

In collaboration with Boston  
Consulting Group and SAP



# Accelerating Asia's Advantage: A Guide to Corporate Climate Action

WHITE PAPER

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# Foreword



**Gim Huay Neo**  
Managing Director, Centre  
for Nature and Climate,  
World Economic Forum



**Paul Marriott**  
President Asia Pacific  
& Japan, SAP



**Neeraj Aggarwal**  
Chairman Asia Pacific,  
Boston Consulting Group

**The past 12 months were slated to be a year of sustainability action.** The 2022 United Nations Climate Change Conference (COP27) in Egypt saw a breakthrough in funding for the loss and damage climate change has wrought. New legislation in the United States and Australia raised hopes and fuelled further climate investment.

**While these developments are welcome, the current trajectory on climate action is still insufficient.** Abiding by existing policies and strategies only serves to maintain a status quo that is harmful to our planet.

**Asia represents the world's biggest opportunity to make tangible change.** The size of Asian populations and economies, together with the region's enormous growth potential, offers great upsides for climate action.

**Businesses across Asia need to be at the forefront of the drive towards climate action.** Corporate entities, whether private or state-owned, are responsible for an overwhelming share, some 51%, of global emissions and bear a strong responsibility for accelerating climate action efforts. Alongside bold policy development from governments, businesses can play a critical role in mitigating climate impact while also boosting their own competitive advantage. This report, prepared jointly by the World Economic Forum, Boston Consulting Group and SAP, provides a business perspective on climate action.

**The findings of this report are based on first- and third-party quantitative and qualitative research from across Asia.** We conducted interviews with a range of senior executives from leading Asian companies across sectors – from energy to transport and from industrial sectors to agriculture. Our analysis was supplemented by additional research from a range of sources, including the International Energy Agency (IEA), Climate Watch, the UN Intergovernmental Panel on Climate Change and the World Bank, in addition to previous work undertaken by Boston Consulting Group and SAP.

**The ambitions, commitments and promises we hear regularly are meaningful only if combined with allied actions, both today and tomorrow.** Businesses must plan their corporate climate action framework across three key phases. First, they must take immediate action to measure benchmarks, set targets and introduce emission reduction solutions. Second, they must mobilize resources and accelerate ecosystem collaboration. And third, they should begin to unlock growth within their value chain – and beyond.

**We live in an age of urgency, and Asia is a region that will decide the success of global climate action efforts.** Only by committing to bold and immediate change can Asian businesses and their leaders contribute to a brighter future for our planet and better lives for our people.

# Executive summary

The success of climate action in corporate Asia will have an exponential influence on the world's net-zero transition.

**The need for climate action has never been better understood. But now is the time for action. Asia's companies face considerable risk from climate change but also have one of the most significant opportunities to realize economic benefits.**

**Asia represents the biggest opportunity for global climate action.** In addition to being the driving engine of global economic growth, Asia also produces the biggest share (51%) of contemporary global emissions. Yet the policy and corporate response in Asia is not currently proportional to the risk the region poses.

**Realizing this opportunity requires managing unique challenges.** Asia's enormous diversity and complexity means there can be no single solution to climate change. The region contains some of the world's fastest-growing economies, leading to increasing demand for more, lower-cost energy.

**Yet Asia has more to lose than most.** Even beyond the terrible potential impact on people's lives, Asia is economically vulnerable to climate change, with 26% of GDP predicted to be at risk if temperatures increase by 3.2°C. And the countries

that are the least able to deal with disaster are most at risk, as recent climate events have shown.

**Adaptation and mitigation must be pursued with equal force and urgency.** The goal of reducing global temperatures through climate mitigation remains critical. But leaders must also acknowledge that a warmer world is inevitable, and adapt to its demands. A focus on adaptation should not minimize efforts or investment to mitigate climate change but complement its aims.

**The report is a guide to corporate climate action.** Businesses across Asia, in every industry, have a fundamental responsibility to act and will have to adapt to new realities while simultaneously contributing to a broader net-zero transition. Using the examples of some of Asia's leading organizations, the report provides a framework to guide businesses on immediate, medium-term and transformational steps.

**The business case for climate action is clear.** Organizations that ignore or hedge their strategies gamble their ethics, revenues and competitive advantage. It's time for leaders to make bold change for the good of their businesses, and the world.



**We are in a life-or-death struggle for our own safety today and our survival tomorrow. There is no time for pointing fingers or twiddling thumbs ... Every government, every business, every investor, every institution must step up with concrete climate actions for net zero.**

António Guterres, UN Secretary-General, October 2022

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# The battle for net zero will be won or lost in Asia

Despite the increasing threat of climate risk, there are reasons to be optimistic.

The world is set to miss the 1.5°C target outlined in the Paris Agreement.<sup>1</sup> There is close to a 50/50 chance that global communities will breach this temperature threshold in the next five years,<sup>2</sup> bringing an increased threat of climate risks such as extreme weather events and rising sea levels.

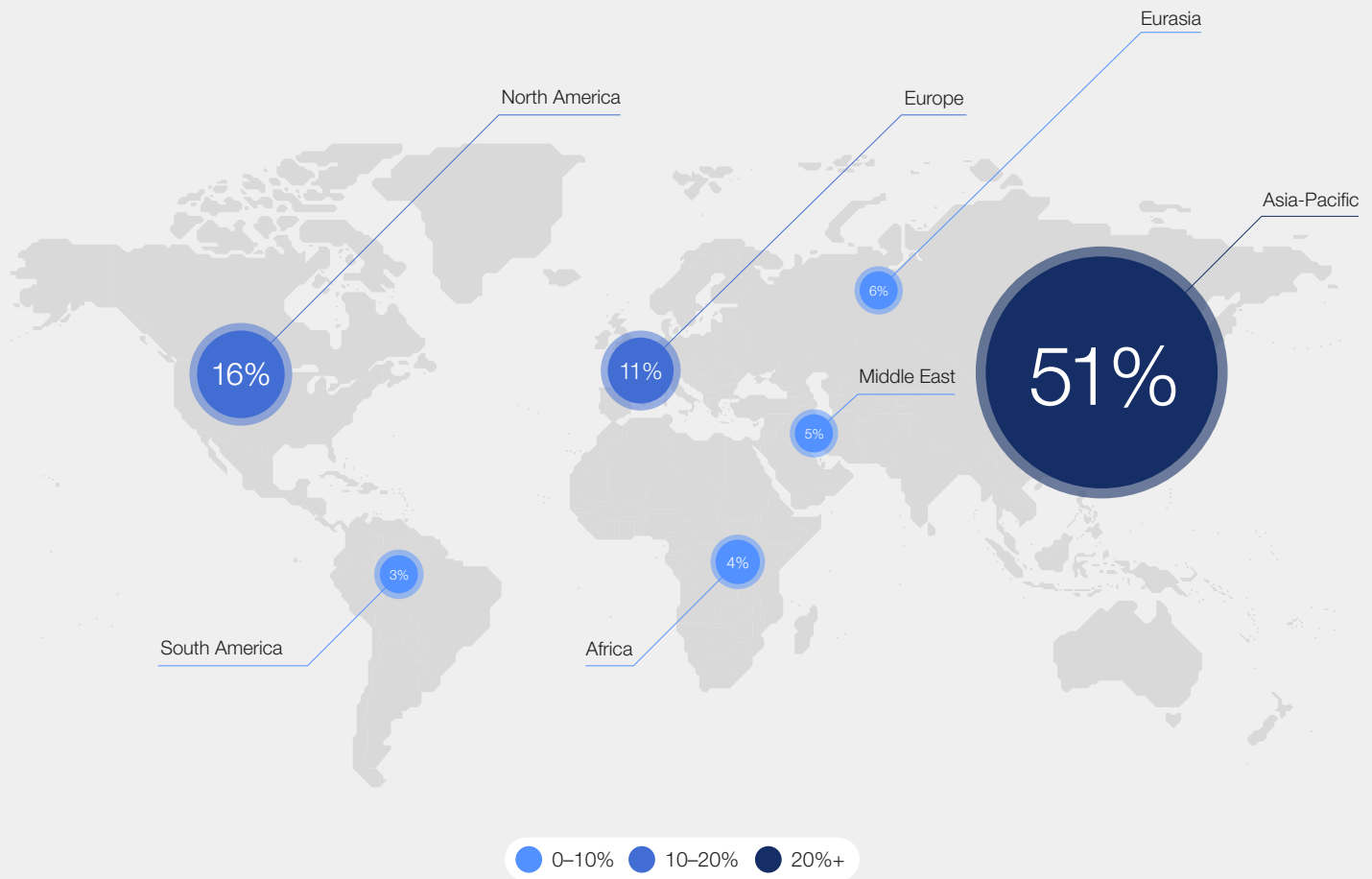
But there remain grounds for optimism. Developed countries such as the United States and Australia have passed long-hoped-for legislation committing to a more sustainable future, and the world's

biggest annual carbon emitter, China, has recorded falling emissions in recent months.<sup>3</sup> Yet significantly more needs to be done, and quickly.

The world's success or failure in achieving its shared climate goals will be critically dependent on the performance of countries and companies in Asia. As a region, Asia is responsible for 51% of annual global greenhouse gas (GHG) emissions, with China, India, Japan, Indonesia and South Korea together accounting for 43% of the overall total (Figure 1).

FIGURE 1 The Asia-Pacific region is responsible for ~50% of annual global GHG emissions

## Percentage of world's CO<sub>2</sub> emissions



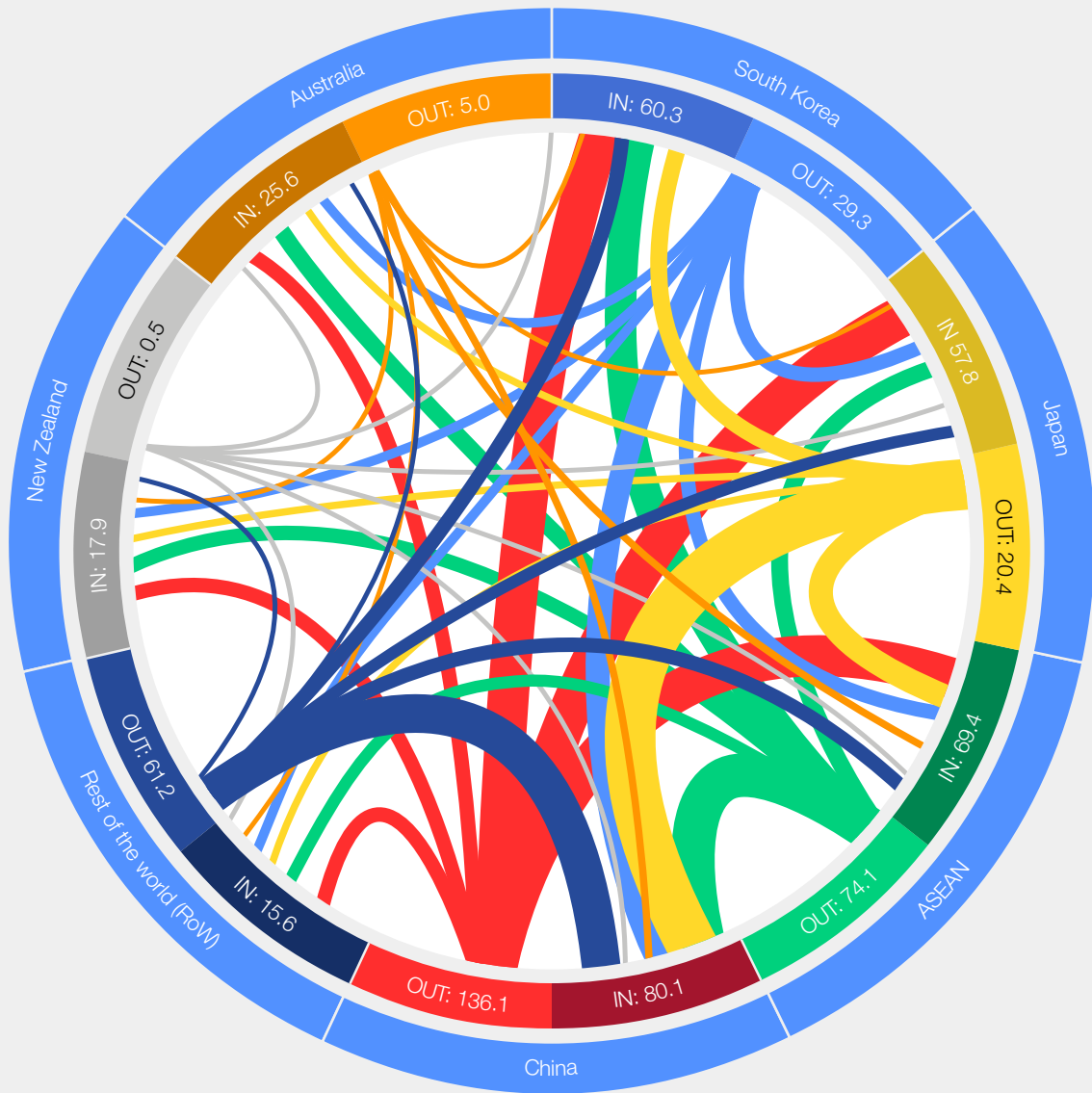
Source: Climate Watch; BCG Analysis

The scale of emissions extends across industries. Asia alone is responsible for more than half of annual emissions in major industries – electricity, manufacturing, industry and land use.<sup>4</sup>

But the impact of Asia’s climate response shouldn’t be considered in a vacuum. Asian climate action has a direct impact on the health of the whole planet.

