, particularly the US, about “holding China accountable” for allegedly failing to warn the world properly about the danger of the new coronavirus also points to increased barriers to international trade.

Free trade ideology was already in retreat in many countries, and the pandemic has amplified calls for greater economic nationalism. The Japanese government’s decision to put up US\$2.2 billion to help companies relocate from China is one sign of how countries are attempting to reduce import dependency.



Increased automation

The cases of coronavirus reported on oil and gas platforms in the Gulf of Mexico were a reminder of the difficulty of controlling the virus in confined conditions. Automating more processes will be one response to the threat of infection in the workplace.

A suite of technologies – including low-cost sensors, machine learning and advanced robotics – has been enabling businesses to rethink operations in energy, metals and mining and many other industries. Persistent requirements for social distancing will increase the payoff from investing in those technologies.





A reduced demand for personal travel

When the pandemic is over, people will want to go back to going on vacation, seeing family and friends, and meeting clients. Even so, travel will take a long time to recover. Many people will remain nervous about the risks, and governments will keep some restrictions in place even once businesses reopen, renewing lockdowns if cases start to rise again.

Businesses have been given a crash course in the potential of modern remote working technology and will seek to cut costs wherever possible by eliminating non-essential travel. They will also seek to reduce office space, leading to a decline in commuting.

On the other hand, some people will choose to move from densely populated urban areas to the suburbs, where car use is higher.



Scenarios for the post-pandemic future

To help think through the implications of these developments for energy, we have sketched out three scenarios: '**Full recovery**', '**Go it alone**' and '**Greener growth**'. The actual outcomes are likely to range between these extreme cases, and to include elements from each, but they give us a framework to examine how energy markets might evolve.

We have made preliminary projections of the outlook for the main energy commodities in those various scenarios. The numbers are illustrative of possible outcomes, and Wood Mackenzie analysts will present more detailed forecasts in the coming weeks

The key features of the scenarios are:



1. Full recovery

A sharp but relatively short world recession, with an effective vaccine becoming available next year. Massive government intervention helps economies rebound, and by the end of the 2020s, the world has reached the same level of GDP as if the pandemic had never happened. Corporate strategy and consumer behavior broadly return to previous patterns.

2. Go it alone

A longer recession and slower subsequent growth, as the coronavirus proves more difficult to defeat. A backlash against international trade, fueled by international tensions and fear of infection, and pressure for shorter and more secure supply chains. Tighter controls on travel and immigration. Global economic growth is on a slower long-term trend.

3. Greener growth

Also a sharp but short recession and a strong rebound, in line with the 'Back to normal' scenario. The difference is that governments in the US, China, Europe and elsewhere focus stimulus programmes on supporting the energy transition. Tax breaks, grants and low-cost loans are offered to renewable energy, electric vehicles, storage and other low-carbon technologies.





Scenarios

for the post-pandemic future



1. Full recovery

- Vaccination ends the pandemic
- Fiscal and monetary stimulus revives economies
- Global growth returns to 2.5% trend rate
- World trade and travel return to previous trends
- Oil demand growth resumes, reaching a peak in the late 2030s
- Coal demand hits a plateau



2. Go it alone

- Vaccination effectiveness is limited
- Slower recovery from the world recession
- Governments put up more barriers to trade
- Industries shorten supply chains
- Global growth slows to long-term trend of 2%
- Weaker international action to curb emissions



3. Greener growth

- Fiscal stimulus includes measures to accelerate the energy transition
- Renewables, EVs, storage and the grid supported by grants and tax breaks
- Global growth returns to 2.5% trend rate
- Carbon pricing strengthens in most leading economies
- Trade and travel reflect costs of carbon
- Regulation and incentives accelerate energy efficiency gains



The '**Full recovery**' scenario can be seen as a "best case" for oil demand. After a few years of disruption, consumption returns to the long-term outlook that Wood Mackenzie was forecasting at the end of last year, reaching a peak in the second half of the 2030s. Petrochemical feedstocks are the main source of growth. Gas demand continues to grow throughout the period, reaching about 5 trillion cubic metres in 2040, up 34% from 2019's level. Coal demand declines slowly through the period, replaced by gas and increasingly low-cost renewables.



