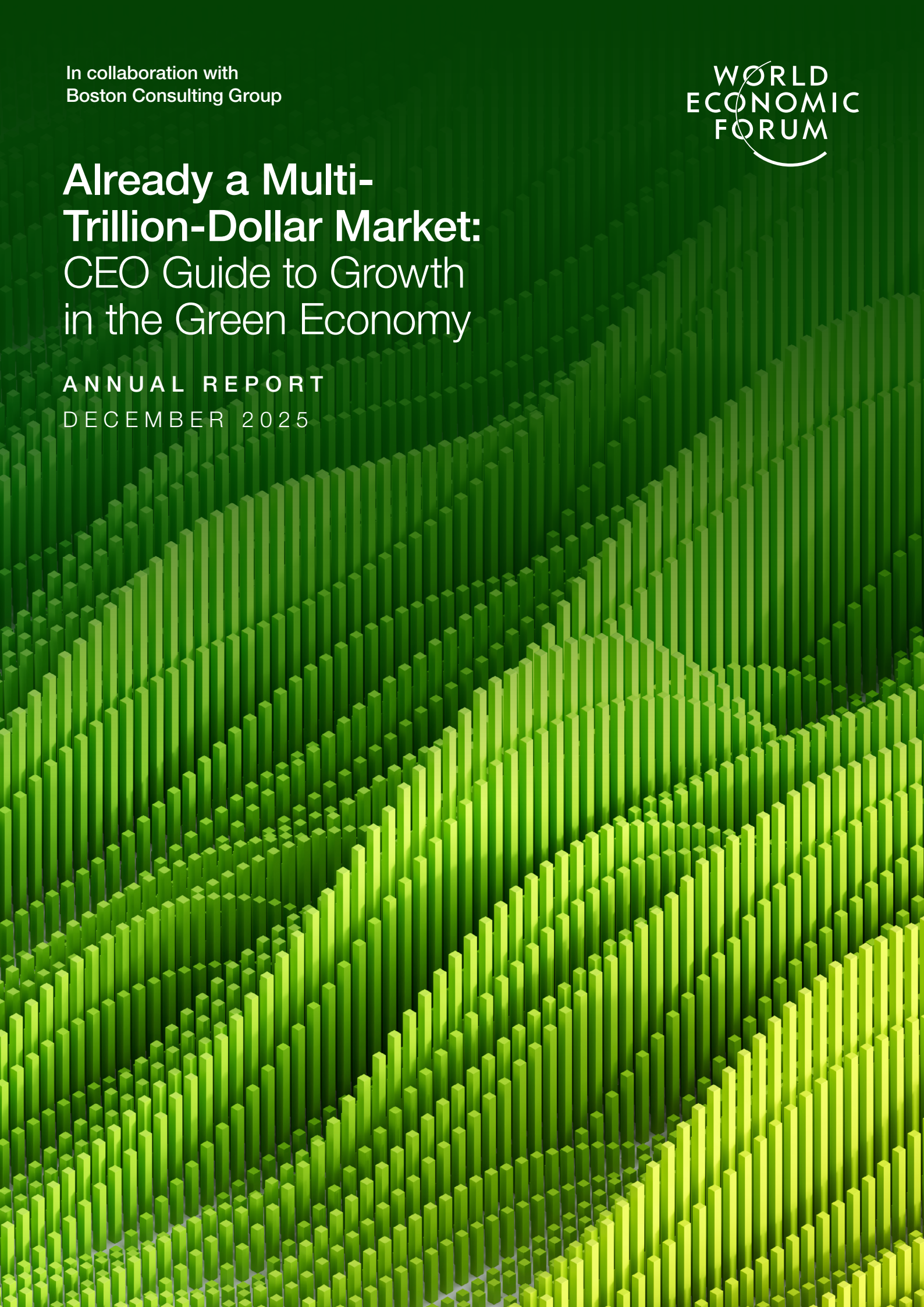
In collaboration with
Boston Consulting Group

WORLD ECONOMIC FORUM

Already a Multi-Trillion-Dollar Market: CEO Guide to Growth in the Green Economy

ANNUAL REPORT

DECEMBER 2025



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Foreword

Pim Valdre
Head, Climate and Nature Economy; Member of the Executive Committee, World Economic Forum

Patrick Herhold
Managing Director & Senior Partner, Boston Consulting Group

Recent headlines may suggest that the climate transition is stalling. The macroeconomic context, regulatory environment, permitting bottlenecks and softer public support have brought additional uncertainties. At the same time, some green technologies have not lived up to early promises (mainly when looking at cost projections), while market valuations in nascent technologies such as low-carbon hydrogen have experienced a sharp drop.

Yet, overall growth in the green economy has not wavered. On the contrary, investments in green technologies keep jumping from record to record – the green economy now represents a multi-trillion-dollar market and is exceeded in growth rate only by the technology sector. It is set for more growth as the costs of these technologies come down further. And companies operating in these markets often outperform and typically earn a premium in capital markets.

In last year's report, we discussed the steep cost of climate inaction – delaying investments in mitigation and resilience today will cost governments and companies far more, over time, than investing today. This year's report is a reminder that the green economy continues to represent one of the biggest growth opportunities on the planet. Drawing on the experiences of members of the World Economic Forum's Alliance of CEO Climate Leaders, who have successfully scaled up their green businesses and navigated common pitfalls, we hope to share valuable inspiration and lessons for those seeking to build successful businesses in this sector. This report encourages companies to act boldly and capture the value offered by the green economy.

Executive summary

The green economy is worth over $5 trillion per year – the world's most dynamic growth sector after technology. Winners in this market push for tech maturity and cost efficiency, shape their ecosystems and unlock smart capital.

The green economy is already a multi-trillion-dollar market and one of the biggest growth opportunities on the planet. In 2024, this global market surpassed $5 trillion in annual value, after a decade of unprecedented momentum from both the private and public sectors. Today, climate investments continue to grow, despite a diverging global environment. Recent geopolitical developments, energy security considerations and short-term economic pressures have shifted the conversation on climate action. But actual investments in the green economy continue to increase. The market is currently projected to exceed $7 trillion by 2030, making the green economy one of the most dynamic growth sectors on the planet – second only to technology.[1]

Yet green markets are moving at different speeds. Low-emission technologies and adaptation solutions are here to stay. But while the direction seems clear, momentum and speed vary significantly across technologies and regions. Proven and economic solutions such as solar, wind, batteries and electric vehicles will continue to grow across most geographies, albeit at different paces. More immature and costly technologies such as low-carbon hydrogen and carbon capture, utilization and storage (CCUS) may not – as they still require favourable and often much more local regulation.

