Targeting net-zero in Asia

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Executive summary
Reducing global energy-related carbon dioxide emissions to net-zero by 2050 is a mammoth task. Yet it cannot be achieved unless Asian countries play their part. This article looks at the key considerations surrounding targeting net-zero in Asia, including the potential challenges on both the sovereign and corporate levels. We showcase Invesco's Net-Zero Investment Framework applied to the Asia fixed income landscape. We also outline the important role that material-emitting sectors have to play on the net-zero journey, as well as the potential investment opportunities arising from this transition.

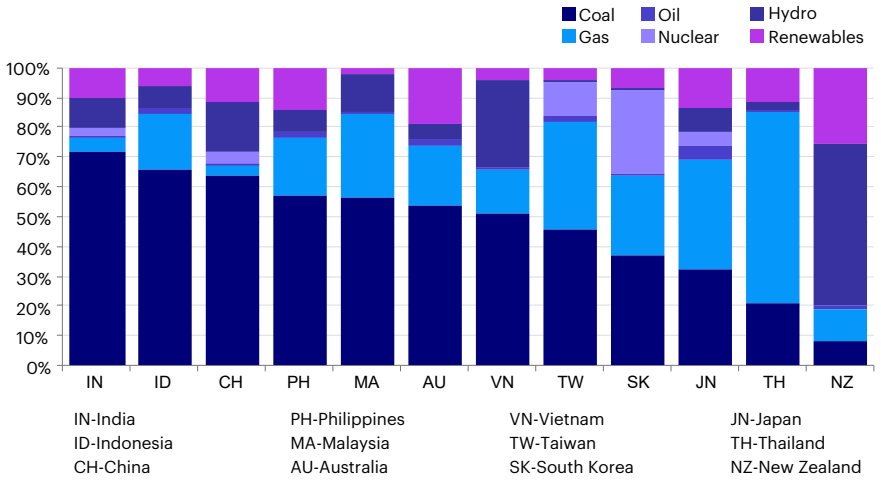
Introduction
Asia is home to about 60% of the world's population and is considered the main engine of global growth.[1] Its rapid economic development in the past two decades, however, has been largely predicated on fossil fuel consumption. In 2020, 52% of the region's energy demand and over 70% of its carbon emission footprint was coal-based.[2] Although the use of renewables is growing across the region, fossil fuel capacity is rising at a still faster rate in order to meet energy demand. As of November 2021, more than 90% of the 195 coal plants being built around the world were located in Asia, according to data from the Global Energy Monitor.[3] In 2020, Asia decarbonized by just 0.9%, which is significantly below the 12.9% decarbonization rate required for the 1.5-degree scenario outlined in the Paris Agreement.[4]

At the same time, the region's high incidence of extreme weather events as a result of human activity highlights the need for countries to act on decarbonization. As of mid-October 2021, just seven Asian countries had set some form of net-zero commitment, either in terms of current or proposed legislation or national policy, while for another eight, these were under discussion (Table 1).[5] Many of these targets were announced in the lead-up to the 26th United Nations Climate Change Conference of the Parties (COP26) held in early November 2021, or soon afterward.

This article looks at the key considerations surrounding targeting net-zero in Asia, including the potential challenges on both the sovereign and corporate levels. We leverage on an earlier piece by Robert Neilson and David Todd at Invesco, who covered the practical implications of targeting net-zero for global investment grade credit portfolios.

