Fitch Solutions

MAR 2021

GLOBAL SUMMARY POWER & RENEWABLES

Week Commencing 15th March

Contents

Global

Potential For Offshore Wind To Progress In The Black Sea

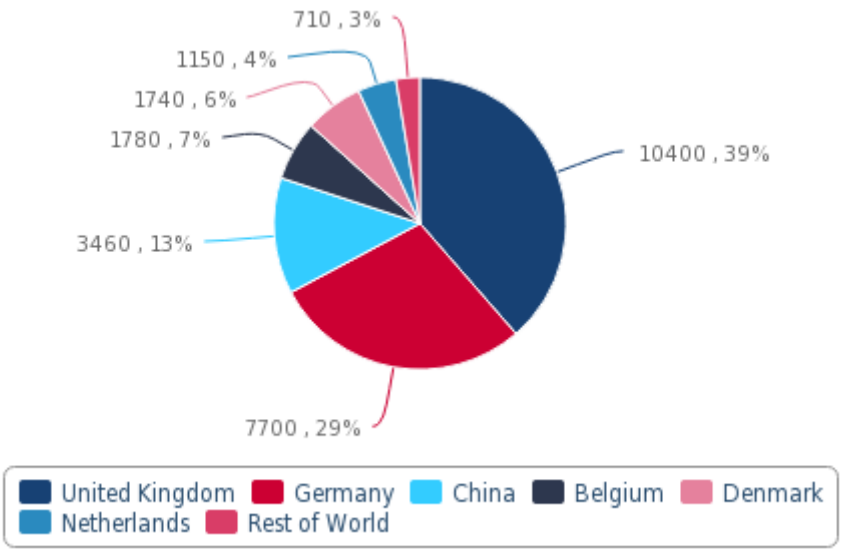
Key View:

- The Black Sea has some of the world's best offshore wind resource potential but currently has limited project development with only one Romanian-led project under development.
- Other regional markets, including Turkey and the Ukraine, have been looking to tap into the offshore sector but have seen limited levels of progress.

While the Black Sea has some of the world's best offshore wind resource potential, there has so far been limited project development. While the Black Sea has some of the world's best offshore wind resource potential, there has so far been limited project development with only one Romanian-led project under development. A report from **International Finance Corporation (IFC)** and **World Bank** outlined that the Black Sea holds over 500GW of potential offshore wind capacity. While this estimate does not factor in the many complex issues surrounding offshore wind planning and development, it does indicate that the region holds significant investor opportunity. The Black Sea is bordered by Greece, Bulgaria, Romania, Ukraine, Russia, Georgia and Turkey, many of whom have the engineering and infrastructure development capabilities to deliver such complex projects. While development has thus far been sluggish, there could be significant momentum with the EU's Modernisation Fund which offers support for the development of offshore renewable energy in Bulgaria and Romania.

We currently do not expect any offshore wind developments to be realised in the Black Sea in our forecast period of 2021 to 2030. Within our Key projects Database, there is only one offshore wind farm in the planning phase within the region – a 600MW offshore wind project being targeted by Romanian power utility **Hidroelectrica**. However, given the project's complexity and the quality of the existing infrastructure in place in Romania, the project's success remains in question. That said, Romania has developed a large number of non-hydro renewable projects in the past and has the capability onshore. We note that 2010 saw the start of Romania's renewable growth, with wind power capacity rising from 0GW to 3.2GW in 2020 and solar capacity expanding from 0GW to 1.5GW over the same time period. Many of these projects had established European or global partners with good development experience. We currently expect this onshore progress to lead to a rise in capacity of an additional 0.8GW of wind and just under 1GW of solar by the end of the decade with upside risks developing in both sectors.

Offshore Wind Still Dominated By Western European Markets
Global – 2020 Offshore Wind Installed Capacity, GW & % Share



Source: Fitch Solutions Key Projects Database, GWEA

For the offshore project, there is strong support from the Romanian government. Among these we note that over Q420 the senate approving a bill formalising the processes for licensing and regulating offshore wind operations. The bill also formalises the subsidy process which will follow a Contracts For Difference (CfD) format. The offshore project is said to be partly financed by Hidroelectrica itself and via European Union funding, which brings in an element of project de-risking and a new level of scrutiny. Furthermore, Hidroelectrica have stated that they might wish to partner by teaming up with industry players from other countries and develop projects co-funded by EU schemes. If they bring in an established entity to take on a part of the process, which has happened in many onshore wind farm cases, it would increase the chance that it could be realized by the end of the decade – creating stronger upside risks to our forecasts.

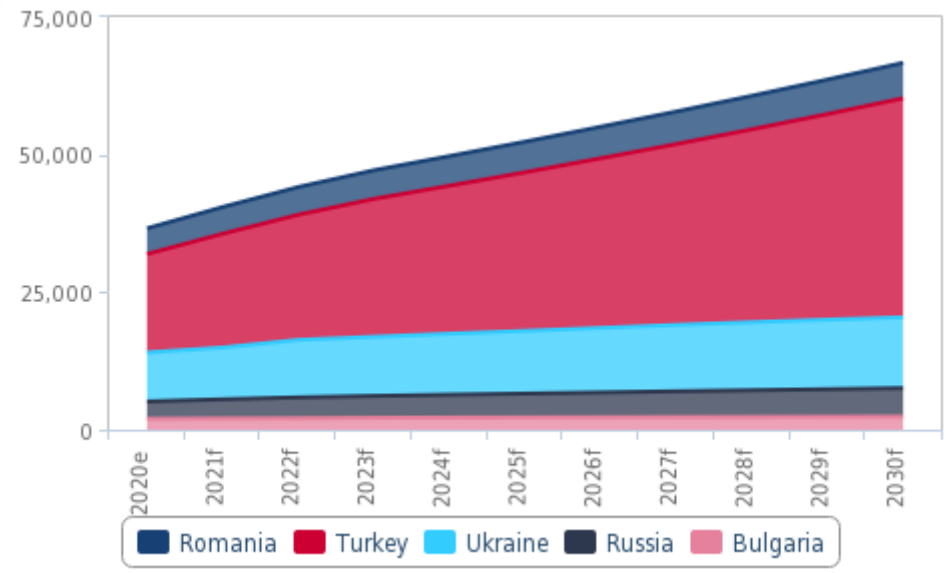
Limited Progress From Other Regional Markets

Other regional markets, including Turkey and the Ukraine, have been looking to tap into the offshore sector but have seen limited levels of progress so far. Turkey launched a 1.2GW offshore wind tender in 2018 - with the Black Sea as one potential area for development - although it ultimately was indefinitely suspended because of low interest. Over Q419 it was reported that levels of cooperative development between Denmark and Turkey were taking place. Seven leading Danish wind supply chain companies held discussions business development meetings with Turkish companies to develop a route to cooperative partnerships. However, we note that a significant deteriorating shift in EU-Turkish relationships over the past year has and will continue to weigh on the opportunities for cooperation.

