

# Capturing Asia's decarbonization opportunity

The RBC Asian Equity team



The increasing impacts of climate change are pushing governments and economies around the world to take rapid action. With Asia comprising some 60% of the world's population and being arguably more exposed to climate risks than any other region, governments are committing to a shift to carbon neutrality and clean energy, giving rise to a compelling investment opportunity.

## Introduction

In 2020, three major Asian economies declared net-zero carbon emissions targets – Japan and South Korea by 2050 and China by 2060. We anticipate these prominent commitments will accelerate the growth of renewable energy across Asia through the development of supply chains, by driving down technology costs and attracting international investment interest.

### Decarbonization urgency –

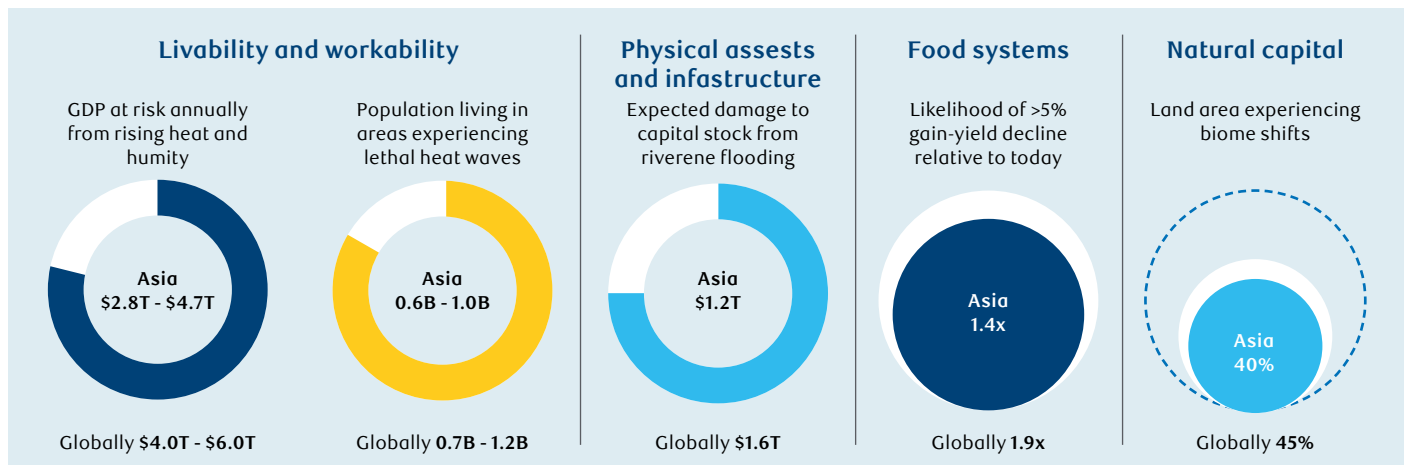
#### Asia is increasingly vulnerable to climate change

Asia's share of global greenhouse gas emissions has risen from 25% to 45% in the past 30 years<sup>1</sup>, reflecting its

economic development and population increase. As it expands, its economies become increasingly vulnerable to climate changes, with many low-lying coastal cities exposed to heatwaves, flooding, typhoons and rising sea levels.

By 2050, it is predicted that Asia will account for more than two-thirds of global GDP at risk from outdoor working hours lost due to increased heat and humidity<sup>2</sup>. For the sake of people and the planet, it's clear why Asia is embracing decarbonization and clean energy in the fight against climate change.