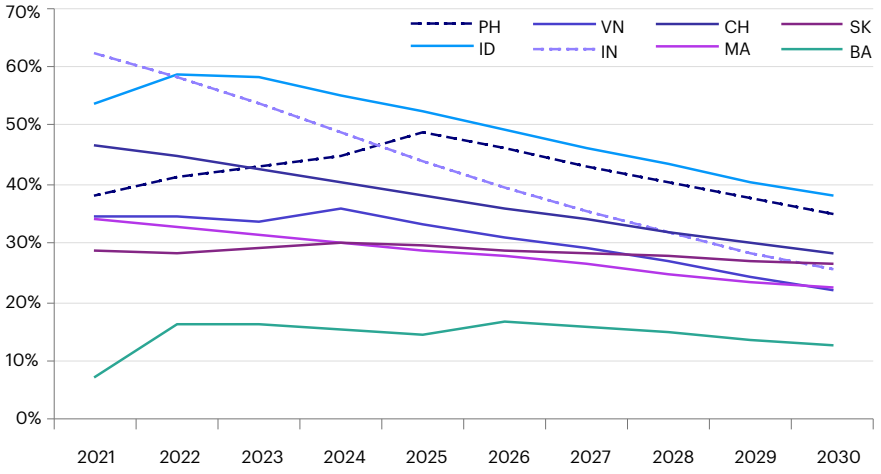
1. For the climate, Asia-Pacific must phase out fossil-fuel subsidies, May 2021, https://www.bruegel.org/2021/05/for-the-climate-asia-pacific-must-phase-out-fossil-fuel-subsidies/
2. Asia Pacific's energy transition conundrum – is net zero possible?, August 2021, https://www.woodmac.com/news/opinion/asia-pacifics-energy-transition-conundrum-is-net-zero-possible/
3. COP26 aims to banish coal. Asia is building hundreds of power plants to burn it, November 2021, https://www.reuters.com/business/energy/cop26-aims-banish-coal-asia-is-building-hundreds-power-plants-burn-it-2021-10-29/
4. Code Red - Asia Pacific's Time To Go Green, November 2021, https://www.pwc.com/gx/en/asia-pacific/net-zero/asia-pacific-code-red-to-go-green.pdf
5. Asia's energy transition, October 2021, HSBC

Figure 1: Electricity generation by source, 2020



Source: BP, Philippine Department of Energy, HSBC; data as of October 2021.

Figure 2: Operating coal power plants as a proportion of installed electricity capacity



Source: Carbon Tracker, HSBC assumptions; data as of October 2021.

Table 1: An overview of Asia-Pacific "net zero" and emissions reductions targets

	Current Emissions % of Global Emissions	Net Zero Targeted Year	Status	Coal Electricity	Renewable capacity target by 2030	Carbon Tax status	EV penetration target
China	28.56%	2060	Policy Document	63%	50%	No	20% by 2025
India	6.89%	2070	Under Discussion	72%	53%	No	65% by 2030
Japan	3.22%	2050	Proposed Legislation	30%	38%	In Place	100% by mid 2030
Korea	1.81%	2050	Under Legislation	36%	34%	No	33% in 2030
Indonesia	1.62%	2060	Proposed Legislation	66%	6%	Proposed	100% in 2050
Thailand	0.72%	2065	Under Discussion	21%	8%	No	100% in 2035
Malaysia	0.68%	2050	Policy Document	56%	9%	Proposed	100% in 2030
Vietnam	0.68%	2050	Under Discussion	51%	26%	No	
Philippines	0.39%			55%	29%	No	21% by 2030
Bangladesh	0.24%	2050	Under Discussion	2%	1%	No	
Singapore	0.14%	2050	Under Discussion	1%	10%	In Place	No ICEV in 2040
Myanmar	0.09%	2050	Under Discussion	9%		No	
Sri Lanka	0.06%	2050	Policy Document	31%	70%	No	100% in 2040
Laos	0.05%	2050	Policy Document	35%		No	
Cambodia	0.03%	2050	Under Discussion	37%		No	
Brunei	0.02%	2050	Under Discussion	0%		No	

Source: Government energy ministries, BP, ADB, HSBC, Invesco; data as of December 2021.

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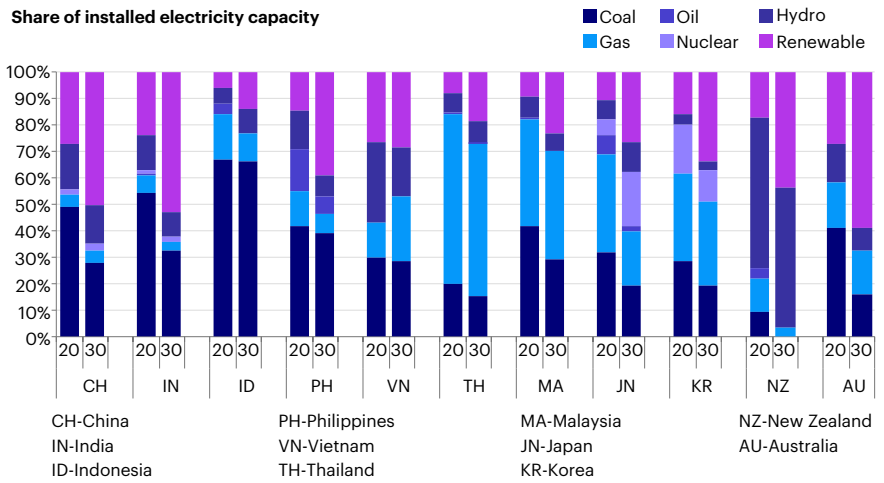
Key considerations for Asian sovereigns on the path to net-zero
The path for Asia to reach net-zero is not going to be easy. However, as the famous proverb goes, a journey of a thousand miles starts with a single step. We outline some of the key steps that sovereigns in the region can consider.

