

ASIA
INVESTOR
GROUP
ON
CLIMATE
CHANGE

Investor Expectations of Asian Electric Utilities Companies

Crossover to
net zero

About AIGCC

The Asia Investor Group on Climate Change (AIGCC) is an initiative to create awareness and encourage action among Asia's asset owners and financial institutions about the risks and opportunities associated with climate change and low carbon investing. AIGCC provides capacity and a trusted forum for investors active in Asia to share best practice and to collaborate on investment activity, credit analysis, risk management, engagement and policy related to climate change.

AIGCC members come from 11 different markets in Asia and internationally, and include asset owners and managers with a combined AUM of over US\$10 trillion (as of November 2020). With a strong international profile, the AIGCC network also engages with government pension and sovereign wealth funds, family offices and endowments. AIGCC represents the Asian investor perspective in the evolving global discussions on climate change and the transition to a net-zero emissions economy.

Acknowledgements

This guide builds upon the previous *Investor Expectations* series of guides that were developed by the Global Investor Coalition (GIC). AIGCC is one of the 4 regional investor networks, alongside IIGCC, Ceres and IGCC, that make up the GIC. AIGCC would like to thank members of the AIGCC Engagement and Policy working group who helped develop this guide. We would like to acknowledge the review by Blackrock, BNP Paribas Asset Management, Cathay Financial Holdings, Church Commissioners for England, EOS-Federated Hermes, Institutional Shareholder Services, Schrodgers and IGCC. We would also like to thank CLP for their consultation on our case study.

Authors

Jane Karen Ho, CFA
jane.ho@aigcc.net

Yong-Liang Por
yong.por@aigcc.net

Contact

 info@aigcc.net



www.aigcc.net



[@AIGCC_Update](https://twitter.com/AIGCC_Update)

Executive Summary

Institutional investors recognise that climate change will impact their holdings, portfolios and asset values in the short, medium and long term. Climate change is an important issue for investors and for the clients and beneficiaries upon whose behalf they invest. Due to their carbon intensive nature, Asian electric utilities are of particular concern since they contribute around 23 per cent of global carbon emissions¹, have a young asset age profile of around 13 years (vs an average economic lifetime of 40 years) and represent more than USD200bn of market capitalisation on Asian stock indices².

Institutional investors are concerned that some companies are not sufficiently prepared for the transition to a net-zero carbon economy and are not playing their parts in global action against climate change to meet the goals of the Paris climate agreement. The utility sector will play a fundamental role in the decarbonisation of the economy given its interrelation with other sectors such as heavy industry, transport and real estate; hence the need for utility companies to take upfront action now. Business strategy and capital allocation decisions made now will determine the future sustainability and profitability of the sector for decades to come.

According to the Science Based Target initiative (SBTi), from 2020 to 2030 the sector average electric utility needs to reduce the emissions intensity of electricity generation by 76 per cent under the 1.5°C-aligned pathway and by 47 percent in the well-below 2°C pathway- this transfers to a coal phase out by 2030 in all OECD countries and by 2040 at latest in non OECD countries, and no new coal anywhere. The improvement in renewables technology and economics makes this possible, with renewable energy recently becoming competitive against fossil fuels in many places. In spite of this, there continues to be substantial investment in coal-fired power plants in the region, increasing stranded asset risks and leading to a missed opportunity to accelerate the transition to sustainable energy systems across Asia.

In Asia, climate change policies and the pace of the energy transition vary greatly between countries, making for a more complex engagement process for utility investors in the region. The recent announcements of net-zero by China (by 2060), Japan and Korea by 2050 are expected to assist this process and accelerate change across the region, but it will take time to see the policies come into place. Investors recognise that Nationally Determined Contributions (NDCs) of many countries are not yet sufficient in meeting 1.5°C warming, making policy advocacy crucial to the overall engagement process. It is within this context that current investor expectations are laid out, challenging utility companies to play their parts in the transition towards a net-zero carbon economy by 2050 and limit global warming to 1.5°C.

This document sets out key insights into trends affecting Asian electric utilities, followed by investor expectations framed in a series of questions that investors can use for constructive engagement with the boards and management of electric utilities.

1. IEA World Energy Outlook 2020

2. Bloomberg, at end September 2020

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Five Investor Expectations of Asian Electric Utilities Companies



Purpose

The purpose of this document is to provide investors with a guide for constructive engagement with boards and management of Asian electric utilities to align business plans with achieving the goals of the Paris Agreement.

We aim to stimulate and facilitate meaningful discussion about the risks and opportunities related to climate change and the appropriate strategies to mitigate the long term risks to investors. This document may be used by investors in their dialogues with electric utilities and represents a regionally specific update to the previously released global *Investor Expectations of Electric Utilities Companies* and *Institutional Investors' Expectations of Corporate Climate Risk Management*.

Background

Changing technology dynamics

New technology is crucial if the global ambition to limit the global temperature increase to well below 2°C and pursue efforts to limit temperature rise to 1.5°C is to be met. Technology developments on multiple fronts, including generation, energy services, management and storage, have now made renewables competitive against fossil fuels in many places. Given the continuously falling cost of renewable energy, fossil fuel plants, particularly coal plants, are at risk when power purchase agreements (PPA) expire as alternative energy sources such as renewables paired with batteries and nuclear make up larger proportions of the baseload. The traditional business models of power generators and distributors are challenged by the transition from a centralised system of major plants feeding a national grid into a more complex and distributed structure with many small and locally installed sources of renewable supply and storage.

Changing policy dynamics

The Paris Agreement provided an unequivocal signal that collective global effort must now focus upon limiting climate change to well below 2°C, and pursuing efforts for 1.5°C³. A raft of regulations already exist but heightened ambition will continue to tighten policy for the utilities sector. Currently 28 countries have instituted national targets to achieve net-zero emissions by mid-century, noting the accelerating impacts of climate on economies. Notable regulations affecting the utilities sector include specific emission reduction targets, incentives to increase renewable energy generation, demand side energy savings and carbon pricing, alongside more indirect requirements such as water management. Mandatory coal phase outs decided by governments and air pollution thresholds may also lead to high compliance costs or forced closures for non-compliant plants.

China's recent announcement that it will aim to have peak emissions before 2030 and achieve carbon neutrality by 2060 is of particular significance, given that the country accounts for roughly 28 per cent of global greenhouse gas emissions. Together with South Korea and Japan's pledges to achieve net-zero carbon emissions by 2050, this means that three of East Asia's biggest economies, representing nearly one quarter of global GDP and one-third of total global greenhouse gas emissions, have committed to decarbonizing their economies with further details to be announced soon.

Changing demand dynamics

Other changes in demand patterns driven by corporate direct power purchases, demographic and economic shifts and retirement of legacy assets are also having complex impacts on traditional business models in the sector. In this context, electric utilities need to design new business strategies and seize opportunities elsewhere to focus on cleaner power generation, networks, customer retention and energy services.

Changing finance dynamics

In a more liberalised generation market, such as the one that China is aiming for, even highly efficient and low cost coal power supply may well be phased out by market forces, rendering operating coal plants uneconomical well within their lifetimes. Over time, coal-fired generators may face refinancing risk due to their deteriorating risk-return profile.

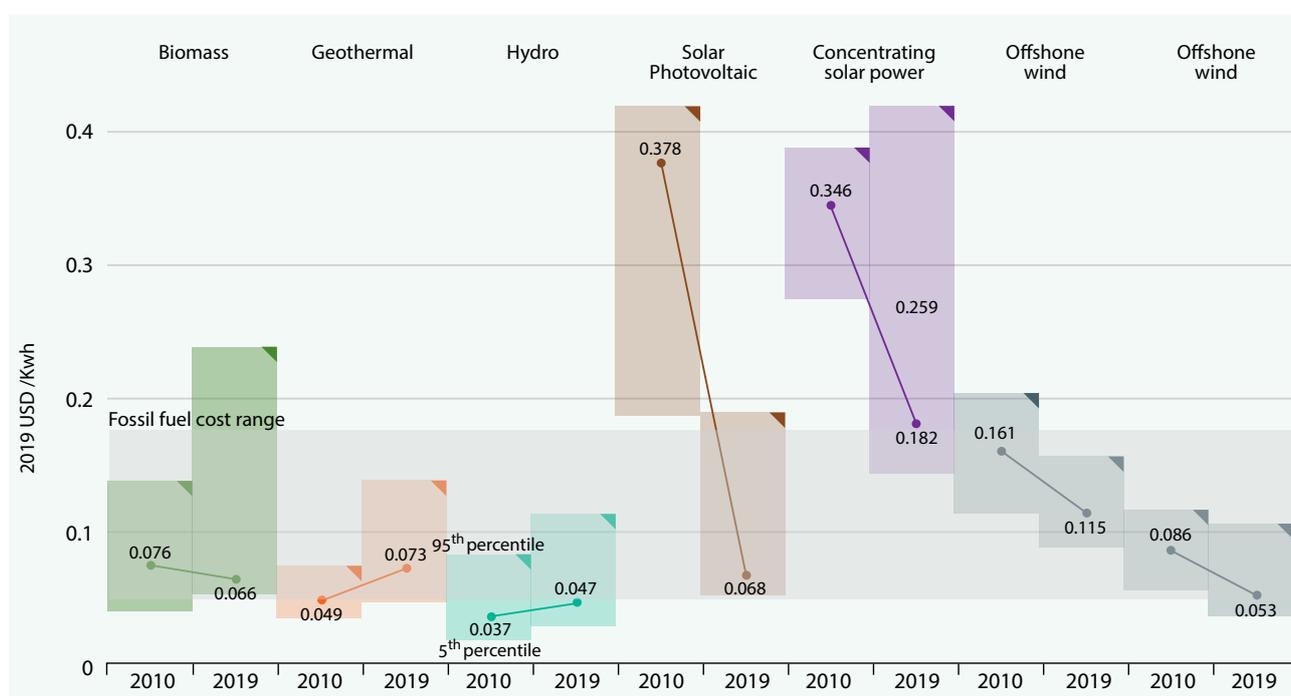
Ongoing progress globally on green taxonomies including across multiple markets in Asia aim to shift financial flows towards sustainable economic activities and avoid locking in carbon intensive power generation. Financiers and investors are moving to decarbonize their portfolios by limiting exposure to the coal sector- together with the sharp rise in ESG-based investing, finance for emissions intensive companies and projects will be further restricted.

