Infrastructure: Driving Sustainable Development

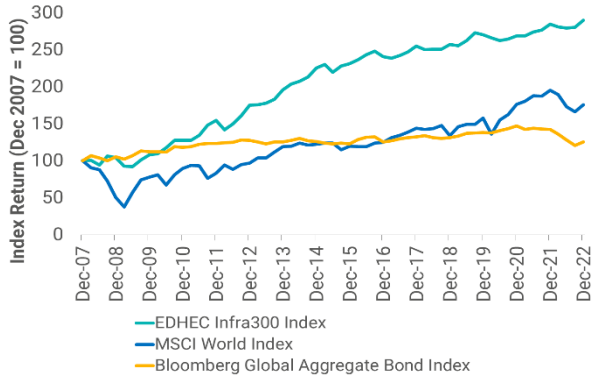
- More green infrastructure needed to close the global emissions gap, especially in APAC
- Opportunities in APAC include renewable energy, EV charging and waste-to-energy
- Critical to partner with established fund managers which can create value and mitigate risks

Resilience amid market turmoil

2022 was a challenging year for financial markets, underscored by the Russian-Ukraine conflict which triggered a global energy crisis and aggressive monetary tightening by the US Federal Reserve and other major central banks to tame the ensuing rise in price pressures.

Amidst the market headwinds which saw global listed equities and bonds falling by 19.5% and 16.2% respectively in 2022, private infrastructure managed to deliver a positive return of 3.8% on account of its stronger inflation-linked cash flows and profitability, which mitigated the impact of higher interest rates on valuations[1] (Figure 1).

Figure 1: Historical return comparison between private infrastructure, public equities and bonds



Source: Bloomberg, EDHEC Infra, Keppel Fund Management Research

In addition to its strong returns, private infrastructure has proven over a 20-year period (4Q2002 to 4Q2022) to have low correlations with other asset classes such as public equities (r= 0.07), public bonds (r=0.32), private equity (r= 0.12) and private real estate (r=0.19)[2], making it an effective portfolio diversifier for investors.

As investors flocked to the safety afforded by infrastructure, global private infrastructure fundraising increased by 22.8% in 2022 to reach a record USD175 billion[3]. In comparison, fundraising across all other private capital asset classes (e.g. private equity, real estate, private debt) declined by 14.8% in 2022.

Climate change: A call to action

Looking beyond the asset class's defensive attributes, growing international momentum around addressing climate change is expected to spur greater investments towards green infrastructure assets over the longer term. For instance, the Net Zero Asset Owners Alliance (a member-led initiative comprising 82 institutional investors with over USD11 trillion in assets under management) in November 2022 released a document outlining its expectations of private asset managers to support the alliance's commitment to decarbonise its portfolios and achieve net zero by 2050. These include allocating more capital towards renewable projects and other infrastructure assets that contribute to climate change mitigation[4].

[1] EDHEC, Q4 2022 Infrastructure Update, 3 Feb 2023
[2] Keppel Fund Management Research; Private infrastructure (EDHEC Infra300), public equities (MSCI World Index, public bonds (Bloomberg Global Aggregate Bond Index), private equity (Preqin Private Equity Index), private real estate (Preqin Real Estate Index)
[3] Preqin
[4] Net Zero Asset Owners Alliance, Call to Action to Private Market Asset Managers, 24 Nov 2022

Closing the emissions gap

The need for decisive climate action has never been more urgent. According to the UN 2022 Emissions Gap Report, signatories to the Glasgow Climate Pact which was adopted at the 26th United Nations Climate Change Conference of the Parties (COP 26) in 2021 have made very limited progress in cutting greenhouse gas (GHG) emissions and more ambitious policies are needed to reduce GHG emissions by 45% from current levels by 2030 and limit global warming to 1.5˚C.

BloombergNEF estimates that some USD4.6 trillion in global energy transition and grid investments (e.g. renewable energy, electric vehicles, carbon capture) are required annually between 2023 and 2030 for the world to get back on track to net zero, which is more than three times the amount spent in 2022 (USD1.4 trillion)[5]. The cost of climate inaction will be even greater, with cumulative global economic losses projected to be USD178 trillion in net present value terms over 2021 to 2070 stemming from reduced agricultural yields, loss of productive land from rising sea levels and property damages, among others[6].