That said, Turkey's non-hydro renewables sector will grow robustly over the decade, with the wind and solar sectors set to lead growth. We forecast that total non-hydropower renewables capacity will more than double from 17.9GW in end-2020 to 39.8GW in 2030, with non-hydro renewables generation set to reach 90.7TWh by the end of the decade. Our strong growth outlook is supported by a growing project pipeline, continued government support for developing the sector and increasing domestic manufacturing capacity. This rapidly sector maturity and increasing drive for renewables will continue to lend support to the development of the offshore segment.

Non-Hydropower renewables to rise in regional markets

Select Markets - Non Hydropower Renewables Capacity, MW



Note. e/f = Fitch Solutions estimate/forecast. Source: EIA, Fitch Solutions

The Ukraine has seen a lot of renewable energy project activity recently, with about 2GW's of onshore wind in the market's project pipeline which is significant for the region. That said, we have not seen much support for offshore wind development in Ukraine outside of interest before the Crimea crisis with **Vindkraft Ukraina LLC** aiming to build an 18MW offshore wind pilot project in 2012/2013. We believe that there could be an elevated risk to offshore wind development in the Ukrainian waters owing to the Crimea conflict, although large-scale open aggression outside the conflict zone remains unlikely. However, our Country Risk team has flagged that we have also seen tensions in recent years between Russia and Ukraine in the Kerch Strait, around the Crimean peninsular. The team has also noted that there is a fair amount of semi-dormant tensions in the Black Sea region. Notably, Crimea remains unresolved. Furthermore, while Russia and Turkey have reasonably good relations, they have supported opposite sides in a number of regional proxy conflicts and are geopolitical competitors. It is important to note that the Turkish Straits are supposed to abide by the 1936 Montreux Convention, but Turkey has the right to close the Straits in times of conflict. Given the limited access to the sea and the undeveloped nature of offshore wind facilities/operations having access via the strait is of absolute importance.

Africa

South Africa Power Capacity To Underperform Due To Government Policy Delays

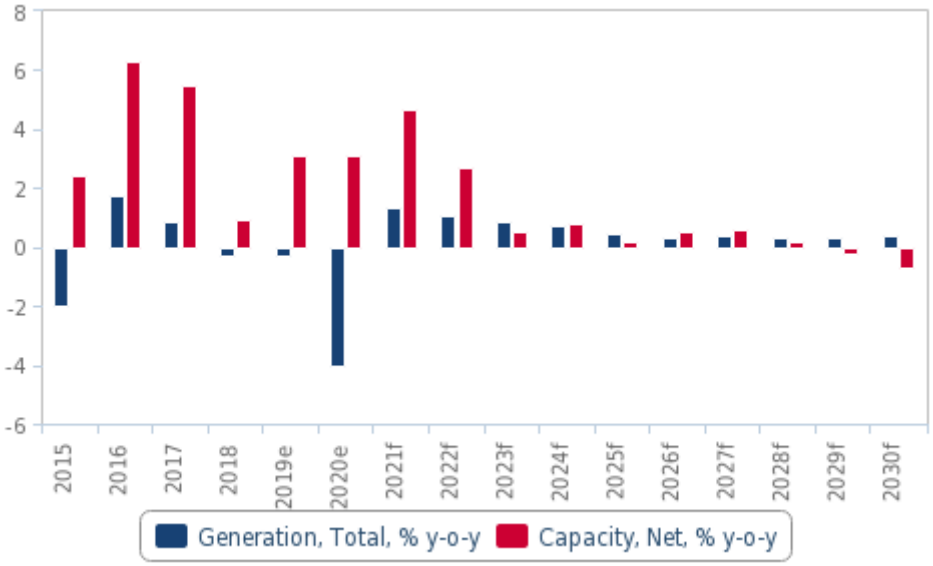
Key View

- We expect that South Africa's installed electricity capacity will continue to underperform in terms of output over our 10-year forecast period, with load shedding remaining a factor, as a result of policy implementation delays.
- Power sector investors will become increasingly cautious of entering the South African market as a result, especially with a history of previous policy delays regarding IPPs and the reform of the power sector.
- Although plans for new capacity through both the RMIPPPP and planned new rounds for the REIPPPP holds an upside risk, we remain bearish in our outlook until progress is made on stated government goals.

We expect that South Africa's installed electricity capacity will continue to underperform over our 10-year forecast period as a result of policy implementation delays. With delays in the approval of regulations allowing municipalities to purchase power from independent power producers (IPPs) and firms to self-generate, power security will remain an issue as state-owned utility Eskom's already-strained capacity remains the primary source of electricity in the market. Following the annual 'State Of The Nation' (SONA) 2020 address in February, we wrote that the new stated government measures hold significant upside to growth in non-hydropower renewables in the country, particularly for private sector developers. particularly for private sector developers. However, given a lack of progress later that year we wrote that policy uncertainty will start to weigh on investor confidence. Our view has been underlined by the SONA 2021 address, which essentially restated the goals outlined the year before.

Generation Performing Below Capacity

South Africa - Electricity Generation & Capacity Growth, % y-o-y



e/f = Fitch Solutions estimate/forecast. Source: EIA, IRENA, Fitch Solutions

In the SONA 2020 address, the following goals were laid out for the South African power sector:

- Implementing the Integrated Resource Plan (IRP) 2019, which entails the development of additional power capacity from virtually all technologies, especially procuring electricity from projects that can supply power within three to 12 months of being