3. IPCC Special 1.5°C report (<https://www.ipcc.ch/sr15/chapter/spm/>)

Current trends are calling for an accelerated transition by Asian electric utilities

The International Renewable Energy Agency⁴ estimates that half of new solar and wind installations undercut fossil fuel in 2019, due to sharply falling costs of as much as 82 percent since 2010 (in the case of solar power). The costs have fallen due to a combination of better technologies, economies of scale and more experienced renewable developers.

Figure 1: Global weighted average levelised cost of electricity from utility-scale renewable power generation technologies, 2010 and 2019



Source: IRENA

In developing markets, which are currently witnessing the greatest demand growth, the energy system has the potential – and in many cases is already demonstrating a capacity – to leapfrog directly into a cleaner and more distributed electric infrastructure, by-passing the centralised grid to some extent. In the case of Vietnam, solar capacity has grown to 5GW by end of 2019 from a zero base in 2017, surpassing Malaysia and Thailand to become the largest installed solar capacity in Southeast Asia. In India, solar energy capital expenditure (capex) has exceeded that of coal power plants since 2018 and has a historical 10-year compound annual growth rate (CAGR) of 104 per cent.⁵

4. [IRENA \(2020\), Renewable Power Generation Costs in 2019](#)

5. [BP Statistical Review of World Energy \(2020\)](#)

However, we continue to see planned capacity increase in coal-fired power plants, in spite of climate models all pointing to the need for no new coal plants to be added anywhere in the world in order to achieve the Paris Agreement. According to Global Energy Monitor⁶, China has about 250 gigawatts (GW) of new coal power plants under development, greater than the coal fleets of the United States or India. After China and India, Indonesia and Vietnam have the largest pipeline of coal-fired projects globally, although this pipeline is likely to be scaled back in some countries⁷. Some of these upcoming plants will be financed by or are projects supported by electric utilities in developed Asia. We believe these plants face the risk of early closure under the Central Banks and Supervisors Network for Greening the Financial System (NGFS) 1.5°C scenario which calls for the complete phase-out of coal by 2040 unless carbon, capture, utilisation and storage (CCUS) is adopted widely. CCUS will add additional and significant cost to existing plants. Utilities that are committing right now to new coal projects with long term take-or-pay Power Purchase Agreements (PPAs) are potentially locking themselves into long term contracts for expensive power, undermining future profitability.

Physical risks are challenging and some companies are already feeling localized impacts. Electric utilities are highly dependent on a stable supply of good quality fresh water. Significant amounts of water are needed in almost all energy generation processes, from generating hydropower, to cooling and other purposes in thermal power plants, to extracting and processing fuels. Yet the UN predicts a global shortfall in water supply of 40 per cent by 2030, threatening the long-term viability of energy projects worldwide. In 2020, Thailand experienced its worst drought in 40 years, forcing power plants to curtail water usage. In addition, Asia is one of the most exposed regions globally to extreme weather such as heat waves, cyclones and flooding. This reflects the density of population, industrial production, and the high proportion of coastal areas in the region⁸.

In this context, electric utilities need to design new business strategies and seize opportunities elsewhere to focus on cleaner power generation, networks, customer retention and energy services. However, with new technologies, this journey is not without risks. New entrants such as Sun Cable, an ambitious project to sell solar power from Australia to Singapore, could become a new competitor. As investors, we need to know how electric utilities will deal with the vast shift already underway within their industry, how they will address the considerable risks posed by these trends and how they plan to profit from emerging opportunities.

6. [Global Energy Monitor \(2020\), A New Coal Boom in China](#)

7. [Japan Times \(2020\), Vietnam reduces plan to build new coal plants amid fiscal and environmental concerns](#)

8. [AIGCC \(2019\), Are Asia's Pension Funds ready for Climate Change?](#)

Figure 2:
Renewables power market share (2019)

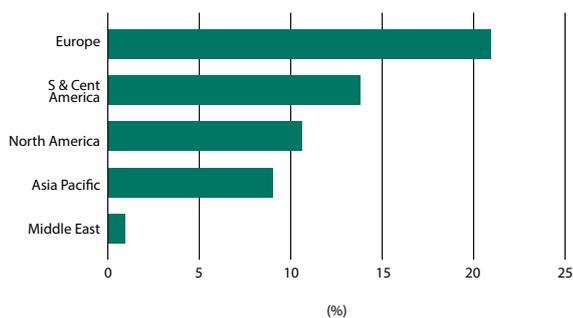
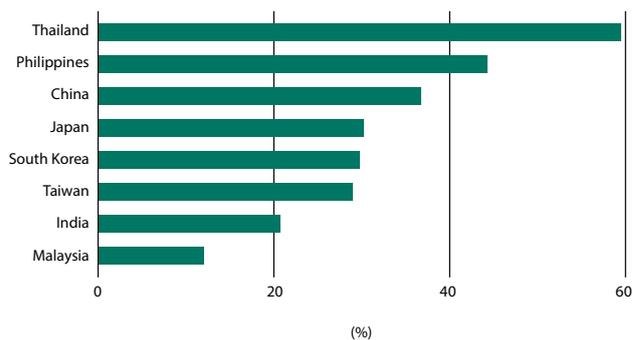


Figure 3:
Renewable power expansion (historical 10-year CAGR)



Source: BP Statistical Review of World Energy

Net zero pathways for Asian electric utilities

The pathways to achieving net zero for electric utilities has been examined in several key studies. These are useful as reference points for specific company engagements. For example, to discern whether forward looking business plans are factoring future transition scenarios aligned with achieving the Paris Agreement goals of restricting global temperature rise to 1.5 - 2°C. Investors can work with companies so that their own scenario analyses are in line with these scenarios to allow for consistency and comparability of risk assessments between issuers.

We present the following reference scenarios:

Transition Pathway Initiatives (TPI)

- TPI has adopted the Sector Decarbonisation Approach (SDA), which takes a sector-by-sector approach, comparing companies within each sector against each other and against sector-specific benchmarks to establish whether the performance of an average company is aligned with international emissions targets. In this approach, the sector data is derived from IEA's modelling output which provides sector-specific emissions paths, against which TPI calculates company emission intensities based on public disclosures by companies. To achieve a well below 2°C pathway, the global utilities sector would need to reduce carbon intensity to 0.229 tCO₂/MWh by 2030 and to -0.008 tCO₂/MWh by 2050 (implying the net removal of CO₂)⁹.

9. [Transition Pathway Initiative \(2020\), Carbon Performance Assessment of Electricity Utilities](#)

Figure 4: Benchmark global carbon intensity pathways for the power sector (tCO₂/MWh)

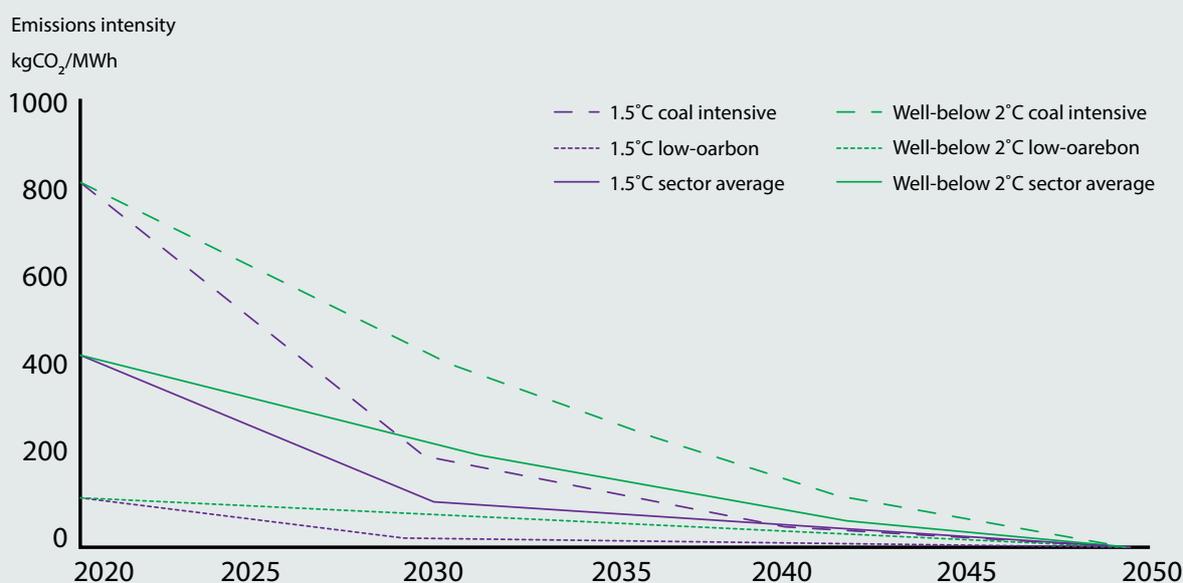
Scenario	2014	2025	2030	2050
Paris Pledges	0.572	0.439	0.402	0.309
2 Degrees	0.572	0.361	0.245	0.036
Well below 2 Degrees	0.572	0.330	0.229	-0.008