In the '**Go it alone**' scenario, weaker economic growth means that energy demand is on a lower trajectory through the next two decades. The markets for jet fuel and diesel continue to grow, but at a slower rate because of travel restrictions and trade barriers. Oil demand does not peak any earlier but shows very little growth after the initial post-pandemic rebound. By 2030 it is barely any higher than was expected for 2020 if the pandemic had not hit. Coal demand rises in India, China and Southeast Asia, but the declines in the US, Europe and eventually Japan South Korea and Taiwan outweigh those increases.

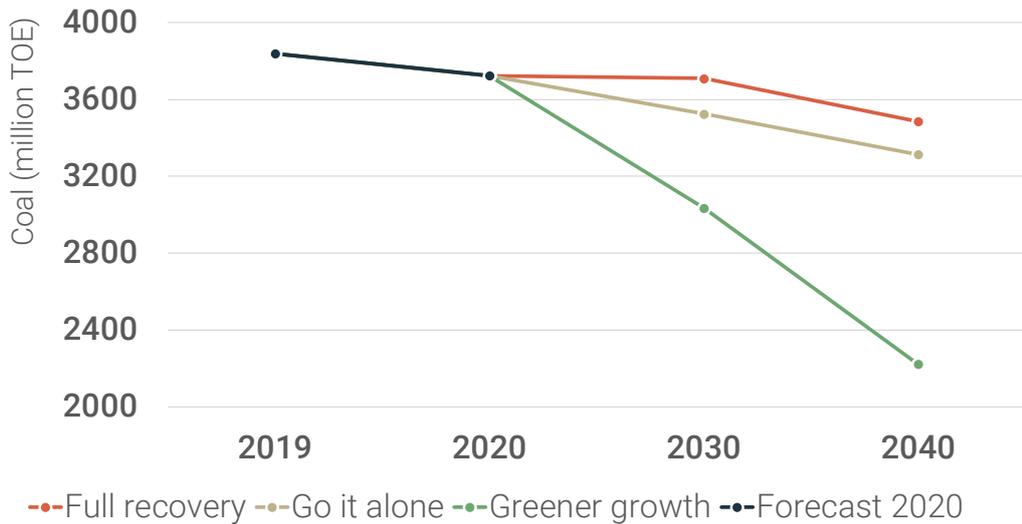
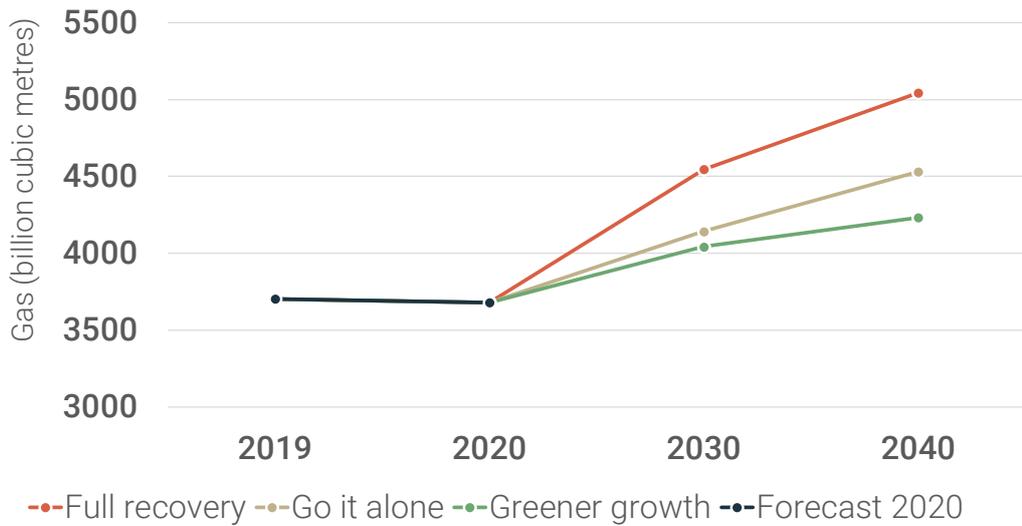
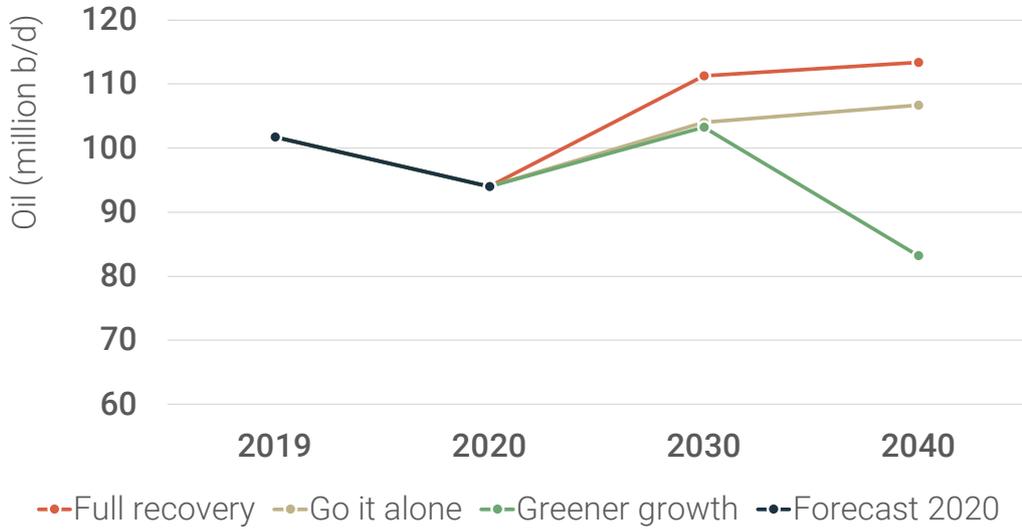