1. Becoming "renewable ready"
Moving to net-zero will no doubt require a shift in Asia's energy mix away from coal, oil and natural gas, and toward renewable energy, which includes wind, solar, hydro, bio-mass and nuclear power. One major constraint facing Asian sovereigns is the maturity of their renewable energy sources and associated infrastructure. Currently, the contribution of renewables to overall energy production in Asia is not as high in percentage terms relative to other regions like Europe. Therefore, demand for renewable energy is very likely to outstrip supply. This is particularly the case for countries like Japan, whose renewable capacity target is expected to double from its 2019 commitment in the next ten years (Figure 3).[6]

Figure 3: Current electricity installed capacity vs 2030 target



Source: Australia Department of Energy, New Zealand Interim Climate Change Committee, Taiwan Bureau of Energy, Sri Lanka Ministry of Power, Bangladesh Ministry of Power, Philippine Department of Energy, Thailand Board of Investment, Malaysia Energy Commission, Global Energy Interconnection Development and Corporation Organisation, Indonesia Ministry of Energy and Natural Resources, Vietnam Ministry of Trade and Industry, Korea Ministry of Trade, Japan Agency for Energy; data as of October 2021. NB: As per convention, we do not include hydroelectric power as a modern renewable. Korea is approved plan from December 2020 that may be adjusted.

While Asian nations have planned substantial renewable energy capacity additions through 2030, the grid infrastructure in some of these countries is not designed to accommodate the variable nature of renewable power output. China and India appear to be on track to reach their 2030 targets, however, grid limitations are expected to impede the significant jump in renewable power generation that is needed to fully meet demand. Other countries, such as Indonesia and Malaysia, are lagging their initial targets. Grid upgrading, load distribution, and storage capacity breakthroughs are all issues that will likely need to be tackled in the region in order for renewables to account for a higher proportion of overall electricity generation.

2. A top-down approach from a sovereign perspective and bottom-up approach from corporates are complementary for the net zero journey
Countries in the region are undoubtedly at various stages of economic development. Their economic growth model, whether it is more export-oriented or dependent on consumption versus services, will have a huge bearing on how they chart their path to net-zero. The journey to net-zero will also look very different depending on if Asian governments choose a more top-down (policy-led) or bottom-up (private sector-driven) approach.

6. Japan aims for 36-38% of energy to come from renewables by 2030, October 2021, https://www.reuters.com/business/energy/japan-aims-36-38-energy-come-renewables-by-2030-2021-10-22/

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Taking the example of China, following President Xi Jinping's announcement of the nation's ambitious carbon neutrality targets (to achieve peak carbon emissions by 2030 and target net-zero by 2060), the government has acted swiftly to curb carbon emissions in areas such as energy policy, industrial policy and construction and transportation. Also, as China's material-emitting sectors are primarily within the purview of state-owned enterprises (SOEs), these firms have the motivation and stability to implement national strategies and policies. Private companies, on the other hand, are more likely to react to policy initiatives as they trickle-down to the sector and corporate level.