Asian economies including China, South Korea, Indonesia, Malaysia and Japan play a significant role in global supply chains. That results in large interregional flows of embedded CO<sub>2</sub> emissions (Figure 2).

FIGURE 2 Asia’s prominence in global supply chains has a significant effect on emissions flows



Regions	Outgoing (Mt)	Incoming (Mt)	Outgoing (Mt)	Incoming (Mt)	
South Korea	29.3	60.3	RoW	61.2	15.6
Japan	20.4	57.8	New Zealand	0.5	17.9
ASEAN	74.1	69.4	Australia	5.0	25.6
China	136.1	80.1			

**Note:** Largest interregional flows of carbon in trade in 2021, measured in millions of metric tons CO<sub>2</sub> equivalent; Mt = millions of metric tons

**Source:** Springer Nature, 2022

## 1.1 Asia represents the world's biggest opportunity for positive climate results

The scale of opportunity in Asia cannot be understated. The region is home to almost 60% of the world's population,<sup>5</sup> accounts for 53% of primary energy consumption<sup>6</sup> and generates 45% of global gross domestic product.<sup>7</sup>

Asia is responsible for more than half (53%) of the reduction needed to achieve the International Energy Agency (IEA)'s Sustainable Development Scenario by 2050, including 88% of the required reduction in global coal emissions.<sup>8</sup>

The region has not yet realized its full economic potential. Driven by China, India and rapidly developing economies in South-East Asia, Asia is expected to see gross domestic product (GDP) growth at rates well above the global average.<sup>9</sup>

Yet despite its lead in population and economic growth, Asia lags in per capita development across GDP, energy consumption and GHGs.<sup>10</sup> Any increases in these areas will further affect climate and make the change required harder to resolve.

## 1.2 The current response to the climate challenge is inadequate

The global action required to limit climate change to 1.5°C is currently insufficient. The rate of decarbonization between 2015 and 2020 stood at just -1.5% globally – this trajectory would lead to at least a 3°C increase in temperatures by 2030 (Figure 3). Decarbonization rates of 6% are needed to limit warming to 2°C, and of 16% for the target of 1.5°C by 2030.

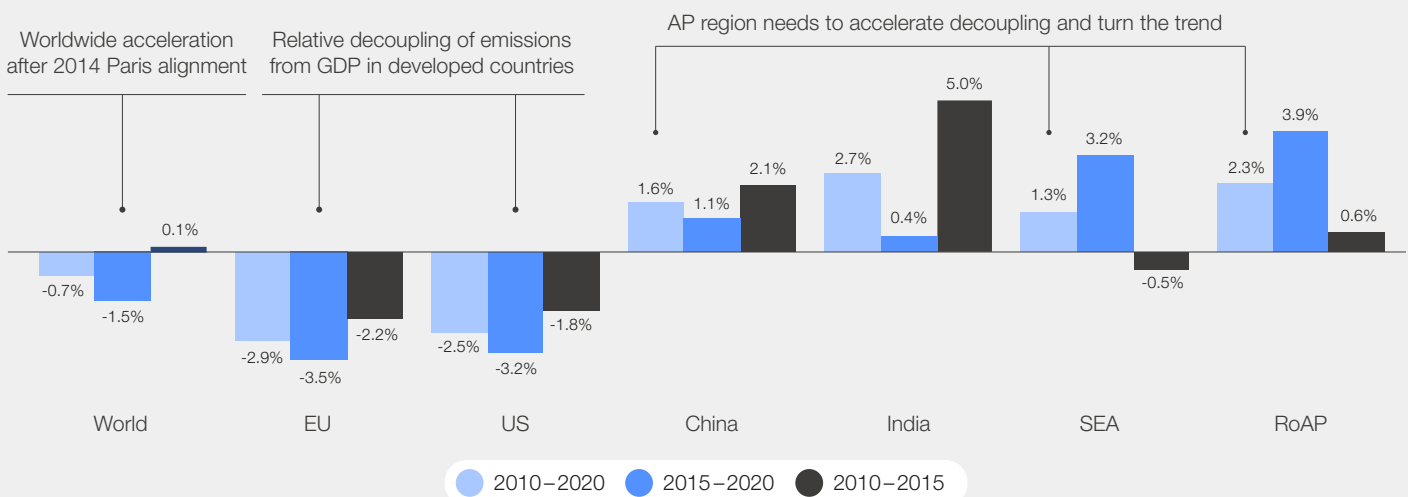
Asia's decarbonization rate remains significantly below the world's average and isn't expected to

improve in the near future. Assessment of the region's existing national policies and commitments implies that carbon intensity will remain at the same level for the next decade, with acceleration of decarbonization happening only after 2030. The same analysis predicts an increase in renewable energy as a share of the energy mix of just 5% by 2030, while energy supply is expected to grow by 18%.

FIGURE 3 Regional decarbonization rates highlight the need for action

### Regional decarbonization rates

Emissions/GDP change, % CAGR for the period



Note: CAGR = compound annual growth rate; SEA = South-East Asia; RoAP = rest of Asia-Pacific

Source: Climate Watch Historical GHG Emissions Data, BCG analysis

At a corporate level, there has been an encouraging acceleration in the number and scale of commitments, as well as in reporting on climate action initiatives.

In 2021, 3,879 companies in Asia disclosed their climate targets and emissions through the Carbon Disclosure Project (CDP) – a 29% increase year-on-year.

However, only around 900 of those companies had adopted science-based targets, and just 300 (8%) had net-zero targets. There is also work to be done to turn commitments into action, with only 38% of companies reporting that they are following a specific low-carbon transition plan.<sup>11</sup>

### 1.3 Change won't be easy as key challenges remain at both regional and corporate levels

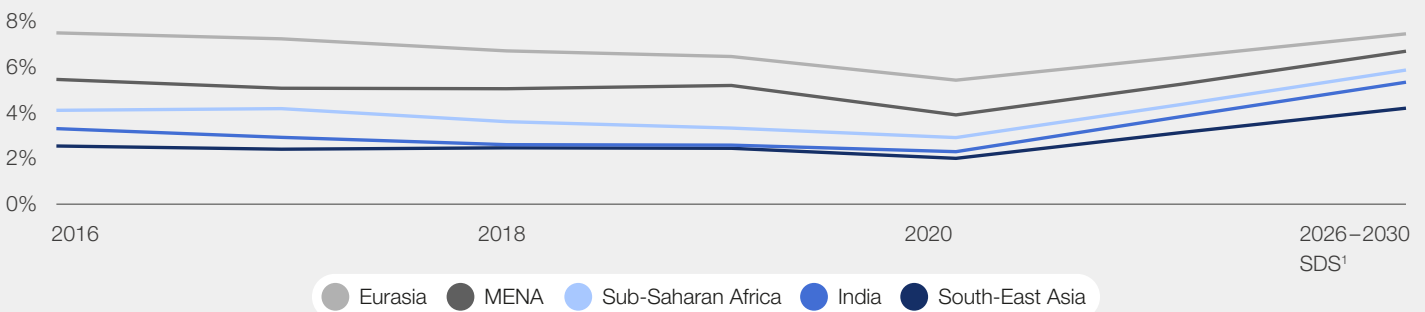
At a macro level, there can be no single approach for success in Asia, given the region's complexity and diversity. Asia is home to 49 countries and 2,300 languages – and there are significant differences in key industries, natural resources and economic considerations within individual countries, let alone across borders.

Strategies must be tailored for each country, taking into account demographic and socioeconomic circumstances as well as the current maturity of climate action development.

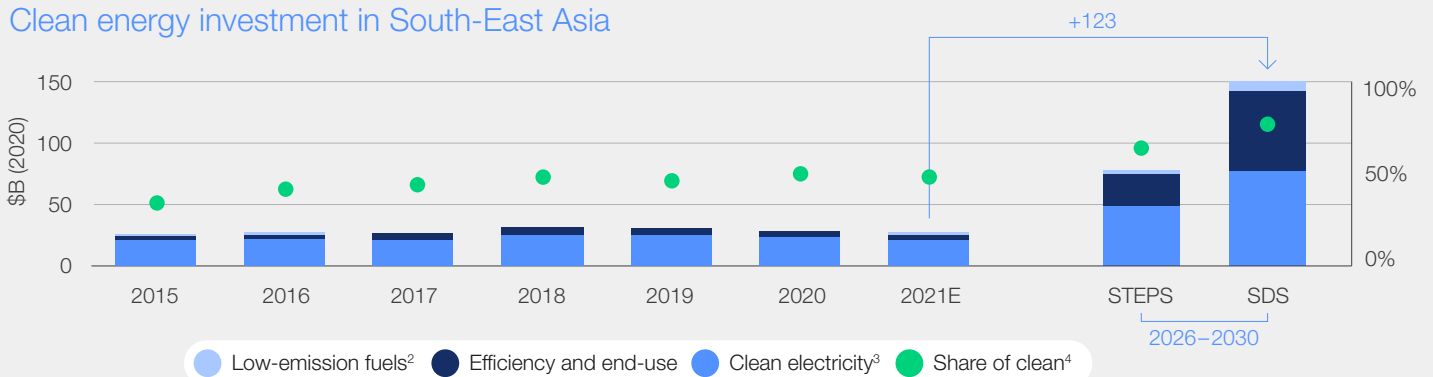
Balancing macro priorities will be a challenge. Asia contains several fast-growing economies that are likely to see increasing demand for low-cost and abundant energy as they develop. Gaps in access to that energy must be balanced with the clean energy transition to ensure equitable growth. This transformation requires significant investment – regions such as South-East Asia and India need to double their clean energy investments to even meet their Stated Policies Scenario (STEPS) goals (Figure 4).<sup>12</sup>

FIGURE 4 Clean energy funding needs new impetus even to reach stated goals

#### Clean energy investment by region as a share of GDP, 2015–2030



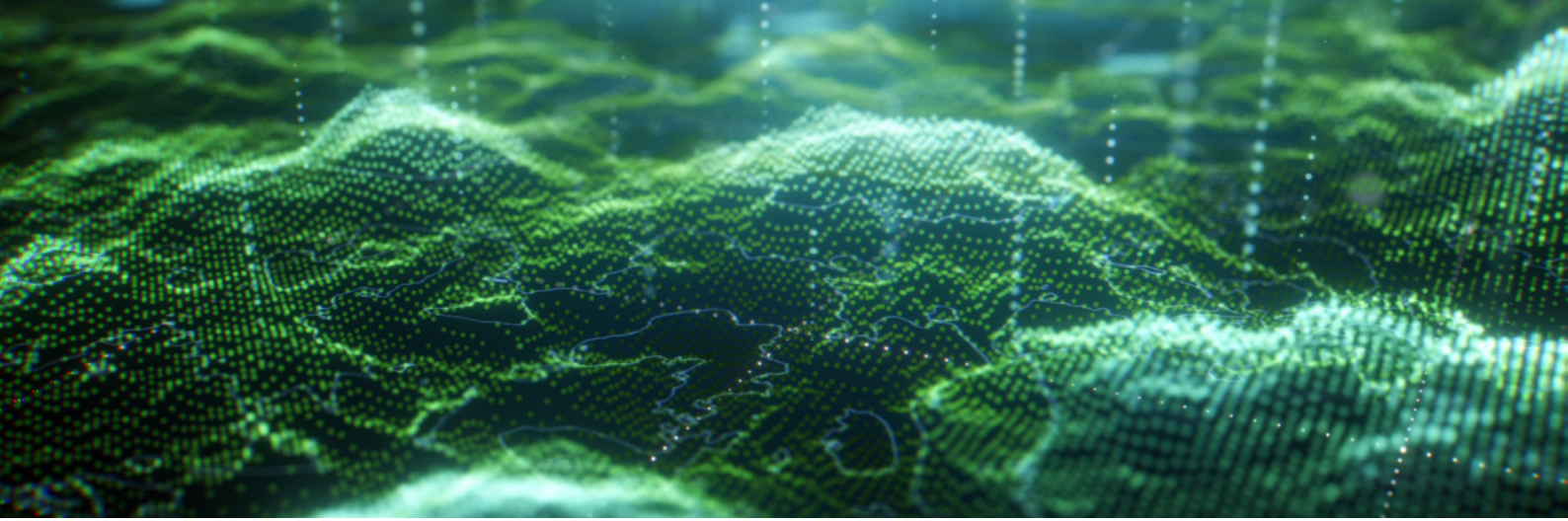
#### Clean energy investment in South-East Asia