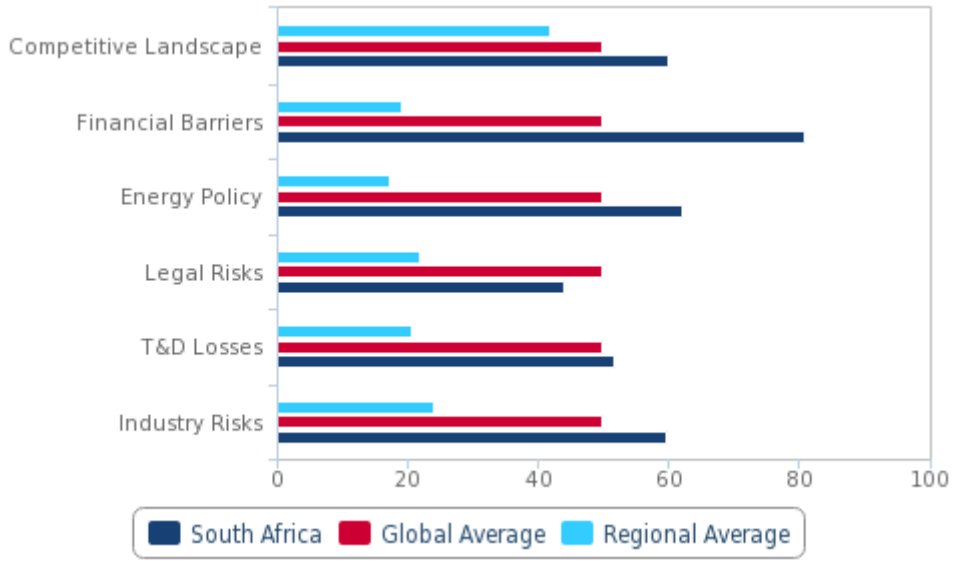
approved.

- Private companies will be allowed to generate their own electricity, no longer being limited to a 1MW cap.
- Launching the Risk Management Independent Power Producer Procurement Programme (RMIPPPP) to purchase emergency power from projects (of any technology type) that can start operations within 12 months of being approved.
- A new bidding window for IPPs under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).
- Allowing municipalities to purchase their own electricity supply from IPPs.
- The continuation of load shedding in order for Eskom to be able to undertake maintenance on its existing capacity.

At the time of writing, there has been little progress on these goals. According to news reports in February, since the release of the IRP in 2019, the South African government has not procured any new electricity capacity. While the Department of Mineral Resources and Energy (DMRE) indicated that it would launch the new bidding window for the REIPPPP in December 2020, the new rounds remain unopened. Similarly, plans to lift the self-generation cap and allowing municipalities to purchase electricity directly from IPPs are still not implemented.

South Africa Remains Above Regional Average For Industry Risks

South Africa, SSA & Global Industry Risk Breakdown



Note: Scores out of 100; higher score = more attractive market. Source: Fitch Solutions Power Risk/Reward Index.

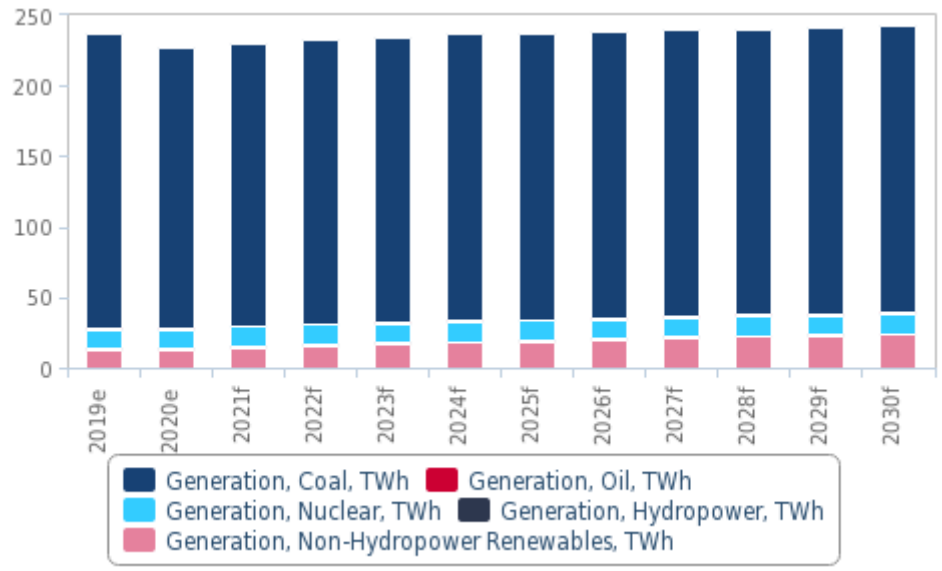
In February 2021, the CEO of Eskom stated that he supports the plan to lift the generation cap and open up avenues for distributed generation in order to reduce the burden on the utility itself as it could potentially unlock up to 5GW of new capacity. This will be done through distributed generation, with multiple private generators connecting to the grid and engaging in offtake agreements with other companies, mines, farms or smelters. **We expect that load shedding will remain a feature of the South African power sector over at least the medium-term if government policy implementation remains delayed**. This is because it will limit the amount of new capacity being brought online while Eskom undertakes maintenance on its existing power capacity.

While South Africa still boasts the largest installed electricity capacity in the SSA region by far and has relatively lower Industry Risks (as can be seen from the chart above), **we expect that there will be increasing wariness from investors looking to enter the South African power sector**. With previous delays to signing IPP contracts as well as strong pushback by unions, we expect that the DMRE's slow implementation of policy goals will decrease risk appetite for investors. **The plan for Eskom to procure 6.8GW of electricity from IPPs through the REIPPPP, as well as a further 2GW through the RMIPPPP, does pose an**

upside risk to our outlook. However, our forecasts remain bearish for new growth and we expect South Africa to remain largely reliant on coal-fired power (as can be seen from the charts below) given repeated delays in signing contracts and pushing through and enforcing regulations.

Power Generation Growth To Remain Stagnant, Largely Reliant On Coal

South Africa Power Generation Growth To Remain Static And Largely Reliant On Coal