Source: IEA

Science Based Target initiative (SBTi)

- SBTi allocates carbon budgets to companies via two approaches: 1) Convergence, where companies within a sector reduce their emissions intensity to converge at a common value at some point in the future; and 2) Contraction, where companies reduce their absolute emissions at the same rate as the emissions reduction required by the global carbon budget. Companies can use the SBTi target setting tool to determine their individual emissions targets. Using the former approach, SBTi calculates that to meet a 1.5°C scenario, emissions intensity from power generation would have to decrease 76% from 2020 to 2030, reaching 0.1 tCO₂/MWh in 2030.¹⁰ The World Benchmarking Alliance developed a methodology based on SBTi’s Sectoral Decarbonization Approach (SDA) to measure and rank the world’s 50 most influential electric utilities companies on their transition to a low carbon economy, which showed that less than 10% of them have Paris-aligned targets.¹¹

Figure 5: Emissions intensities of utilities using SBTi Target Setting Tool for coal-intensive utility



Source: Science-Based Target initiative (SBTi)

10. [Science Based Targets \(2020\), Quick Start Guide for Electric Utilities](#)

11. [World Benchmarking Alliance \(2020\), Measuring the world’s 50 most influential electric utilities companies](#)

The Central Banks and Supervisors Network for Greening the Financial System (NGFS)

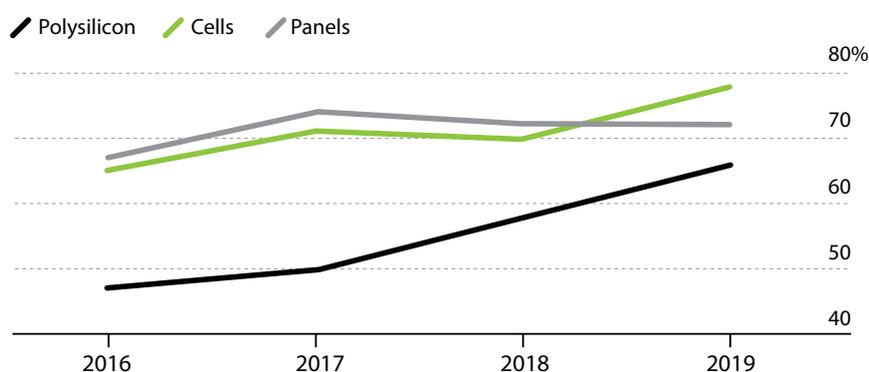
- NGFS published its first set of climate scenarios in June 2020, exploring scenarios of an orderly transition (global warming of 1.5-2°C), a disorderly transition (global warming of 2-3°C), and a hot house world (global warming of 3°C+). In the absence of CCUS technologies, the immediate Paris-aligned scenarios require almost the complete phaseout of coal by 2040 and gas peaks around 2020-25 in Asia ex Japan. For Japan, the share of renewables in the country's electricity mix is required to increase by almost threefold by 2030 (estimated around 50% of total electricity supply), while both coal and gas usage dramatically decrease by almost three quarters (coal reduces to 8% and gas to 13%).¹²

Technology Dynamics

Asian companies are at the forefront of renewable technology development. In China, for example, new build solar can be developed at \$35 per megawatt hour (/MWh)¹³, the same price as operating coal-fired power. Furthermore, not only are the costs of renewables falling sharply, the technology continues to improve, allowing for enhanced utilisation rates. According to the IEA, offshore wind is a good example, with average capacity factors increasing from 38 per cent to 43 per cent from 2010 to 2019. New wind turbines being developed which exceed 10MW will provide capacity factors above 50 per cent, close to that of many fossil fuel generators.

Longi Green Energy Technology Co. is the world's largest producer of solar wafers and the world's largest solar company by market value. As of the end of last year it created about one in every four wafers made globally. Chinese solar companies make up 60 per cent of the global capacity for every step in the supply chain.¹⁴

Figure 6: Chinese Companies' Share of Global Solar Equipment Production



Source: Bloomberg New Energy Finance

12. [Network for Greening the Financial System \(2020\), NGFS Climate Scenarios for Central Banks and Supervisors](#)

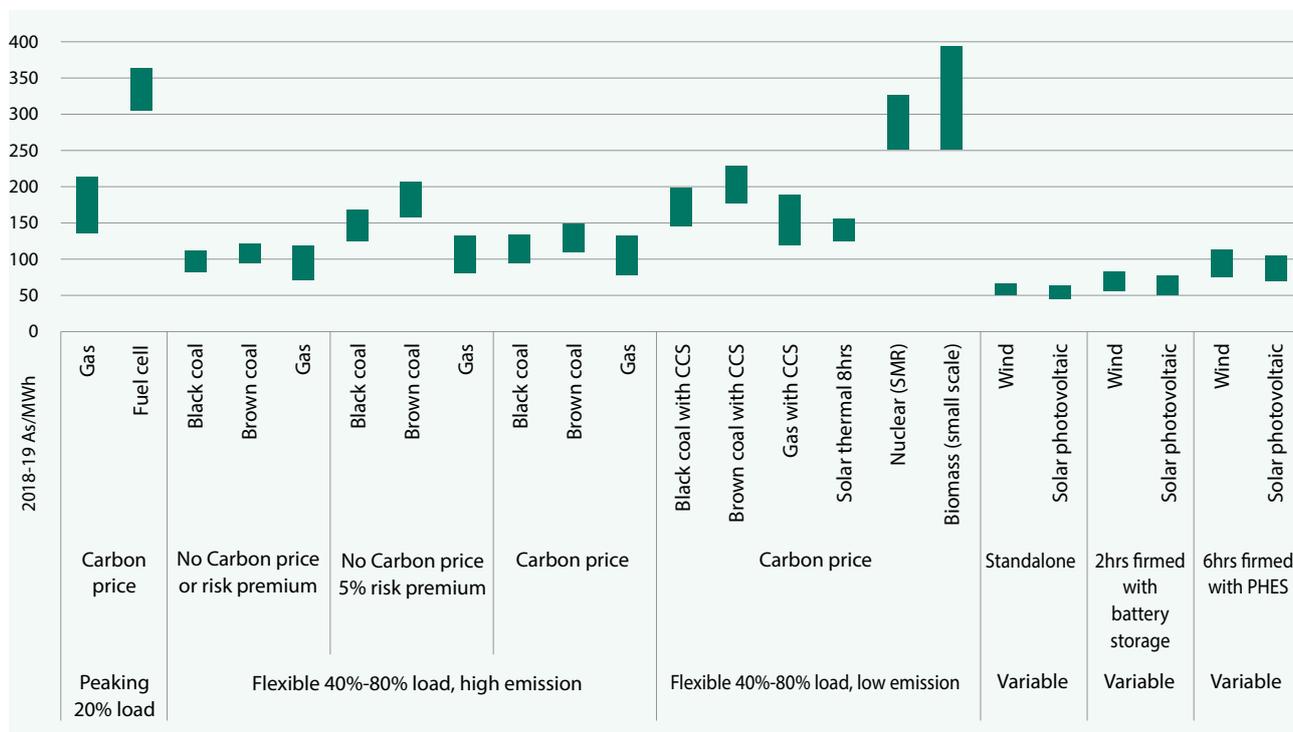
13. [Bloomberg NEF \(2020\), Scale-up of Solar and Wind Puts Existing Coal, Gas at Risk](#)

14. [Bloomberg \(2020\), The Solar-Powered Future is Being Assembled in China](#)

A suite of technologies are available for managing intermittency, which has been the biggest drawback of solar and wind power. The most prominent of these are utility-scale storage projects, primarily using lithium-ion batteries. According to Bloomberg New Energy Finance, lithium-ion batteries have benefitted from the multiple applications across the transport and consumer electronics sector, allowing for prices to fall 87 per cent from 2010-2019, with prices continuing to fall, expecting to reach \$100 per /kilowatt hour (kWh) in 2024. In many projects, storage is being coupled with solar, allowing for a capacity value of over 99 per cent. This potential for managing intermittency and improving grid reliability has inflated expectations for utility-scale storage deployment, with current estimates going from 9GW in 2018 to 1,095GW in 2040.¹⁵

Green hydrogen and ammonia are potential energy carriers as they can be synthesised from renewable energy through electrolysis. There are a lot of potential uses for hydrogen, including feeding it into the gas grid, combusting it within natural gas generators and the production of green steel¹⁶. Such a scenario with a high penetration of hydrogen within the economy would have to be predicated on significant renewables expansion, and subsequent low energy prices, as well as continued fall in electrolyser prices. In July 2020, the EU unveiled its Hydrogen Strategy, a plan to accelerate the adoption of green hydrogen to meet the EU’s net zero emissions goal by 2050 and which would raise the percentage of hydrogen in national energy demand to 24 per cent from a negligible level at present.¹⁷

Figure 7: Levelised cost of energy by technology and category for 2020



Source: CSIRO

15. [Bloomberg NEF \(2019\), Energy Storage Investments Boom as Battery Costs Halve in the Next Decade](#)

16. [Australian Financial Review \(2020\), BHP Invests in Hydrogen and Carbon Capture for Chinese Steel](#)

17. [European Commission \(2020\), EU Hydrogen Strategy](#)

Policy Dynamics

From September 2020, China, Japan and South Korea in rapid succession, committed to net zero emissions, setting the region on an accelerating pace towards decarbonisation. This was followed by the Philippines declaring a moratorium on new greenfield coal-fired power plants, becoming the first country in Southeast Asia to do so, and Thailand also announced to reduce coal generation to 5% by 2030. With this, we believe that more Asian governments are likely to come forward with both long-term commitments and more ambitious NDCs ahead of the Glasgow COP. Many Asian electric utilities are state owned enterprises (SOEs) and will play a critical role in ensuring countries maintain national competitiveness as global investors and supply chains increasingly look to invest and source from low carbon economies.