## Exhibit 1. Asia is more exposed to climate risks, impacting c.60% of global population

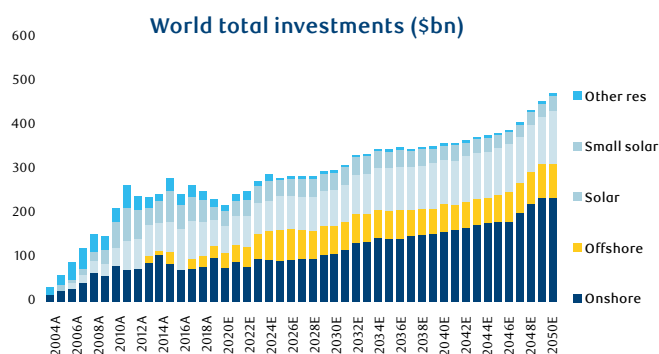


Source: McKinsey Global Institute, November 2020

<sup>1</sup> & <sup>2</sup> McKinsey Global Institute, November 2020

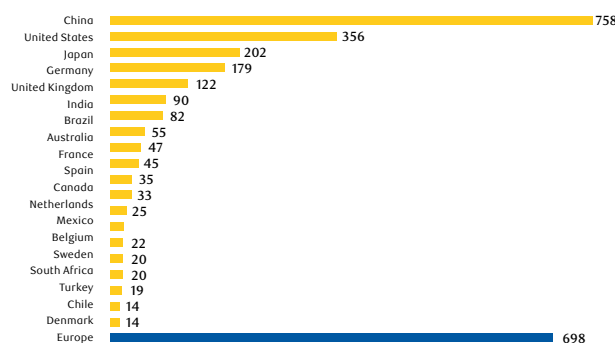
## Exhibit 2. Asia is leading global investment in renewables

a. Renewable investments by type (\$bn, global, annual)



Source: BNEF, Bernstein Research, March 2020. Renewables above excludes hydro. Years beyond 2020 are estimates.

b. Renewable investments by country – 2010 to H1 2019 (\$bn, top 20 countries, cumulative)



Source: UN Environment, Frankfurt School-UNEP Centre, BloombergNEF, September 2019. Cumulative data from 2010 to 1H 2019. Does not include forecasts.

### TAKING ACTION – WHAT'S DRIVING CHANGE?

#### Governments are supporting carbon neutrality

Over 84% of Asia Pacific greenhouse gas emissions come from the region's top five countries – China, India, Indonesia, Japan and Australia<sup>3</sup>. Mitigating climate change risks depend on the governments of these five committing to decarbonization targets. Alongside the net-zero targets announced by Japan (2050), South Korea (2050) and China (2060), many other Asian governments have made announcements to reach carbon neutrality in the coming decades.

For example, India – the world's third-largest emitter of CO<sub>2</sub><sup>4</sup> – is working on net-zero policies that both lower pollution and CO<sub>2</sub> emissions and create jobs for its growing workforce. The country is aiming to generate 40% of its power from renewable sources and reduce carbon emitted per unit of output by 33% to 35% by 2030<sup>5</sup>.

#### Companies are increasing capital investment

Government support has spurred investment into renewable energy sectors. The world invested unprecedented amounts in low-carbon assets in 2020, from renewables to cleaner transport, energy storage to electric heat. The total investment in decarbonization reached a record \$501.3 billion in 2020<sup>6</sup> – an increase of 9% on 2019 despite the economic disruption caused by the Covid-19 pandemic.

Over the past decade, China has led renewable energy

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capacity investment, comprising nearly a third of the global total, while Japan and India ranked the 3<sup>rd</sup> and 6<sup>th</sup> largest by investment<sup>7</sup>. The total global investment in renewables is expected to double by 2050<sup>8</sup>. By 2040, around half of all power investment will be made in Asia, putting the region in a unique position to lead mitigation efforts in the energy sector<sup>9</sup>.

#### Technological advancements are seeing breakthroughs

The cost of renewable technologies has fallen dramatically over the last few years, thanks to increased capital investment and R&D. Lower costs help make renewables less reliant on government support and become cost-competitive compared to conventional energy sources.

For example, the levelized cost<sup>10</sup> of onshore wind and solar photovoltaics has already crossed over with the cost of new-build thermal power. Newer technologies, such as offshore wind and concentrating solar power, are expected to follow within a decade.