APAC's climate action strategy

As the largest contributor of CO_2 emissions (52% in 2022)[7], Asia Pacific (APAC) plays a critical role in closing the global emissions gap. Without additional policy support and investments in green infrastructure, the region's share of global emissions is projected to rise to 54% by the end of this decade[8].

In our view, APAC has the potential to achieve its climate action goals via the following three strategic thrusts:

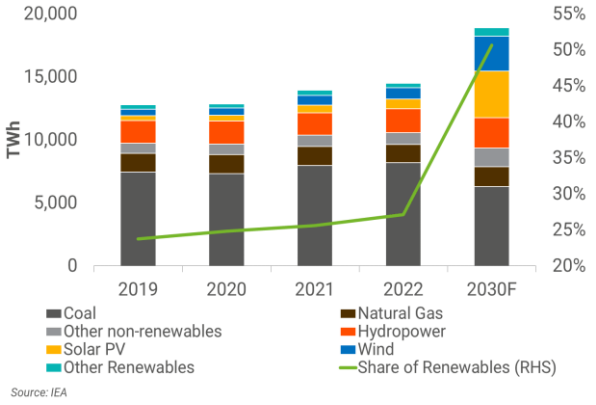
i. Decarbonising power generation
ii. Accelerate electric vehicle (EV) adoption
iii. Transit towards circular economy

I) Decarbonising power generation

Power generation is the largest carbon emitter in APAC (49%)[9] and its emissions are expected to increase further going forward in tandem with the region's economic modernisation. To reduce the sector's CO_2 emissions, the immediate priority for APAC will be to scale up the use of renewable energy in place of coal, which accounted for 57% of the region's generation mix in 2022.

Based on IEA's projections, APAC needs to expand renewable electricity generation from 3,900 terawatt-hour (TWh) in 2022 to 9,600 TWh in 2030 (or 51% of generation mix) to keep to its net zero pathway. Environmental considerations aside, the 2022 energy crisis sparked by the Russia-Ukraine conflict will also provide additional impetus for APAC markets to shift towards renewable energy to bolster their energy security. Growth in renewable electricity generation will come predominantly from zero-carbon sources such as solar PV (67%), wind (42%) and hydropower (11%)[10] (Figure 2).

Figure 2: APAC electricity generation mix



In tandem with the shift in APAC's electricity generation mix towards clean energy such as solar and wind, the region also needs build up its interconnectors (such as high-voltage cables) and battery storage facilities to even out fluctuations in electricity generation arising from changes in weather conditions.

[5] BloombergNEF, Energy Transition Investment Trends 2023, Jan 2023
[6] Deloitte, The Turning Point, 20 Jun 2022
[7] Source: IEA World Energy Outlook 2023
[8] Ibid
[9] Ibid
[10] Ibid

However, not all countries are equally endowed with renewable resources. For instance, Singapore's ability to generate renewable energy domestically is constrained by factors such as land scarcity, low wind speeds and lack of river system.

In this respect, high-density cities could turn to green hydrogen, which produces little to no emissions when combusted, as an alternative feedstock to decarbonise the power generation sector. Utility-scale gas-fired Combined Cycle Gas Turbines (CCGTs) that can combust a blend of up to 30-50% of hydrogen are already commercially available, while CCGTs capable of burning 100% hydrogen are expected to be ready for commercial deployment around 2030[11]. More important, green hydrogen allows renewables-rich regions, which can produce and liquefy hydrogen more economically, to connect with demand centres located far away.

Market perspective: India

As part of India's COP 26 commitments, the government aims to cut the country's carbon emissions by 1 billion tonnes (or 40%) from FY2020/21 to FY2029/30[12] by increasing renewable power capacity by 355GW over the same period to 506GW (or 62% of total power capacity)[13]. Based on a study by the Central Electricity Authority (CEA), renewable capacity additions will come primarily from solar PV (65%) wind (28%) and hydro (7%).