In contrast, Japan's private sector is leading the way. In mid-2019, 20 Japanese companies signed a petition to campaign for faster energy grid transition, in a bid to boost their own global competitiveness. They called on the government to set a higher target for sourcing electricity from renewable energy sources: they recommended that at least 50% of Japan's electricity should come from renewable sources by 2030 versus its previous ambition of 22-24%. [7] As of July 2021, over 60 Japanese companies have joined the RE100 initiative and are committed to 100% renewable electricity. [8]

Major Asian exchanges have also been leading the charge when it comes to improving sustainability-related disclosures for listed companies. This is already the fifth year in which Hong Kong-listed firms have been mandated to issue ESG reports by the Hong Kong Exchange (HKEX). [9] They have since implemented a "comply-or-explain" regime for issuers on ESG data in areas such as carbon emissions data and carbon intensity. [10] Similarly, the Singapore Exchange (SGX) now requires all issuers to provide climate reporting in their sustainability reports on a 'comply or explain' basis, starting from the 2022 financial year, in order to be more closely linked to Task Force on Climate-related Financial Disclosures (TCFD). [11] Such regulations have spurred improved climate disclosures in the region, which we believe are required for net-zero progress and target setting.

3. Developing the regional taxonomy and alignment with international standards
There are two key areas where a taxonomy will be particularly helpful on the journey to net-zero in Asia. One is to define sector-specific guidance for business activities in three areas: green, transitional, or non-green. A second is to set up clear guidelines around corporate sustainability-related reporting. While the specifics may differ, broad principles such as "do no significant harm", use of revenue thresholds, and clearly defined, consistent environmental goals across the region can help to build consensus.

The announcement of the Common Ground Taxonomy (CGT) between the People's Bank of China (PBoC) and the European Commission in November last year was groundbreaking. The CGT is the first activity to map and compare the Chinese and EU taxonomies. The initial stage covers climate change mitigation and will map all activities in both taxonomies for commonalities. The ASEAN regional taxonomy was also released in November and will be integral in directing capital toward activities focused on transition and climate change mitigation.

7. Major companies call for ambitious 2030 renewable electricity targets in Japan – News, June 2019, https://www.there100.org/our-work/news/major-companies-call-ambitious-2030-renewable-electricity-targets-japan-news
8. Japanese Government renewable energy target falls short, July 2021, https://www.there100.org/our-work/news/japanese-government-renewable-energy-target-falls-short
9. Is Chinese business on the cusp of a 'leapfrog moment' in ESG reporting?, March 2021, https://www.weforum.org/agenda/2021/03/chinese-business-leapfrog-moment-esg-reporting/
10. PRIMER: HKEX's new ESG disclosure rules, February 2020, https://www.iflr.com/article/b1lmx64723h43z/primer-hkexs-new-esg-disclosure-rules
11. SGX mandates climate and board diversity disclosures - Singapore Exchange (SGX), December 2021, https://www.sgx.com/media-centre/20211215-sgx-mandates-climate-and-board-diversity-disclosures

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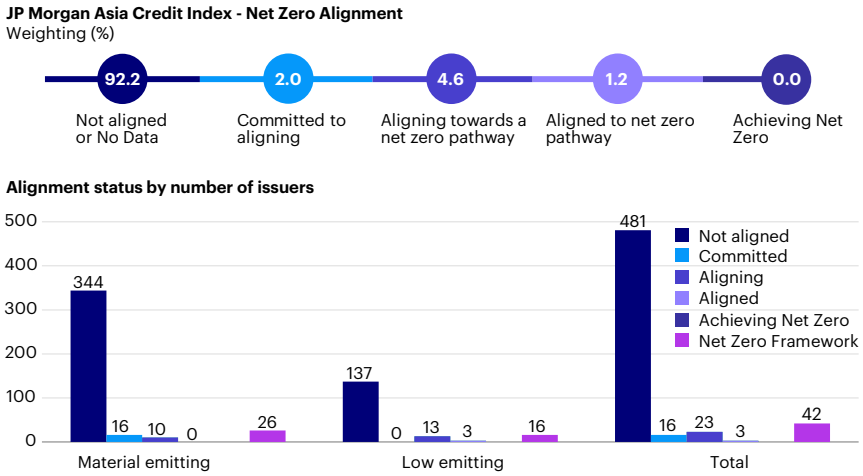
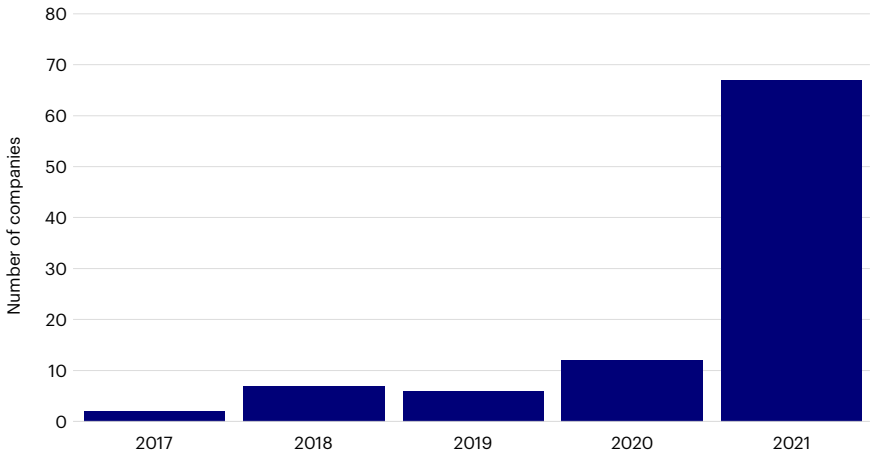
Application of Invesco's Net Zero Investment Framework to Asia fixed income
At Invesco, we have mapped our Net-Zero Investment Framework to the J.P. Morgan Asia Credit Index (JACI) of 565 issuer names (Figure 4). While it shows a fairly low level of alignment among listed Asian companies at present, the picture is a rapidly improving, with exponential growth in the number of Asian companies having committed net-zero targets in recent years (Figure 5).