<sup>3</sup> & <sup>9</sup> McKinsey Global Institute, November 2020

<sup>4</sup> The Carbon Brief Profile: India, March 2019

<sup>5</sup> IEA India Energy Outlook 2021, 2021

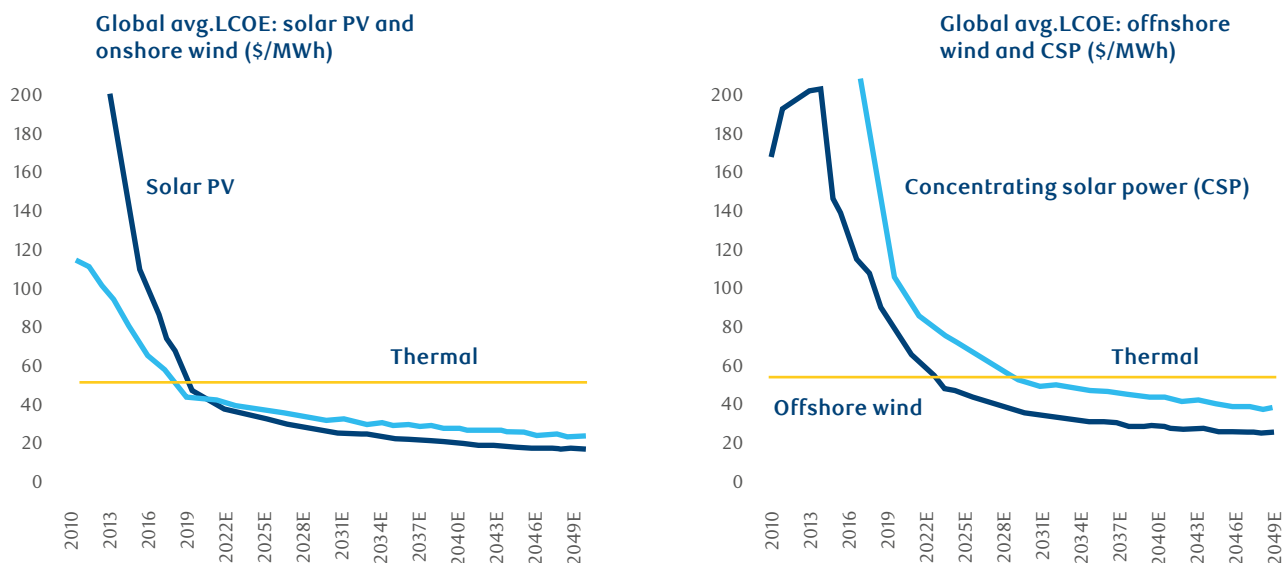
<sup>6</sup> Bloomberg, January 2021

<sup>7</sup> Global Trends in Renewable Energy Investment 2019, Bloomberg 2019

<sup>8</sup> Bernstein research estimates, March 2020

<sup>10</sup> Levelized cost of energy (LCOE) represents the average revenue per unit of electricity generated that would be required to recover the costs of building and operating a generating plant during an assumed financial life and duty cycle. LCOE is often cited as a convenient summary measure of the overall competitiveness of different generating technologies. Source: U.S. Energy Information Administration.

**Exhibit 3. Case study – cost per MWh of solar and wind, compared to thermal**



Source: Bernstein Research. Bernstein proprietary global renewables LCOE model, 2020.

**WHY INVEST IN ASIAN DECARBONIZATION?**

The need for change usually brings with it opportunity. From an investment perspective, we believe the shift towards low carbon and clean energy makes an attractive proposition for equity investors.

Firstly, the consideration of environmental, social and governance (ESG) factors is rapidly becoming one of the most visible and durable megatrends shaping how companies and economies will look in the near future. Investing in this major disruption through leading renewable companies provides unique opportunities to build on both sustainability and capital appreciation. This

could also help manage the risk of traditional carbon-intensive businesses getting marginalized as the transition to a lower-carbon economy occurs.

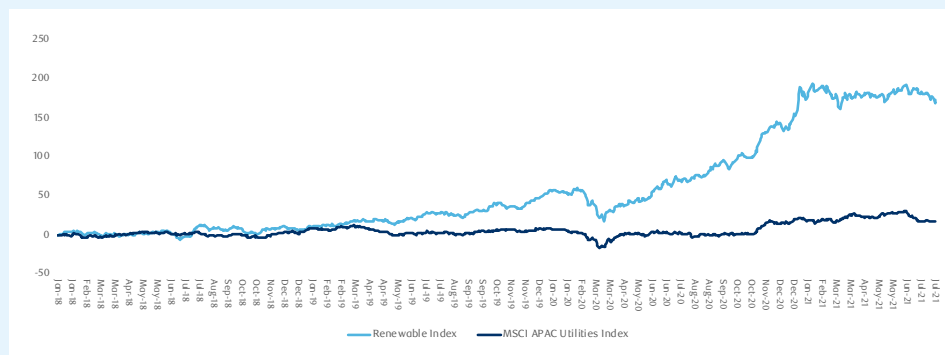
Even within renewables, there are both growth and yield investment opportunities, allowing for a diversified approach. Hydro tends to offer stable and consistent cash yields with low correlation to markets. Solar and wind have higher capex needs but offer more upside from top-line growth and technology improvements. All in all, these companies have outperformed the regional benchmarks significantly and we expect this to continue.