Geographically, the green economy is increasingly led by China, which is consistently outspending, outproducing and out-deploying other countries. Adaptation and resilience solutions now account for more than one-fifth of all climate-related investments. The resulting market extends beyond the Global South, long the frontline of climate impacts, into the Global North, where risks are mounting as rapidly. The global opportunity has not got smaller, but the need to understand fundamental market needs, economics and regulatory environments in different geographies has become much more important for navigating it.

For those making bold moves in the green economy, the bet seems to be paying off. Companies in the green economy often outperform. On average, they manage to grow green revenues two times faster than conventional revenues, typically get access to cheaper capital, build competitiveness for the future and accordingly are often valued at a premium on capital markets.

Nonetheless, winning in the green economy is not always easy. At its core, growing in this market requires the same business fundamentals as any successful venture: a clear purpose and strategy, a compelling value proposition and an agile operating model built for rapid scale. But often, it needs more. Winning companies accelerate growth by rigorously pushing for technology maturity and bringing down costs of nascent technologies. They are often able to shape favourable regulation and mobilize early adopters. And they are able to unlock smart capital in support of a viable business case for their green offering.

Investments in decarbonization and resilience are not just essential for communities around the world. In many cases, they are a winning business strategy. The green market is already a massive opportunity and there is plenty of unmet future demand for companies to serve. Further, it provides a material opportunity for governments to accelerate GDP growth, push innovation, strengthen resilience and create jobs. Two years ago, in the World Economic Forum's *Winning in Green Markets: Scaling Products for a Net Zero World*, we argued that pioneering in green markets is a bet that would pay off and that large-scale green markets would become a reality proving the business case. Reality has not disappointed.

1 The green economy continues to grow

The green economy surpassed $5 trillion in value last year. By 2030 it is projected to grow to over $7 trillion, despite a diverging global environment.

$5 trillion industry second only to technology in growth rate

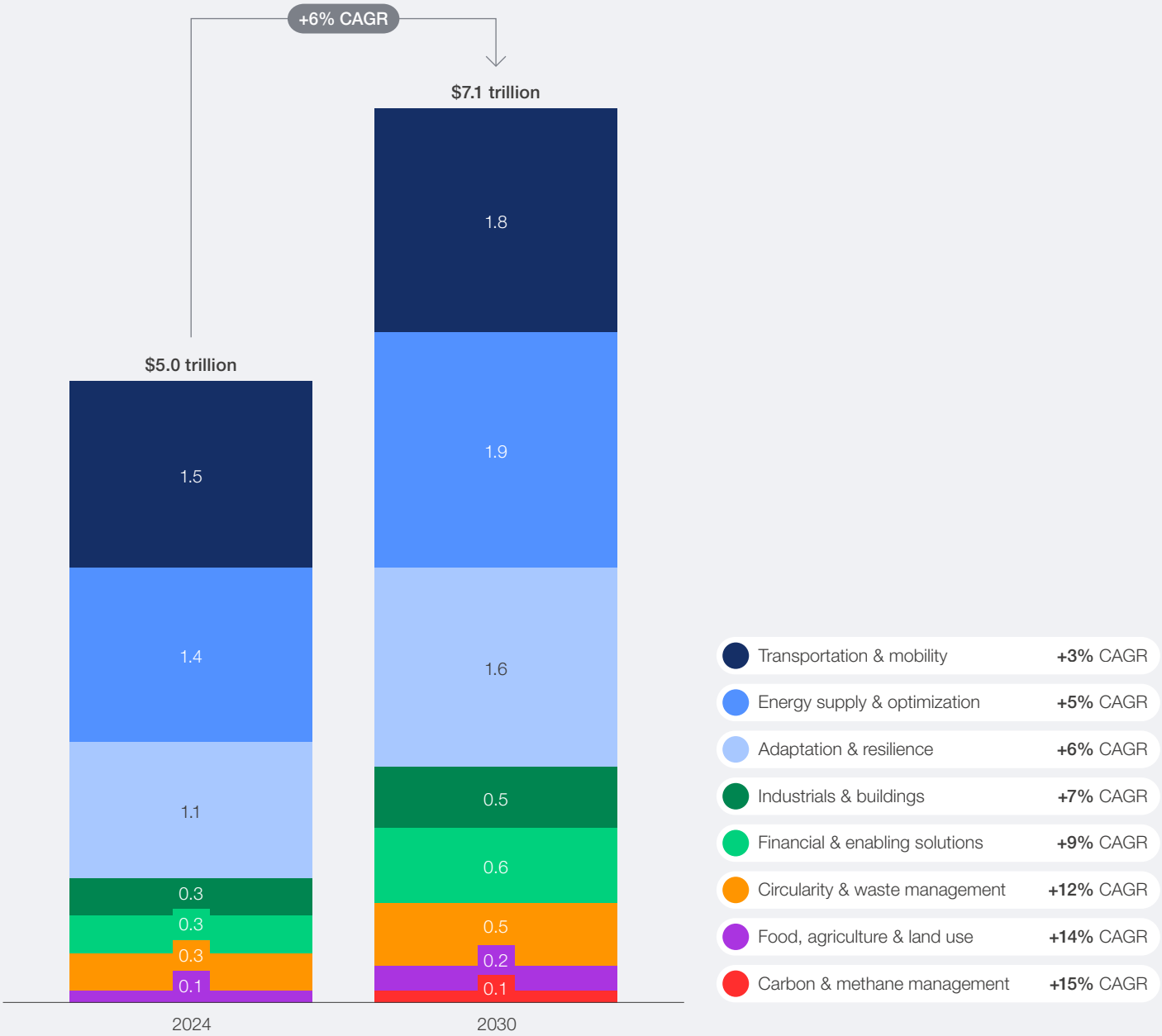
Decades of technology progress and years of strong momentum in global climate action have made the green economy one of the most dynamic growth sectors on the planet. In 2024, the green economy surpassed $5 trillion in annual value and – despite a recent shift in the global environment – is set to exceed $7 trillion by 2030.[2] For businesses, this market offers major opportunities for resilient growth.

Mitigation has driven the majority (78%) of this value to date – led by transportation and mobility, which account for 30% of total revenue from green markets. Adaptation and resilience have also gained traction, accounting for 22% of total demand – driven primarily by climate-adapted agri-inputs, resilient construction materials and cooling technologies (see Figure 1).

FIGURE 1 **Green economy – expected evolution (2024-2030)**

The green economy has surpassed $5 trillion annually and is set to exceed $7 trillion by 2030

Expected evolution of green markets size ($ trillion, 2024-2030)



Notes: Not exhaustive. The adaptation and resilience market only includes nine subsectors: (1) active cooling, (2) passive cooling, (3) climate-adapted agricultural inputs, (4) climate-resilient building/construction materials, (5) built flood defence structures & drainage solutions, (6) emergency/essential medical services & equipment, (7) urban & industrial waste efficiency, (8) climate forecasting & risk assessment, (9) distributed energy solutions (data centres only). CAGR = compound annual growth rate.