At present, regulations across Asia include specific emissions reduction targets, incentives to increase renewable energy generation, demand side energy savings and carbon pricing, alongside policy support for natural gas and more indirect requirements for disclosure and water management (see Appendix for full details with breakdown by country on aforementioned policies).

Asian countries have set emissions reduction targets in the form of Nationally Determined Contributions (NDCs), but which vary vastly between countries and in terms of ambition. The majority of Asian NDCs have been rated “highly insufficient” by Climate Analytics, implying that they fall short of a country’s “fair share” range and are not consistent with holding warming to well below 2°C, let alone the Paris Agreement’s stronger 1.5°C limit. Whilst this is the context within which electric utilities operate across Asia, investors have a responsibility to engage with companies and ensure bottom up action, acknowledging that current NDCs are insufficient, are likely to be revised upwards in terms of ambitions, and more needs to be done to align business strategies with the Paris Agreement.

Similar to NDCs, targets for renewable energy vary by country and degree of ambition. China and India have NDC renewable energy targets, whilst other countries only have domestic goals. These targets are also relatively short term, with some having been exceeded already or are close to being exceeded, they may also be in need of a refreshment higher.

Case study: AC Energy renewables target of 50% of output by 2025

AC Energy, the fifth largest power producer in the Philippines, has become the first power company in Southeast Asia to announce the full divestment of coal-fired plants as part of its plan to significantly reduce greenhouse gas emissions and comply with the national target for 35 per cent of Philippines energy to be generated from renewable sources by 2030. Key details of this plan, first announced in April 2020, include:

- Plan to fully divest all coal generation assets by 2030, subject to review and finalisation by 2035.
- Plan for new investments in lower carbon emitting gas-fired generation.
- Plan to cap thermal capacity to no more than 50% of output or at most 2GW by 2025.
- Target to reach renewables power capacity of 1GW by 2020, 5GW by 2025, and for renewables to account for at least 50% of output by 2025 (from 30% at present).

AC Energy's 2019 Integrated Report¹⁸ provides material disclosures with reference to GRI and SASB Standards. Key details include:

- Breakdown of electricity and fuel consumption by category and Scope 1 & 2 emissions.
- Detailed short-term (2020) renewables energy target and actions undertaken to achieve it.
- Comprehensive independent assurance statement to verify the sustainability disclosures provided.

18. [AC Energy Integrated Report 2019](#)

Energy efficiency improvements amongst International Energy Agency (IEA) member countries since 2000 lowered energy use by around 20 per cent in 2018, an amount greater than the final energy consumption of India in the same year. In Asia, not all countries have energy saving policies and those that do vary greatly in targets and measurements. This is a key area where coordination could lead to easy improvements.

In terms of carbon pricing, there is no regional scheme in Asia, with China and South Korea being countries with notable individual schemes. Nonetheless, managing carbon prices and taxation in different markets will become a growing concern to utilities companies and China will soon expand its carbon trading scheme nationally. While companies may think they can pass this cost through to customers, there might be industrial clients and consumer groups that do not accept this approach. Another development is the work by a private sector task force set up by Mark Carney, the former Governor of the Bank of England, to establish the standards for the infrastructure around a voluntary carbon market. The ambition is to begin trading under a new framework, which will include a transparent price for carbon, by the beginning of 2021.

Stock exchanges in Asia have made substantial efforts to make environmental, social and governance (ESG) disclosures mandatory for listed companies. ESG disclosures are expected to become mandatory for all companies listed in China shortly. From July 2020, Hong Kong listed companies must issue an ESG report that includes an assessment of the effects of climate change and disclosure of social key performance indicators. This follows on New Zealand's recent proposed implementation of mandatory climate-related financial disclosure, reflecting the trend of higher disclosure standards globally.

Countries in Asia have been pushing for the increased use of natural gas at the expense of coal for electricity generation to reduce particulate and carbon emissions. However, this has become a point of debate due to the relatively high cost of natural gas vs renewables, still considerable emissions that natural gas produces and possibility that large-scale methane emissions released into the atmosphere from natural gas production has not been accounted for in the estimates of natural gas lifecycle emissions.

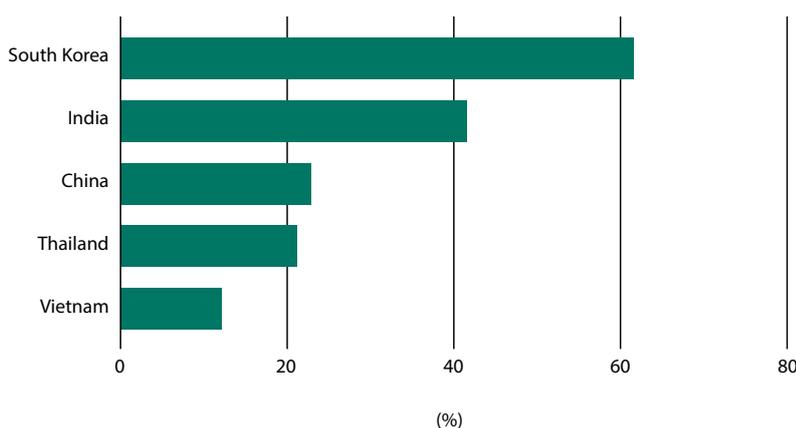
Demand Dynamics

Trends in energy demand impacted by climate, renewable energy and environmental factors are having complex effects on the traditional business model of electric utility companies.

Corporations have started to go around the back of electric utilities by signing direct power purchase agreements with large-scale off site renewable developers. This shift could represent a major threat to utilities demand from large clients. According to the global initiative RE100, a global initiative made up of businesses committed to 100% renewable electricity, companies in China are currently directly sourcing over 970GWh in renewable power annually for their own operations.¹⁹ Companies are also increasingly making commitments to renewables with a record amount of clean energy bought through power purchase agreements in 2019, according to Bloomberg New Energy Finance. This consisted of 19.5GW of clean contracts signed by more than 100 corporations in 23 different countries, more than triple the activity in 2017²⁰. In July 2020, TSMC signed a corporate power purchase agreement with Orsted for the supply of 920MW of wind power, the largest contract of its kind in Taiwan. The Korean government has also introduced measures to support companies joining RE100, including: 1) Renewable Energy Certificate (REC) purchase system; 2) authorising third-party Power Purchase Agreements (PPA); and 3) green pricing schemes. Over 70 of Apple's suppliers, the majority of which are in Asia, have committed to 100 per cent renewable energy²¹, of which 2.7GW is operational in 2019.

There have also been shifts towards renewables in many Asian growth markets such as India and Vietnam, with demand increasingly fulfilled by cheaper renewable sources that have displaced fossil fuel-based projects.

Figure 8: Renewable power as % of total power growth (2018-19)



Source: BP Statistical Review of World Energy

19. [Center for Resource Solutions \(2019\), Accelerating Corporate Renewable Energy Engagement in China](#)

20. [BloombergNEF \(2019\), Corporate Clean Energy Buying Leapt 44% in 2019, Sets New Record](#)

21. [Apple Supplier Clean Energy, 2020 Program Update](#)

Electric utilities stand to benefit from the long-term trend of increased electrification, which can drive fuel switching away from gasoline (in the case of passenger cars) and from natural gas (in the case of buildings). For example, the IEA estimates that the increasing adoption of electric vehicles (EVs) could boost electricity demand from EVs by 6-11x by 2030 from 2019 in the EU.²² To capture the full benefits of these trends, it is important that electric utilities generate power from renewable sources to ensure that the well-to-wheel emissions remain lower compared to combustion of gasoline and natural gas.

Regulatory instability is also a rising risk factor for Asian utilities. We note that prior to COVID-19, S&P had already noted that electricity generation companies in Indonesia and India faced rising risks of intervention. In Indonesia, PLN, the dominant power utility, faced cash flow pressures due to delayed government payment of services. In India, 42 coal-fired power projects totalling 19GW are currently on hold due to financial difficulties²³, while some states such as Andhra Pradesh had delayed payments to renegotiate executed contracts, leading to curtailment. With both Indonesia and India being hard hit by COVID-19 in 2020, short-term falling electricity demand increases the risk that generation companies may face reduced payments.²⁴

Finance Dynamics

A rapid change in the financing of the energy industry has led to significant adverse consequences for the financing of fossil fuel (particularly coal plants) and conversely beneficial outcomes for financing of renewable energy.