e/f = Fitch Solutions estimate/forecast. Source: EIA, IRENA, Fitch Solutions

Asia

Growth Prospects For Solar Power In Malaysia Improving

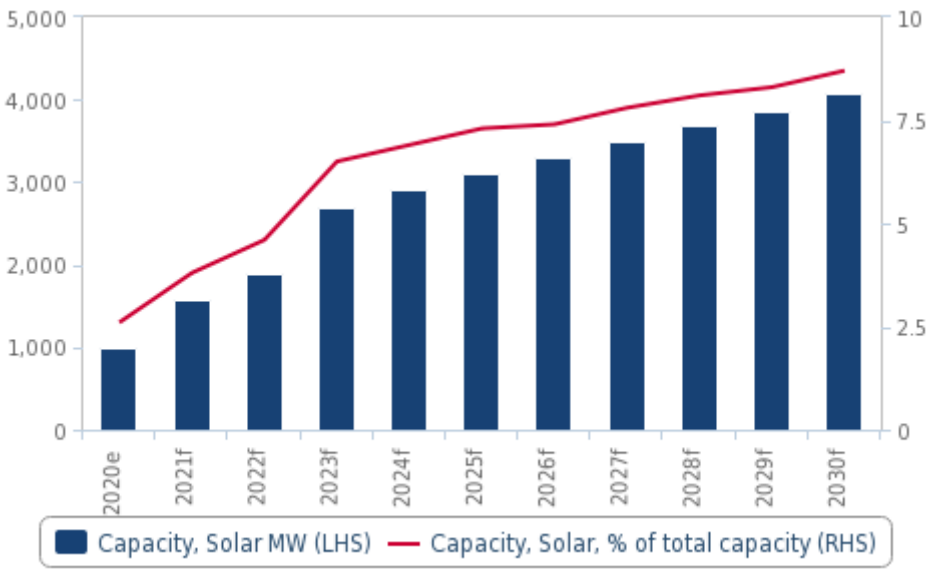
Key View

- We have revised up our solar forecasts for Malaysia, as we continue to see significant investor interests and project announcements.
- Stronger regulatory support and improved financing for the solar sector, as well as continued success of solar tenders, further underlines our view of Malaysia being an attractive investment destination for renewables developers.

We have revised up our solar forecasts for Malaysia, as we continue to see an increase in already significant investor interest and project announcements. While we expect some near-term headwinds to weigh on growth in 2020, stemming from the Covid-19 pandemic and ongoing political uncertainties, we expect the sector to recover from 2021 and to see stronger growth over the coming years. We now expect solar capacity to reach over 4GW by 2030, from an estimated 996MW as of end-2020.

Solar To See Stronger Growth

Malaysia - Solar Power Capacity, MW & Share Of Total Capacity, %



e/f = Fitch Solutions estimate/forecast. Source: EIA, IRENA, National Sources, Fitch Solutions

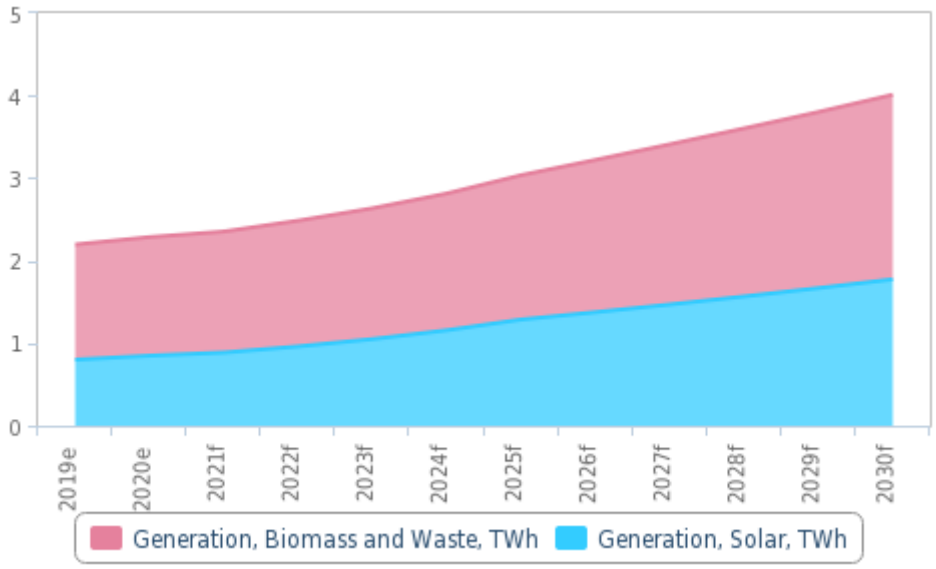
Our forecast revision stems largely from the continuation and success of solar tenders in Malaysia. As we initially expected, the latest round of solar auctions, launched in May 2020, still managed to attract interest despite the Covid-19 pandemic. As of March 2021, the government has now shortlisted 30 winning bidders, with a total combined capacity of 823MW. These projects are expected to enter into commercial operations in 2022 and 2023. Winning bid prices have also continued to register a slight decline from the previous auction, and ranged from as low as MYR0.1850/kWh for 10-30MW projects and MYR0.1768/kWh to MYR0.1970/kWh for 30-50MW projects. These prices are already competitive with gas-fired power in Malaysia. Given that these tenders have continued to register ongoing success, we believe that the government will continue to launch more solar tenders over the coming years, possibly with larger target capacities, particularly as it seeks to revitalise the economy following the effects of the pandemic.

Beyond solar tenders, the Sultan of Malaysia's Johor State has also announced the development of a 450MW Sultan Ibrahim Solar

Park in Pengerang, which will be the largest in the region upon fruition. The ground-breaking ceremony for the project is expected to be held on March 23 2021, and is targeted to be commissioned in 2023. The project will support the 2030 Johor Sustainable Development Plan, and mark its first investment into large-scale renewable energy. We are optimistic on this project given the direct support of the Sultan and ongoing project progress, and have also included it into our forecasts to come online in 2023.

Share Of Solar To Increase In Malaysia's Renewables Mix

Malaysia - Non-Hydropower Renewable Generation By Technology Type



Source: EIA, IRENA, National Sources, Fitch Solutions

Stronger regulatory support and improved financing into the sector further underlines our view. The Malaysian government's commitment to the domestic renewables sector has strengthened in recent years and a number of regulations and financing incentives have been put in place to encourage investment into the sector. As part of the Budget for 2021, the Green Investment Tax Allowance and Green Income Tax Exemption incentives will be extended to 2025, based on the expanded qualifying list of green assets from last year. Concurrently, the Green Technology Financing Scheme 3.0 will be guaranteed by **Danajamin** at MYR2bn (USD485mn).

The government is also looking to enhance green energy trading with the private sector while planning to launch a Renewable Energy Transition Roadmap 2035. This forms part of the government's aim to boost the country's share of renewables in the power mix to 20% by 2025. This is in line with its Generation Development Plan 2020-2030, where they intend to build more renewables capacity to replace retiring thermal power plants. We believe that the roadmap will contain provisions and more specific actions to accelerate renewables growth, and may include strategies such as peer-to-peer electricity trading or transitioning towards a mandatory renewable energy certificate market.

China's 14th Five-Year Plan: Power Transition Toward Cleaner Generation Continues

Key View

- The 14th Five-Year Plan (FYP) had limited mentions about decarbonising the energy sector specifically, although it still remains in line with our existing views and forecasts for the power and renewables sector in China.
- Emission reduction targets will continue to support growth in alternative low-carbon power generation segments, while consolidating its coal power sector. That said, any substantial shift away from coal generation will occur only in the longer-term, beyond our forecast period.
- We expect nuclear to be a key decarbonisation strategy, and for China to maintain its robust growth momentum for the sector in line with the strong regulatory support in place.
- Improvements toward grid infrastructure will also aid with decarbonisation efforts by facilitating the integration of more intermittent renewables generation.