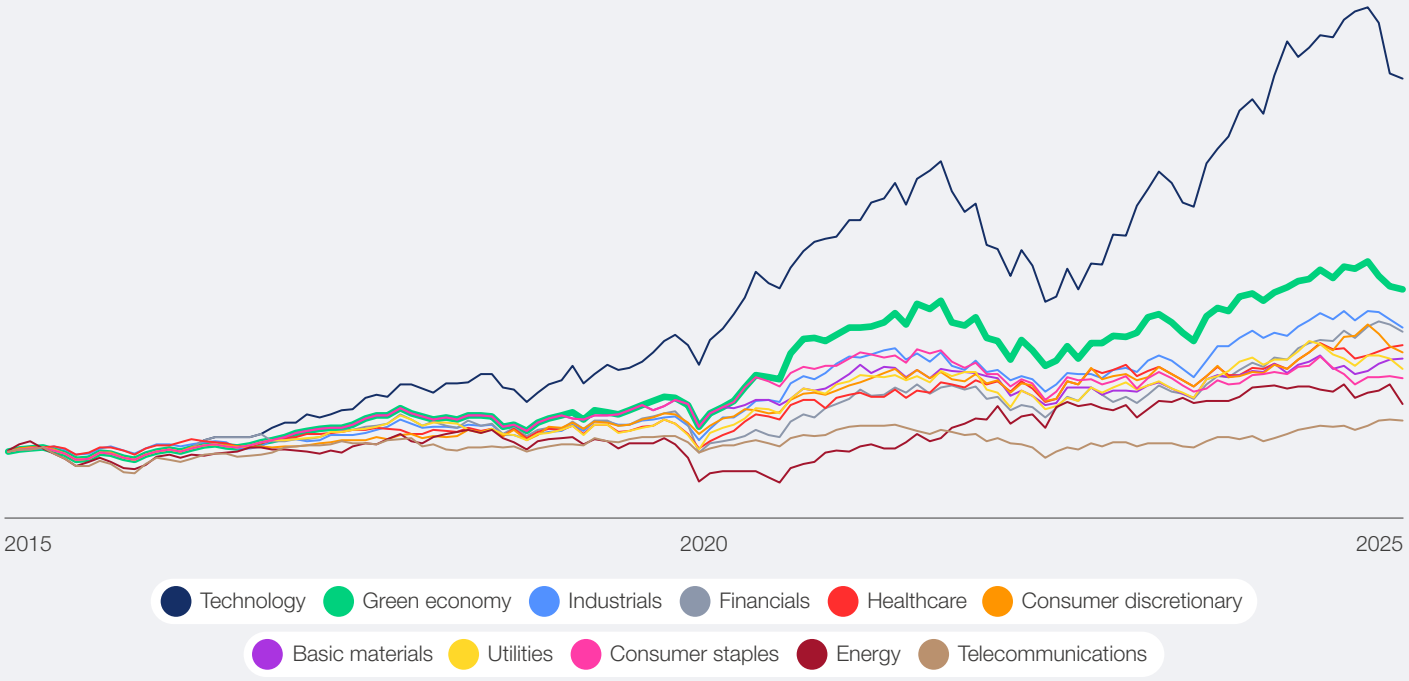
Source: Temasek and Boston Consulting Group (BCG).[3]

The green economy is already one of the world's top two growth industries. The massive increase in investments has lifted the green economy to become the second-best performing sector among Industry Classification Benchmark (ICB) industries[4] in the Financial Times Stock Exchange (FTSE) All World Index[5] during the past decade, second only to technology.[6] During those 10 years, its market capitalization grew at a 15% compound annual growth rate (CAGR), outperforming the S&P 500[7] by about four percentage points (see Figure 2).

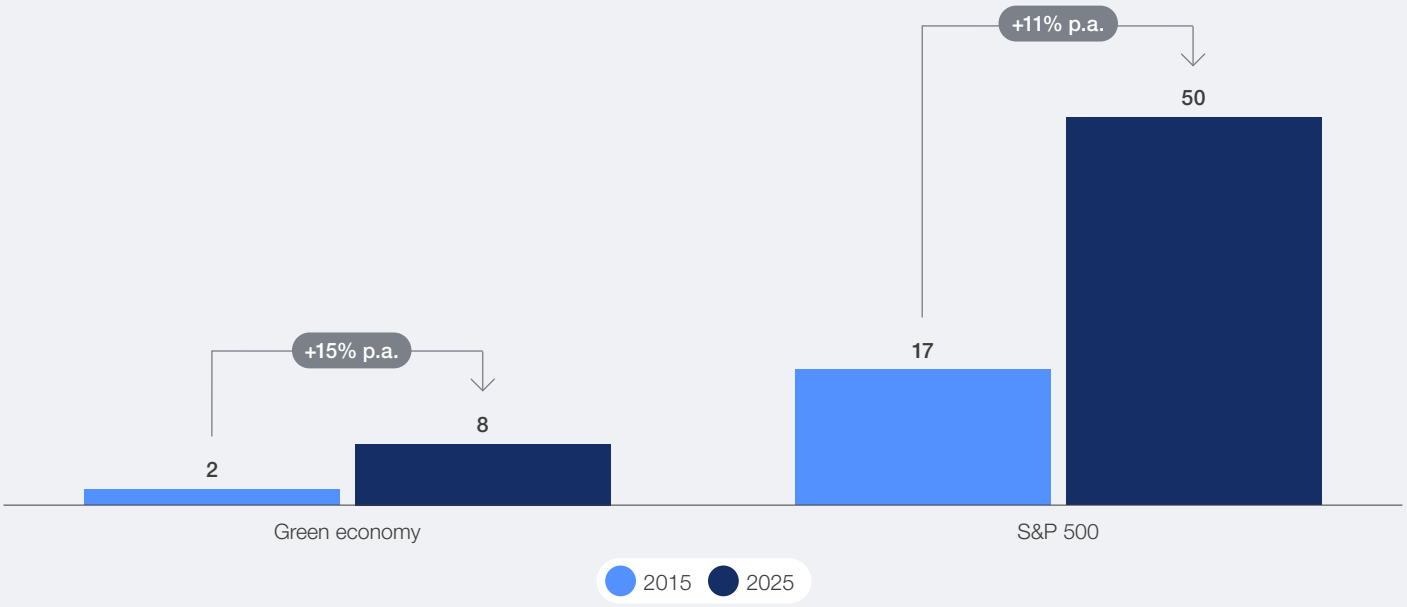
FIGURE 2 **Green economy growth rate performance vs. global benchmarks (2015-2025)**

The green economy was the second-best performing ICB sector and outperformed S&P 500 over the past decade

Green economy performance vs. ICB[1] industries (rebased index value, 2015-2025)



Green economy market capitalization vs. S&P 500[2] (market capitalization, $ trillion, 2015-2025)



Notes: 1. Industry Classification Benchmark (ICB) is a globally utilized standard for the categorization and comparison of companies by industry and sector. Based on FTSE Russell Index performance data from January 2008 to 15 April 2025. **2.** S&P 500 refers to a US stock market index representing all major industries.