To meet the new capacity targets, India needs to invest around USD37 billion annually between FY2020/21 to FY2029/30 to install new renewable power generation projects. Another USD 22 billion in annual investments are also required over the current decade to expand India's battery storage and upgrade the country's grid and support infrastructure[14]. The government has introduced a range of policy instruments to support the development of India's renewable energy sector, such as amending the Energy Conservation Act in 2022 which mandates certain industries (e.g. chemicals, steel, commercial buildings, railway) to procure a minimum level of electricity from non-fossil sources, among others.

Market perspective: Southeast Asia

Underpinned by rapid economic and population growth, Southeast Asia's (SEA) electricity demand is projected to increase by around 55% between 2018 and 2030[15]. To sustainably meet the rise in electricity demand, the International Renewable Energy Agency (IRENA) estimates that SEA needs to build up its renewable power capacity by 303GW between 2018 and 2030 to 370GW (or 57% of total power capacity). The bulk of renewable capacity additions is expected to come from solar PV (78%) while contributions from wind and hydropower are projected to be 9% each.

Some USD25 billion in investments are required annually between 2018 and 2030 to scale up its renewable power capacity, in addition to another USD17 billion in annual spending to upgrade the region's battery, grid, interconnectors and other supporting infrastructure[16].

II) Accelerate EV adoption

Governments in APAC have introduced several incentives and regulations to spur demand for EVs[17] and curb transport-related emissions, which is the region's third largest emitting sector. For example, South Korea offers subsidies for EVs, which can go as high as KRW6.8 million (c. USD5,200) for entry-level EVs priced less than KRW 57 million (c. USD 43,100)[18] each under the country's 2023 EV Subsidy Reform Plan. EV buyers in Singapore are currently eligible for tax rebates of up to SGD45,000 from both the EV Early Adoption Incentive and Enhanced Vehicular Emissions Scheme[19].

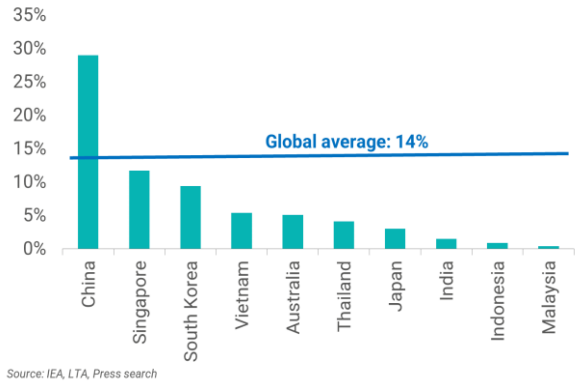
[11] Ministry of Trade and Industry, Singapore Hydrogen Strategy, 26 Oct 2022
[12] India's fiscal year starts on 1st Apr and ends on 31st Mar of the subsequent year
[13] BloombergNEF, Financing India's 2030 Renewable Ambition, 22 Jun 2022
[14] Ibid
[15] IRENA, Renewable Energy Outlook for ASEAN 2nd Edition, 19 Sep 2022
[16] Ibid
[17] Comprising of battery electric and plug-in hybrid passenger vehicles
[18] Based on FX rate of USD1 - KRW1,323 as of 30 August 2023, source: Bloomberg
[19] The maximum tax rebates will be reduced to SGD40,000 in 2024 with the reduction in the EV Early Adoption Incentive's rebate cap; source: LTA

From a regulatory viewpoint, major APAC markets have also instituted plans to phase out sales of internal engine combustion (ICE) vehicles over the coming decades. For example, sales of new ICE cars will be banned in Singapore from 2030, followed by China, Japan, South Korea and Thailand in 2035. Both India and Indonesia have pledged to halt sales of new ICE cars in 2040 and 2050 respectively.

These policies have helped to bolster sales of EVs across major APAC markets[20], which expanded by a robust pace of 56.8% CAGR between 2017 and 2022 to 6.3 million units, outpacing other regions such as Europe (+54.0% CAGR) and North America (+39.3% CAGR)[21].

Despite the stellar performance, the share of EVs as a proportion of total passenger vehicle sales remained uneven across different APAC markets. Other than China (29% adoption rate) which provided substantial fiscal support since 2009 (e.g. subsidies for consumers and domestic EV producers, R&D support) to cultivate a robust EV ecosystem, the average EV take-up rate for other APAC markets stood at just 3.8%, which is well below the global level of 14%[22] (Figure 3).