While we initially expected climate considerations to be a key policy focus of the 14th Five-Year Plan (FYP), which was released on 12th March 2021 by China's National People's Congress, there were limited mentions about decarbonising the energy sector specifically. The FYP, which runs from 2021-2025 did include targets for energy intensity and carbon intensity, but both areas have already been established prior and merely reaffirmed. The FYP has also proposed to increase the share of 'non-fossil energy' in total energy consumption to 20% by 2025, although this remains non-binding. That said, we expect more detailed targets to be announced in the sector-specific plans that will be released in the later half of this year. **Broadly, the 14th FYP still remains in line with our existing views and forecasts, and we highlight some of the key features and implications on the power and renewables sector.**

CHINA'S KEY FYP TARGETS

	14th FYP	13th FYP
GDP Growth Rate	No Specific Target	6.5%
Carbon Intensity Reduction (per unit of GDP)	18%	18%
Energy Intensity Reduction (per unit of GDP)	13.5%	15%
Share of Non-Fossil Fuel In Energy Consumption	20%*	15%
Share of Coal Consumption In Energy Consumption	No Mention Yet	58%

**Non-binding. Source: 14FYP Draft, Various News Sources, Fitch Solutions*

Emission Targets A Slow But Steady Race

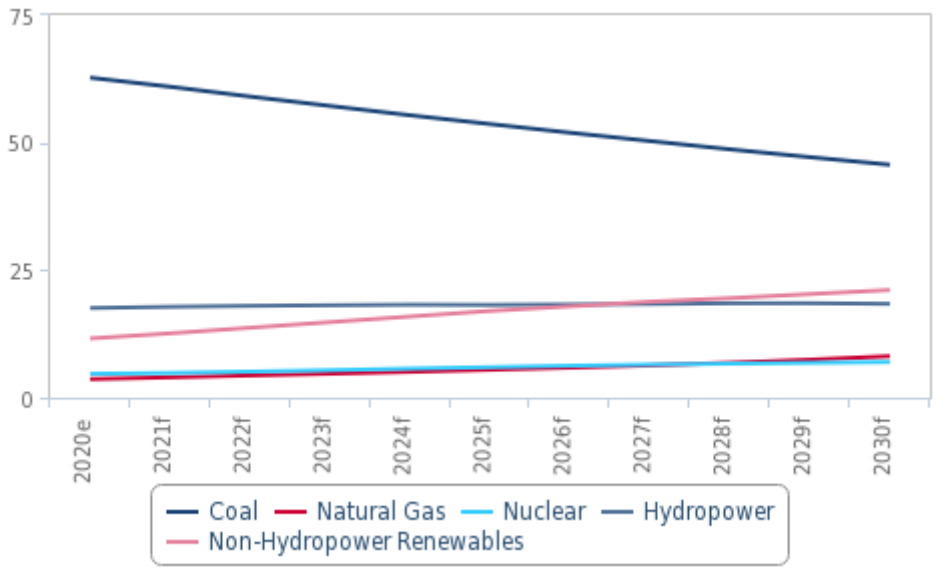
The 14th FYP has reaffirmed China's targets to peak carbon emissions by 2030, in accordance with the country's intended nationally determined contribution target (INDC), and to achieve carbon neutrality by 2060. We have previously highlighted how this will **accelerate China's power and renewables growth transition trajectory, as the emission reduction targets will continue to support growth in alternative low-carbon power generation segments, while consolidating its coal power sector.** This continues to present a significant downside risk to coal-powered generation growth, which will be one of the first sectors that the government will work on to achieve these emission targets.

In line with this, the Ministry of Ecology and Environment has requested for provincial governments to formulate a 'peak emission action plan' along several indicators including – energy mix targets and carbon emission caps across several key sectors by April

2021.This will be formulated into a nationwide plan by early 2022. China has also launched its nationwide Emissions Trading Scheme (ETS) in February 2021 and targets trading to begin by mid-2021, although it currently only covers thermal power plants that exceeded emissions of more than 26,000 mt/year in any year over 2013-2019.

China To Transition Toward Cleaner Generation Sources

China - Power Generation by Fuel Type, as % of Total



e/f = Fitch Solutions estimate/forecast. Source: EIA, National Sources, Fitch Solutions

We believe that any disruptions from the imposition of a nationwide carbon price in China is likely to be muted over the short to medium term as we remain cautious over the initial efficiency of the market, as a number of structural issues we noted at its inception remain. The planned ETS contains risks to liquidity, particularly as the government looks set to ban financial institutions from trading in the market. In addition, the present nationwide-trial only covers a small scope of companies, and current compliance obligations are capped at 20% of verified emissions above the free allowance, so the impact will remain quite limited. Variation across different existing pilot projects, and generally low carbon trading prices, will also weigh on its effectiveness. There also remains concerns over the credibility and scope of nationally aggregated emissions data in China, and lack of adequate and transparent legal weight behind the ETS.

Over the more medium to longer term, we expect the ETS rules to tighten and also gradually expand in coverage to include more sectors. The pace of this happening will in part depend on the strength of the post-pandemic recovery, as policymakers attempt to balance growth considerations with decarbonisation goals. Technological change will also be a significant factor, with decarbonisation likely to occur at a faster rate if there are substantial breakthroughs that improve the cost competitiveness of alternative generation sources, such as batteries or hydrogen.