There is growing and widespread adoption of restrictions on financing thermal coal. According to IEEFA, there are presently 123 globally significant financial institutions (defined as those with assets under management of more than \$10 billion) that have divested their coal assets and are no longer financing projects throughout the coal value chain²⁵. More Asian financial institutions have adopted these restrictions this year, including two of Japan's largest institutional banks, Sumitomo Mitsui Financial Group and Mizuho Financial Group, and Korea's KB Financial Group. This follows coal exit announcements in 2019 by Singapore's UOB, DBS and OCBC. Importantly, Japan has announced the tightening of state-backed financing criteria for overseas coal-fired power plants and Korea may soon follow, closing another traditional avenue of financing of coal projects in the region. (Please see Figure 16 in the Appendix for a detailed list.)

22. [IEA \(2020\), Global EV Outlook 2020](#)

23. Global Energy Monitor, Troubled Indian Coal Plant Construction Sites

24. [S&P Global \(2019\), Utilities - Asia Pacific, Industry Top Trends 2020](#)

25. [IEEFA, Over 100 and counting](#)

Flows into sustainable investing funds are accelerating, reducing the cost of capital of renewable companies whilst conversely increasing those of fossil fuel companies. The value of global assets applying ESG data to drive investment decisions has almost doubled over four years, and more than tripled over eight years, to \$40.5 trillion in 2020, according to research firm Opimas.²⁶ The number of ESG-themed strategies being launched has accelerated to almost 400 in 2019 compared to 160 in 2016, and research from Morningstar has shown that the majority of ESG funds have outperformed non-ESG funds over one, three, five and 10 years as well as during the COVID-19 sell-off in the first quarter of 2020²⁷.

Ongoing progress globally on green taxonomies, including across multiple markets in Asia, aim to shift financial flows towards sustainable economic activities and overcome previous barriers to scaling up green finance.

The World Bank and the International Organisation of Securities Commissions' (IOSCO) have recently published guides to help financial regulators develop green taxonomies²⁸. In October 2020, five key government ministries in China issued a set of guiding opinions to encourage private investment and foreign capital to back green bonds and fund climate-friendly projects, including plans to allow individuals and financial firms to participate in its soon-to-be-launched national carbon-trading scheme and inviting foreign entities to issue green bonds and hold RMB-denominated green financial assets. In Asia, China, Malaysia, Singapore, Japan, South Korea and India have all made varying levels of progress on this front. A key step forward would be to improve consistency of taxonomies across the different Asian jurisdictions and to aim for harmonisation with the EU taxonomy, which remains the most advanced classification of green finance in operation.

Renewables offer potentially stronger returns than fossil fuel projects. The sharp fall in alternative energy costs and lower energy prices in 2020 have led to competitive investor returns for renewables compared to oil and gas projects, according to Wood Mackenzie²⁹. This is likely to encourage energy companies to take on more renewable projects to meet their 2050 emission goals. We note that in January 2019, a survey conducted by the Oxford Institute of Energy Studies showed that the hurdle rate for most fossil fuel projects were already significantly higher than renewables (up to 40% for coal projects vs 11% for renewables), signalling a tilting preference towards renewables, and the growing acceptance of the higher risk profile of fossil fuels as carbon emissions risks continue to rise.

26. [Global ESG data driven assets hit \\$40.5 trillion](#)

27. [Morningstar \(2020\), Do Sustainable Funds Beat Their Rivals?](#)

28. [World Bank \(2020\), Developing a National Green Taxonomy: A World Bank Guide; IOSCO \(2019\), Sustainable Finance in Emerging Markets and the Role of Securities Regulators](#)

29. [Wood Mackenzie \(2020\), Could Clean Energy Be The Winner In The Oil Price War?](#)

Utility companies still have large numbers of high-carbon power plants on their balance sheets that may become legacy or stranded assets going forward. Their future value will depend upon how the transition away from high-carbon, high-water use electricity generation is managed by policymakers. We are likely to see continued decline in costs of gas and renewables, combined with additional regulatory measures against carbon emissions, which could lead to the early closure of coal plants³⁰. According to Reuters, South Korea is accelerating plans to shut down up to 20 ageing coal plants from 2019 onwards to reduce emissions, while Japan will close up to 100 old coal plants by 2030³¹. JERA, Japan's largest power generator, pledged to shut down all inefficient coal-fired power plants in the country by 2030 as part of their net-zero 2050 goal.³²

Case study: CLP Group Climate Vision 2050

CLP Group, a leading investor and operator in the energy sector of the Asia-Pacific region, has laid out a clear pathway towards decarbonising its generation portfolio of over 24GW, as detailed in its updated Climate Vision 2050 report, which was first launched in 2007. Key details include:

- A tightened target to reduce its carbon intensity by 80% by 2050 (from 2007 levels), along with new carbon intensity targets for 2030 and 2040.
- A new renewable energy capacity target of 30% and a new non-carbon emitting capacity target of 40% by 2030.
- Commitment to add no additional coal-fired power generation assets and progressively phase out all remaining coal-based assets by 2050.
- Commitment to strengthening its low carbon targets at least every five years.
- Tracking its progress in climate action against the Sectoral Decarbonisation Approach (SDA) trajectory of the Science Based Targets initiative (SBTi) using the below 2 degrees scenario.

CLP's 2019 Sustainability Report³³ provides clear disclosures across the four TCFD areas:

- **Governance:** The CLP board has overall responsibility for CLP's ESG strategy and reporting, with the Sustainability Committee overseeing management of sustainability issues and the Audit & Risk Committee responsible for the assurance of sustainability data. The duties and scope of work of both committees are clearly defined and the Sustainability Executive Committee consists of senior members of the management team.

30. Carbon Tracker estimates that Japan faces up to \$71bn of stranded coal assets without policy reform

31. [Reuters \(2020\), Japan to Accelerate Closure of Old Coal Power Plants](#)

32. [Japan Times \(2020\), Power firm JERA to shut inefficient coal-fired power plants by 2030](#)

33. [CLP Sustainability Report 2019](#)

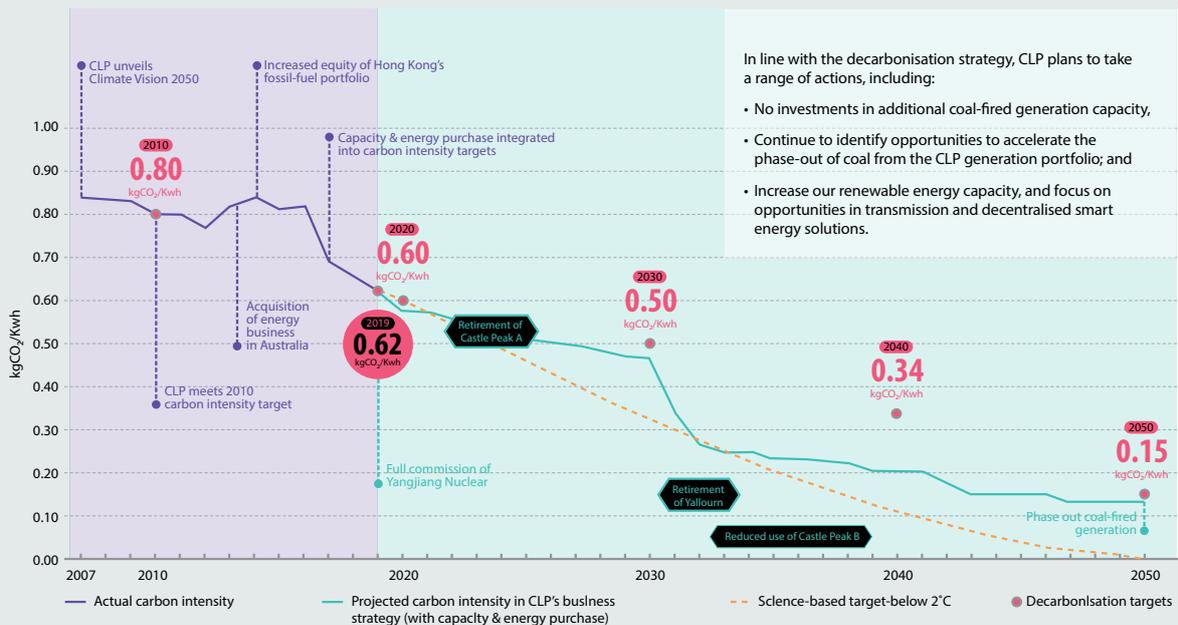
Figure 9: CLP governance framework



Source: CLP

- **Strategy:** CLP's strategy to deal with climate change is laid out in its latest Climate Vision 2050 publication (22 pages) with key targets set out above. Climate scenario analysis has been conducted to examine scenarios of extreme global warming and evaluate the resilience of its strategies against these scenarios. CLP has also developed a set of tailored risks and opportunities relevant to its assets across its key markets for the short term (0-1 year), medium term (1-5 years) and medium to long term (5+ years).

Figure 10: CLP's carbon intensity



Source: CLP

- **Risk management:** CLP's overall risk management process is overseen by the Board through the Audit & Risk Committee. The company tracks physical and transition risks, in line with TCFD's recommendations, and is developing an additional risk register that tracks risks and opportunities on a longer-term basis.
- **Metrics and targets:** CLP provided clear details of its 2019 decarbonisation efforts in comparison with the 2020 targets and provided case studies on its efforts in this regard. Scope 1, 2 and 3 GHG emissions are disclosed and a full breakdown of Scope 3 emissions by category are also provided. Generation capacity by fuel and energy generated by fuel are also disclosed.