**RENEWABLES AND DECARBONIZATION AS INVESTMENT OPPORTUNITIES**

We selected the companies within the MSCI AC Asia Pacific Utilities Index that have more than 60% of revenues from renewable power sources to create a renewable power sub-index.

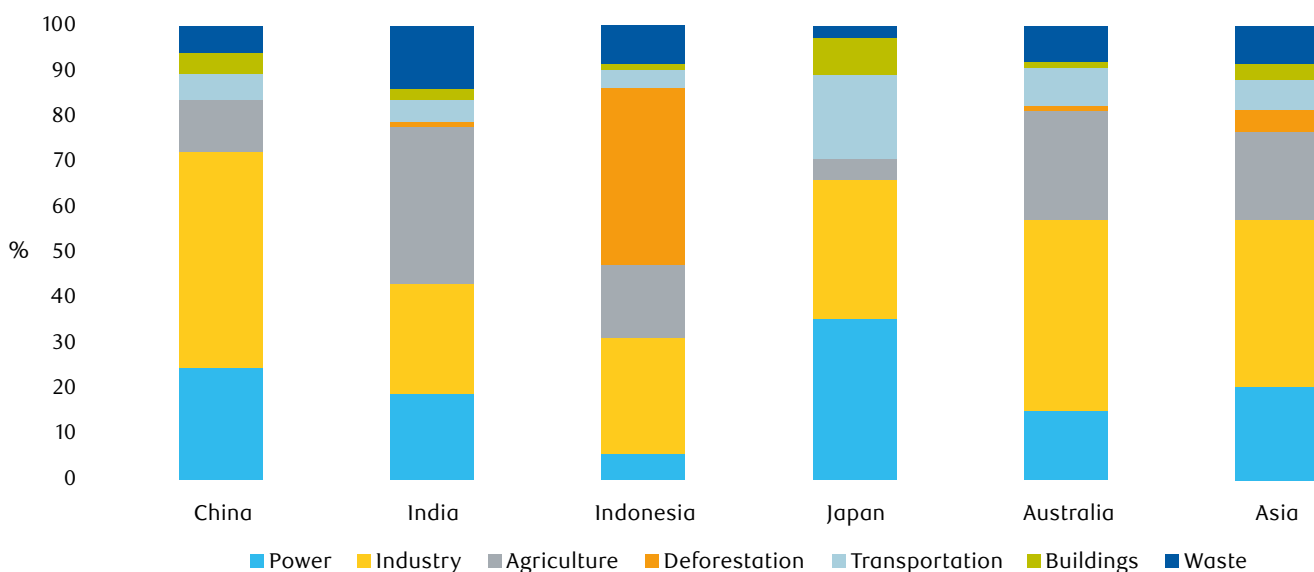
The total return of the renewables sub-index has outperformed the broader utilities index by 164% since 2018, thanks to both robust revenue growth and strong investor interest.

**Exhibit 4. Renewables sub-index outperforms broader utilities sector index in Asia**



Source: Bloomberg, 5 July 2021. Data from Jan 2018 to June 2021. Renewable sub-index composition: Chubu Electric Power Co; China Longyuan Power Group Corp; Adani Green Energy; Meridian Energy; China Yangtze Power; Mercury NZ Ltd; Energy Absolute PCL; Sichuan Chuantou Energy Co.

Exhibit 5. Greenhouse gas emissions breakdown comparison by country, Asia Pacific, 2016



Source: McKinsey Global Institute. Climate Risk and Response in Asia, November 2020. Top 5 countries shown.

### HOW TO CAPTURE DECARBONIZATION INVESTMENT OPPORTUNITIES

Every country within Asia has a different greenhouse gas emissions profile, hence the need for each to have its own strategy and timeline. However, the broader investment opportunities can be summarized according to the four major sources of emission:

1. Power
2. Industry
3. Agriculture and deforestation
4. Transportation and buildings

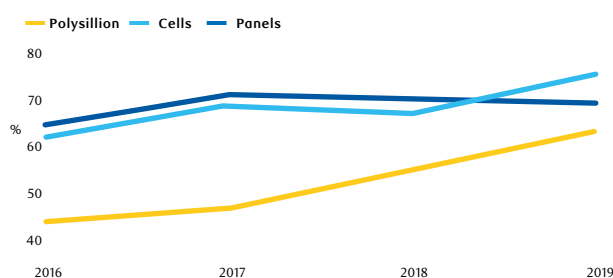
#### Power: Renewables to replace coal-powered energy