<sup>1</sup> SDS refers to the IEA's Sustainable Development Scenario; <sup>2</sup> Low-emissions fuels include modern solid, liquid and gaseous bioenergy, low-carbon hydrogen and hydrogen-based fuels that do not emit any CO<sub>2</sub> from fossil fuels directly when used and also emit very little when being produced; <sup>3</sup> Clean electricity includes low-carbon generation, power infrastructure grids and batteries; <sup>4</sup> "Share of clean" = clean energy investment as a share of total energy investment. Investment is measured as ongoing capital spending in energy-supply capacity (fuel production and clean electricity) and incremental capital spending above a baseline for energy end-use and efficiency sectors (in buildings, transport and industry)

Source: IEA, South-East Asia Energy Outlook 2022: <https://www.iea.org/reports/southeast-asia-energy-outlook-2022>





Meanwhile, corporate Asia is making slow progress. Today, 50% of Asian businesses believe that addressing environmental issues will be material to business results within the next five years.<sup>13</sup>

But there remain both external and internal barriers to corporate progress. Externally, major policy development has largely stalled<sup>14</sup> and there are still no standardized global reporting formats, nor a global carbon price. While consumer interest in environmentally responsible goods is strong, higher pricing and lower availability of sustainable goods has hindered adoption.<sup>15</sup>

Internally, key obstacles including strategy alignment, data use and access to resources are still being tackled. Uncertainty is the top critical barrier for businesses, though 42% of South-East

Asian businesses say lack of environmental strategy is holding them back, while 33% point towards lack of funding (Figure 5).<sup>16</sup>

Another unique aspect of corporate Asia is the prevalence of family-run businesses. As many as 300 of the 500 largest companies by revenue in India are family-owned and operated. This offers a unique challenge and opportunity for climate action.

Data is critical to benchmark climate action and set targets, yet 59% of South-East Asian businesses are not completely satisfied with their ability to accurately measure their environmental impact: 20% of South-East Asian companies rely solely upon assumptions and estimates to assess the environmental impact of their supply chain.

FIGURE 5 The barriers to corporate climate action vary



Note: South-East Asia (N = 580), percentage who chose a barrier anywhere in their top 5

Source: SAP

# 1.4 Asia has much to lose in a climate emergency

The worrying fact is that, even if the 1.5°C targets set in the Paris Agreement are achieved, Asia will still bear the brunt of more – and more extreme – weather events, as well as a shift in its broader climate.

At 1.5°C, Asian countries will still have to deal with as many as 60 million people affected by coastal flooding every year, a risk of long-term degradation to 70% of coral reefs through bleaching, around 5% lower crop yields and a 1.8 times increase in heatwaves.<sup>17</sup>

However, the world's current trajectory is to see a 4°C increase by 2100. The results of such warming are unconscionable – severe food crises, an 8.2% increase in heatwaves and the potential flooding of a number of capital cities.

In Asia, rising sea levels are already a threat. Almost 12% of South-East Asia's population is even now at risk of displacement,<sup>18</sup> and big urban metropolises are in real jeopardy. Jakarta is the fastest-sinking city in the world, while central Tokyo, Manila and Bangkok are all at extreme risk of floods.<sup>19</sup>

## BOX 1 The most significant effect of climate change will be on people's lives

The biggest – and most important – impact of climate change will be to people's lives and livelihoods. Even today, there is evidence that at least 85% of the global population has experienced weather events made worse by

climate change.<sup>20</sup> That number will only grow. While those impacts are disturbing, this report is primarily focused on corporate action and, as such, the economic and organizational impacts.

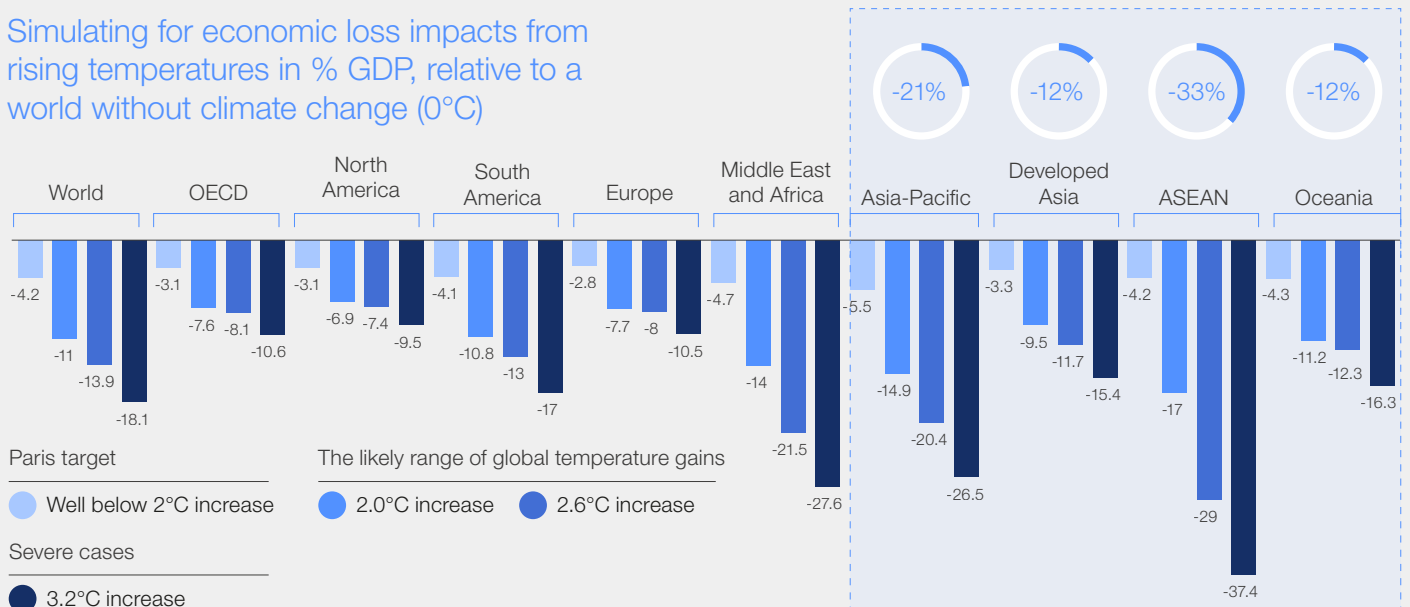
Asia's exposure to climate risk makes the region particularly vulnerable. While global temperature rises will affect economies in every corner of the globe, Asia is in extreme danger. Based on a severe increase of 3.2°C, Asia is projected to see a reduction in GDP of more than 26%, trailing only the Middle East and Africa (-27%). In fact, South-East Asia fares even worse, with an expected hit of 37% – by far the worst-affected region around the globe (Figure 6).

It is past the time for economies in the region to take notice. Four South-East Asian nations – Myanmar, the Philippines, Viet Nam and Thailand – are among the top 10 countries most affected by climate change in the past 20 years.<sup>21</sup>

The potential GDP impact could cause even further pain. Consider the effect that the projected 46% drop in GDP could have on Singapore or Malaysia, a 43% GDP drop on Thailand or a 39% GDP drop on Indonesia.<sup>22</sup>

FIGURE 6 Global temperature rises will negatively affect GDP in all regions by mid-century

Simulating for economic loss impacts from rising temperatures in % GDP, relative to a world without climate change (0°C)



Source: Swiss Re Institute, The Economics of Climate Change: No Action Not an Option, 2021: <https://www.swissre.com/dam/jcr:e73ee7c3-7f83-4c17-a2b8-8ef23a8d3312/swiss-re-institute-expertise-publication-economics-of-climate-change.pdf>



## 2 It's time to adapt to what's to come and mitigate its effects

The solution to the climate challenge is to create a strategy that acknowledges the reality faced while also working to significantly slow the pace of global warming.



Achieving this goal requires two equally critical strategies – **adaptation** and **mitigation**.

### 2.1 Adapting to a warmer world

“Adaptation is not an alternative to a redoubled effort to stop climate change, but an essential complement to it. Failing to lead and act on adaptation will result in a huge economic and human toll.

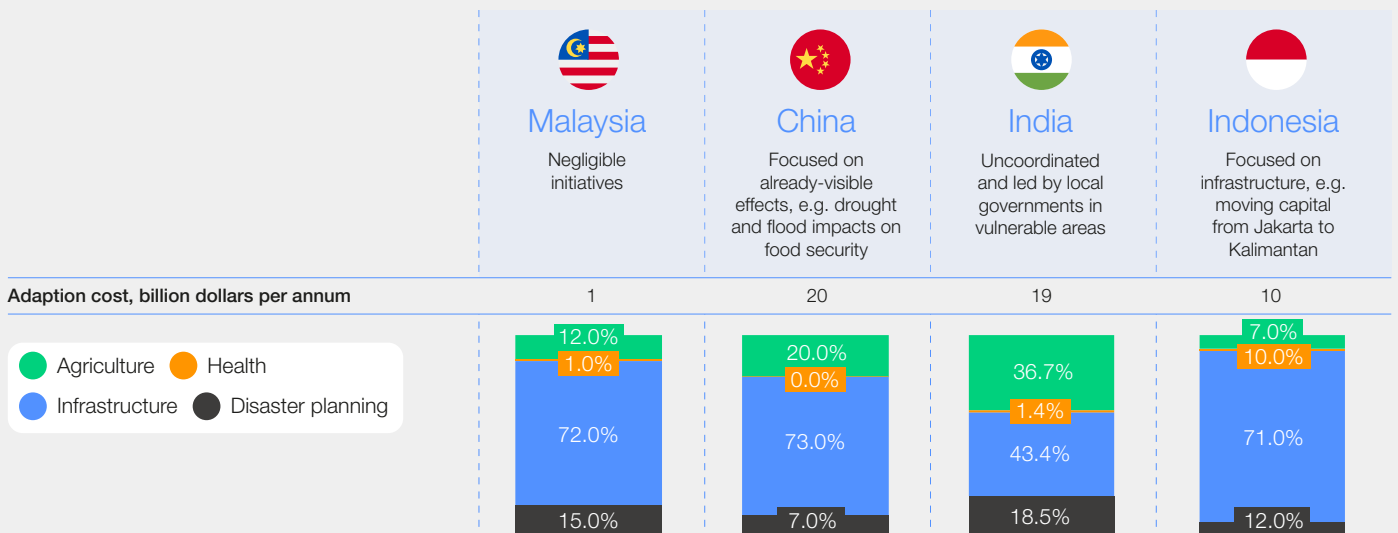
Global Commission on Adaptation<sup>23</sup>

Adaptation as a concept concedes that the world will continue to warm, even if every target and goal that has been set is met. It recognizes that changes will need to be made to deal with the results of that warmer world.

A focus on adaptation does not concede that the battle to mitigate the effects of climate change has been lost. Instead, the effects of a changing climate have to be understood and managed today, while action is increased to mitigate change in the future.

Adaptation must be considered locally as the impacts of climate change are nuanced and particular to the country-specific context (Figure 7). This requires primarily local activations focused on short-term reductions in risk and investments in system and infrastructure resilience, with similarly local benefits. In particular, differences in the reliance on food systems, the level of vulnerability to disasters and existing adaptation planning must be taken into account.