On the public policy front, CLP discloses its participation in a range of industry and professional bodies related to climate change and energy and the level of financial contributions and engagement thereof. When joining any organisation, respective Public Affairs teams act as a control point and will consider the appropriateness of the membership request. The Group CEO or respective MD approves the participation, to ensure the position of the organisation is consistent with CLP's ambitions on climate.

To help advance climate-related financial disclosure, CLP also joined the TCFD Electric Utilities Preparer Forum with five major electric utilities and the World Business Council for Sustainable Development (WBCSD) to share effective disclosure practices and plans to continue this collaboration with WBCSD. CLP has been an active member in driving collaborative climate actions globally by connecting with leading organisations including WBCSD, the Energy Transitions Commission, The Climate Group, the International Emissions Trading Association and the Business Environment Council.

Investor Expectations

Asian electric utility companies should have robust long-term business strategies aligned with the Paris agreement, aiming for a 1.5°C science based transition pathway, even if in many cases these are ambitions beyond NDCs. This guide sets out investor expectations for the companies in the form of key questions for their boards and management teams. The questions set out clear metrics to gauge where each company is positioned in their journey of decarbonisation, covering scenario analysis of risk and opportunities as well as emissions reduction targets. The questions proposed are aligned to the four pillars of governance, strategy, risk management and metrics/targets as recommended by the Task Force on Climate-related Financial Disclosures (TCFD). These expectations and questions have also been referenced against the new Climate Action 100+ Net Zero Company Benchmark which includes indicators on ambition, targets and goals, decarbonisation strategy, capital alignment, climate policy engagement, governance, just transition³⁴ and reporting.³⁵

Five Investor Expectations of Asian Electric Utilities Companies



1 Governance

EXPECTATION

Clearly define board and management governance processes to ensure adequate oversight of climate-related risk and opportunities, as well as the strategic implications of planning for a transition consistent with more ambitious NDCs over time. NDCs are expected to converge over time with Paris Agreement goals to limit global temperature increase to well below 2°C and pursue efforts to limit temperature rise to 1.5°C compared to pre-industrial levels.

-
34. The goal of a just transition for workers and communities was included as part of the Paris Agreement on climate change. At its core, the just transition is a forward- looking, action-oriented framework that identifies opportunities for public and private investment in economic development that is both sustainable and inclusive. Reference <https://www.unpri.org/download?ac=9452>
35. The Climate Action 100+ Net Zero Company Benchmark will be formally introduced in the second Climate Action 100+ Progress Report in late 2020. The first version of the benchmark will be delivered publicly in early 2021 with company level assessments against the majority of indicators.

QUESTIONS

Mission Statement

- Has the company made a GHG emissions reduction statement that explicitly includes scope 1, 2 and, when applicable, the most relevant scope 3 emissions? Is it in line with NDC(s) or exceed them?
- Has the company made a GHG emissions reduction statement that explicitly includes scope 1, 2 and, when applicable, the most relevant scope 3 emissions? Is it in line with a well below 2°C scenario?
- Has the company made a net zero GHG emissions ambition statement that explicitly includes scope 1, 2 and, when applicable, the most relevant scope 3 emissions?

Oversight

- Describe the board's oversight of climate-related risks and opportunities. Who is the most senior executive responsible for managing climate risk?
- What is the process and frequency by which board committees, such as the audit committee, are kept informed of climate change issues?
- Please provide further details on the role of the audit committee on climate-related issues, such as whether the company has incorporated climate-related analyses in its financial statements and underlying assumptions.
- Describe how processes for identifying, assessing and managing climate-related risks are integrated into the company's overall risk management, in particular taking into account the interconnectedness of climate risks with others to form a full picture. What action, if any, has the company taken as a result?
- How do staff members keep the board and relevant committees abreast of climate-related developments, including regulatory changes? (Organigrams showing structure may be useful)
- Describe management's role in assessing and managing climate-related risks and opportunities.
- Where electric utilities are partly state owned, please explain the decision-making process between management, board and the state, particularly with regards to climate-related issues.

Expertise

- Does the board itself have expertise in climate risk, and/or accessed expertise outside the company?
- Do any independent directors have expertise in climate and/or related risks?
- How does the company support and maintain the building of these capabilities?

Remuneration

- Do metrics used to determine remuneration consider climate change, environmental risks and opportunities? If so, how are these metrics tracked and assessed? e.g. through key performance indicators (KPIs) or metrics disclosed in response to the TCFD's recommendations on metrics and targets.

2 Decarbonisation strategy and scenario stress testing

EXPECTATION

Take action to reduce GHG emissions across the value chain, consistent with the Paris Agreement's goal of limiting global average temperature increase to well below 2°C compared to pre-industrial levels and efforts to pursue 1.5°C. We expect electric utility companies to have a clear short, medium and long-term decarbonisation strategy³⁶ to enable a just transition.

Provide a timeline for the phaseout of thermal coal power generation³⁷ or the implementation of mitigation measures like CCUS in line with scientific emissions reduction pathways.

QUESTIONS

Strategy

- Does the company have an overarching decarbonisation strategy that encompasses goals and progression targets?
- What are the key climate-related risks and opportunities the company has identified over the short, medium and long term? What are their key impacts on the organization's different business lines- including generation, distribution and customer services where applicable?
- Does the company's strategy include a commitment to 'green revenues'³⁸ from low carbon products and services?
- Do the company disclose considerations of the impacts from transitioning to a lower-carbon business model on your workers and communities?
- Where electric utilities are partly state owned, please discuss the direction of national climate-related policies, in particular progression towards net zero and any details regarding policy implementation.

36. For reference, the Climate Action 100+ Net Zero Company Benchmark defines short, medium and long term as periods 2020-2025, 2026-2035, 2036-2050.

37. In-line with the conclusions of Climate Analytics' analysis that global coal power generation needs to be phased out by 2040 to be compatible with the 1.5C Paris Agreement (2031 for OECD and 2037 for non-OECD Asia)

38. Revenue from power generation from renewable and alternative energy sources, generated from renewable and alternative energy value chain, and products and services enabling more efficient methods of energy usage and management.

Generation

- What is the company's actual and projected generation mix?
- What is the company's outlook for future energy demand? What are the key outlook input assumptions and ranges tested with respect to (i) speed and alignment of regional and national policy measures to deliver on the Paris Climate Agreement; (ii) technology break-through and penetration (in particular, renewable energy, electric storage and energy demand profile); and (iii) carbon pricing (whether an internal or shadow carbon price is used)?
- Has the company established firm targets for renewable energy capacity over the short, medium and long-term?
- Does the company view natural gas as an intermediate pathway towards carbon reduction (15-20 years) and does it plan for potential policy shifts on gas?
- If natural gas is expected to be a permanent fuel, has the company explored the addition of carbon capture, utilisation and storage (CCUS) facilities to capture these CO₂ emissions?
- Is the company exposed to regulatory risks (e.g. where future tariff reviews could impact potential capital expenditure) and to what extent may this impact its climate change strategy?

Management and Phaseout of coal-fired power plants

- Has the company committed to implementing the phase out or replacement of existing coal-fired power plants within a specific timeframe?
- Has the company committed to divesting and halting coal-fired power plants and projects overseas within a specific timeframe?
- How is the company revaluing assets as projected closure dates approach to avoid large, sudden write-downs?
- Apart from write-downs and depreciation, how do the company's current accounting policies reflect anticipated policy and technology changes?
- How is the company evaluating other financing methods, such as refinancing or reinvestment³⁹, to accelerate the decommission of legacy assets?
- How does the company plan to provision for potential site remediation?
- Does the company have energy efficiency targets in place for existing plants?

39. <http://rmi.org/wp-content/uploads/2020/06/How-to-retire-early-June-2020.pdf>

Expenditure

- How does the company decide on capital expenditure for fossil-fuel energy over the coming years in the light of potential changes in national policy and more ambitious NDCs?
- Is the company's future capex plan aligned with its long-term GHG reduction target, NDCs and/or with the Paris Agreement's objective of limiting global warming to well below 2°C and no more than 1.5°C?
- Please detail, where possible, any public quantitative information on changes to capital expenditures and operational expenditures and revenue as a result of actual or anticipated policy changes.

Targets

- Has the company set short, medium and long-term targets for reducing its GHG emissions from the present on a clearly defined scope of emissions?
- How does the company track performance against these targets both for the company overall and per fuel type?
- Is the long-term target or goal aligned with NDCs, a trajectory to limit global temperature increase to well below 2°C, or 1.5°C (according to sector specific decarbonization pathways as defined by SBTi/IPR/TPI/NGFS/NZE2050⁴⁰)?

Scenarios and Resilience

- Has the company undertaken a range of scenario stress tests, including for NDC(s), 1.5°C, 2°C and a 3°C+ hothouse world⁴¹?
- Do the scenario analyses include quantitative elements and are the results disclosed?
- Does the quantitative scenario analysis cover the entire company? Have you disclosed the key assumptions and variables used and reported on the key risks and opportunities identified and potential impact on the company's business strategy?