The '**Greener growth**' scenario is in line with Wood Mackenzie's existing projection for an accelerated energy transition, reflecting potential changes to the global energy system if governments worldwide commit to radical change to cut carbon emissions. After the post-pandemic rebound, world oil demand is essentially flat in the 2020s, before starting a steep decline in the 2030s. Demand for gas grows as it drives out coal for power generation and domestic use. The combined share of oil, gas and coal in total primary energy drops to 68% in 2040, down from 84% in 2019. There will be a steep increase in demand for metals, particularly the battery raw materials lithium, nickel and cobalt.



The energy outlook

Energy demand projections





Which path are we on?

In all the upheavals created by the coronavirus, some things will not change. Human nature will still be the same: people will want to meet friends and family and congregate in large groups when they can. The economic logic of comparative advantage that has created complex global supply chains will not change, either. So, there will be powerful forces driving the world back towards the economic structures and habits that existed before Covid-19 hit.

However, some features of the world before will not be easy to reconstruct.

The '**Full recovery**' scenario is not impossible – the influenza pandemic of 1918-20 was followed by the economic boom of the Roaring 20s – but the risks are weighted to the downside, and oil demand is particularly vulnerable. Whether because of lower economic growth, travel restrictions and trade barriers, government policies to accelerate the transition to electric vehicles, or some combination of all of those, oil demand is likely to be lower in the long term than seemed likely before the coronavirus hit.

How will corporate strategy shift? Oil and gas

Poleaxed by the brutal combination of economic crisis and oil price collapse, the oil and gas industry's sole focus is survival in 2020. Only 'no-regret' decisions will be made, mainly around cost reduction.

Strategic decisions will be put on the back burner while the crisis is at its peak. But companies must also prepare for the world that lies ahead, mapping out a strategic direction to thrive post-crisis. Risk aversion will be one common theme. Another will be flexibility in execution given the higher uncertainty as to what the future looks like. Companies must be adaptable.

Strategic divergence is likely to accelerate

We expect an acceleration of the pre-existing trends in corporate strategies driven by investor, political and societal pressures. The US Majors and larger Independents will intensify **focus** on their global core businesses; European majors will **diversify** into zero carbon energy. A suite of regional **niche** players can build positions as the Majors retreat. Demand for gas is more resilient in each of our scenarios, and we'd expect gas to increase its share in upstream portfolios, irrespective of corporate strategy.