FIGURE 7 | Adaptation costs differ markedly across countries



Source: World Bank Group, Economics of Adaptation to Climate Change Study, The Cost to Developing Countries of Adapting to Climate Change, 2019; <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/667701468177537886/the-costs-to-developing-countries-of-adapting-to-climate-change-new-methods-and-estimates-the-global-report-of-the-economics-of-adaptation-to-climate-change>; Channel News Asia, NDR, It Could Cost \$100 Billion to Protect Singapore Against Rising Sea Levels, 2019; BCG Analysis

FIGURE 8 | Potential returns (10-year benefit over a five-year investment period)



Source: Global Center on Adaptation, State and Trends in Adaptation Report 2020; <https://gca.org/reports/state-and-trends-in-adaptation-report-2020/>; World Resources Institute; BCG analysis

The benefits of adaptation are clear, from mitigating future risk and avoiding loss, to direct economic and socioeconomic benefits. Over the course of a decade, potential returns tally up to a 9x return on

early-warning systems, a 4x return on infrastructure resilience and a 5x return on agriculture and food security (Figure 8).



## 2.2 Mitigating the rate of change

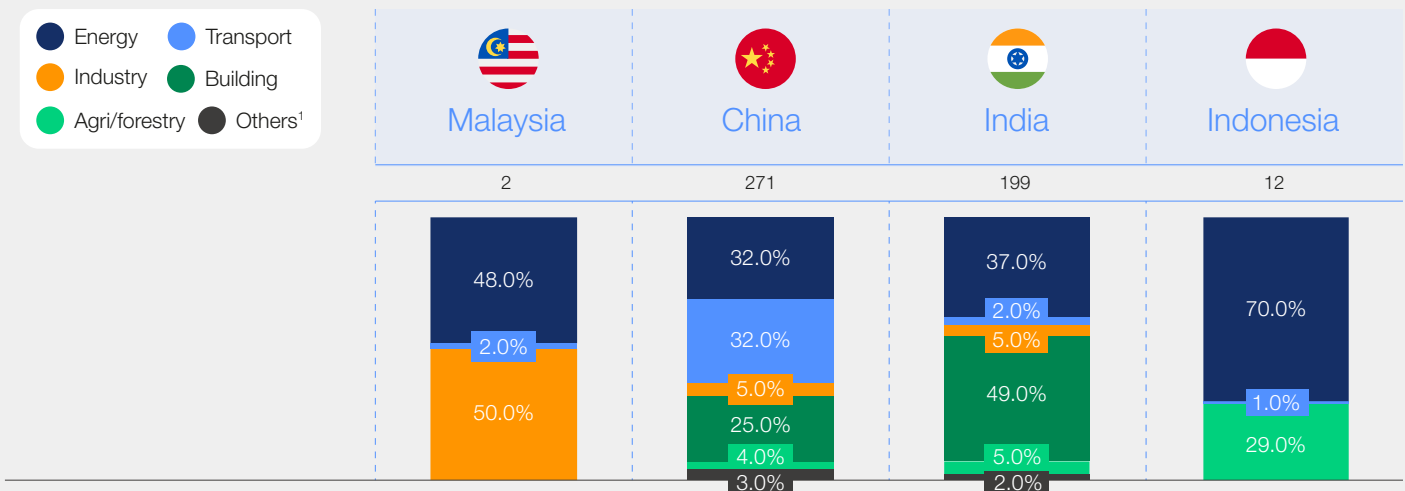
While adaptation is important, it is also crucial to slow and ultimately reduce the rate of global temperature rises. Climate mitigation is a better-understood strategy, based on tackling global issues through worldwide coordination and action.

Climate mitigation focuses primarily on investing in decarbonization, slowing GHG emissions and removing existing GHGs from the atmosphere. Asia is expected to lead the way when it comes to clean

energy investment activity over the next decade, with opportunities to increase the small installation bases of both solar and wind infrastructure (Figure 9).

Investment in energy infrastructure will be needed in most countries, as well as in building projects to offset the rapid expansion of urban living, in transport to assist in the growth in population mobility and even in agriculture and forestry in countries with big farming industries.

FIGURE 9 Energy leads key mitigation costs, but investment is needed in a variety of areas



<sup>1</sup> Covers miscellaneous sources such as fewer fugitive emissions from mining, less landfilling, etc.

Source: Burchardt, Jens, The Economic Case for Combating Climate Change, BCG, 27 September 2018: <https://www.bcg.com/publications/2018/economic-case-combating-climate-change>; BCG analysis

## 2.3 A single approach will yield great opportunities

“ Many adaptation and mitigation options can help address climate change, but no single option is sufficient by itself. Effective implementation needs integrated responses that link mitigation and adaptation.

Intergovernmental Panel on Climate Change

It is not possible to adapt without mitigation or to mitigate climate change without adaptation. The two strategies must be pursued simultaneously – and soon.

Yet it is important to recognize that these activities will require significant investment by nations and businesses, both in terms of capital investment and of opportunity cost. For example, countries will need to balance funding for climate action alongside competing agendas and national priorities

such as big infrastructure projects, transport programmes or even social campaigns.

It would be a mistake to consider climate adaptation and mitigation only through a cost lens, however. New opportunities, revenue streams and jobs will emerge as industries evolve to deal with changing environmental focuses. In addition, the move from carbon-intensive practices to more efficient ways of working will see a value transition in a range of key industries (Figure 10).

FIGURE 10 | The evolution of industries will see a value shift towards low-carbon practices

	Energy	Transport	Construction	Industry	Agriculture
Losing value	Fossil fuel extraction and generation	ICE manufacturing and servicing	Low-EE and low-resilience builders	Low-EE and low-resilience producers	Low-resilience agriculture, smallholders
Gaining value	Renewables manufacture and generation	EV manufacturing, infrastructure and mobility services	Retrofitting low-EE stock, high-EE builders	High-EE and high-resilience producers	High-resilience agriculture, large producers

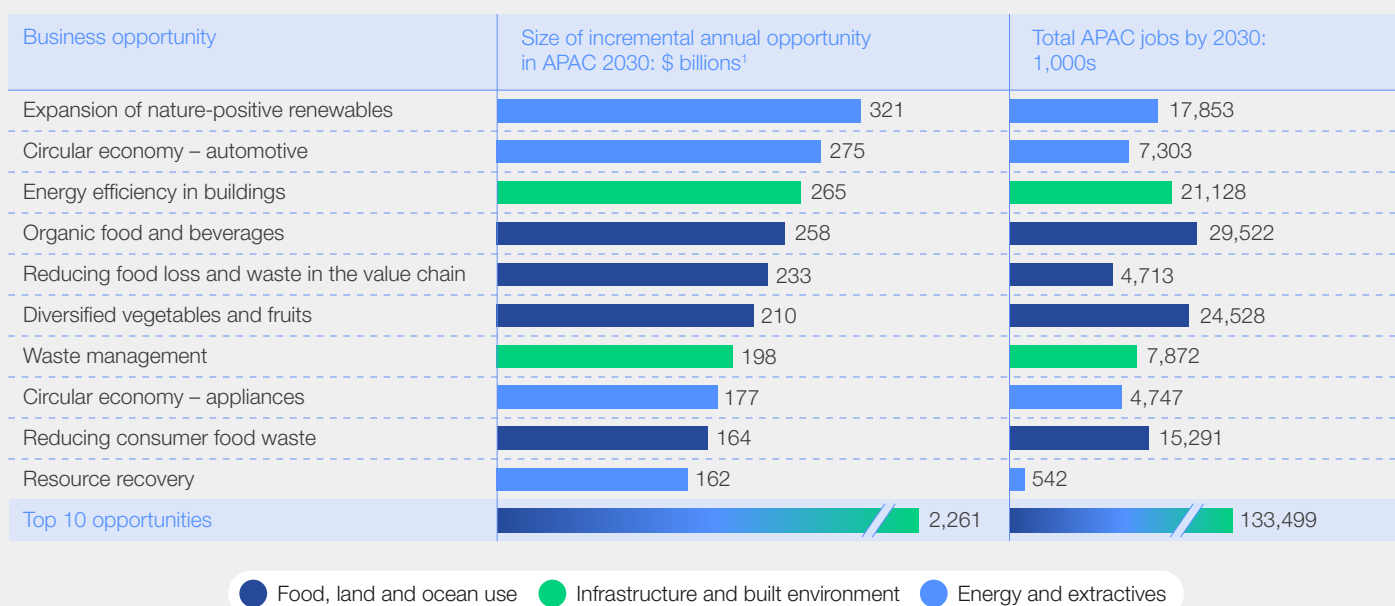
Note: ICE = internal combustion engine; EE = energy efficiency; EV = electric vehicle Source: BCG analysis

There are already significant opportunities for businesses involved in adaptation and mitigation. Consider the incremental revenue opportunity that could be available by 2030 from activities such as the expansion of renewable power, energy efficiency in buildings and greater circularity in producing industries. The total opportunity is enormous, with revenues of approximately \$4.3 trillion available for Asian businesses to claim – representing a 43% share of the total global opportunity (Figure 11).

The story is the same when considering job growth. More than half (58%) of the 395 million new jobs predicted to be required to service new revenue opportunities will be situated in Asia across food, land and ocean industries, infrastructure and the built environment, and energy and extractives.<sup>24</sup>

FIGURE 11 | Adaptation and mitigation will spur a boom in climate revenues and new jobs: the top 10 opportunities in Asia

Size of business opportunity in 2030 \$ billions,<sup>1</sup> 2019 values



<sup>1</sup> Based on estimated savings or project market sizing in each area. These represent revenue opportunities that are incremental to business-as-usual scenarios. Where available, the range is estimated based on analysis of multiple sources

Source: Literature review; market research; expert interviews; Temasek, the World Economic Forum and AlphaBeta, New Nature Economy: Asia's Next Wave: Risks, Opportunities and Financing for a Nature-Positive Economy, September 2021: <https://www.ecosperity.sg/content/dam/ecosperity-aem/en/reports/new-nature-economy-asia-low-res-pages.pdf>

## 2.4 Energizing a just transition

The energy transition is a critical focus of both adaptation and mitigation strategies, but it brings with it significant ongoing challenges. Only through a move to renewable energy sources can the world meet the net-zero challenge.

Yet increasing the share of renewable and environmentally sound energy is taking time. Asia has to balance the transformation of its energy mix with the ability to provide secure, affordable energy to growing economies – a so-called “just transition”.

A just transition is vital to address both mitigation and adaptation through fair and inclusive action, ensuring that no community is left behind and inspiring essential buy-in from nations and citizens at different levels of the socioeconomic spectrum around the world.

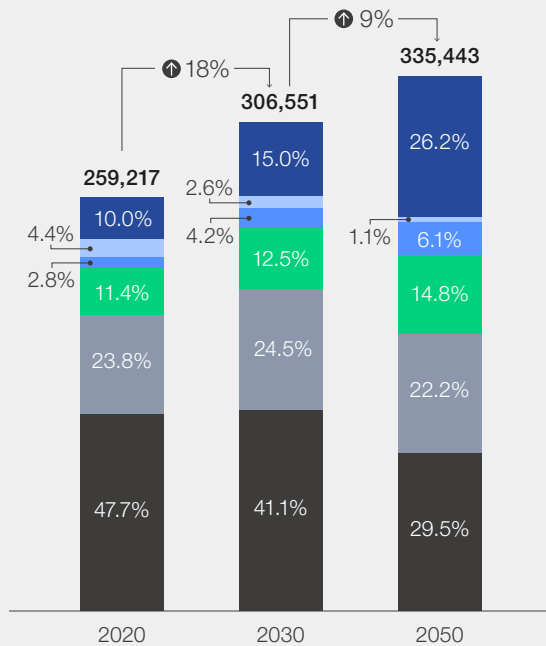
A growing region needs energy. In fact, Asia represents almost two-thirds of projected growth in global energy demand, taking into account India (26%), China (22%) and South-East Asia (12%).<sup>25</sup> It is concerning that demand is likely to be largely made up of fossil fuels in the near term.

Asia is expected to see an increase in energy demand of 18% by 2030 according to the International Energy Agency's Stated Policy Scenarios, a granular, sector-by-sector look at existing energy policies and measures as well as those that are under development. Yet even fully implementing current policies will see an increase of only 5% for renewables' share of the energy mix, far below the 12% increase required to achieve key development targets (Figure 12).