Figure 3: Passenger EV share of sales in selected APAC markets in 2022

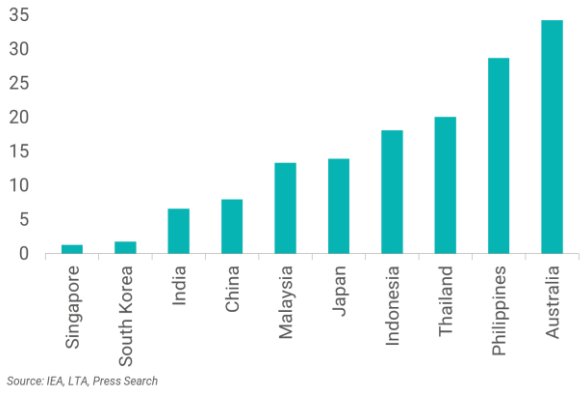


Expand EV charging points

As governments and carmakers strive to accelerate EV uptake in APAC by increasing the availability of affordable models among others, equal emphasis should also be placed on expanding the region's public charging network (e.g. public carparks, workplaces, retail malls, highway exits) to address range anxiety, which is a critical barrier to EV adoption.

For a region as diverse as APAC, the optimal ratio of EVs per public charging point for each market will depend on a few factors, such as the urban population density, road traffic conditions and proportion of fast chargers. For example, a lower EV per public charging point ratio will be required in markets such as Singapore and South Korea where 95% and 77%[23] of their respective households reside in apartments and have limited access to home charging. In comparison, the reliance on public charging points is lower in Australia, where 84% of households[24] reside in landed properties which allow them to install their own dedicated home charging points (Figure 4).

Figure 4: EVs per public charging point ratio in selected APAC markets in 2022



Highly congested metropolitan areas such as Manila, Bengaluru, Tokyo, Jakarta and Sydney[25] may require a higher proportion of fast-charging points to be deployed to minimise traffic backlog at charging stations.

[20] Comprising of Australia, China, India, Indonesia, Japan, Philippines, Singapore, South Korea, Thailand and Vietnam
[21] BloombergNEF, IEA Global EV Outlook 2023, press search
[22] IEA Global EV Outlook 2023, press search
[23] Department of Statistics Singapore, Korean Statistical Information Service
[24] Australia Bureau of Statistics
[25] TomTom Traffic Index Ranking 2022; selected metropolitan areas were ranked among the top 50% in APAC in terms of the longest travel time per 10km

Market perspective: Southeast Asia

As part of SEA's commitment to reduce transport-related emissions, IRENA estimates that the number of EVs in the region needs to increase sharply from 0.1 million in 2018 to 14 million in 2030. Around 3.7 million charging points are needed by 2030 to support the growth of SEA's EV fleet, at a cumulative investment cost of USD47.2 billion[26].

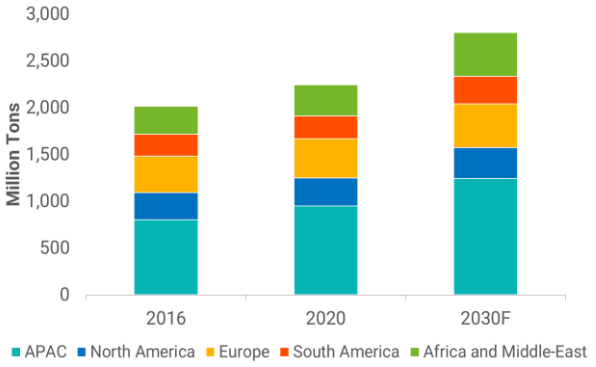
In Singapore, the government has set a target of installing 60,000 EV charging points by 2030, with 40,000 located in public carparks and the remaining 20,000 in private premises (e.g. apartments, offices, retail malls). Based on an EV to charging point ratio of 5:1, the envisaged network of 60,000 charging points will be sufficient cater up to 300,000 EVs, or about 46% of Singapore's car population as of December 2022.