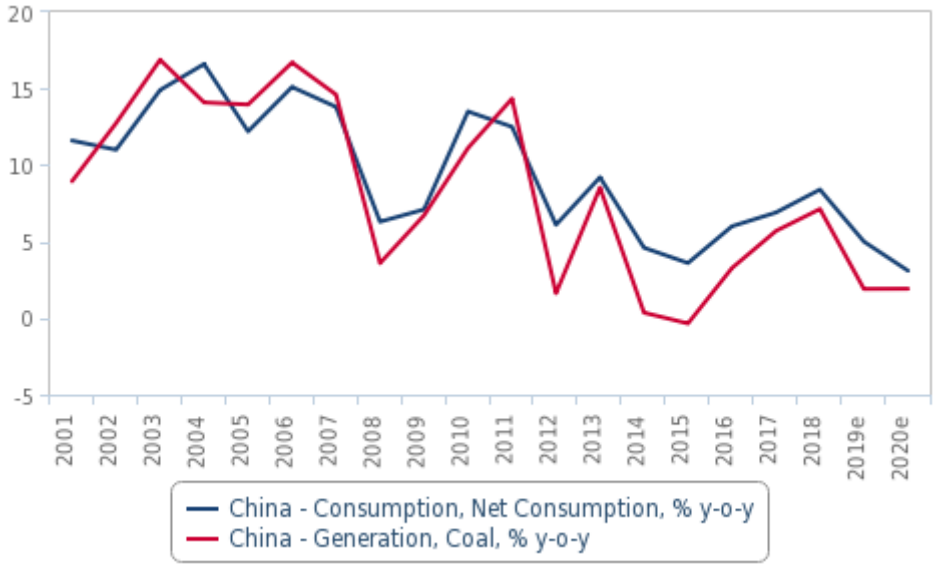
Coal Question Remains Unanswered

While we maintain our relatively downbeat outlook for coal-fired power in China, we believe any substantial change will likely occur only in the longer-term, beyond our forecast period. We note that the government has already appeared to soften its stance on reducing coal generation since late 2019, in line with increasing calls for energy security. Unlike its earlier FYPs, the latest draft does not indicate an explicit commitment to shift away from coal. In fact, a coal consumption (as share of total energy consumption) target was dropped this time, and the latest FYP indicates to "promote the clean and efficient use of fossil energy such as coal" and "reasonably control the scale and development pace of coal power construction", which shows an ongoing need for coal generation. Coal power has also seen a resurgence in recent years, which stems in large part from a ramp up

in power demand from China's heavy industry sectors, which received financial support from the Chinese government in fiscal stimulus measures.

Coal Has Been Key To Meeting Power Demand Surges

China - Power Consumption & Coal Generation Growth, 2000-2022f

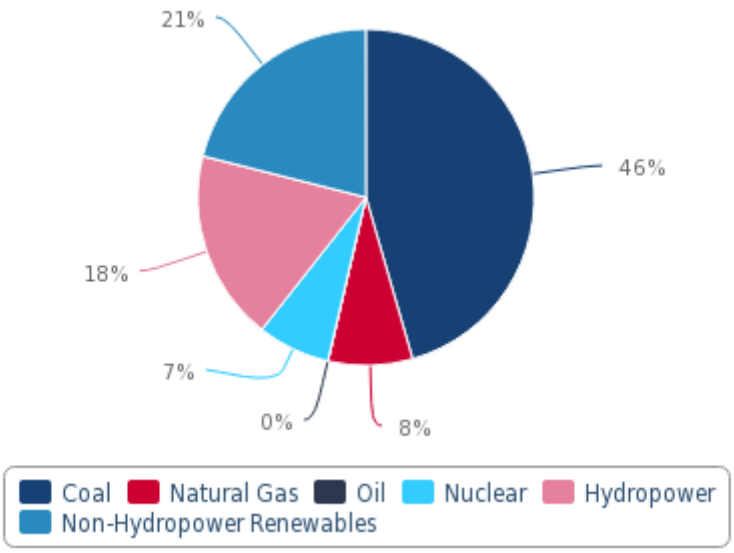


e = Fitch Solutions estimate. Source: EIA, National Sources, Fitch Solutions

Given that the government is working towards peak carbon emissions in 2030, there remains scope for coal capacity to increase in line with a robust project pipeline. According to Global Energy Monitor, 73.5GW of coal-fired power projects were proposed across 2020, and China as a whole approved nearly 37GW of coal-fired projects. We now expect China to have approximately more than 250GW of coal-powered capacity in the pipeline. Furthermore, the **China Electricity Council** (CEC) recommended extending the cap for coal-fired capacity to 1,300GW by 2030, an increase of 200GW from the existing cap of 1,100GW. As the CEC represents Chinese utilities, the recommendations could allow for 300-500 new coal plants in the market over the coming decade, and highlights continued appetite for coal. Furthermore, most of the government's efforts to reduce coal-fired generation remain largely hinged on boosting expansion of alternative generation segments rather than restricting coal directly. These efforts will also be undermined by vested interests of provincial governments who continue to show a preference for coal generation.

Coal To Still Remain Key Generation Source

China - Power Generation by Fuel Type, as % of Total, 2030f



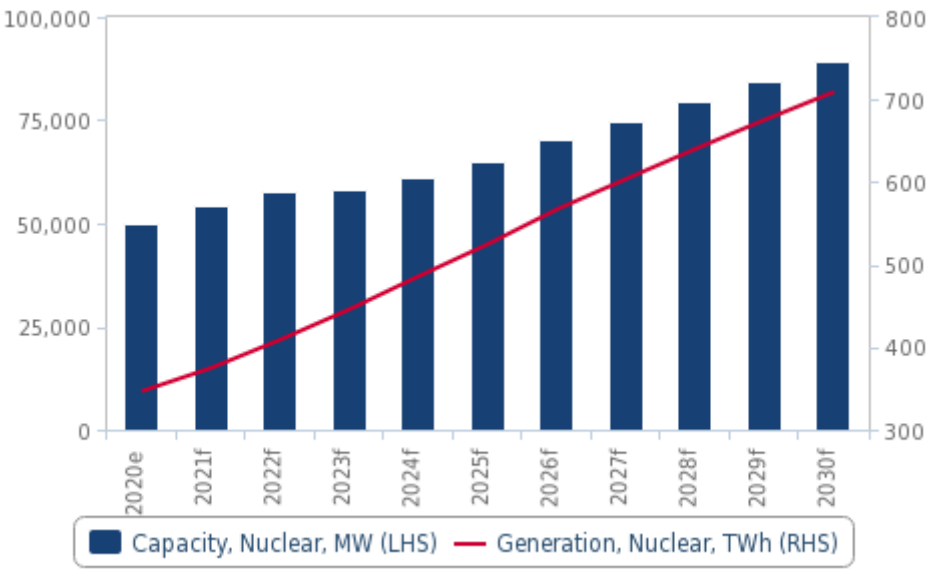
f = Fitch Solutions forecast. Source: EIA, National Sources, Fitch Solutions

Nuclear Power Key Decarbonisation Strategy

We expect China to maintain its robust growth momentum for the nuclear power sector, in line with the strong regulatory support and commitment in place. As part of achieving its target for 20% share of 'non-fossil energy' in total energy consumption, there were broad mentions in the 14th FYP to "accelerate the development" of wind, solar, hydropower (particularly pumped-hydro), nuclear generation and energy storage technologies across eight key development zones, three of which are an extension of ongoing projects from the 13th FYP. That said, details remain vague beyond this statement. **The only fuel that was specifically highlighted was in nuclear generation, which shows its priority over the coming years**. The government now aims to reach 70GW of nuclear capacity by 2025, and will look to develop nuclear power in a "proactive and orderly" manner. Our nuclear capacity forecasts stand at slightly over 65GW by 2025, which is relatively aligned with their target.