FIGURE 12 Asia must increase the proportion of renewables in its energy mix

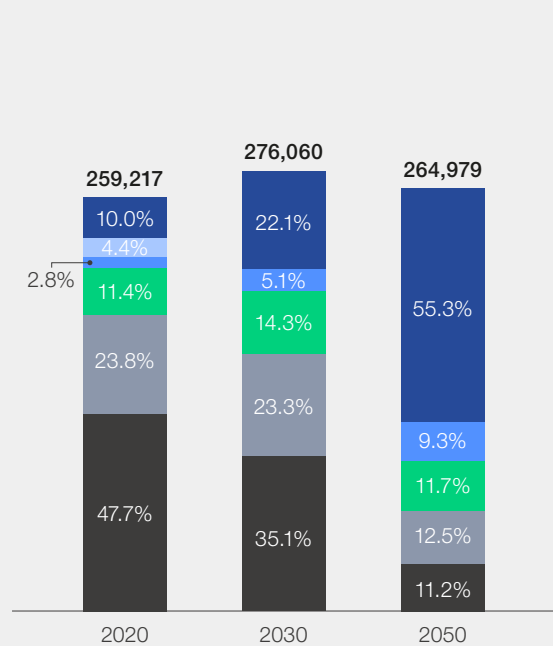
### Stated policy scenario

AP region's energy mix (% of total energy supply)



### Sustainable development scenario

AP region's energy mix (% of total energy supply)



● Renewables
 ● Traditional use of biomass
 ● Nuclear
 ● Natural gas
 ● Oil
 ● Coal

Source: IEA, World Energy Outlook 2021; BCG analysis

Making the transition to renewables will require focus and conscious action. To achieve the IEA's Sustainable Development Scenario goals, global coal emissions must drop by 88% – of which 88% must come from Asia – and oil emissions by 65% – with 20% of the reductions coming from Asia.

Renewables are on the brink of becoming an affordable option in Asia, but they have not yet

overtaken the cost-competitiveness of fossil fuels. Historically, there has been a premium of more than 25% on renewables in countries such as Indonesia, Japan and Malaysia. Yet over time price differences will shrink, with renewables predicted to become 23% cheaper than fossil fuels by 2030.<sup>26</sup> Significant net-zero pledges by influential nations such as Malaysia, Indonesia and Thailand will further spur this journey.



“ A well-managed just transition can help shield Asia from energy volatility – as well as boosting decarbonization.

State-owned enterprises (SOEs) will play a major role in delivering this change in South-East Asia. Indonesian oil and gas operator Pertamina is an SOE that is exploring more climate-friendly operating practices to drive sustainable growth and mitigate the environmental impacts of its operations. This reflects a wider regional trend for some energy players seeking to mitigate their impact on the climate while also responding to evolving regulatory, consumer and investor expectations.

Pertamina has developed a comprehensive sustainable strategy that encompasses ten key areas of sustainability focus. The strategy outlines Pertamina’s commitment to sustainable development and highlights the importance of reducing GHGs, promoting biodiversity, accelerating new and renewable energy capacity, and fostering social responsibility and corporate ethics.

To further underscore its commitment to sustainability, Pertamina has established a dedicated Sustainability Committee to oversee its sustainability policies and programmes. The committee comprises senior executives responsible for setting and monitoring the company’s sustainability targets, as well as overseeing the implementation of the sustainability policy.

At the corporate level, in 2022 Pertamina made a concerted effort to embed sustainable practices into the core of its operations through the adoption of 16 environmental, social and governance (ESG) initiatives and a roadmap towards its goal of achieving net-zero emissions by 2060. Pertamina’s Net Zero Roadmap consist of two pillars. The first is the decarbonization of business through energy efficiency, green power generation, loss reduction and the use of low- or zero-carbon fuel in fleets.

The second pillar is new green business building, through actively investing in diversifying operations to include new green energy opportunities such as biofuels, large-scale renewables, electric vehicle (EV) charging and swapping, blue and green hydrogen, nature-based solutions, carbon capture, utilization and storage (CCUS), carbon offsetting and carbon market business.

These efforts contributed to Pertamina’s ESG risk rating from the Sustainalytics Institute improving from 46.1 to 22.1, placing it second globally in the Integrated Oil and Gas subcategory and improving its CDP Climate Score from D to B in 2022. By the end of 2022, Pertamina had reduced its production of CO<sub>2</sub>e GHGs by around 7.9 million metric tons of (a reduction of over 31%) based on its 2010 baseline.

Some regions are already reaping the rewards of championing sustainable transitions (Figure 13). While policy and regulation have driven up the cost of solar and wind in Indonesia, if those restraints fell to the global average, the levelized cost of electricity (LCOE) of solar would be around 40% lower than fossil fuels.<sup>27</sup> This is just one example of how a well-managed, just transition can help shield Asia from energy volatility – as well as boost decarbonization.

Malaysian SOE Tenaga Nasional Berhad (TNB) has also set objectives to transform the national energy outlook through accelerating its sustainable transition journey. It has committed to expanding renewable energy capacity as a share of its total energy mix from 14% to 66% by 2035 as part of its net-zero vision. This will form a critical contribution to Malaysia’s Renewable Energy Roadmap, which aims to have renewable energy form 40% of generation capacity by the same year.



FIGURE 13 | The vast scale of the energy transition promises great benefits



● Conventional ○ Renewables XX Total installed capacity (GW)

Note: RE = renewable energy; JVs = joint ventures; LNG = liquefied natural gas Source: IRENA; industry reports; desktop research; BCG case experience; BCG analysis

TNB engaged a structured transition process to set sustainability as a core part of its business. It integrated climate action into its corporate governance strategy and aligned its organizational structure, introducing sustainability disclosure and reporting, and setting aside capital committed to investing in green innovation (Figure 14).

To assess its progress towards net-zero operations by 2050, TNB initiated assessment of emissions across Scope 1 and 2, with further assessment of Scope 3<sup>28</sup> value-chain emissions as it works towards achieving Science Based Targets Initiative (SBTi) accreditation.<sup>29</sup> It has identified levers to

achieve full decarbonization within its existing value chain, with accompanying growth impact analysis, including transition to solar and hydroelectric production, wind power and green hydrogen in energy generation. TNB has invested heavily in global renewable energy businesses through its TNB Renewables subsidiary to both expand its generating footprint and to spur knowledge transfer. It is also investing in smart and automated grid and distribution technologies to achieve efficiency and demand savings, and introducing new products and services enabled by digitalization in energy retail. It is further investing in value chain expansion, including EV charging infrastructure and e-mobility services.

FIGURE 14 | A planned sustainability roadmap for Tenaga Nasional Berhad



Source: Tenaga Nasional Berhad sustainability reports

“ A just transition must include support for the poorest 40% of communities, which are also suffering from rising costs and losses as a result of climate change impacts.

There are complexities that come along with the delivery of a just transition, and these must be managed carefully to ensure that necessary transformation takes place without negatively affecting the most vulnerable communities. South-East Asia faces many challenges in this regard, with wide regional socioeconomic stratification, diverse communities, geographical barriers and rapid growth reliant on high-intensity industries (Figure 15).

Efforts must be carefully focused on managing job redistribution, as roles in traditional legacy sectors such as oil and gas and mining are being disrupted. This not only triggers the need for appropriate job transition support but also has major repercussions for state revenue and the consequent investment capabilities of governments. Mining and coal alone contributed an estimated 5% of Indonesia’s total GDP in 2019.<sup>30</sup>

Protecting at-risk groups and communities is another critical challenge, with efforts to compensate or redistribute opportunities for vulnerable communities. Mining, for example, often

takes place in rural areas where it represents a significant share of socioeconomic opportunities. A just transition must include relevant support for the poorest 40% of communities, which are also suffering from rising costs and losses as a result of climate change impacts, and mitigation and adaptation efforts. This can include dedicated financial aid and investment in adaptation that take this into account.

Funding the transition itself remains a key challenge, with only 30% of annual climate funding thus far channelled into emerging and developing markets. A landmark agreement at the COP27 climate summit to establish a historic loss and damage fund offers positive movement in this direction.

Managing the impact on natural systems will form a further element of a just transition in South-East Asia – a region of rich biodiversity that is intrinsically linked to the well-being of local communities. Analysis reveals that protecting this marine and terrestrial biodiversity could deliver benefits of \$2.19 trillion<sup>31</sup> a year through job creation and nature-linked socioeconomic opportunities.

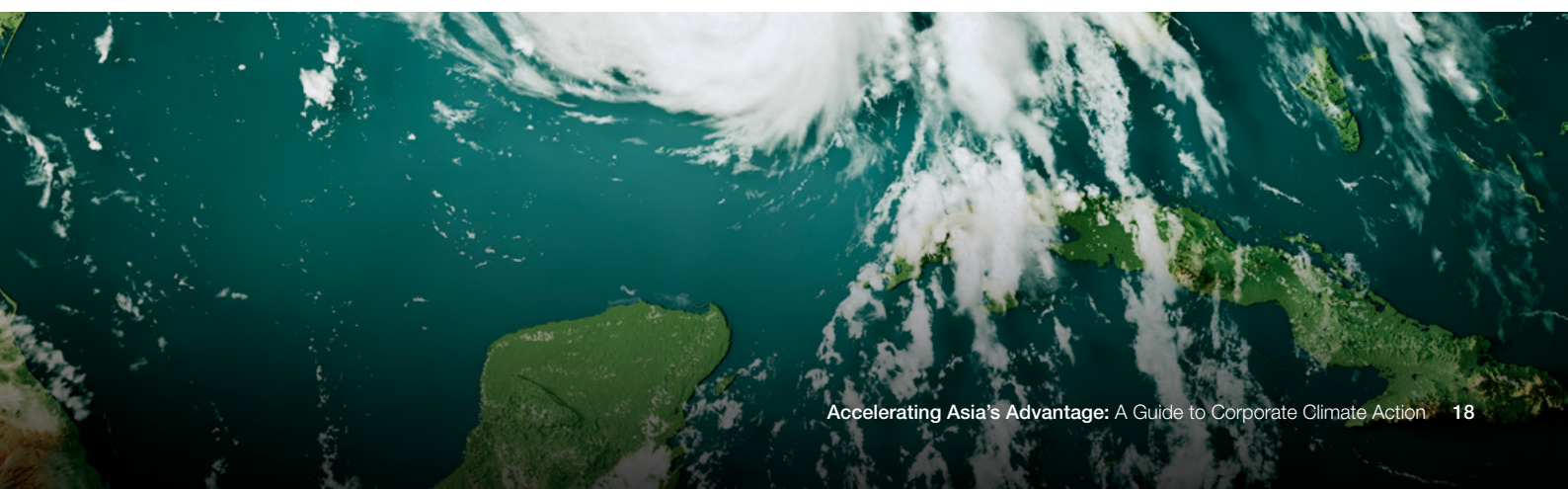
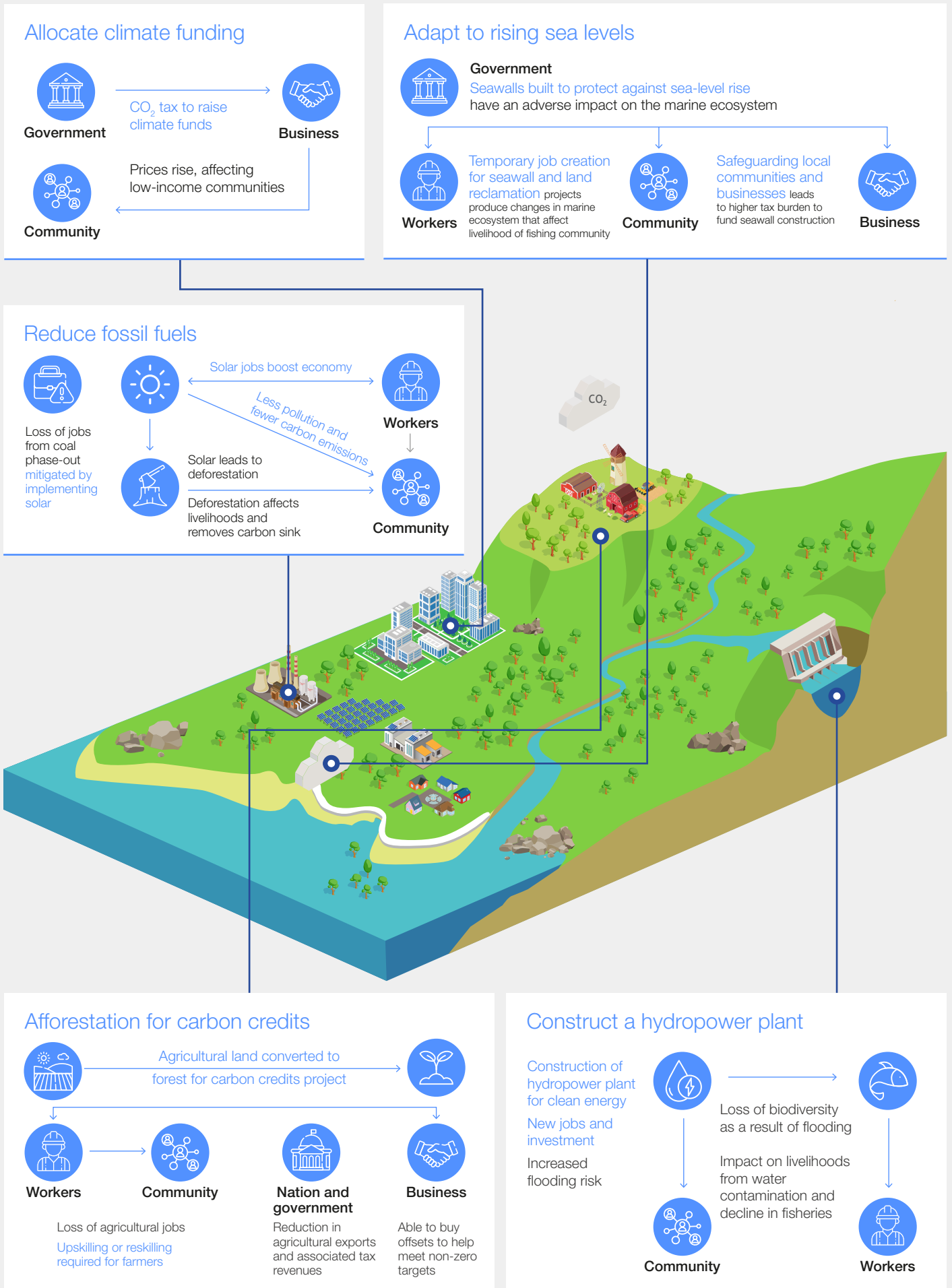