40. NZE 2050 refers to the Net Zero Emissions by 2050 scenario as set out in the IEA's World Energy Outlook 2020.

41. <https://www.iea.org/reports/world-energy-model>,

https://www.ngfs.net/sites/default/files/medias/documents/820184_ngfs_scenarios_final_version_v6.pdf

3 Transparency & Disclosure

EXPECTATION

Provide enhanced corporate disclosure in line with recommendations of international frameworks, such as the Task Force on Climate-related Financial Disclosures (TCFD) or the Sustainability Accounting Standards Board (SASB), to enable investors to test the robustness of the company's business plans against a range of climate scenarios and improve decision-making.

QUESTIONS

- Has the company aligned its reporting with international sustainability reporting standards such as SASB?
- Has the company participated in surveys such as the CDP questionnaire and are the results disclosed to investors?
- Has the company committed to implementing the TCFD recommendations?
- Has the company produced TCFD aligned climate risk reporting to date?
- What is the company specific carbon intensity (CO₂/KWh) and how is it going to evolve? How does it compare with the well below 2°C/1.5°C specific carbon intensity standard?

4 Physical Resilience

EXPECTATION

Physical risks, in particular water scarcity, should be taken into account in business planning. Adaptation strategies should be devised and deployed to mitigate these risks.

QUESTIONS

- Has the company provided information about the geographical spread of assets, even at subnational levels, and assessed the likelihood of physical climate risks to assets from other extreme weather disruptions such as heat, floods, storms and coastal inundation?
- Has the company made contingency plans in relation to the potential threats described above?
- Please detail where plans are made for specific locations, any modeling processes used and any efforts to improve the physical resilience of assets, such as operational experience, diversification of assets, and the capacity to deploy additional resilience measures within the time horizon or lifespan of the asset (i.e. replacement of assets, technology improvements).
- How is the company assessing water security risks and what are the future scenarios around that?
- Has the company considered changes to its business strategy in the event of changes in water availability?

5 Public policy

EXPECTATION

Engage with public policy makers and other stakeholders in support of cost-effective policy measures to mitigate climate-related risks and support low carbon investments in line with achieving net zero GHG emissions by 2050 or sooner. Electric utilities should also have board level oversight and transparency of their positions regarding relevant environmental legislation and of any lobbying activities - ensuring consistency of any lobbying activities undertaken either directly or indirectly via industry associations with limiting global warming to well below 2°C with an ambition to limit warming to no more than 1.5°C above pre-industrial levels.

QUESTIONS

Policy positions

- Climate policy engagement – Does the company have a clear commitment and set of disclosures clarifying its intent to support climate policy in line with the Paris Agreement?
- Please describe the position the company has taken on all relevant climate-related policies⁴².

Activity/Alignment

- How does the company conduct engagement with policymakers on a national and international level?
- Please provide a detailed explanation of how the company's policy engagement process is governed.
- What industry associations does the company have links with (including trade associations, chambers of commerce and business forums)? And what is the nature of the involvement? E.g Committee participation, board level roles, etc.
- What is the governance process for managing these relationships?
- How does the company ensure consistency between its own public positions on climate change and those articulated by its trade associations, and what actions is it prepared to take where there is a misalignment?
- If applicable, please demonstrate how the company's direct and indirect lobbying activity is consistent with its public position on climate change/ Paris Agreement goals?

42. For example, capacity payments and energy market rules, renewables subsidies, energy efficiency/renewable energy targets, carbon price, carbon tax, reform to local carbon markets, GHG reduction targets including NDC and long-term emissions reduction plans, indirect messages through industry associations.

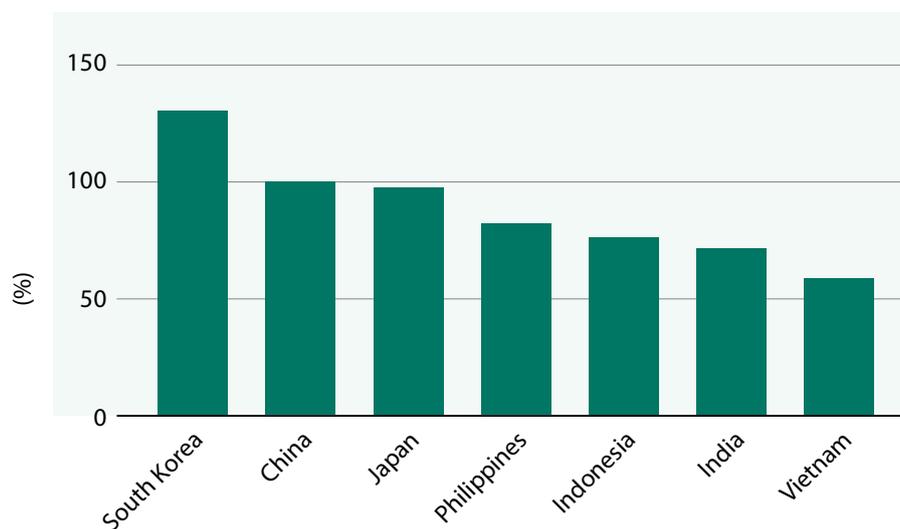
With net-zero emissions commitments now covering over half of the world's emissions and GDP, following recent announcements from major Asian economies and companies (not including the new US administration's intentions), the challenge to 'crossover to net-zero' must start now. Companies who clearly set out their transition plans will facilitate and benefit from investors assessing their competitiveness in this rapidly developing and necessary journey to net-zero emissions. We hope this guide provides a useful overview of the trends affecting Asian electric utilities, coupled with the practical investor expectations questions that can be used for constructive engagement with the boards and management of electric utilities.

Regulations impacting the electric utilities sector

1. National and state level greenhouse gas (GHG) emissions reduction targets

Following the negotiations that led to the COP 21 climate agreement, 186 countries set emissions reduction targets in the form of Nationally Determined Contributions (NDCs). Many of these NDCs reflect national targets and regulatory packages that have been in place for years, such as in the European Union, but also reflect significant new commitments from China and India. It is important to note that based on current trajectories, many of the Asian countries are expected to meet their current NDCs by 2030.

Figure 11: Projected CO2 emissions vs NDC targets (2030)



Source: Climate Action Tracker

However, the majority of Asian NDCs have been rated “highly insufficient” by Climate Analytics, implying that they fall short of a country’s “fair share” range and are not consistent with holding warming to well below 2°C, let alone the Paris Agreement’s stronger 1.5°C limit.

Figure 12: Country compatibility with global <2°C limit

Country	Current projection	NDC target
South Korea	Critically insufficient	Highly insufficient
China	Insufficient	Insufficient
Japan	Insufficient	Highly insufficient
Philippines	Compatible	Compatible
Indonesia	Insufficient	Insufficient
India	Compatible	Compatible
Vietnam	Highly insufficient	Critically insufficient

Source: Climate Action Tracker⁴³ (as of November 2020)

In some countries, such as Indonesia, absolute levels of GHG emissions will likely be higher in 2030 even if NDCs are met, since their NDCs target a level below business as usual. We also note that some of the NDCs are conditional upon other factors, such as technology assistance by other countries, and are not defined scientifically.

China has pledged to cut its CO₂ emissions per unit of GDP by 60-65 per cent from 2005 levels by 2030, by increasing non-fossil fuel sources in primary energy consumption to about 20 per cent by the same date. In September 2020, China pledged to scale up its NDC by adopting more vigorous policies and measures and aim to achieve carbon neutrality before 2060, with more details likely to be forthcoming in the 14th Five-Year Plan due to be released publicly in early 2021.

Japan is targeting emission reductions of 26 per cent by 2030 from 2013 levels, utilising a bottom up calculation which takes into account policies, individual technologies and cost constraints. On 26 October 2020, Japan pledged to become carbon neutral by 2050, with concrete goals to achieving this to be identified in a report to be released by end-20. On 28 October 2020, South Korea also pledged to become carbon neutral by 2050, although detailed plans are also lacking at present.

43. <https://climateactiontracker.org/countries/>

Figure 13: National Determined Contributions (NDCs) in Asia

Country	Nationally Determined Contributions (NDC)		Announced
	Unconditional	Conditional	Net zero targets
China	Carbon intensity: -60 to -65% below 2005 by 2030	n.a.	By 2060 (23 Sep 2020)
	Peak CO2 by around 2030	n.a.	
Japan	GHG: -26% below 2013 by 2030	GHG: -80% below 2013 by 2030	By 2050 (26 Oct 2020)
S. Korea	GHG: -37% below BAU by 2030	n.a.	By 2050 (28 Oct 2020)
Taiwan	GHG emission: -50% below BAU by 2030; -20% below 2005 by 2030	n.a.	n.a.
India	Carbon intensity: -30 to -35% below 2005 by 2030	Renewable share: 40% by 2030	n.a.
Indonesia	GHG: -29% below BAU by 2030	GHG: Up to -41% below BAU by 2030	n.a.
Malaysia	Carbon intensity: -35% below 2005 by 2030	Carbon intensity: -45% below 2005 by 2030	n.a.
Philippines	n.a.	GHG: -70% below BAU by 2030	n.a.
Thailand	GHG: -20% below BAU by 2030	GHG: -25% below BAU by 2030	n.a.
Vietnam	GHG: -9% below BAU by 2030	GHG: Up to -27% below BAU by 2030	n.a.

Source: UNFCCC, local governments (as of November 2020)

2. Measures to increase renewable energy supply

China is the world's leader in terms of installed capacity and consumption of renewable energy, with 184GW of wind capacity and 174GW of solar capacity at end-2018, with the aim of renewables accounting for at least 35 per cent of electricity consumption by 2030, according to the National Development and Reform Commission (NDRC). For 2020, China expects to increase the share of renewable-based power generation to 28 per cent, with 10 provinces and regions being ordered to generate at least 30 per cent of power from renewable sources. Whilst subsidies are gradually being withdrawn, renewables have become increasingly price competitive on a standalone basis.