To catalyse the initial deployment of EV charging points in private residential projects, the government in July 2021 launched an EV Common Charger Grant which co-funds half of the installation cost, subject to a cap of SGD4,000 per charger. The grant will lapse at the end of 2023, or when 2,000 EV chargers have been approved for co-funding, whichever is earlier. An EV Charging Bill was introduced in November 2022 which requires all new buildings with carparks and those undergoing substantial renovations to install at least one charging point for every 25 parking lots.

III) Transit towards circular economy

Underpinned by the growth in urban population and living standards, APAC's consumption of material resources is expected to increase in tandem over the coming decades. This will in inevitably result in the generation of more solid waste and wastewater, which presents a major environmental threat. According to a World Bank report, APAC's solid waste generation is projected to account for 53% of growth in global waste output between 2020 and 2030[27] (Figure 5).

Figure 5: Solid waste generation by region



Source: World Bank

To decouple APAC's economic growth from resource consumption and environmental degradation, the region needs to shift from its current linear consumption pattern of take-make-dispose to a more circular economy which focuses on reusing and recycling existing resources for as long as possible.

Converting waste to energy

Waste to energy (WTE) technologies such as thermal treatment can play a key role in APAC's transition towards a circular economy. Through a controlled incineration process, the volume of the combusted waste is shrunk by up to 90%[28] from their original levels. This in turn reduces the reliance on landfills and frees up land for more productive uses. While the combustion of waste generates CO_2 emissions, the impact on climate change will be more than offset by the reduction of methane (which is 86 times stronger than CO_2 in trapping heat in the atmosphere) released from the decomposition of organic waste in landfills[29].

Energy recovered during the combustion process in the form of heat can also be used in district heating systems or produce high-pressure steam to power electricity generation turbines. Being less vulnerable to price and supply fluctuations, WTE incinerators can be an effective supplement to APAC's power sector. Post incineration, reusable materials such as aluminium, copper and zinc can be recovered from the bottom ash while the

[26] IRENA, Renewable Energy Outlook for ASEAN 2nd Edition, 19 Sep 2022
[27] World Bank, More Growth, Less Garbage, 26 Jul 2021
[28] Renewable Energy World, An Independent Engineering Evaluation of Waste-to-Energy Technologies, 13 Jan 2014
[29] Infrastructure Investor, Waste-to-Energy is Key to Cutting Methane Emissions, 12 Dec 2021

residual ash is well suited for construction projects such as roads and bridges[30].

Due to the higher development costs and lack of stringent regulations, only 14% of the APAC's wastes are incinerated. In contrast, 70% of the region's wastes are disposed in open dumps and landfills without proper gas collection system[31], with such practices more prevalent in emerging markets such as Thailand (81%) and Indonesia (79%). Correspondingly, there is significant room for the private sector to partner with governments to catalyse investments in WTE projects in APAC.

Market perspective: Indonesia

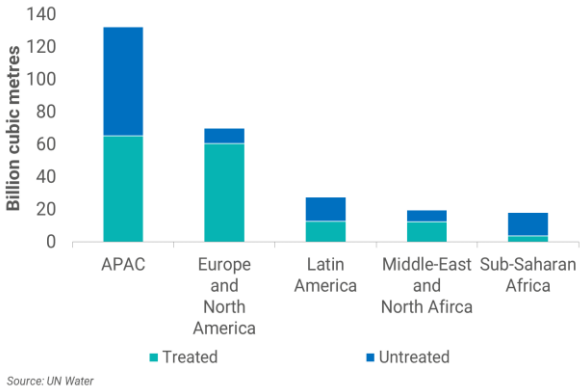
Waste management is one of the largest challenges facing Indonesia, which is the world's fourth most-populous country. Most of Indonesia's waste is organic, which releases hazardous emissions such as methane during decomposition. To address the growing waste problem, the Indonesian government established WTE as a National Strategic Programme in 2017. A new bill was subsequently introduced in 2018 which provides a more comprehensive legal framework to accelerate the development of WTE incinerator projects across 12 major cities, including Jakarta. Key features of the bill include the removal of foreign ownership restrictions and expanding the role of the WTE project developer to run both the waste management and power generation businesses[32]. Under Indonesia's new electricity business plan (RUPTL), installed capacity of WTE incinerator plants is projected to increase from 0.5MW in 2020 to 811MW by 2030[33].