NOC strategies will vary by region and by country. Integration across the hydrocarbon chain, including petrochemicals, will be a central theme.

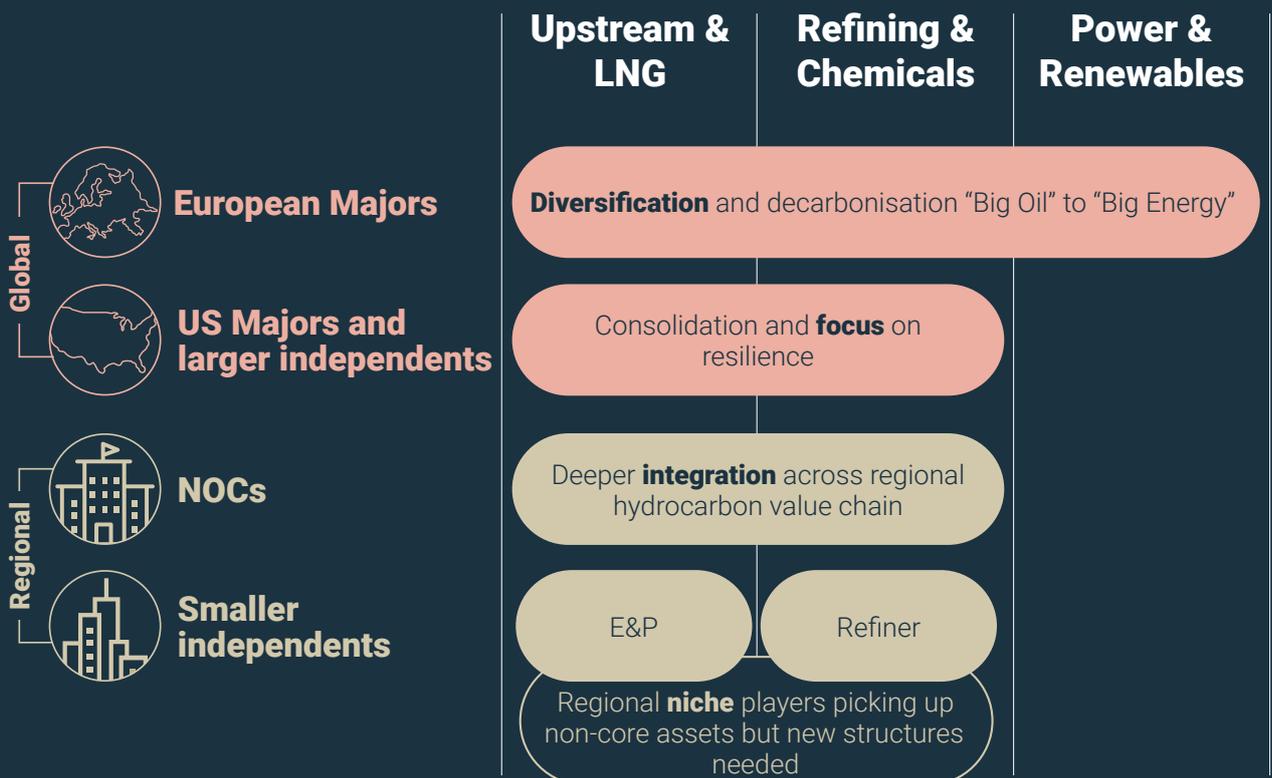
It's easy to pigeon-hole, but each oil and gas company will position for change as it sees fit, and depending on its starting position. The challenges that lie ahead raise many questions which the companies will need to answer as they execute.



The US Majors/larger Independents: Focus strategy - resilience and value above growth

Focus on returns through aggressive portfolio high grading and cost management. Resilience criteria will be tightened and lead to an exit from high-cost, high-carbon assets.