Thailand's recently approved Power Development Plan and Alternative Energy Development Plan projects renewable energy in Thailand to be 30 percent of total energy production by 2037, from the present level of 14.5 per cent. To facilitate this, measures such as streamlining licensing for rooftop solar and allowing owners to sell excess electricity to the grid were approved. Big state enterprises such as EGAT are preparing to invest in large scale floating solar and energy storage projects.

South Korea's Renewable Portfolio Standards (RPS) mandates power producers that have installed capacity over 500MW to produce a minimum proportion of power using renewable energy. The obligatory renewable service supply ratio rises from 1 per cent in 2012 to 10 per cent in 2022, creating a significant new supply of renewable energy.

Figure 14: Renewable energy targets

Region/Country	Type	Category	Date	RE target (%)	RE achieved (2019, %)
China	NDC: Unconditional	Non-fossil	2030	20	31
Japan	Domestic goal	Renewables	2030	24	19
South Korea	Domestic goal	Renewables	2030	33	15
Taiwan	Domestic goal	Renewables	2025	20	6
India	NDC: Conditional	Non-fossil	2030	40	22
Indonesia	Domestic goal	Renewables	2025	23	12
Malaysia	Domestic goal	Renewables	2025	20	17
Philippines	Domestic goal	Renewables	2030	35	21
Thailand	Domestic goal	Renewables	2037	37	15
Vietnam	Domestic goal	Renewables	2030	10	9

Source: UNFCCC, local governments (as of November 2020)

3. Demand and supply side energy saving policies

Japan established the Building Energy Efficiency Act in 2015 with mandatory compliance with energy efficiency standards and incentive measures such as a labeling system.

China's Energy Conservation Law provides the legal framework for energy conservation and energy efficiency. China's five-year plans have also driven energy efficiency improvements and the Energy Supply and Consumption Revolution Strategy (2016-30) sets a clear target to cap total energy consumption at 6 gigatonnes of coal equivalent (Gtce).

Thailand's Energy Efficiency Development Plan (2011-30) is aiming to increase energy efficiency by 25 per cent by 2030, compared to 2005 levels, through a focus on the transportation and industrial sectors.

Figure 15: Energy Efficiency Plans

Region/Country	Program	Target
China	Energy Supply & Cons. Revolution Strategy	Carbon emission per GDP unit falls by 60-65% by 2030 vs 2005
Japan	Strategic Energy Plan (2018)	Energy reduction of 14% by 2030 vs 2013
South Korea	Energy Master Plan (2014-2035)	13%/15% reduction in energy/electricity demand by 2035
India	National Mission for Enhanced Energy Efficiency	Avoided capacity addition of 20GW
Indonesia	Govt regulation number 70/2009	Improve energy efficiency by 25m boe in 2025
Malaysia	National Energy Efficiency Action Plan	Electricity demand growth reduction of 8% by 2025
Philippines	Energy Efficiency Roadmap (2014-30)	Annual savings 1.6% and total savings of 24% by 2030
Taiwan	Energy Transition White Paper (2018)	Efficiency targets set for 6 sectors, including transportation
Thailand	Energy Efficiency Development Plan (2011-30)	Increase energy efficiency by 25% by 2030 vs 2005
Vietnam	National Energy Efficiency Program (2019-30)	Efficiency rate of 8-10% per total energy consumption by 2030

Source: Local governments (as of November 2020)

4. Carbon pricing

China has been experimenting with cap-and-trade programs in several pilot cities and plans to gradually roll out a nationwide program from 2020 onwards, with several years of testing before expanding to major sectors like electricity, steel and concrete.

In South Korea, the introduction of the Korea Emissions Trading Scheme (KETS) has seen relatively low prices with minimal impacts for utilities but it is likely that the introduction of phase three standards from 2021 onwards would have flow-through price impacts for utilities.

Figure 16: Carbon Emission Trading programs

Region/Country	Present status	Future plan
China	7 regional pilot programs since 2013	National roll out for power sector from 2020
Japan	Tokyo ETS since 2010, targeting buildings	National roll out postponed since 2010
South Korea	Korea ETS launched since 2015	Phase 3 Allocation Plan for 2021-25
Taiwan	ETS proposed in 2015	No timeline implemented
India	None	None
Indonesia	Studying mandated ETS implementation	National roll out mandated by 2024
Malaysia	None	None
Philippines	None	None
Thailand	Voluntary-ETS launched since 2013	None
Vietnam	Draft law includes provisions for ETS	Design of domestic ETS from 2021

Source: ICAP, local governments (as of November 2020)

5. Local developments disclosure regulations

Figure 17: Disclosure standards of Asian stock exchanges

Region/Country	ESG	Disc. rank (2019)	Climate assess.
China	Mandatory by 2020	41	No
Hong Kong	Mandatory	27	From 2021
Japan	Voluntary	34	No
South Korea	Mandatory for large-caps	33	No
Taiwan	Expanding the mandatory list to the listed companies with paid in capital more than NTD2bn from 2023	n.a.	2023
India	Voluntary	37	No
Indonesia	Mandatory from 2020	36	No
Malaysia	Voluntary	22	No
Philippines	Mandatory from 2020	30	No
Singapore	Mandatory	24	No
Thailand	Mandatory	9	No
Vietnam	Mandatory	45	No

Source: Various exchanges, Rankings the World's Stock Exchanges, 2019 (as of November 2020)

6. Controversies on natural gas as a transition fuel

Countries in Asia have been pushing for the increased use of natural gas at the expense of coal for electricity generation as a means to reduce particulate and carbon emissions, since the lifecycle greenhouse gas emissions of LNG is less than coal, according to industry analysis.

Since 2014, China has made significant progress in increasing the adoption of natural gas, with the government setting a goal of increasing China gas consumption to 360 billion cubic metres (bcm) in 2020 to 10 per cent of the country's energy mix by 2020, from 6 per cent in 2014. By late-2019, China was the largest importer of LNG in the world surpassing Japan and South Korea. The formation of China's national pipeline company in 2019 was a further step in that direction. Vietnam is also projecting strong growth in LNG imports from 1.2 million tonnes by 2025 rising to 30 million tonnes by 2045.

The growing use of natural gas as a transition fuel to renewables from coal has become a point of debate. This is because of the relatively high cost of natural gas vs renewables, still considerable emissions that natural gas produces and possibility that large-scale methane emissions released into the atmosphere from fracking in the US has not been accounted for in the estimates of natural gas lifecycle emissions. According to the Global Energy Monitor, overall methane system leakage in the US gas system is 2.3 per cent, which would make emissions from leakages similar to emissions from burning the gas in power plants, thus doubling the warming from just burning the gas⁴⁴. The Network for Greening the Financial System (NGFS) has concluded that in order to conform with the 1.5C scenario, Asia's natural gas demand has to peak around 2020 and decline by around 40% in 2050.

Gas demand for electricity generation has been flat or on the decline since 2015 in countries such as Japan, Thailand and India, which could reflect the growing competitiveness of renewables vs LNG and other factors such as environmental concerns and slowing overall electricity demand growth, particularly in Japan. In Australia, gas powered generation in the national electricity market has fallen 59 per cent between 2014-19, as gas has not been able to compete with cheaper, renewable sources of power generation. However, there are specific situations such as in Hong Kong and Singapore, where the land availability constraints make renewables difficult to scale up and transition is taking place first with gas, before implementation of other solutions such as green hydrogen or import of renewables from China.

44. Global Energy Monitor (2020), Gas Bubble - Tracking Global LNG Infrastructure

7. Regional water resource management

Governments are seeking to shore up their water resources management in order to deliver improved water security. For example, China's National Energy Administration released a Coal Bubble Alert System in 2016 which would ban new coal plants from being built in areas where water is constrained.

Restrictions on thermal coal funding are rising

Figure 18: Asian financial institutions that are restricting thermal coal funding

No	Financial Institution	Type	Country
1	Asian Development Bank	Multilateral Development Bank	Philippines
2	Asian Infrastructure Investment Bank	Multilateral Development Bank	China
3	Cathay Financial Holdings	Bank	Taiwan
4	DB Insurance	Insurer / Reinsurer	South Korea
5	DBS Bank	Bank	Singapore
6	E.Sun Bank	Bank	Taiwan
7	Japan Bank for International Cooperation	Export Credit Agency / Bank	Japan
8	KB Financial Group	Bank	South Korea
9	Korea Trade Insurance Corporation	Export Credit Agency / Bank	South Korea
10	Mitsubishi UFJ Financial Group	Bank	Japan
11	Mizuho Financial Group	Bank	Japan
12	OCBC Bank	Bank	Singapore
13	Resona Holdings	Bank	Japan
14	Shinhan Financial Group	Bank	South Korea
15	Sompo Holdings	Insurer	Japan
16	Sumitomo Mitsui Banking Corporation	Bank	Japan
17	Sumitomo Mitsui Trust Bank	Bank	Japan
18	The Export-Import Bank of Korea	Export Credit Agency	South Korea
19	Toho Bank	Bank	Japan
20	United Overseas Bank	Bank	Singapore

Source: AIGCC, IEEFA (as of Nov 2020)