- Asia's power sector causes over 20% of regional greenhouse gas emissions and around 90% of Asian power emissions come from coal (compared to 70% globally)<sup>11</sup>.
- As the largest emitter in Asia<sup>12</sup>, China's government has supported rapid clean-energy development, turning the country into the world's largest producer of renewable energy, with development supported by state-backed banks providing friendly financing terms.
- With renewable power facilities rolling out across the country, Chinese renewable energy is expected to grow at an 11% compound annual growth rate between 2019–2030 and make up 35% of the total power sector (rising from 15% in 2020)<sup>13</sup>. Two-thirds of renewable power built in 2020 was constructed in Asia.

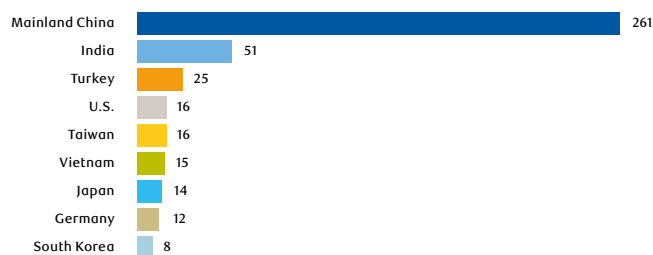
<sup>11</sup> McKinsey Global Institute. Climate Risk and Response in Asia, November 2020  
<sup>12</sup> IEA, Global Energy Review: CO2 Emissions in 2020. March, 2021  
<sup>13</sup> Bernstein estimates, 2020

Exhibit 6. Asia is leading investment on a global scale

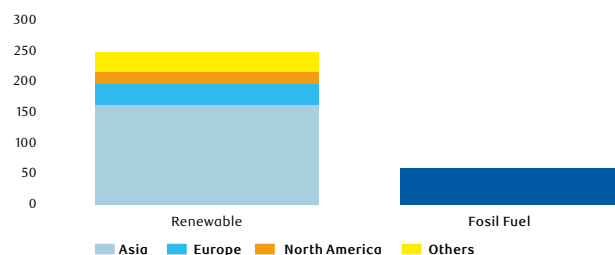
#### a. Chinese companies' share of global solar equipment production



#### b. Number of solar panel manufacturing facilities by country



#### c. Renewable vs. fossil fuel power plants built in 2020



Sources: a. BloombergNEF, September 2020; b. BloombergNEF, June 2021; c. IRENA, BloombergNEF, 2021.

“We believe clean power and the electrification of transportation will be solid investment themes for the coming 5-10 years. In contrast, opportunities in the industrial sector and farming still appear to be in the early stages; higher costs and unclear government policy targets make these more long-dated themes that may develop at a slower pace.”

**Industry: Technological breakthrough & process innovation**

- The industrial sector is the largest producer of greenhouse gases in Asia, accounting for over a third of the region's annual emissions. Steel and cement are the two highest emitting sub-sectors; Asia accounts for some 80% of global CO2 emissions from steel and cement<sup>14</sup>.
- Japan has increased production using scrap electric arc furnaces (EAF) to reduce CO2 emissions. Hydrogen-based steel production using an EAF, along with carbon capture and storage facilities, has also been developed.
- The commercialization of new technologies is considered part of a long-term solution for the large-scale decarbonization of the steel industry.

**Agriculture and deforestation:**

**Low-carbon farming & sustainable forestry**

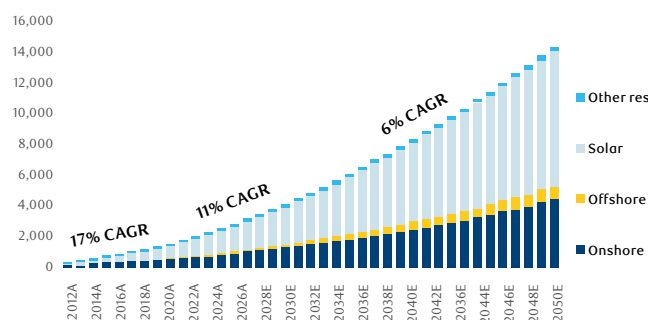
- Agriculture and deforestation account for near 24% of greenhouse gas emissions in Asia. Methane emissions from Asian agriculture account for almost 20% of the global total<sup>15</sup>.
- Education and policy will play a major role. While the growing middle class will be inclined to shift to an animal protein-based diet, awareness and availability are improving for plant-based proteins. Improving farming practices and reducing deforestation can also make a significant difference.