Sources: see endnote.[8]

Growth follows public and private momentum in climate action and adaptation over the last decade

The sector's expansion reflects a sustained momentum in climate action in both national and private spheres. Today, 142 countries, covering more than 76% of global emissions, have a net-zero commitment in place – up from virtually zero in 2016. Many have implemented regulatory frameworks with increasingly strict emissions standards or have pushed the expansion of low-carbon technologies. Over the same period, corporate decarbonization target-setting has grown exponentially. By mid-2025, the number of companies with science-based emission reduction targets, or a commitment to set such a target, had surged to 10,949 from just 116 in 2015.[9] These companies now represent more than 40% of global market capitalization and approximately 25% of global revenue.

Despite a diverging global environment, the overall green economy is projected to exceed $7 trillion globally by 2030. True, there are many uncertainties that affect climate action – the macroeconomic context, regulatory environment, administrative bottlenecks such as permitting delays and softer public support are just a few. But, driven by further falling technology costs and already-enacted climate regulation, the green economy is expected to grow at an average 6% annual rate (see Figure 1).

Transportation and energy supply will remain central to mitigation, but growth will increasingly expand beyond these industries into fast-growing areas such as carbon and methane management (15% CAGR, 2024-2030), food, agriculture and land use (14% CAGR) and circularity and waste management (12% CAGR).

The market for adapting and building resilience will become even more material. Average global temperatures have already increased significantly since industrialization, exceeding the 1.5°C threshold for the first time in 2024. With further warming ahead,[10] climate-related damage, which already totalled more than $3.6 trillion over the past 15 years, will likely substantially increase.[11] As a result, investments to adapt or build resilience are projected to grow at more than 6% annually on average, with 3-5% for air-conditioning systems, 7-10% for resilient building materials such as waterproofing and insulation, and 25-30% for nascent markets such as speciality climate analytics.

> **The green market is one of the greatest economic opportunities of our time. From clean energy to sustainable finance, it is driving new engines of growth. Companies that lead today are not just future proofing; they are creating the markets of tomorrow.**
>
> Feike Sijbesma, Founder and Co-Chair, Alliance of CEO Climate Leaders; Chair, Supervisory Board Royal Philips.

What is the green economy?

There is no uniform definition of the green economy.[12] In this report, the green economy refers to commercial solutions with a clear environmental purpose or solutions that are a direct response to environmental challenges. This covers both mitigation and adaptation and resilience, from advanced clean technologies to nascent agri-tech solutions.

Examples include renewable energy, electric vehicles, low-carbon food products, climate-resilient construction materials, textile recycling, green finance, carbon-measurement tech and services, and more.

This market landscape definition covers seven major industry segments in mitigation (see Table 1) and seven impact themes in adaptation and resilience (see Table 2), which further divide into ~100 subsegments.

TABLE 1

Green economy landscape – mitigation segments
The green economy landscape covers seven major industry segments in mitigation

Mitigation						
1 Energy supply & optimization	2 Industrials & buildings	3 Transportation & mobility	4 Food, agriculture & land use	5 Carbon & methane management	6 Circularity & waste management	7 Financial & enabling solutions
1.1 Renewable power	2.1 Low-carbon materials	3.1 Road transportation electrification	4.1 Green fertilizers	5.1 Carbon capture utilization & storage (CCUS)	6.1 Sorting technology	7.1 Carbon measurement & accounting
1.2 Geothermal energy	2.2 Building energy management & automation, incl. EMS[1]	3.2 Aviation & marine propulsion	4.2 Alternative proteins	5.2 Gas capture, incl. methane	6.2 Paper & wood recycling	7.2 Carbon markets & services
1.3 Nuclear power	2.3 Machinery efficiency	3.3 Sustainable logistics	4.3 Farming technologies	5.3 Engineered carbon removal solutions	6.3 Plastics recycling	7.3 Sustainable finance solutions
1.4 Waste-to-energy (e.g. for biomass & gas)	2.4 Industrial green heat	3.4 Electric charging infrastructure		5.4 Nature-based carbon removal solutions	6.4 Metals, batteries & e-waste recycling	
1.5 Hydrogen & derivatives	2.5 Green packaging	3.5 Biofuels			6.5 Construction & demolition waste (CDW) recycling	
1.6 Energy storage	2.6 Green heating	3.6 Synthetic fuels & e-fuels			6.6 Textile recycling	
1.7 Electricity grids						
1.8 Flexibility management						
1.9 Distributed energy						
1.10 District energy						
1.11 Energy contracting & energy service companies						

Note: 1. EMS = energy management system.
Source: Boston Consulting Group.[13]

TABLE 2 | **Green economy landscape – adaptation and resilience themes**
The green economy landscape covers seven impact themes in adaptation and resilience

Adaptation and resilience						
1 Food resilience	2 Infrastructure resilience	3 Health resilience	4 Business & community resilience	5 Water resilience	6 Energy resilience	7 Biodiversity resilience
1.1 Cropping systems	2.1 Nature-based coastal defence	3.1 Climate-related disease surveillance	4.1 Climate instrumentation & remote sensing	5.1 Hydrological services	6.1 Grid backup & energy storage	7.1 Marine protection & rehabilitation
1.2 Climate-adapted agricultural inputs	2.2 Built coastal defence	3.2 Rapid diagnostic & point-of-care testing	4.2 Climate forecasting & risk assessment	5.2 Rainwater, runoff harvesting	6.2 Smart grid management	7.2 Terrestrial protection & rehabilitation
1.3 Controlled environment agriculture	2.3 Nature-based flood defence	3.3 Vaccines for climate-related diseases	4.3 Supply chain climate resilience	5.3 Atmospheric water harvesting	6.3 Distributed energy solutions	7.3 Wetland protection & rehabilitation
1.4 Precision agriculture	2.4 Built flood defence	3.4 Medical supply chain & logistics resilience	4.4 Climate insurance	5.4 Seawater desalination	6.4 Urban & industrial energy efficiency	
1.5 Climate-adapted livestock & fishery management	2.5 Climate-resilient building design & maintenance	3.5 Emergency/ essential medical services & equipment	4.5 Critical infrastructure maintenance & network resilience	5.5 Groundwater recharge		
1.6 Fit-for-purpose food storage	2.6 Geohazard services	3.6 Personal cooling equipment/ devices	4.6 Climate-resilient urban planning	5.6 Water storage infrastructure & technology		
1.7 Improved food packaging	2.7 Climate-resilient construction materials		4.7 Disaster training & education	5.7 Water purification, treatment, recycling		
	2.8 Storm-proof building components		4.8 Disaster response equipment & logistics	5.8 Water quality monitoring, testing, compliance		
	2.9 Cold-resistant building components		4.9 Disaster communication & alerts	5.9 Agricultural water efficiency		
	2.10 Active cooling		4.10 Emergency shelter & infrastructure solutions	5.10 Urban & industrial water efficiency		
	2.11 Passive cooling		4.11 Social protection			
	2.12 Wildfire management		4.12 Adaptation focused funding & lending			

Source: Boston Consulting Group and Temasek.[14]

2 One of the biggest growth opportunities on the planet

The green economy is here to stay – to navigate this opportunity, companies must understand diverging market demands, economics and the regulatory environment.