FIGURE 15 | Some of the complexities of a just transition



Source: BCG analysis

3

# The corporate climate framework

Corporate entities are responsible for an overwhelming proportion of global emissions, so it's essential for businesses to accelerate their climate action efforts.

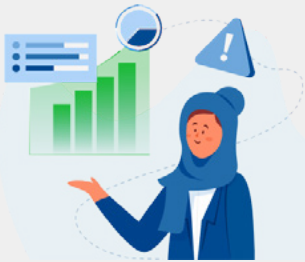
However, non-strategic, piecemeal solutions will not lead to the type or scale of change required.

A corporate climate action framework outlines the actions leaders can take immediately and in the mid-term, as well as actions to enable long-

term growth through climate action. These steps don't have to be executed in sequence – in fact, companies identified as pioneers of the best practices have often invested in different levers in parallel (Figure 16).

FIGURE 16 The corporate climate action framework

## A Take immediate actions



- 1 **Make climate action a CEO priority**  
– Ground your climate ambition in the company's purpose, demonstrating coherence to all stakeholders
- 2 **Understand climate risks – and opportunities**  
– Understand your climate risks and plan an adaption programme in line with company strategy
- 3 **Set clear decarbonization targets and specify milestones**  
– Baseline your historic and future emissions across the value chain using data and AI-enabled enterprise technology  
– Set your ambition and emissions-reduction targets on all scopes
- 4 **Implement cost-efficient solutions to tackle emissions**  
– Identify and size emissions-reduction levers  
– Deploy levers at scale

## B Enable transformation



- 5 **Mobilize organization and resources**  
– Anchor climate action in corporate governance and strategy  
– Commit and prioritize company resources to deliver against ambition and targets  
– Engage, disclose and communicate climate action
- 6 **Accelerate collaboration across the business environment**  
*Beyond individual actions, accelerate ecosystem collaboration*  
– Bring scale to address external barriers and foster collaboration to tackle Scope 3 emissions  
– Spread short-term disadvantages from still-unclear business cases and bear risks of developing unproven technologies

## C Unlock new growth



- 7 **Expand existing value chains**  
*Acquire new capabilities to reduce carbon footprint of existing value chains*  
– Technology: undertake early adoption of high-impact tech (CCU, H2, BECCS, etc.)  
– Digital: unlock full potential of digital IoT and AI solutions
- 8 **Develop new capabilities**  
*Foster new capabilities in adjacent businesses and enter new green markets*  
– Downstream expansion: include low-emission, value-add businesses to your end segments

Source: BCG and SAP

## 3.1 What to do first: immediate actions

### 1 Make climate action a CEO priority

The first action for organizations to take is the most fundamental. Environmental and sustainability goals must become a foundational part of the business and, as such, must be inherently grounded in an organization's purpose and led by the CEO.

That's not as simple as changing the words in a stated mission or purpose, but it requires clear, coherent and consistent communication of climate ambition through top management, external statements and internal strategies and policies.

### 2 Understand climate risks – and opportunities

It's a cliché but nonetheless true that businesses can manage only what they can measure.

Organizations must understand the scope and scale of their climate risks and opportunities before planning their adaptation and mitigation programmes in line with their company strategy.

To do this, businesses should pull data from a wide array of sources, including proprietary and public sources, and use it to prepare a variety of plans. It's critical to recognize that no scenario is certain, so running simulations and stress-testing hypotheses for multiple different futures is necessary, as is prioritizing risks based on climate exposure and ranking key opportunities for action. These climate strategies should be openly and widely communicated to stakeholders.

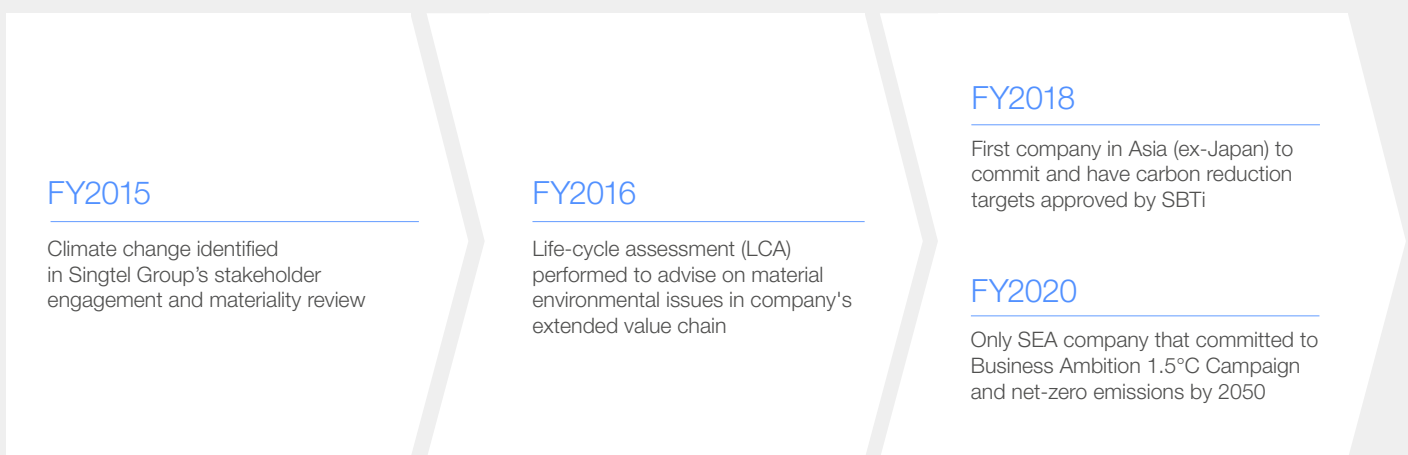
### 3 Set clear decarbonization targets and specify milestones

Whatever an organization's climate action maturity, it should be clearly setting and measuring targets and milestones for decarbonization based on both its unique circumstances and industry standards. Baseline historic and future emissions across the value chain can be achieved by using data and AI-enabled enterprise technology.

For organizations just starting out on this journey, it could be as simple as beginning to measure emissions at a high level, as well as setting a long-term ambition aligned to peers or a short-term target with limited scope. As maturity increases, organizations can increase the accuracy, granularity and exhaustiveness of measurement across Scopes 1 and 2 and part of Scope 3. Targets can be increased in line with this development, and ambitions aligned to science-based targets (SBT).

Best-practice organizations should be targeting full carbon accounting across their businesses – and using the data to inform their decision-making. Long-term ambitions should align to an SBT of 1.5°C, include a detailed roadmap to achieve that ambition and include emissions across their full value chain (Figure 17).

FIGURE 17 SingTel's climate action evolution



Source: SingTel

#### 4 Implement cost-efficient solutions to tackle emissions

Once a strategy is in place, it's time to put the data and insights to use. Businesses can identify emissions-reduction opportunities and begin to implement them. Start with "low-hanging fruit" and plan next steps and longer-term levers that require technological or business-model change.

By classifying and prioritizing solutions based on competitive advantage, such as reducing costs or differentiating products, businesses can focus on getting the biggest return on investment. Levers can then be deployed at scale. Examples of best practices include infrastructure company Keppel Land saving \$383,000 per annum through green and eco-design technologies, or Bangchak Corporation realizing an additional \$26 million of EBITDA (earnings before interest, taxes, depreciation and amortization) through new biofuel products.



### 3.2 What good looks like: Zuellig Pharma drives impact through transparent targets

The mission of Zuellig Pharma, one of the largest healthcare services groups in Asia, is to make healthcare more accessible to the communities it serves. It provides world-class distribution, digital and commercial services to support the growing healthcare needs in the region. The company, which was started 100 years ago, has grown to become a \$15 billion-plus business covering 16 markets with more than 13,000 employees, serving more than 350,000 medical facilities and working with 500+ clients, including the top 20 pharmaceutical companies in the world.

Zuellig Pharma's decarbonization journey is founded on transparency and external validation. Its general disclosure and key sustainability metrics, including its GHG emissions data, are verified by Bureau Veritas.

Reducing its environmental impact is a significant part of Zuellig Pharma's mission as it seeks to secure the well-being of future generations. Mitigating climate change is key to that overarching effort. First, the business clearly aligned its purpose with climate action, working on twin ambitions to make healthcare more affordable while becoming a sustainable organization.

As a key player in the pharmaceutical supply chain, Zuellig Pharma recognizes its potential to play a significant role in addressing the climate crisis through decisive action. It is committed to reducing its GHG emissions and increasing its energy efficiency. To hold itself accountable, it committed

to the Science Based Targets initiative (SBTi) in 2021 and worked with an external consultant to set science-based targets aligned to a 1.5°C scenario, as well as to develop a carbon-reduction roadmap. Its near-term targets were validated by the SBTi in 2022. These targets include reducing its Scope 1 and 2 emissions by 42% and its Scope 3 emissions by 25% from the base year of 2020.

In addition, Zuellig Pharma aims for its own operations to be carbon neutral by 2030 and has also committed to obtain 30% of its energy from on-site renewable resources by the same year. While offsets might be necessary to achieve these targets, the company's primary focus is on reducing its emissions. It has mapped out and will be looking at further opportunities to reduce its energy consumption, improve its energy efficiency, increase the use of renewable energy and work with its suppliers to reduce its material value chain emissions. The company's approach is based on a granular understanding of its emissions and an eight-year carbon reduction investment plan built around selected initiatives with the support of external consultants.

Zuellig Pharma next invested in understanding its climate impact. As part of its GHG assessment, it has screened all Scope 3 categories listed by the GHG Protocol to identify those relevant to its activities, with both upstream and downstream emissions being tracked. It was able to identify that 65% of its total emissions came from upstream transportation and distribution, while

more than 80% of its energy consumption came from electricity use in its facilities. It also identified commuting as another opportunity, generating 8% of total emissions.

This data is being used to drive targeted incremental improvements. A few examples include: moving most of its regional services from on-premise hosting to cloud-based Microsoft Azure data centres, which is up to 93% more energy

efficient and up to 98% more carbon efficient than on-premises solutions; opening its first LEED (Leadership in Energy and Environment Design)-certified warehouse, supplied by 10,000 square metres of solar panels; and piloting an exclusively solar-powered transportation fleet estimated to be able to generate more than 1.5 mKWh (million kilowatt-hours) of clean energy per year, equivalent to 1,156 metric tons of CO<sub>2</sub> and 375,000 litres of diesel saved, if scaled up nationwide.