Rethinking water management

APAC accounts for 60% of the global population[34] but only possesses 36% of the world's entire clean water resources, making the region with the lowest per capita water availability in the world[35]. APAC's water consumption is expected to increase going forward, backed by as continued growth of the region's urban population and growing demand from the agriculture and industrial sectors. Meanwhile, increasingly erratic conditions (intense droughts and floods) and the indiscriminate discharge of untreated wastewater into the waterways will further strain the availability of freshwater. Without any policy interventions, water scarcity could result in economic and health-related losses that could shave the growth rates of APAC markets by between 1% to 6% by 2050[36].

In this respect, fostering greater investments in wastewater infrastructure will allow APAC to simultaneously address its water scarcity and pollution challenges. Apart from reducing the volume of untreated wastewater discharged into the natural systems, wastewater treatment plants also help to improve water productivity by treating the wastewater to the standards needed for reuse across various applications such as agriculture, industrial (e.g. cooling water) and urban (e.g. street cleaning). Treating wastewater also uses much less energy than producing freshwater via desalination plants, thus reducing APAC's carbon footprint[37]. As the largest generator of household wastewater, there is substantial scope for APAC to increase its wastewater treatment rate, which at 49% is the third lowest globally[38] (Figure 6).

Figure 6: Volume and share of household wastewater treated in 2022, by region



[30] ESWET, How Waste-to-Energy Contributes to the Circular Economy, 14 Nov 2022
[31] World Bank, What a Waste 2.0, 6 Dec 2018
[32] Global Business Guide Indonesia, Expanded Coverage and New Feed-in Tariff for Indonesia's Waste to Energy Projects, 7 May 2018
[33] OECD, RUPTL 2021-30, 16 Nov 2021
[34] UN World Population Prospects 2022
[35] UNESCAP, Water on the Global Centre Stage: Every Drop Counts, 20 Mar 2023
[36] World Bank, High and Dry: Climate, Change, Water and the Economy, 23 May 2016
[37] International Water Association, From Seawater to Tap or From Toilet to Tap, 4 Sep 2016
[38] UN Water SDG 6 Data Portal, 2022

Market perspective: Vietnam

Due to the lack of investments and poorly designed water drainage system, only 15% of Vietnam's urban wastewater is treated in 2021, which is far short of the government's goal of achieving 70-80% wastewater treatment rate by 2025[39]. According to the Vietnam Water Supply and Sewerage Association, between USD8-10 billion in investments are required to upgrade the Vietnam's wastewater infrastructure to sustainably support the country's economic growth[40].

To accelerate the development of Vietnam's wastewater infrastructure, the government intends to pass a new Law on Water Supply and Sewerage in 2024 which will among others, define the investment policies and incentives as well as regulatory standards for drainage and wastewater treatment[41].

Market perspective: Indonesia

As part of Indonesia's 2020-2024 National Medium-Term Development Plan, the government has committed to provide all households with access to drinking water and sanitation services by 2024, as compared to 72.0% and 76.9% respectively in 2017. To this end, the government has rolled out some USD9.5 billion worth of water infrastructure projects, of which 38% will go towards developing Indonesia's wastewater management system[42]. The government however updated in January 2022 that an additional USD18.4 billion in investments will be required to achieve the 2024 targets[43].

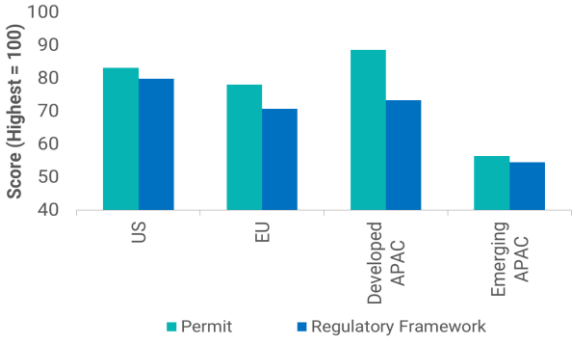
Due to fiscal constraints, the government will only be able to fund 62% (or USD11.3 billion) of the additional capital and will need to rely on the private sector to fill the financing gap.