The need to address climate change will not go away and, with improving economics of low-emission technologies, the green economy is here to stay. However, not everything that is green will grow, everywhere, all at once – especially in technologies that are still immature. The scale of the opportunity remains significant – but the need to understand fundamental market demands, economics and the wider regulatory environment has become a lot more important for navigating the green economy.

Five key observations presented below can help leaders navigate the opportunity:

OBSERVATION 1
Solutions to decarbonize more than 50% of total emissions are already cost-competitive.

OBSERVATION 2
Markets for deep decarbonization technologies are growing – but much more unevenly.

OBSERVATION 3
Green growth is increasingly spearheaded by China.

OBSERVATION 4
Energy independence is an increasing driver of low-carbon investments.

OBSERVATION 5
Climate adaptation markets are becoming material, including in the Global North.

OBSERVATION 1

Solutions to decarbonize more than 50% of total emissions are already cost-competitive

> Solar PV capacity projections for 2030 grew 84 times faster than expected in the early 2000s, with wind growing 11 times faster and EV battery deployment 9 times faster.

More than half of total emissions could be decarbonized by solutions that are already cost-competitive, with another 20% addressable through solutions at a minor cost disadvantage (see Figure 3). Proven solutions such as energy efficiency, solar photovoltaics (PV), wind power, and electric vehicles are rapidly scaling-up across geographies, shifting the tectonics of the global energy system. Even without subsidies, most of these technologies are poised for global growth and mass deployment.

Over the past decade, key mitigation technologies such as solar PV, wind power and EV batteries have experienced explosive capacity growth, often outperforming expert projections (see Figure 4). At a global level, solar PV capacity projections for 2030 grew 84 times faster than expected in the early 2000s, with wind growing 11 times faster and EV battery deployment 9 times faster. In January 2023, the International Energy Agency (IEA) issued its "largest-ever upward revision" to renewable energy growth forecasts, 67% higher than its projection just two years earlier. A year later, the forecast was revised upwards by a further 33%; 2024 and 2025 saw continued records, with growth in 2024 renewable capacity additions at 22% and a further 9-23% growth expected by the end of 2025. Expectations are now stabilizing, with 2025 revisions showing flat or downward adjustments in capacity additions and 2030 generation across several regions. This reflects policy shifts in key markets and the growing technological and cost maturity of renewables as they align with market dynamics. The overall outlook remains strong; in November 2025, the IEA forecast that renewables will become the world's largest source of electricity, reaching nearly 45% of total generation by 2030.[15]

This rapid scaling-up has been driven in part by much steeper cost declines than originally anticipated. Since 2010, average costs of solar PV fell by around ~90%, offshore wind power costs dropped by ~50% and lithium iron phosphate battery costs by ~90%.[16] As a result, in most geographies these technologies no longer carry a cost premium over fossil alternatives in terms of levelized cost of energy (LCOE).[17] These technologies have "crossed the S-curve" (cross-sector technology maturity indicator),[18] demonstrating global scalability. They remain poised for global growth and mass deployment – not just where the subsidies are strongest.

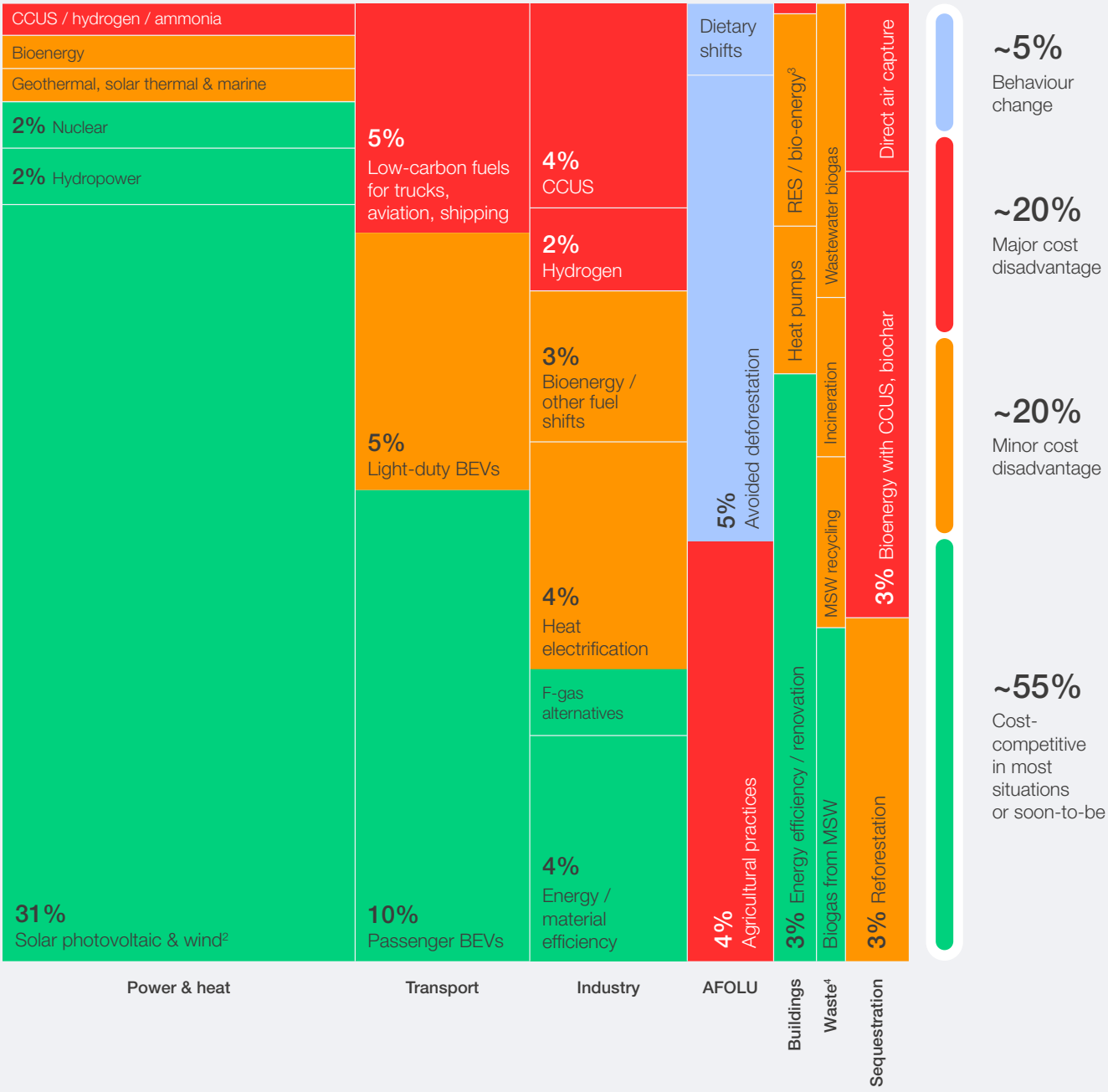
Both renewable energy capacity and generation are now expected to grow at 10% and 7% respectively or more annually in most regions (see Figure 5). Even in emerging regions such as Africa, solar panel imports have surged across 20 countries over the past 12 months – highlighting the extent of growth across the continent.[19] For the US the forecast is less clear; in October 2025, the IEA revised its 2025–2030 growth projection down from 9% per year to 5%.[20]