**FIGURE 18** Zuellig Pharma is reaping the rewards of climate action

GHG emissions (tCO<sub>2</sub>e)



Source: Zuellig Pharma sustainability report

The positive results have been clear. Zuellig Pharma has reported a 7% reduction in overall carbon emissions, including 4 million kWh of energy savings (Figure 18). More than 5% of its energy is now sourced from certified renewable sources, providing a reduction of 14.7 million metric tons of emissions. There was a 75% increase in renewable energy use, powering operations in Taiwan, Vietnam, Malaysia and the Philippines with self-generated solar-power, and there was a 20% reduction in waste, with 551 metric tons attributed to recycling programmes.

These achievements are being recognized by the community. Zuellig Pharma first received a Gold certification from sustainability ratings specialist EcoVadis in 2021 for its focus on sustainability management. It then received an EcoVadis Platinum award in 2021 and again in 2022, placing it in the top 1% of all assessed companies worldwide.



## 3.3 Enabling transformation in the medium term

### 5 Mobilize organization and resources

The next step towards climate action maturity is to embed sustainability throughout the organization, from the top down. This demands a systemic approach.

At a leadership level, organizations must anchor their climate action strategy in corporate governance. Steering committees for sustainability should advise the board and executive committee to ensure that climate is embedded in strategic decision-making. Actions such as setting internal carbon prices, including climate risk in new business cases and communicating climate targets and milestones are critical.



**At GoTo, our sustainability function serves as a crucial part of company-wide risk management and decision-making. This builds GoTo's institutional capacity to understand what is material to each business line, what are the shifts needed to credibly respond and how it contributes to each Three Zero by 2030 roadmap. This ensures sustainability is truly integrated into each and every team in GoTo, and helps the entire company collectively work towards the same goals.**

Tana Sullivan, Chief Sustainability Officer, GoTo Group

#### BOX 2

#### Sembcorp embeds climate action into governance

Singapore's Sembcorp provides a good example of embedding climate into governance, creating sustainability and climate change committees reporting to the board, and setting ESG performance incentives for senior executives.

The organization uses risk-based scenario analysis in investment decisions and is moving to achieve reduced emissions by transforming its portfolio from fossil fuels to green energy, and growing renewable capacity.

But action without investment is doomed to fail. Organizations must commit and prioritize company resources to deliver against climate targets. That means not only securing funds but also aligning targets to performance, allocating money to training and identifying and promoting core centres of expertise (Figure 19).

accepted standards including those of the International Capital Markets Association and the Loan Market Association.

Indorama Ventures, a global chemical company headquartered in Thailand, issued a THB10 billion (\$262 million) triple-tranche sustainability-linked bond (SLB) in 2021, aligned with internationally

The SLB is linked to an independently verified assessment of Indorama Ventures' performance in reducing GHG emissions-intensity by 10% by 2025 (from a 2020 base),<sup>32</sup> increasing recycling of certain plastic inputs to 750,000 metric tons per year by 2025, and achieving 25% renewable electricity consumption by 2030.







Source: BCG and SAP

Those principles and programmes have to be clearly and consistently communicated to major internal and external stakeholders. Climate action communication can be a tricky subject, with accusations of greenwashing rife.







Climate communication must first and foremost be credible – supported by tangible action, feasible targets and verified results and plans. But it must also be consistent and comprehensive, tailored to an organization’s business and inspiring enough to express why the actions taken should matter. And the actions must be focused on corralling decision-makers and stakeholders around a singular ambition.

### 6 Accelerate collaboration across the business environment

Climate action cannot be taken alone. Organizational responses to climate must go beyond individual action; they should serve not just to accelerate business but also lead to collaboration across the business environment (Figure 20).

Businesses must understand the climate impact of both their upstream and downstream stakeholders, from suppliers, customers and competitors to regulators and investors.

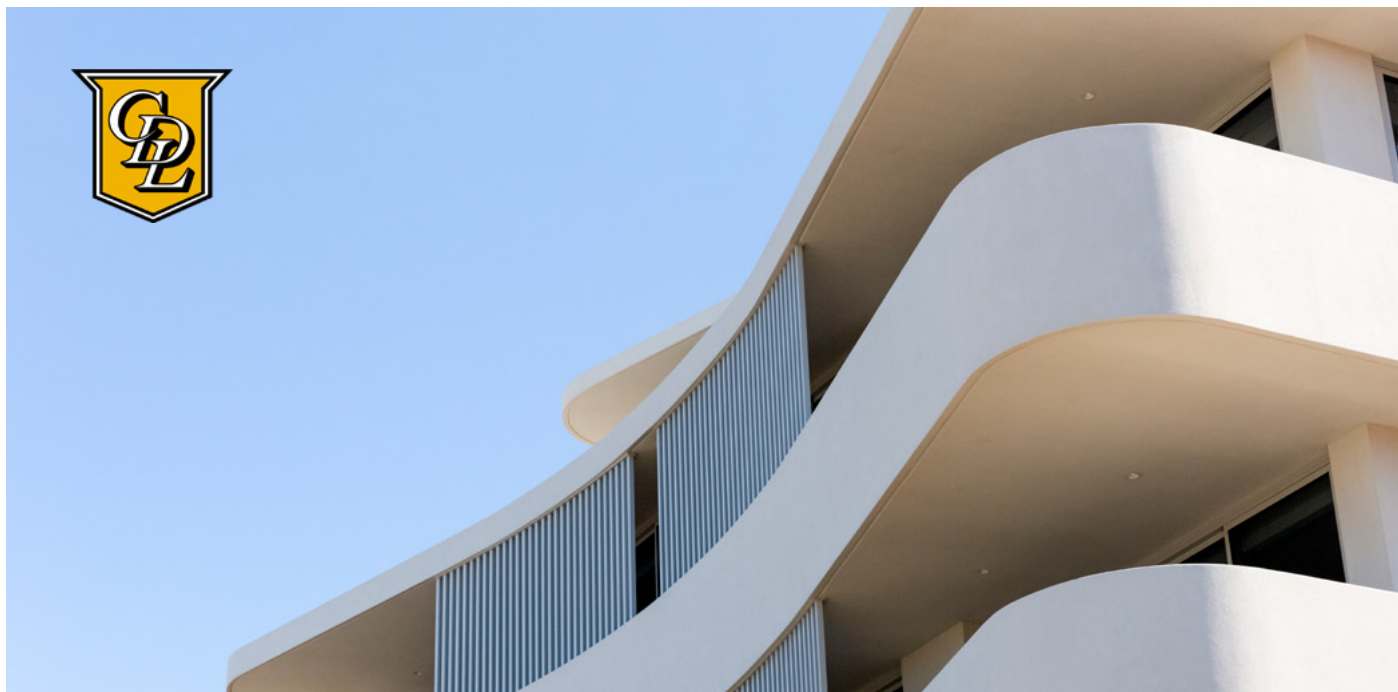
FIGURE 20 | Climate action requires collaboration across the system

 <p><b>Suppliers</b> Address Scope 3</p> <ul style="list-style-type: none"> <li>– Include climate action in supplier evaluation</li> <li>– Push for disclosure (especially detailed baseline)</li> <li>– Support their decarbonization journey (e.g. co-development, expertise-sharing...)</li> </ul>	 <p><b>Regulator</b> Advocate sectoral needs</p> <ul style="list-style-type: none"> <li>– Be explicit on policy changes needed to create a level playing field</li> <li>– Provide transparency on consequences of insufficient changes</li> </ul>	 <p><b>Competitors</b> Collaborate on climate</p> <ul style="list-style-type: none"> <li>– Develop sector methodologies and metrics</li> <li>– Implement simultaneously “first-mover disadvantage” levers</li> <li>– Scale abatement technologies</li> </ul>
 <p><b>Investors</b> Collaborate on climate</p> <ul style="list-style-type: none"> <li>– Showcase climate action as value-creation driver</li> <li>– Disclose decarbonization targets, actions, progress and barriers</li> </ul>	 <p><b>Customers</b> Enlist in climate journey</p> <ul style="list-style-type: none"> <li>– Educate through communication campaigns</li> <li>– Push for disclosure (especially detailed baseline)</li> <li>– Support their decarbonization journey (e.g. co-development, expertise-sharing...)</li> </ul>	 <p><b>International organizations</b> Facilitate broader mobilization</p> <ul style="list-style-type: none"> <li>– Learn from the best-in-class</li> <li>– Get expertise on specific levers (e.g. NCS)</li> </ul>

Source: BCG and SAP

Singaporean aviation services company SATS is using its position in a carbon-intensive business environment to drive a core commitment to sustainability. The organization has focused on creating a resilient supply chain by including environmental criteria in its supplier code

of conduct, and measuring supplier ESG performance. It has also run sustainability training for its customers and reduced plastic consumption for every Singapore Airlines customer by 80%.



### 3.4 | **What good looks like: City Developments Limited invests to address emissions across the value chain**

“ CDL has long focused on sustainable growth, understanding the real estate industry’s position as a significant cause of global emissions.

City Development Limited (CDL) is one of the world’s largest real estate companies, with a network spanning 143 locations in 28 countries and regions. Based in Singapore, CDL has 60 years of experience developing homes and buildings, as well as running hotel chains around the world.

CDL has long focused on sustainable growth, understanding the real estate industry’s position as a significant cause of global emissions. It has embedded climate action into its governance, introducing its climate change policy in 2015 and committing to reduce its carbon emissions by a quarter by 2030. It is also the first real estate developer in Singapore to join the World Green Building Council’s Net Zero Carbon Buildings Commitment.

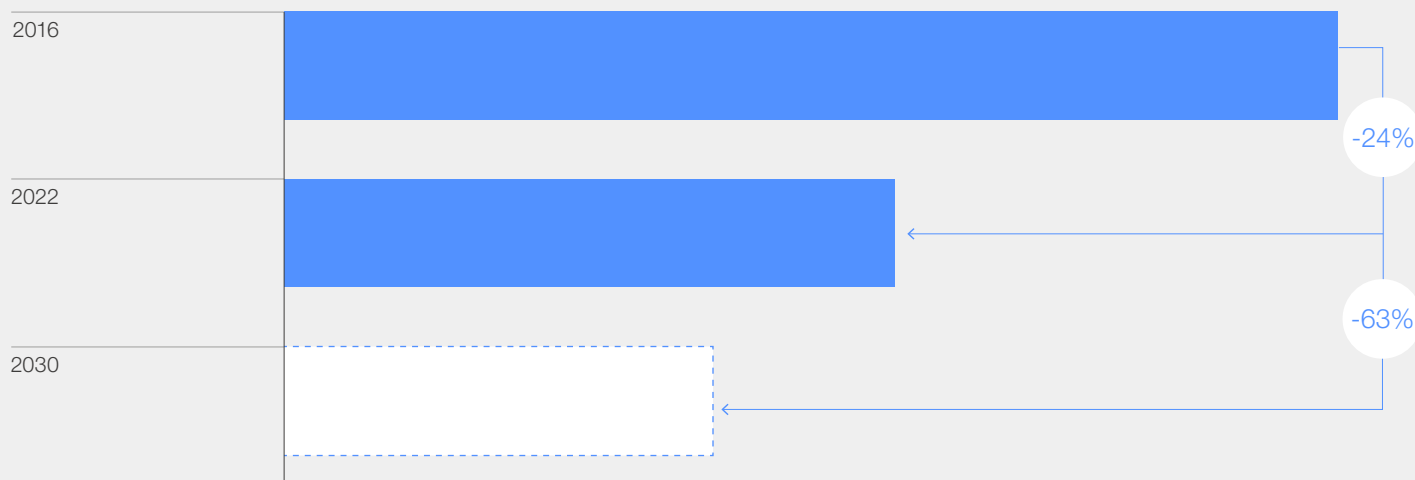
The company has also funded, completed and publicized climate change studies for five countries (Singapore, China, the UK, the US and New Zealand) for the real estate industry based on 1.5°C, 2°C and 4°C scenarios.<sup>33</sup>

It has focused on investment across design, procurement and operations of its real estate assets. In terms of design, CDL has not only looked towards passive strategies to reduce heat gain but also introduced new innovations such as integrated photovoltaics, which convert light into energy. It is using recycled concrete aggregates and washed copper slag to replace aggregates for concrete production in its construction . It is also upgrading high-consumption assets such as lifts or chillers, replacing them with lower-energy modernized versions.