Figure 4: Current alignment status of Asian issuers listed on the J.P. Morgan Asia Credit Index



Source: Invesco; data as of December 2021.

Figure 5: Number of Asian companies with committed Net Zero targets



Source: Science Based Targets Initiative (SBTi); data as of December 2021.

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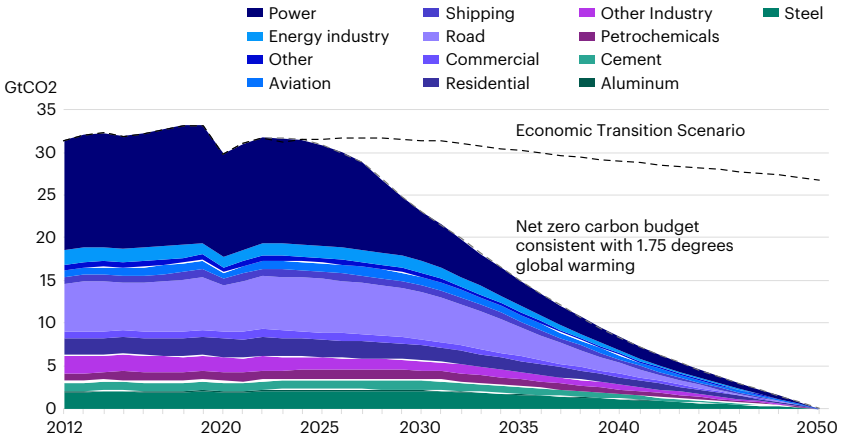
Material-emitting sectors play a key role in Asia's net-zero journey

It goes without saying that the actions of issuers in material-emitting sectors (namely power, steel, and cement) are vital to the net-zero transition. The net-zero carbon budgets associated with different sectors globally are expected to vary significantly over the next few decades depending on their current trajectory and available abatement options (Figure 6). In order to achieve global net-zero by 2050, more than three quarters of the abatement effort in this period falls to the power sector. Another 14% will likely be achieved through the greater use of electricity in transport, building heat and by utilizing lower-temperature heat in industry. Increased recycling in steel, aluminum, and plastics would account for 2%.[12]

Figure 6: Global energy emissions and net zero carbon budget, by sector



Source: BloombergNEF, data as of July 2021.

The importance of curbing emissions in material-emitting sectors is even greater in Asia. China is the world's largest producer and consumer of steel, followed by India and Japan.[13] China is also the world's largest cement producer, accounting for about 55% of global production in 2021, followed by India at 8%.[14]

Currently, material-emitting sectors account for 56% of the JACI's net asset value (NAV). Decarbonization needs to happen in these names and the JACI already screens high for material-emitting sectors and the potential impact of their decarbonization.

We detail the current state of material-emitting sectors in key countries across the region and the actions that have been taken by regulators and corporates to lower carbon emissions in these industries along with plans for the future.