Renewables constitute one of the biggest global greentech markets, but they are not alone. Outside of renewable power generation, the growth of renewables has accelerated electrification, which in turn has enabled many other technologies (e.g. heat pumps, electric mobility) to scale up. More are on the horizon: a further 20% of global emissions could be eliminated with mitigation technologies that come at a relatively minor cost disadvantage for asset owners. For instance, bioenergy is moderately more expensive than fossil fuels and can become cost-competitive in regions where regulation is favourable and with abundant local feedstocks.[21]

FIGURE 3 **Cost-competitiveness of emission abatement solutions, by sector and technology**

More than 50% of emissions can be abated with positive business cases for asset owners today

Global greenhouse gas mitigation required by 2050 to reach 1.5°C, split by sector and technology,[1] pre-subsidy (% of net Gt CO_2e p.a.)

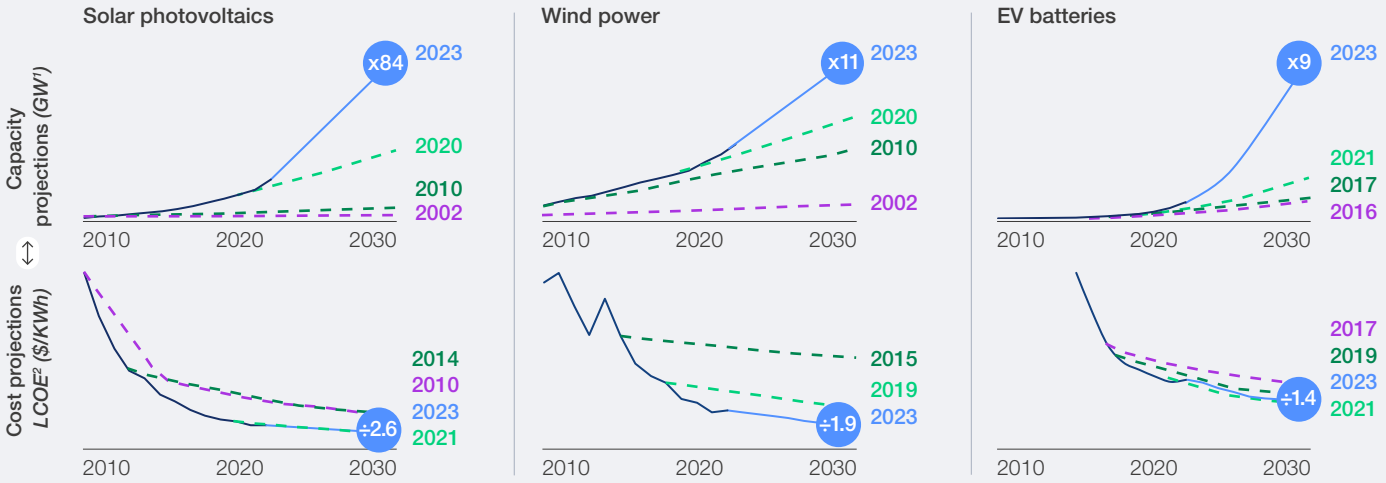


Notes: Cost competitiveness is defined in comparison to today's higher-GHG reference, including capex and opex, and is measured from the perspective of the business case for an individual asset owner (i.e. does not present a full system view); AFOLU = agriculture, forestry and land use; BECCS = bioenergy with carbon capture and storage; BEV/FC = battery electric vehicle/fuel cell; CCUS = carbon capture, utilization and storage; DAC = direct air capture; EVs = electric vehicles; F-gas = fluorinated gas; MSW = municipal solid waste (including industrial); PV = photovoltaic; RES = renewable energy sources.
1. Annual emissions at projected 2050 level, current cost-competitiveness. **2.** Storage reduces the cost-competitiveness of solar PV and wind relative to fossil generation, with the impact varying widely by market. **3.** Renewable energy sources (RES) and bioenergy for heating only. **4.** Excluding agricultural waste.

Sources: see endnote.[22]

FIGURE 4 | **Solar, wind power and batteries – evolution of capacity and cost forecasts (2010-2030)**

Since 2010, solar photovoltaics, wind power and batteries have seen soaring increases in capacity alongside plummeting costs