- As Majors and larger Independents increasingly manage for margin, they may choose to exit ‘awkward’ assets such as Canadian oil sands. With a limited pool of buyers, will sellers be prepared to divest unwanted assets at steep discounts? One option is to spin these off into ‘bad producers’ for niche players to later sweep up.
- Investors will expect higher returns and distributions from a ‘pure-play harvest’ model in a maturing oil and gas sector. Consolidation could drive efficiencies through portfolio and G&A synergies. But the companies will find it hard to deliver improved returns without help from oil and gas prices.
- Portfolio choices will be key to success. What part will flexible US unconventional or capital-intensive, low-return LNG projects play in upstream portfolios built for resilience? Will the pendulum swing back to international conventional projects or will reduced risk appetite intensify domestic retrenchment?
- Downstream will be streamlined to integrate more closely with upstream and petrochemicals.
- ESG will increasingly dominate the stakeholder agenda. Pure oil and gas players will be under pressure to decarbonise beyond Scope 1 and 2 to remain investible





The European majors: Diversification - accelerated corporate energy transition

Responding to societal and ESG pressures, the European Majors will accelerate the shift from 'Big Oil' to 'Big Energy', with Scope 3 carbon commitments in line with the Paris Agreement goals. Shell's ambitious decarbonisation plans, announced on 16 April 2020, are confirmation that the European peer group's commitment to net-carbon neutral is undimmed by the crisis.

- Oil and increasingly gas will be part of the portfolio for decades to come, albeit declining in importance as zero-carbon assets build. But it is unclear how the market will value these diversified entities, and whether investors will acknowledge lower risk/lower return through share price rerating. Can dividends be maintained through this transition? Shell and Equinor have already decided that they cannot.
- A new business model or corporate structure is needed for these diversifying businesses to establish a competitive advantage and demonstrate value. Companies will look for ways to make the diversified whole worth more than the sum of the parts.
- The Majors will be challenged to compete with pure play utilities on costs in the generation, grid edge and customer segments they will target. The shift from 'fixed prices' to 'merchant prices' for renewables could give oil companies an advantage from a risk and size perspective.
- A shift from 'mature' to 'green growth' business won't be achieved organically, relying on legacy cash flow fund acquisitions. Can the model be scaled up and will access to capital remain competitive?

Niche players: Specialists in upstream or downstream

Consolidation is inevitable, leaving a smaller, but stronger pool of higher quality E&Ps, and new independents will emerge. Other niche acquirers will include specialist private companies, oil traders and new equity structures with higher risk and reward tolerance. Deep-pocketed family offices or Sovereign Wealth Funds unconstrained by ESG could emerge as buyers of carbon-intensive or environmentally challenged assets. There could also be opportunities for specialists to focus on improving ESG credentials of 'bad' assets.

Different scenarios favour different strategies

In the '**Full recovery**' case, both the 'focus' and 'diversify' strategies can co-exist, for a time, but inevitably one strategy will win. Significant relative underperformance by either group would force a U-turn and force them to change course.

'**Go it alone**' favours the simpler focus strategy, centred on resilience. With climate change



down the agenda, we can imagine the European majors coming under greater pressure to abandon Big Energy ambitions.

'Greener growth', in contrast, is bullish for zero carbon diversification, offering a path to growth and could force US companies to follow their European peers towards decarbonisation. The US political landscape through the next administration will play a big part in which direction the US Majors' strategies evolve.

How will corporate strategy shift? Metals and Mining

Demand recovery for metals today looks increasingly bifurcated, as China regains much of its industrial might while many other countries are only slowly relaxing restrictions. The industry unsurprisingly finds itself in margin protection mode, cutting costs and pushing out project development, but still needs to think about strategy for long term. Scenario planning gives rise to several new directions that strategic thinking might follow.

1. The major diversified miners: Cyclical resilience

The crisis has underlined the benefits of commodity diversification, scale and balance sheet strength. The capital allocation debate of shareholder returns versus growth is now likely to swing firmly to prioritising shareholder returns. The majors will be pressed to keep investor trust intact, through continued prudent capital allocation and healthy dividends, but there will still be a desire to look for growth opportunities that can move the dial.

Emerging growth strategies could be delayed. Glencore's growth in battery raw materials has faced setbacks, while project spend is being pushed out at Anglo American and South32. But while this crisis has rocked short-term dynamics, it has spurred the search for the Holy Grail of high-quality, scalable portfolios in stable geopolitical environments.