12. New Energy Outlook 2021, July 2021, https://about.bnef.com/new-energy-outlook/
13. China Emissions Trading System - A new dawn, August 2021, https://www.schroders.com/en/sysglobalassets/digital/insights/2021/08-august/china-ets/china-emissions-trading-system---a-new-dawn.pdf
14. Cement – Analysis – IEA, November 2021, https://www.iea.org/reports/cement

1. **Power:**

- **Coal:** Over 70% of Asia's emission footprint is coal-based. [15] Coal-fired generation is the base load in most Asian countries with the share of coal in total power generation accounting for around 50% to 70%. [16]

  China: Recently, many state-owned power companies in China have been releasing ambitious plans for committing their capital expenditure to renewable energy additions. Unfortunately, at the same time, coal-fired independent power producers (IPPs) have not yet disclosed their plans regarding closures of their coal-fired plants.

  The Chinese government has shown commitment to permanently close inefficient \ coal-based power generation capacity. However, despite China's efforts to reduce inefficient coal power capacity, they are simultaneously building more efficient plants with lower emissions. 15GW of new coal power capacity started construction in the first half of 2021 and 24GW of new projects were announced or re-activated, led by coal-rich western provinces hoping to export electricity to the east. [17]

  The recent power crunch in the country in the latter part of 2021 starkly reflects the difficulties associated with energy transition. The unexpected rise in demand for coal, coupled with production bottlenecks in China, India, and Indonesia (the largest producers), led to a spike in prices and power curbs. As recovery from the COVID pandemic gathers pace, the push to green energy will likely make economies more vulnerable to swings in the supply of renewable power, which is typically weather dependent.

  India: India's coal share is set to decline substantially by 2030 in line with the country's renewable investment plan. However, coal capacity is still expected to increase over the next five years based on strong electricity demand growth and ongoing coal plant construction, which is equivalent to 9% of India's current installed capacity. [18]

  Southeast Asia: According to latest plans, the installed coal capacity share in the Philippines, Vietnam, and Indonesia is expected to remain similar to current levels in the near term due to expected capacity expansions.

- **Natural gas:** While natural gas is far from ideal from a climate change point of view, it has half the lifecycle emissions as coal. At present, most Asian governments plan to use it only as a transitional fuel source. Natural gas is already the main source of electricity generation in Thailand, Bangladesh, Japan, and Korea (roughly tied with coal). Gas fueled electricity generation will likely remain high in these countries as a share of total power, while demand for natural gas is rising significantly in China, Vietnam, and Malaysia.

- **Renewables:**
  India and Vietnam: Both India and Vietnam have made impressive progress in installing renewable capacity – in particular, solar power (24% and 26% of total capacity, respectively,as of the end of 2020). However, with grid limitations (referenced earlier), renewables still account for only 10% and 4% of total power generation, respectively, resulting in short-term demand for more coal as the recovery from the COVID pandemic gathers pace. [19]

2. **Steel:**
   China: Last year, China produced 1 billion megatons of crude steel, which while down 3% year-on-year, still made up 54% of the overall global total. [20] At present, most Chinese steel makers use the blast furnace-basic oxygen furnace (BF-BOF) method to produce steel. This method is more than twice as carbon intensive as the electric arc furnace (EAF) method, which uses electricity as its main energy source. Nevertheless, major players in the industry have already begun to cooperate with domestic and foreign technology partners in areas such as hydrogen steelmaking and smelting reduction. The ultimate need is for these firms to decarbonize their production processes and improve energy efficiency to achieve their carbon-reduction targets.

15. What a difference a year makes – Asia's energy leaders discuss an uncertain future, October 2021, https://www.woodmac.com/news/opinion/what-a-difference-a-year-makes--asias-energy-leaders-discuss-an-uncertain-future/
16. BP Statistical Review of World Energy 2021
17. China's power & steel firms continue to invest in coal even as emissions surge cools down, August 2021, https://energyandcleanair.org/wp/wp-content/uploads/2021/08/China-Q2-briefing-coal-steel-CO2.pdf
18. Asia's energy transition, October 2021, HSBC
19. Ibid.
20. Global crude steel production climbs 3.6% on year in 2021: worldsteel, January 2022, https://www.spglobal.com/platts/en/market-insights/latest-news/metals/012622-global-crude-steel-production-climbs-36-on-year-in-2021-worldsteel

3. Cement:
China: In 2020, China produced about 2.2 billion tons of cement. [21] Emissions reductions related to cement production are likely to come from reducing the use of coal in the process by improving kiln efficiencies and shifting from coal to bioenergy use.