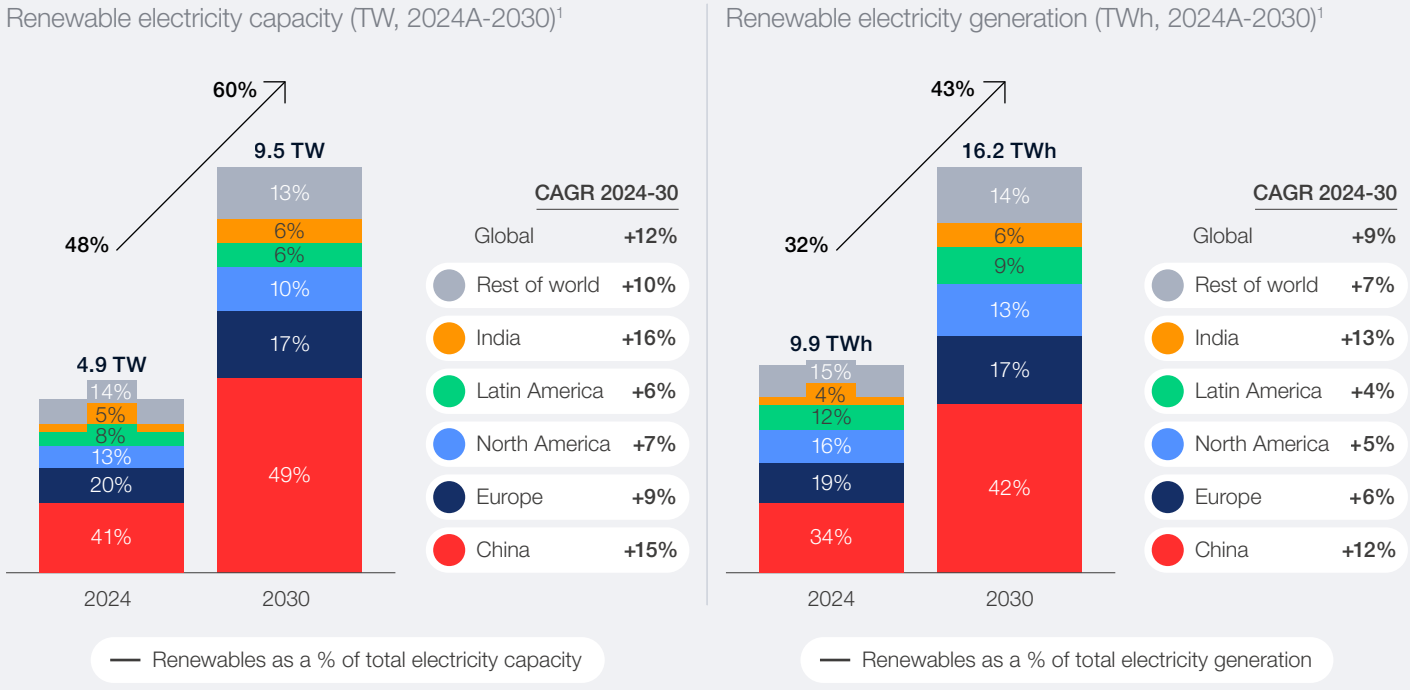


Notes: Solar capacity includes utility-scale, commercial and residential; solar costs include utility-scale only. Wind capacity includes onshore and offshore; wind costs include offshore only. EV batteries are for BEV cars only. All numbers are global averages. **1.** Installed power generation capacity corresponding to the maximum potential supply. **2.** LCOE = levelized cost of electricity, corresponding to the average cost per unit of electricity generated over the lifetime of a plant, accounting for capital, operations, maintenance, fuel and financing costs.

Sources: see endnote.[23]

FIGURE 5 | **Renewable electricity capacity and generation (2024-2030)**

Renewable capacity is set to grow at ~10% annually in most regions, with renewable generation growing at 9% globally



Notes: 1. International Energy Agency (IEA) main case scenario leveraged for 2030.
Sources: IEA and BCG.[24]

OBSERVATION 2

Markets for deep decarbonization technologies are growing – but much more unevenly

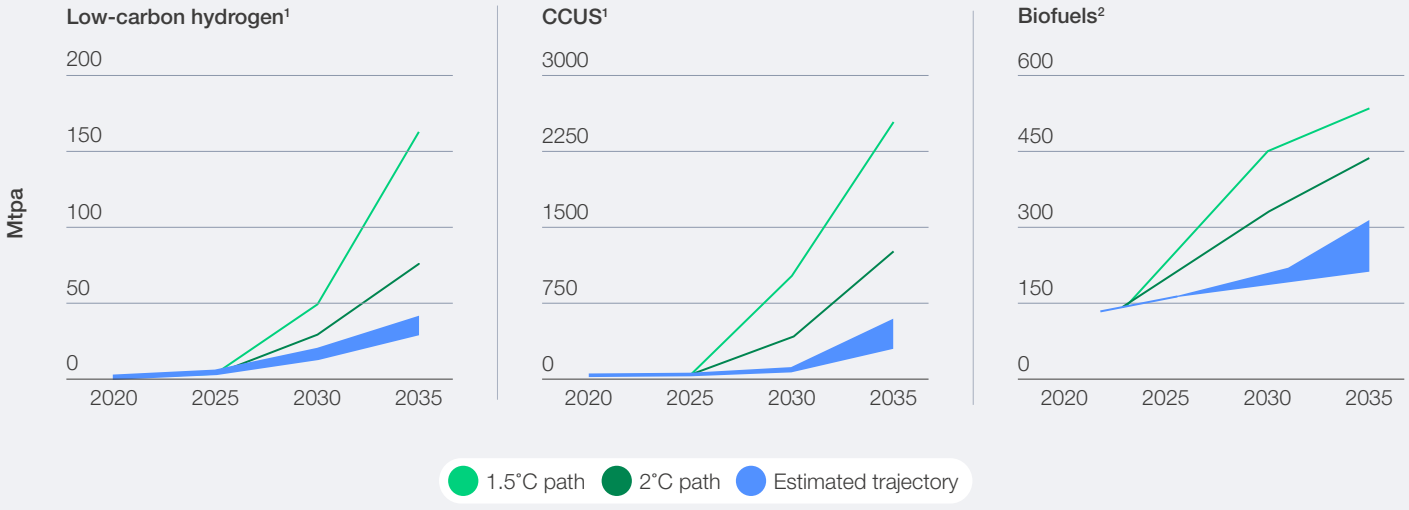
If the world is to fully decarbonize, it will not be sufficient to scale up only those technologies that are "proven solutions". In particular, decarbonizing hard-to-abate sectors calls for levers such as low-carbon hydrogen, power-to-X, carbon capture, utilization and storage (CCUS) and advanced biofuels – many of which are still immature and all of which currently come at high additional costs in nearly all markets.

In comparison to the momentum from a few years back, the actual dynamics on most of these technologies have been disappointing and their current deployment pace remains far below the level needed for a net-zero pathway (see Figure 6). However, markets for these technologies are still expected to expand as unit economics improve. They will just not grow as fast as hoped and they will not grow everywhere.

FIGURE 6 **Deep decarbonization technologies, required vs. projected (2020-2035)**

Deep decarbonization technologies grow, but far below a net-zero pathway

Requirement vs. estimated trajectory (Mtpa, 2020-2035)



Notes: 1. The low-carbon hydrogen and CCUS estimated trajectories are based on BCG scenarios and reflect policy uncertainty. The low scenario is based on: (a) 2030 projections assume existing operational capacity plus under-construction projects, with an 80% conversion rate applied to those under construction; and (b) 2035 projections assume full conversion (100%) of under-construction projects and a 60% conversion rate of planned projects. **2.** Biofuels' estimated trajectory is based on a BCG scenario leveraging IEA data, reflecting policy uncertainty and presenting a ±20% margin.

Sources and further notes: IEA and BCG.[25]

The world needs to scale up deep decarbonization technologies to move to net zero (see Box 1). But scaling-up each of these solutions comes with significant challenges, ranging from high capital investments and significant energy intensity to missing infrastructure and limited feedstock.[26]

Equally important is supportive regulation, given that abatement costs run to several hundred dollars per tonne of CO_2 in most places and applications. Therefore, they will only grow in regions where governments and businesses are heavily betting on their future.