Robust Nuclear Growth To Offset Thermal Reliance

China - Installed Nuclear Capacity, MW and Generation, TWh



e/f = Fitch Solutions estimate/forecast. Source: EIA, National Sources, Fitch Solutions

Nuclear power is increasingly propelled as a clean energy source, and China has reiterated its ambitions and commitment towards the use of nuclear power to meet with its Paris Agreement Climate goals, particularly now as they move towards carbon neutrality. China is also looking to explore the use of nuclear power for more applications such as district heating or seawater desalination as well. China is also looking to develop new nuclear technologies, most notably in the high-temperature gas-cooled reactor (HTR-PM) as well as other small module reactor (SMR) designs. We note that China has already been actively investing in the research and development of cleaner, more efficient nuclear power production, and has plans to develop the world's first large-scale thorium-powered molten-salt reactors. We believe that these initiatives will support the continued expansion of its nuclear power sector, as the use of more domestically developed reactors will further cement its strong, local nuclear supply chain.

Modernising the Energy System With Improved Grid Infrastructure

The 14th FYP also highlighted improvements for its grid infrastructure, with the expansion of more ultra-high voltage (UHV) transmissions, and integration of smart grid technologies, which are in line with our earlier expectations. The inclusion of UHV transmissions has been a key investment focus in the working report of the 2020 National People's Congress to decarbonise. We believe its success will be a crucial step for the country to transit away from carbon-intensive power production as it facilitates the integration and higher utilisation of cleaner, renewable sources. Concurrently, we expect China to remain a global leader in smart grid technologies, with technologies that can support smarter load management and better support the integration of renewables generation, and a further expansion of the sector without jeopardising energy security.

Latin America

Continued Momentum In Chile's Renewables Sector

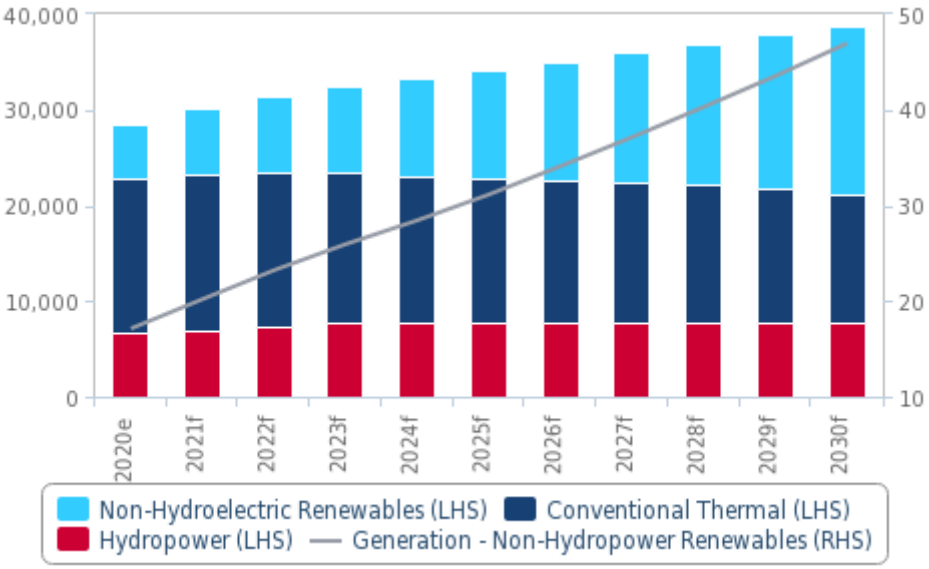
Key View

- We maintain our view for strong growth in Chile's non-hydropower renewables sector over the coming decade to 2030, with the wind and solar power sub-sectors set to lead growth.
- Our positive long-term outlook is supported by several factors which will encourage non-hydro renewables capacity and generation growth, including a favourable energy policy landscape, a sizeable renewables project pipeline, government ambitions to become a green hydrogen exporter, and improving transmission and distribution infrastructure.
- In addition, Chile's upcoming power supply auction presents upside risks to our wind and solar power forecasts over the medium term.
- That said, we continue to note elevated risks facing Chile's renewables sector over the next few quarters as a result of the ongoing Covid-19 pandemic as well as elevated political risks.

We maintain a strong long-term outlook for Chile's non-hydro renewables sector, with the wind and solar power sub-sectors set to drive growth. Chile continues to rank as one of the most rapidly expanding non-hydropower renewables markets in Latin America, in which we forecast the market to add 11.9 gigawatts (GW) of new renewables capacity between 2021 and 2030. Simultaniously, non-hydro renewables generation is forecast to grow 132.4% to reach 47 terawatt hours (TWh) in 2030 – accounting for nearly half of Chile's total electricity generation mix by the beginning of the next decade. The wind and solar power sectors are set to drive growth with 5.2GW and 6.6GW in capacity additions over our 10-year forecast period respectively.

Robust Growth for Non-Hydro Renewables as Coal Declines

Chile - Electricity Capacity, By Tech Type, MW (LHS) & Non-Hydro Renewables Share Of Total Generation (RHS) (2020-2030)



e/f = Fitch Solutions estimate/forecast. Source: EIA, CNE, Fitch Solutions

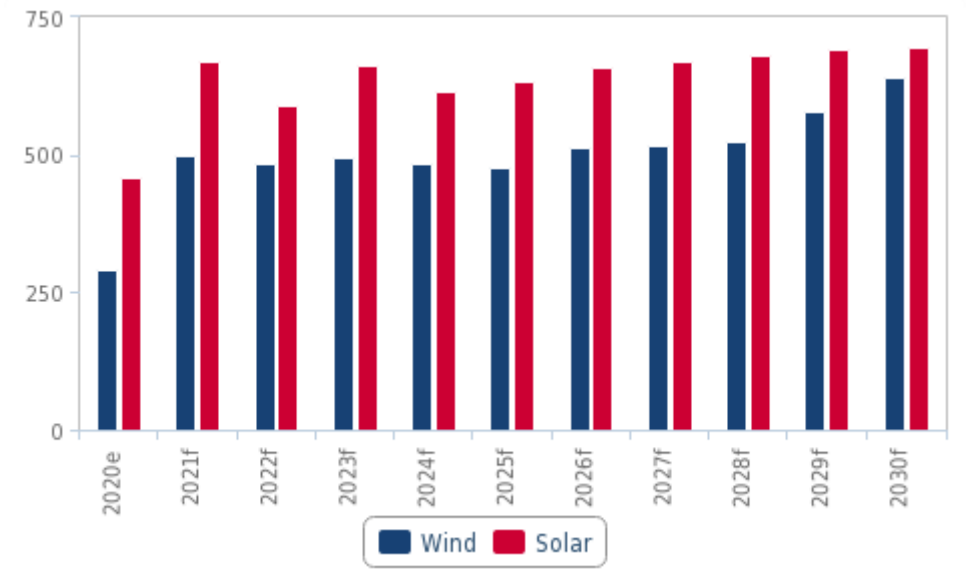
Supporting our outlook, we highlight a number of factors which will persist over the coming years and continue to encourage growth. In addition to Chile's abundant untapped wind and solar resources, our bullish forecast for electricity demand growth through 2030, and expectations for further declines in renewables project development, we highlight:

- **Favourable Energy Policy for Renewables Development:** Chile's energy policy landscape remains highly favourable towards the development of non-hydro renewables projects. Most notably is the Chilean government's plan to phase out coal-fired power by 2040, which provides long-term transparency to the market and boost the non-hydro renewables outlook. The phase-out continues to progress with two of the Chile's remaining coal power producers announcing in December 2020 early closures on three generating units with a cumulative capacity amounting to nearly 470MW. **Enel** permanently retired the 128MW first unit at its Bocamina coal-fired power station as of December 31st, 2020. This came just two days after **AES Gener** announced its plan to permanently and immediately close the 120MW Ventas unit 1, with the 220MW Ventas unit 2 scheduled for retirement in 2022 - two years ahead of its previous planned retirement in 2024. Furthermore, while we note elevated risks within the country in relation to the upcoming convention to rewrite the constitution, we continue to expect that the risk remains low for any major changes in policy towards the renewables sector.
- **Large Renewables Project Pipeline:** Chile's renewables project pipeline continues to expand and progress. Recently in February 2021, **Grupo Ibereólica Renovables** submitted an environmental impact study for a 1.2GW integrated solar pv and wind power project in the Antofagasta region. Investors in a number of other large-scale renewables projects submitted environmental impact statements for evaluation by the environmental evaluation service since November 2020, including **Engie Energía Chile**, **Ibereolica**, **Activos en Renta Grupo Corporativo**, **Generadora y Distribuidora de Energía Oxum**. With more than 3GW in capacity between these projects alone, we note that these developments support our bullish outlook on the country's continuing renewables sector growth over the next decade.
- **Government Ambitions To Become Green Hydrogen Exporter:** In November 2020, Chile's Ministry of Energy released its National Green Hydrogen Strategy Report that foresees the market ramping up domestic green hydrogen production by 2025 and becoming a global exporter of the clean fuel from 2030 onwards. A robust growth outlook in non-hydro renewables capacity and generation, in combination with expected cost declines, will be key for the government to achieve its plans. As such, we expect that the green hydrogen industry will open opportunities for wind and solar power project development beyond what can be utilitised to meet electricity demand and electricity exports. Companies which are currently exploring green hydrogen projects in Chile include renewables developers **Enel Green Power** and **Engie**, Chilean power company **AME**, Chilean blasting technology firm **Enaex**, and mining research organization **Mining3**. We also note the formation of a handful of relationships between Chile and other nations in regards to the development and trade of green hydrogen. On February 15 2021, Chile signed a memorandum of understanding (MoU) with Singapore over cooperation on green hydrogen, including financing and supply chain development. Also in February, it was reported that Chile plans to sign a similar MoU with the Gulf Cooperation Council.
- **Improving Transmission And Distribution Infrastructure:** The Chilean government continues to work on improving the market's transmission and distribution infrastructure in order to reduce oversupply challenges in certain parts of the grid as well as decrease risks for future bottlenecks from the significant renewables development. In January 2021, Chile's National Grid Coordinator CEN released its Transmission Expansion Proposal 2021 Report which identifies 15 projects for the national transmission system SEN and 113 smaller regional projects, totalling USD717mn in investments, which should be the primary focus this year. Furthermore, a tender for the USD1.3bn 1,500km HVDC Kimal-Lo Aguirre transmission line was launched in October 2020 and is expected to be completed this year. The project will connect the Antofagasta region in northern Chile, a key development region for non-hydro renewables projects, to demand nodes near Santiago in the centre of the country, further improving the market's north-south interconnections which will be key to supporting robust renewables growth.

We also highlight the market's upcoming power supply auction, which presents upside risks to our wind and solar power forecasts. In December 2020 Chile's National Energy Commission CNE published rules for its 2020 tender which has been postponed twice. Final bidding will take place in May 2021, with the aim to award 2,310GWh in electricity supply through 15-year power purchase agreements scheduled to begin in 2026. The terms of these contracts make provision for suppliers to voluntarily extend the supply contract period by up to three years in the event that the base supply amount is not met within the standard 15 years, improving income security for suppliers. The contract also allows for suppliers to benefit from any future changes in standard CNE contract terms at auction, in the event that they are eligible under said auction conditions. While Chile's power auction structure is officially technology-neutral, it often ends up favouring solar and wind technology. Finally, the supply auction also allows for the inclusion of storage-based electricity supply not paired directly to its own generation source, encouraging investment in utility-scale storage.

Upcoming Power Auction To Pose Upside Risks To Solar and Wind Power Sectors

Chile - Annual Net Capacity Additions By Non-Hydro Renewables Technology, MW (2020-2030)



e/f = Fitch Solutions estimate/forecast. Source: EIA, CNE, Fitch Solutions

While these fundamental supportive factors have resulted in the country's renewables project pipeline advancing even amidst the ongoing coronavirus pandemic, we note that risks for delays and political uncertainty will persist over the coming quarters. There are a number of highly consequential events on the Chilean political calendar in H221 - namely a convention to re-write Chile's constitution opening in June 2021 and a presidential election on November 21 - which will continue to result in elevated uncertainty over the future policy direction in what has traditionally been viewed as Latin America's most business-friendly market. That said, our core view remains that the constitutional overhaul will not result in a sharp departure from Chile's current model of free-market capitalism and representative democracy, and we continue to expect that the risk remains low for any major changes in policy towards the renewables sector. We also expect that risks for project delays will begin to decline over the coming quarters as our Country Risk team expects that the Chilean economy will rebound in the quarters ahead due to loosened public health restrictions and the rollout of a Covid-19 vaccine in H121.