Through dedicated tracking, monitoring and improvements in energy efficiency, CDL has achieved cost savings of more than SGD \$38 million from reduced energy expenses across all managed properties since 2012.<sup>34</sup>

This leadership is being shared across the country and across industries. CDL is among the pioneering firms included in the first 87 companies who support the Business Ambition for 1.5°C campaign in Singapore.<sup>35</sup>

GHG emissions per m<sup>2</sup> leased area



Source: City Development Limited sustainability report

CDL has been widely recognized for its climate progress. The company has driven a 24% reduction in CO<sub>2</sub> emissions-intensity per unit net-lettable floor area since 2016, and has secured more than \$3 billion in sustainable financing over the past five years (Figure 21). For those achievements,

CDL has been ranked top real estate firm by Corporate Knights<sup>36</sup> and has maintained Double As in CDP for climate change (since 2018) and water security (since 2019) as well as being awarded CDP Supplier Engagement Leader for the third consecutive year.

### 3.5 Unlocking new growth

#### 7 Expand existing value chains

Businesses across Asia should view climate action not only as a means of reducing harmful activity but also as a way to create new value, spur new revenue streams and unlock new growth.

First, businesses can do this within their existing value chains, though these opportunities are often unique to each industry and organization. However, by segmenting components of the core value chain, businesses can apply new ideas and innovation to each area to create new opportunities.

A good example is GoTo Group, a digital business in Indonesia comprising on-demand, e-commerce and financial services through the Gojek, Tokopedia and GoTo Financial platforms. The company has begun to integrate sustainability across its organization and ecosystem through its Three Zeros (zero emissions, zero waste and zero barriers) by 2030 commitments. For instance, as part of its zero emissions roadmap, GoTo is making strategic operational shifts across its business lines as well as

facilitating credible, tested solutions for the millions of partners across its business.




The company has begun to switch its two-wheel vehicles in Indonesia to low-emission alternatives. It also aims to transition to a 100% EV fleet by 2030, and has established Electrum – a joint venture with energy company PT Karya Baru TBS – to accelerate the development of the country’s EV ecosystem. For its fleet operations, it is integrating AI-enabled software to improve efficiency through smarter allocation of drivers.

#### 8 Develop new capabilities

Climate action also offers organizations the potential to explore emerging solutions and new business models, transforming what was once a fundamental challenge into an engine for new growth (Figure 22).

Businesses will need to assess the relevant opportunities based on the timeframes within which they are able to work and the proximity to their core business.

FIGURE 22 | Turning climate challenges into business opportunities

		Feasibility	
		Near-term	Long-term
Proximity to core business	 <b>New</b>	<b>1</b> Acquire new capabilities to tap into new high-growth themes  E.g. explore potential <b>investments and entry strategies</b> in <b>carbon value chain</b> (via alliances, JVs)	E.g. <b>bioproducts</b> in high carbon cost economy: substitute fossil products (e.g. <b>bioplastic, green building materials</b> )
	 <b>Adjustment</b>	<b>2</b> Develop new capabilities in adjacent businesses  E.g. explore potential plays in <b>BECCS</b> to become a <b>carbon-neutral energy supplier</b>	E.g. explore other <b>negative-emission technologies</b> , build biomass/waste <b>trading business</b>
	 <b>Core</b>	<b>3</b> Apply existing capabilities in non-core areas  E.g. <b>implement avoided deforestation</b> to build nucleus carbon offset portfolio	E.g. plan and execute <b>reforestation projects</b> , lean into <b>sustainable forestry</b> and agriculture practices

**Note:** JVs = joint ventures; BECCS = bioenergy with carbon capture and storage **Source:** Company websites; BCG analysis

Terrascope, backed by Olam Ventures and built with support from BCG X Ventures, is one example. The platform enables businesses to measure and manage their carbon footprint with precision. Using machine learning to process, analyse and visualize emissions data in simple dashboards, it allows for

informed decisions regarding emissions reduction and identification of opportunities for sustainable growth. Since its launch less than a year ago, Terrascope has worked with large enterprises across 12 industries and measured more than 350 million metric tons of emissions.



### 3.6 What good looks like: Olam combines digital transformation and climate action

Headquartered in Singapore, Olam is one of the world's leading food and agribusinesses, supplying food, ingredients, feedstuffs and fibre to more than 20,000 customers across 60 countries worldwide.

Through its purpose – to “Re-imagine Global Agriculture and Food Systems” – it aims to address many challenges involved in meeting the needs of a growing global population, while achieving positive impacts for farming communities, the planet and Olam’s stakeholders.

The company has been involved in climate action for several years and has been reporting to the CDP since 2017. It has committed to SBTi targets,

including for its Scope 3 emissions, and has pledged to support the Business Ambition for 1.5°C campaign.

In making climate action a top priority, Olam has committed to reach net-zero emissions by 2050. With its customer and partners, it continues to make progress on addressing its climate impacts, protecting ecosystems and biodiversity, enhancing water stewardship, reducing food loss and waste, and regenerating soil.

It is focused on reducing its carbon footprint and, in line with the SBTi FLAG (Forest, Land and Agriculture) guidelines released in 2022, is

developing its near-term targets, segmented into FLAG and non-FLAG.

To support the development of the upcoming GHG Protocol Land Sector and Removal Guidance, Olam participated in a pilot study coordinated by the World Business Council for Sustainable Development (WBCSD) to refine the accounting methods for stored carbon in biogenic products (such as wood), removal activities implemented at the supply shed level, and land use change.

Olam also collaborated with 14 of the world's largest agri-commodity traders to develop the Agriculture Sector Roadmap to 1.5°C, launched at COP27 in November 2022, towards reducing emissions related to land-use change and supporting forest-positive sector transformation. The roadmap will strengthen processes and collaboration for more transparent and forest-positive supply chains.

The company is transforming its business and supply chains to decarbonize and mitigate the impact of a changing climate. To achieve this, it has been working with Terrascope – an enterprise-grade, end-to-end, smart carbon measurement and management SaaS (software-as-a-service) platform – to measure its carbon footprint across three Scopes – direct emissions from owned or controlled sources (Scope 1), indirect emissions from purchased energy (Scope 2) and indirect emissions that occur in the value chain (Scope 3).

Olam is also working to reduce emissions in its third-party supply chains that are associated with farming practices and support climate resilience. The approach focuses on four areas:

**Adaptation:** helping farmers adapt to the impacts of climate change by improving their skills to implement better farming practices, and their access to technology such as irrigation equipment and higher-yielding, climate-resilient seed varieties.

**Resilience:** enabling farmers to increase their household incomes by promoting crop diversification, as well as other income opportunities such as beekeeping. Additionally, Olam is strengthening local farmer cooperatives, improving access to savings and loans facilities, and crop insurance.

**Regeneration:** through improved crop rotation, composting, mulching, soil erosion control, integrated soil fertility management and integrated pest management, helping farmers to regenerate their soils and ecosystems.

**Reduction:** reducing emissions by sequestering carbon in soils and trees through regenerative agriculture, agroforestry and reforestation initiatives; reducing post-harvest loss from improper processing, drying and storage; and reducing methane emissions from rice farming through better water management practices.

To reduce methane emissions from rice production, Olam has introduced climate-smart agriculture practices such as AWD (alternate wetting and drying), laser land levelling, site-specific nutrient management, and better straw and stubble management. Building on successes with rice farmers in Thailand since 2018, the initiative has expanded to Viet Nam, India and, now, Nigeria.

Improving soil is fundamental to meeting climate and biodiversity goals. To identify hotspot areas, in 2022, Olam harnessed geospatial tools and looked at indicators for soil moisture, NDVI (Normalised Difference Vegetation Index), soil organic carbon, fire incidence and canopy cover loss across the five-year period from 2016 to 2021. These will be followed by ground-level studies in identified hotspot areas and developing context-specific regenerative agriculture.

Olam is helping smallholder farmers implement practices to reduce post-harvest losses, which, in turn, reduce emissions and increase farmers' sales. In 2022, it assessed the baseline across rice, quinoa, sesame and other crops in a dozen supply chains around the world, and is now piloting adapted technology, such as improved storage bags, simple moisture tests and modified scythes, to reduce losses.

Olam is also at the forefront of integrating digital applications with climate action. The company introduced its AtSource application, a sustainability insights platform giving customers rich data, advanced footprinting and granular traceability across agricultural supply chains. It also launched the Olam Farmer Information System, which uses GPS and survey data, providing farmers with better insights and reporting about their farm holdings.



4

# Follow your ambitions with committed actions

Asia will be central to the world's decarbonization response.

Unmitigated climate change is the biggest threat facing the world. The global economy could lose more than 18% of current GDP if no action on climate change is taken. And the impact would be significantly higher in Asia, at almost 26%.

Asia drives not only global economic growth, but global emissions, too. And, while progress is being made to mitigate and adapt, the response from government and business is not meeting the challenge today.

The expansion of the Asian middle class has undoubtedly improved quality of life in the region. Policy-makers and corporations must serve these people who are expected to consume larger amounts of energy, products and services as they become more prosperous. Balancing climate impact while providing the energy and infrastructure for the Asian continent to develop requires an investment of trillions of dollars each year. This level of investment cannot be achieved through public capital alone. The choice for businesses is stark – their organizational future is dependent on the action they take and investments they make today to realize climate outcomes.

It is clear that Asian businesses face varied challenges and opportunities. The solutions they implement must be tailored to meet those variables. It is thus vital to create uniquely Asian climate action to meet broader, global demands.

Leaders should not feel that climate action is solely concerned with existential warnings of doom. There are clear opportunities for organizations to boost brand perception, tap new markets and customers via innovative business models, and drive competitive advantage within and beyond existing value chains.

This requires more than making pledges on the world stage and stating net-zero ambitions at summits, though these actions are important. It demands a strategic transformation based on clear immediate, medium- and long-term actions.

It is time for Asian corporate leaders to make bold changes for the good of their businesses and the region. Action is needed to make pledges a reality.



# Contributors

## Boston Consulting Group

**Andrey Berdichevskiy**  
Partner & Associate Director

**Artak Mikaelyan**  
Consultant

**Marc Schmidt**  
Managing Director & Partner

**Mai Vu**  
Associate

## SAP

**Apoorv Bhatnagar**  
Regional Head of Value Advisory,  
South-East Asia

**Abhinav Singhal**  
Vice-President and Head of Strategy,  
Asia Pacific & Japan

**Paul Thompson**  
Head of Content Strategy,  
Asia-Pacific & Japan

## Acknowledgements

**Neeraj Aggarwal**  
Managing Director & Senior Partner, Chair,  
Asia-Pacific, Boston Consulting Group

**Clara Chung**  
Head of Business Engagement Asia-Pacific,  
World Economic Forum

**Michel Frédeau**  
Managing Director and Senior Partner,  
Boston Consulting Group

**Ramya Krishnaswamy**  
Head of Institutional Communities and ESG  
Initiative, and Member of the Executive Committee,  
World Economic Forum

**Joo-Ok Lee**  
Head of Regional Agenda Asia-Pacific, and  
Member of the Executive Committee,  
World Economic Forum

**Paul Martin Marriott**  
President, SAP Asia-Pacific & Japan, SAP

**Gim Huay Neo**  
Managing Director, Centre for Nature and Climate,  
World Economic Forum

**Cornelius Pieper**  
Managing Director and Senior Partner,  
Boston Consulting Group

**Daniel Schmid**  
Chief Sustainability Officer, SAP

**Dave Sivaprasad**  
Managing Director & Partner, SEA Climate and  
Sustainability Lead, Boston Consulting Group

**Sebastian Steinhäuser**  
Chief Strategy Officer, SAP

**Pim Valdre**  
Head of Climate Ambition Initiatives,  
World Economic Forum

## Production

### Studio Miko

**Laurence Denmark**  
Creative Director

**Sophie Ebbage**  
Designer

**Oliver Turner**  
Designer

### Astra Content

**Alison Moore**  
Editor

# Endnotes

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**World Economic Forum**  
91–93 route de la Capite  
CH-1223 Cologny/Geneva  
Switzerland

Tel.: +41 (0) 22 869 1212  
Fax: +41 (0) 22 786 2744  
contact@weforum.org  
www.weforum.org