Calls for greater disclosure and action on carbon emissions targets still need to be addressed over the longer term. ESG compliance will continue to impact capital allocation decisions away from carbon-intensive commodities, favouring those that enable the energy transition.

2. Pure play miners: Winners and losers



Pure-play commodity producers will suffer varying extents of disruption and damage. If stronger companies emerge in a position to advance their strategies, distressed companies holding good assets may become M&A targets and plays for industry consolidation.

Focused growth opportunities in this sector are likely to be defined by the path of global recovery, as financing enough firepower to continue building as before may come at higher cost.

If the fundamental outlook for certain mined commodities becomes significantly worse post-pandemic, pure-plays in these sectors may be forced into other strategies. Relative cost positioning, scalability and jurisdictional risk will remain central to longer term strategic goals.

Meanwhile, ESG concerns are rising unabated. The crisis-induced pause in activity may allow management teams to scrutinise these issues more closely, as smaller companies face growing investor pressure to adopt more stringent climate and social policies while improving investor perception of governance.

In the **'Full recovery'** scenario, a rising tide lifts all boats. Some will rise faster than others, though, depending on commodity exposure and operational leverage. Within each commodity, producers placed higher on the cost curve will enjoy the greatest operational leverage during the upturn.

A **'Go it alone'** world will reignite risk-off sentiment, and pile added pressure on the mining sector. Capital flows are likely to become even more limited, and will favour lower-risk diversified companies and lower-cost pure-play producers.

The **'Greener growth'** scenario is bullish for the pure-play miners that focus on lower-carbon energy commodities such as copper, nickel, cobalt and lithium, leading to investment in growth and M&A. The bigger, better-capitalised, diversified miners could also take advantage of this scenario to strengthen their portfolios in key commodities.

How will corporate strategy shift? Power and renewables

Unlike more global commodities, the power industry is hyperlocal, with several markets already familiar with negative price periods. In our pre-Covid-19 outlook and the **'Full recovery'** scenario, many mature markets reach significant (70%+) shares of non-carbon generation on the grid, although the picture is uneven.

In the **'Go it alone'** world, the power industry faces more policy fragmentation as well as



depressed demand growth from negative economic and trade policies. The economics of renewables are unlikely to backtrack, however, and their share of generation will continue to grow.

In '**Greener growth**', the power industry will be a major beneficiary as sectors from transportation and home heating to heavy industries and oil extraction look to decarbonise via electrification. The European Commission's desire to tie stimulus funds to "green transition" is the clearest example.

For power companies, the priorities will be:

1. De-risk existing business and diversify

Even in the '**Full recovery**' case, electric utilities in North America and Europe will still have to deal with declining coal generation. Growth will require de-risking existing business models, which may be easier for vertically integrated

2. Capitalise on incumbent advantage

The '**Go it alone**' world will further entrench incumbent regulatory structures, as utilities vie for more protection to preserve traditional business models. This case leaves the electric utilities vulnerable to an acceleration of decarbonisation when it eventually arrives.

3. Adopt and innovate grid flexibility models

The most underappreciated outcome of '**Greener growth**' will be the rise of new business models. Traditional electric utilities will need revenue streams tied to services, a far cry from the current 'poles and wires' model. The grids will need to be more flexible. Historically, generation has had to follow load, but a more decarbonised grid will require the load to be more dispatchable. Utilities that have flexibility products and customer-centric offerings in their DNA will benefit in this scenario, and new entrants with disruptive ideas will also proliferate.

How could the coronavirus pandemic affect your business?



The outbreak of coronavirus, the oil price crash and the impending global recession present an enormous challenge for energy and natural resources businesses like yours. Wood Mackenzie is here to help inform the decisions that will sustain your organisation through the crisis and beyond. Our team of 600+ analysts in 40+ countries continues to deliver the data and analysis you rely on; our team of consultants with expertise in your industry is on hand to support you.

Wood Mackenzie is among the leading providers of commercial insight and data to the oil and gas, metals and mining and power and renewables industries. Our Research and Consulting teams advise companies across these sectors on supply chain risk, performance management and cost control; portfolio management to improve resilience and maximise value; and energy transition strategies including reduction of carbon intensity in legacy fossil fuels.

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