Key risks

Regulatory and policy risks

Obtaining permits for infrastructure projects is generally a complex process which requires spatial planning studies, environmental impact assessments, consultations with local communities and engagements with multiple government agencies. Depending on the level of red tape, it may take several years before the permits are granted. For example, there are four times as much wind capacity awaiting approval as it does under construction in the EU, where the permitting process often exceeds the Renewable Energy Directive's stipulated period of two years[44]. The permitting process across emerging APAC markets is likely to be lengthier and more challenging as their regulatory and licensing environments are generally less transparent[45] (Figure 7).

Figure 7: Permit and regulatory framework score in selected markets



Source: Global Infrastructure Hub, InfraCompass 2020
Note: Developed APAC includes Australia, Japan and Singapore; Emerging APAC includes China, Indonesia, Philippines and Vietnam

Protracted lead times would increase the risk of cost overruns and delayed income stream that would adversely affect the project's economic viability.

At the national level, the absence of a clear and consistent energy transition policy could also adversely affect the bankability of renewable energy projects. For instance, IEA noted that there

[39] Vietnam's Ministry of Construction, Approving Orientations for Development of Water Drainage in Vietnamese Urban Centres and Industrial Parks up to 2025, 20 Nov 2009
[40] Saigon News, Vietnam Needs US$10 billion for Urban Wastewater Treatment, 22 Nov 2021
[41] Vietnam's Ministry of Construction, Conference to Review the Implementation of the Law on Water Supply and Drainage and Proposed Policies, 2 Jun 2023
[42] US International Trade Administration, Indonesia Water Projects, 8 Oct 2020
[43] USAID, Indonesia: High Priority Country Plan, 22 Apr 2023
[44] en:former, Faster Permitting Cannot Come Quick Enough, 8 Nov 2022
[45] Global infrastructure Hub, InfraCompass, 2020

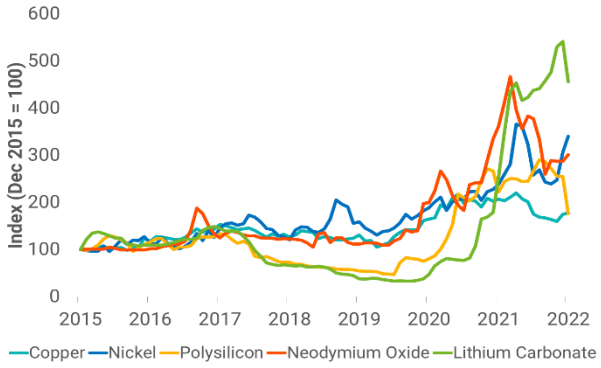
is still considerable uncertainty about the retirement pathway for coal-fired power plants in Australia even as the government has targeted to increase the share of renewable energy in the country's generation mix to 82% by 2030[46]. Correspondingly, it will be difficult to evaluate the pace of clean energy investments needed to augment Australia's power generation capacity without causing over-capacity in the national grid.

Supply chain disruptions

Clean energy technologies require substantially more critical materials than fossil-fuel projects. These include nickel (used in wind turbines), lithium (used in EV and utility-scale batteries), polysilicon (used in solar panels) and rare earth elements (used in wind turbines and EV motor).

However, the mining and processing of most critical minerals are presently concentrated in a small number of markets, making supplies vulnerable to adverse geopolitical events and natural disasters. For example, Indonesia was the world's largest miner of nickel in 2021 (nearly 40% share) and produced 30% of the global refined nickel. 90% of the world's rare earth elements were refined in China in 2021, which also controlled 80% of global polysilicon production[47]. Not surprisingly, disruptions to global supply chains stemming from the COVID-19 pandemic and the 2022 Russia-Ukraine conflict have resulted in the prices of critical materials rising sharply over the last few years (Figure 8).