**Transportation and buildings: Electrification**

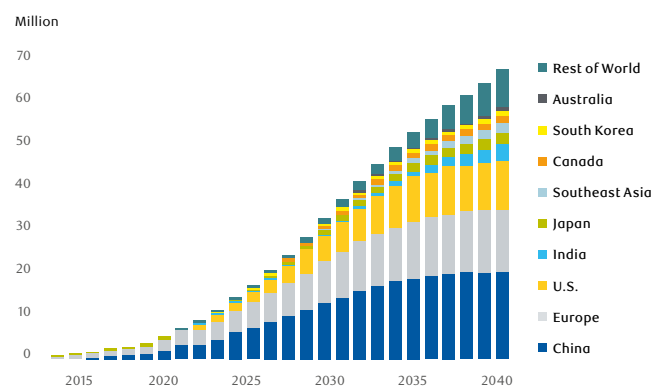
- Transportation and buildings account for 10% of GHG emissions in Asia<sup>16</sup>. Technological advancements in electric and fuel cell vehicles are tackling the issue in transportation.
- China has the largest demand for electric vehicle (EV) batteries and controls 80% of the world's raw material refining, 77% of the world's cell capacity and 60% of the world's component manufacturing<sup>17</sup>.

**Exhibit 7. Renewable power and EV penetration are long-term themes ripe for investment**

**a. World renewable capacity (GW) by type**



**b. Global passenger EV sales outlook by market**



Source: IEA, BNEF, and Bernstein estimates and analysis, 2020. Note: EVs include battery-electric and plug-in hybrid electric vehicles. Europe includes the EU, the U.K. and EFTA countries

- Japan and South Korea rank numbers two and three in EV battery demand and both countries are leaders in electric and fuel cell battery technologies and components manufacturing<sup>18</sup>.
- In buildings, space and water heating are the primary emissions contributors. Electrifying these two processes would be the primary decarbonization driver in Asia.

**OUR INVESTMENT STRATEGY**

Decarbonization is creating exciting investment opportunities in Asia. Renewable power capacity is estimated to grow beyond a 10% compound annual growth rate over the next decade and EV sales growth at c.20-30% per year until 2025<sup>19</sup>. We believe clean power and the electrification of transportation will be solid investment themes for the coming 5-10 years. In contrast, opportunities in the industrial sector and farming still appear to be in the ‘early stages’; higher costs and unclear government policy targets make these more long-dated themes that may develop at a slower pace.

<sup>14, 15, 16</sup> McKinsey Global Institute. Climate Risk and Response in Asia, November 2020

<sup>17</sup> BloombergNEF: China Dominates the Lithium-ion Battery Supply Chain, but Europe is on the Rise. September 2020

<sup>18</sup> BloombergNEF: China Dominates the Lithium-ion Battery Supply Chain, but Europe is on the Rise. September 2020

<sup>19</sup> Bernstein Research estimate 2020

Within the theme, we look for quality businesses with strong management teams, just as we would with any other investment. Vertically integrated supply chains, strong technological leadership and cost advantages compared to industry peers are examples of competitive moats in these sectors. Strong balance sheets and cash flow, a track record of good capital allocation and return on invested capital are considerations when we assess management teams.

In terms of risks to our investment outlook, political and policy risks are key. A major change of government policy could put the industry's growth at risk as many initiatives depend on government budgets and policy support. Technological innovation is another factor to consider. The energy transition industry is in a period of rapid growth with a high risk of disruption in the form of new technologies and competitive pressure. Technologies that appear attractive today could be replaced by discoveries in the future that have the potential to make the former less profitable or obsolete.

In summary, Asia is a critical part of the global decarbonization initiative, both in terms of its exposure and its role in driving change. Strong willingness from governments helps to reduce uncertainty, while disruptive companies are leading the world in technological innovation and investment. We believe investors will benefit from investing in select future winners in Asia's decarbonization efforts, both from a sustainability perspective and for capital appreciation.

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