Investment implications
According to the International Energy Agency (IEA), investment in climate solutions such as electrification, hydrogen-based fuels, carbon capture, utilization, and storage (CCUS) and carbon removal is critical to achieving net-zero emissions globally by 2050. [22]

In the Asia region, we see investment opportunities in the following areas.

- **Electrification and renewable energy** :
  For downstream heavy-emitting sectors such as steel and cement, a zero-carbon transition cannot be achieved without electrification and large-scale renewable energy substitutions, which should drive the expansion of renewable energy-related infrastructure. We see opportunities in green bonds with such use of proceeds, especially within the carbon neutrality bonds framework in China.

- **Carbon capture, utilization, and storage (CCUS)**
  CCUS technologies are key to future large-scale emission reductions and the IEA predicts they will account for one-sixth of the carbon emission cuts globally under their 2-degree Celsius target by 2050. [23] When assessing the role of CCUS in each sector, it should only be used in sectors where no other technologies exist to further neutralize residual emissions. The growth of carbon trading and carbon tax policies will likely also create a more supportive financial backdrop to deploy CCUS.

- **New energy vehicles (NEVs)**
  The Chinese government has firmed up its New Energy Vehicle (NEV) penetration target to 20% by 2025 in China's 2021-35 NEV industry development plan released in November 2020. [24] China's carbon-neutral target and associated policy support is also paving the way for the entire electric vehicle (EV) value chain (including EV batteries and battery materials). The demand for hydrogen fuel vehicles is also expected to soar According to the Society of Automotive Engineers of China, China is targeting to have one million fuel-cell vehicles in operation by 2030 (from 10,000 vehicles at present). [25]

- **Greening of Asia supply chains**
  Recent supply chain disruptions have brought to light the importance of Asia's position in global manufacturing chains. From a climate perspective, even as large multinationals move toward their net-zero targets, they will likely need to improve their respective supply chains and manufacturing footprints in the region. This impact is visible within the semiconductor and technology sector, where larger players have already committed to net-zero.

  Apart from top-down policy guidance, we believe it is important for the investment community to engage with portfolio companies to improve their ESG disclosures and encourage best practices, while also challenging companies about ESG issues that could have a material impact. This is particularly true for companies in the material emitting sectors. Engagement needs to occur at all levels, including with company management, investor relations, senior management, and the board. Effective engagement strategies can also be conducted using a combination of bilateral engagement and collaborative engagement with investor groups such as Climate Action 100 and the Asia Investor Group on Climate Change (AIGCC).

21. Major countries in worldwide cement production from 2010 to 2020, September 2021, https://www.statista.com/statistics/267364/world-cement-production-by-country/
22. Keeping the door to 1.5 °C open, 2021, https://www.iea.org/reports/world-energy-outlook-2021/keeping-the-door-to-15-0c-open
23. Net Zero by 2050, May 2021, https://www.iea.org/reports/net-zero-by-2050
24. China keeps 20 per cent sales target for home-grown electric cars by 2025, calling controversial industrial plan by another name, November 2020, https://www.scmp.com/business/china-business/article/3108275/china-keeps-20-cent-sales-target-home-grown-electric-cars
25. China goes ahead with hydrogen-powered cars, defying Elon Musk's warnings, November 2020, https://www.business-standard.com/article/technology/china-goes-ahead-with-hydrogen-powered-cars-defying-elon-musk-s-warnings-120112000125_1.html

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Conclusion

While the Asian region still has a long way to go on its path to net-zero, the focus should be on encouraging companies to progress in the right direction. ESG has become an essential part of investing. As investment managers, we believe we are uniquely able to work with portfolio companies to encourage positive change. Apart from regular disclosures, companies can move toward setting ambitious, science-based targets and regularly monitoring their decarbonization journeys. The transition to net-zero in Asia entails significant financing requirements, representing a generational investment opportunity for fixed income funds. At Invesco, addressing climate change matters greatly to our clients, employees, shareholders, and communities, and it is an important focus for our firm. We support and invest in companies that are allocating capital toward the transition to more sustainable sources of energy, and actively engaging with the companies we invest in to develop solutions toward a low-carbon economy and net-zero targets.

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