Figure 8: Prices of selected critical materials



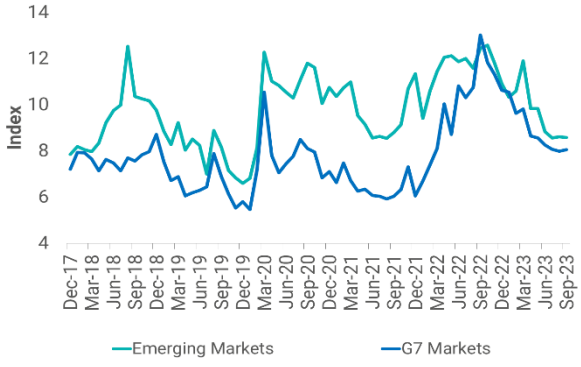
Source: Bloomberg, Keppel Fund Management Research

In tandem with the increase in the prices of critical materials and borrowing costs, the levelised cost of electricity (LCOE) of renewable energy rose over 2021 and 2022 after falling over the earlier decade, although they remain well below pre-COVID levels. LCOE of solar PV and onshore wind increased by an average pace of 3.9% p.a. and 2.6% p.a. respectively over 2021-2022, as did the cost of utility-scale batteries (+15.7% p.a.)[48]. Going forward, demand for critical minerals will continue to rise amid a global decarbonisation push and this is expected to put further strain on supply chains, which remain susceptible to ongoing geopolitical tensions. For example, China has restricted exports of two critical minerals, gallium and germanium[49], with effect from 1 August 2023 amid the country's ongoing technological trade war with US and EU. McKinsey estimated that the shortage of critical minerals could reach 50-60% by 2030[50]. Together with increased competition for qualified talents in a tight labour market, these could put upward pressure on both the project's development and operating costs.

Currency and interest rate risks

Monetary tightening by the US Federal Reserve and other major central banks to tame elevated inflation has resulted in heightened FX volatility, especially among emerging market currencies which faced sharper swings due to a flight-to-safety among investors (Figure 9).

Figure 9: Implied volatility of G7 and emerging markets' currencies



Source: Bloomberg, JP Morgan G7 and Emerging Market Volatility Index

[46] IEA, Australia 2023 Energy Policy Review, 11 Apr 2023
[47] IEA, Energy Technology Perspectives, 18 Jan 2023
[48] Bloomberg
[49] Gallium is a key component of EV onboard chargers while germanium is used in the production of solar panels
[50] McKinsey & Company, Renewable Energy Developers in a Net-Zero World, Disrupted Supply Chains, 17 Feb 2023

Borrowing costs in most APAC markets have also increased and are likely to remain elevated in the immediate future (except for China and Japan) with central banks in the region signalling that a tight monetary policy is needed to bring inflation down to their targeted levels. The combination of increased FX volatility and elevated borrowing costs could adversely impact the cashflows and profitability of infrastructure projects if the appropriate hedges are not employed, even if some cashflows may be inflation-adjusted.

Investment considerations

The substantial investments required to realise APAC's climate action goals cannot be sustainably met by the public-sector alone given its limited fiscal space and debt headroom. Governments in APAC can however encourage greater private sector participation by implementing policy and regulatory reforms to improve the bankability of infrastructure projects. This would open up tremendous investment opportunities for institutional investors (e.g. insurers, pension funds, sovereign wealth funds) seeking to build up a portfolio of infrastructure assets to hedge against their long-term liabilities and durations.

Alongside their benefits, investing in APAC's infrastructure also carries a higher degree of risks given that the region's infrastructure market is relatively nascent vis-à-vis the US and EU. However, these risks can be mitigated by partnering with fund managers which have intimate knowledge of APAC markets and regulatory environments, as well as strong development and operational expertise across different infrastructure sub-sectors.

Conclusion

As the largest CO_2 emitting region, APAC needs to take the lead in closing the global emissions gap by decarbonising its power sector, accelerating EV adoption and transiting towards circular economy. While APAC's climate action plan offers tremendous opportunities for institutional investors, investing in the region's nascent infrastructure market carries a higher degree of risks. Investors can expect to do well by partnering established fund managers with strong track records of developing and operating infrastructure assets in APAC.

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About Keppel

Keppel Corporation Limited (SGX:BN4) is a global asset manager and operator with strong expertise in sustainability-related solutions spanning the areas of infrastructure, real estate and connectivity. Headquartered in Singapore, Keppel operates in more than 20 countries worldwide, providing critical infrastructure and services for renewables, clean energy, decarbonisation, sustainable urban renewal and digital connectivity.

Keppel creates value for investors and stakeholders through its quality investment platforms and diverse asset portfolios, including private funds and listed real estate and business trusts, and has a total portfolio with more than $65 billion of assets under management.