BOX 1 | **What are deep decarbonization technologies?**

Deep decarbonization technologies are those needed to address hard-to-abate sectors, such as heavy industry (steel, cement and concrete, aluminium, chemicals and refining) and long-distance transport (aviation, shipping, trucking), which represent 25-30% of global GHG emissions. These technologies enable massive emissions reduction (or even permanent removal).

This section of the report focuses on low-carbon hydrogen, CCUS and biofuels, as examples of deep decarbonization, because this triad covers the key levers needed by hard-to-abate sectors, including new molecules, alternative heat, alternative transportation fuels and carbon management infrastructure. Low-carbon hydrogen is needed to decarbonize process industries and as a medium for long-duration energy storage. CCUS is essential for capturing emissions from cement, chemicals and other process-intensive industries. Advanced biofuels are needed to displace fossil fuels in hard-to-abate transportation.

European Union programmes have provided a cumulative €40 billion of funding for scaling-up low-carbon hydrogen, CCUS and electrification between 2022 and 2030.

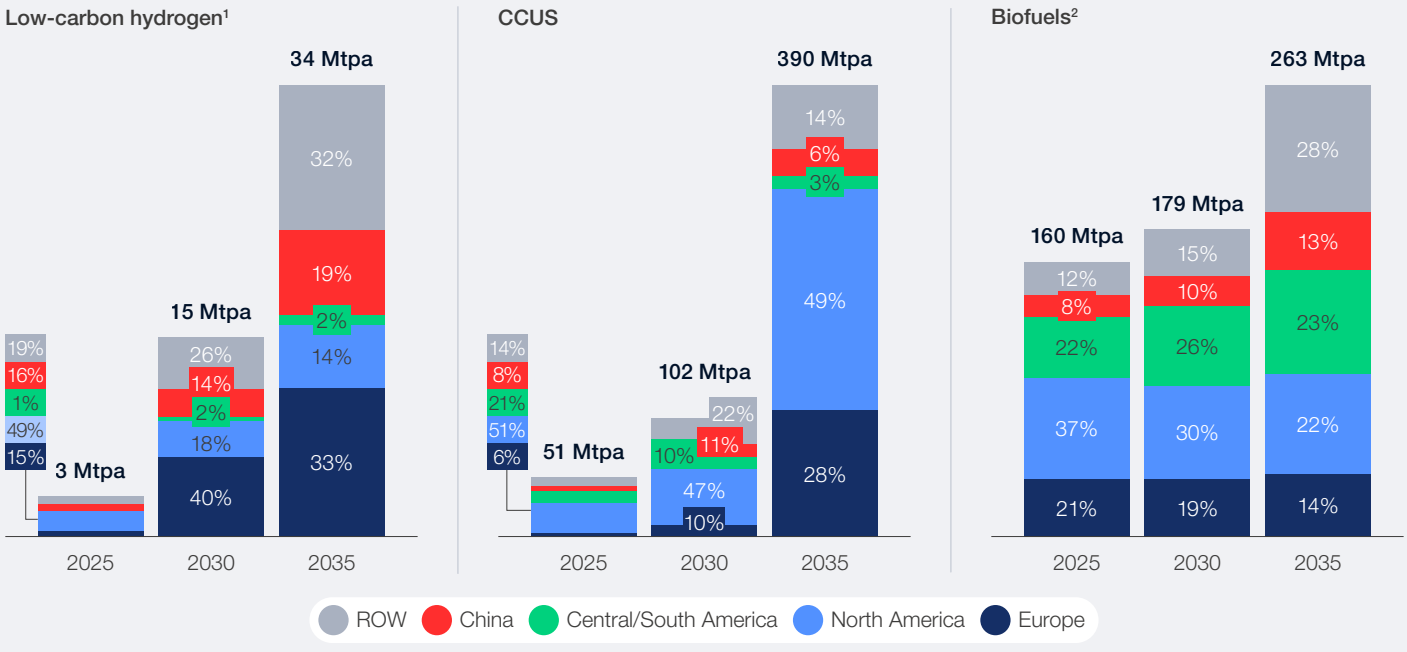
These regions do exist, especially in Europe, where recent policies and regulations indicate a willingness to address the costliest parts of the climate transition. As a result, the European Union (EU) currently aspires to lead the world in "hard-to-abate" decarbonization regulation, with some of the most ambitious policy and financial support frameworks globally. The bloc has implemented quotas for low-carbon hydrogen, power-to-X and advanced biofuels; it offers structured subsidy instruments through EU-wide programmes and a number of national contract for difference (CfD) schemes and more advanced infrastructure support. Meanwhile, the European Clean Industrial Deal presents measures to boost every stage of production, with a focus on energy-intensive industries such as steel, metals and chemicals.[27] In addition, programmes such as Horizon Europe, NextGenerationEU and the Innovation Fund have provided a cumulative €40 billion of funding for scaling-up low-carbon hydrogen, CCUS and electrification between 2020 and 2030.[28]

Support in other countries is mixed (see Figure 7). In the US, strong incentives are accelerating CCUS and the scaling-up of mature biofuels. Brazil continues to benefit from robust national support for biofuels – particularly first-generation ones – underpinned by decades of pro-biofuel policies, blending mandates and investment in flex-fuel infrastructure. Until now, Chinese efforts have focused on technologies that are closer to economic breakeven – although the country is making strong efforts to build a domestic electrolyser industry and policy signals could suggest broader improvements across the board. China's push on low-carbon hydrogen has had a positive ripple effect across other Asian economies such as India, Japan and Korea.

FIGURE 7 | **Deep decarbonization markets – global demand forecasts (2025-2035)**

Global deep decarbonization markets will multiply, but unevenly across geographies

Total global demand on estimated trajectory, medium scenario (Mtpa, 2025-2030)



Sources and further notes: IEA and BCG.[29]

OBSERVATION 3

Green growth is increasingly spearheaded by China

$659 billion

China's clean energy investment in 2024 – well ahead of Europe ($410 billion) and the US ($300 billion).

China is leading on numerous dimensions: it spends more, innovates faster and builds at larger scale than its global peers, consolidating control over green technology value chains. This reflects two decades of deliberate industrial policy. Initiatives such as Strategic Emerging Industries, Made in China 2025, the 15th Five-Year Plan for Economic and Social Development and the Dual Carbon Goals (peak by 2030, neutrality by 2060) have channelled public investment, green finance and carbon trading into industrial capabilities.

After years in which China stood "on the fence" in global climate negotiations, in September 2025 the country presented its first absolute economy-wide GHG emissions pledge (7-10% below peak emissions by 2035) – although some noted that coal went unaddressed, while the EU's climate commissioner said this level of ambition "falls well short".[30]

Nevertheless, China's innovation, deployment and monumental investment in clean energy – which in 2024 was 60% greater than the next largest investor – marks an historic power shift: global green energy leadership is moving from the West to the East.

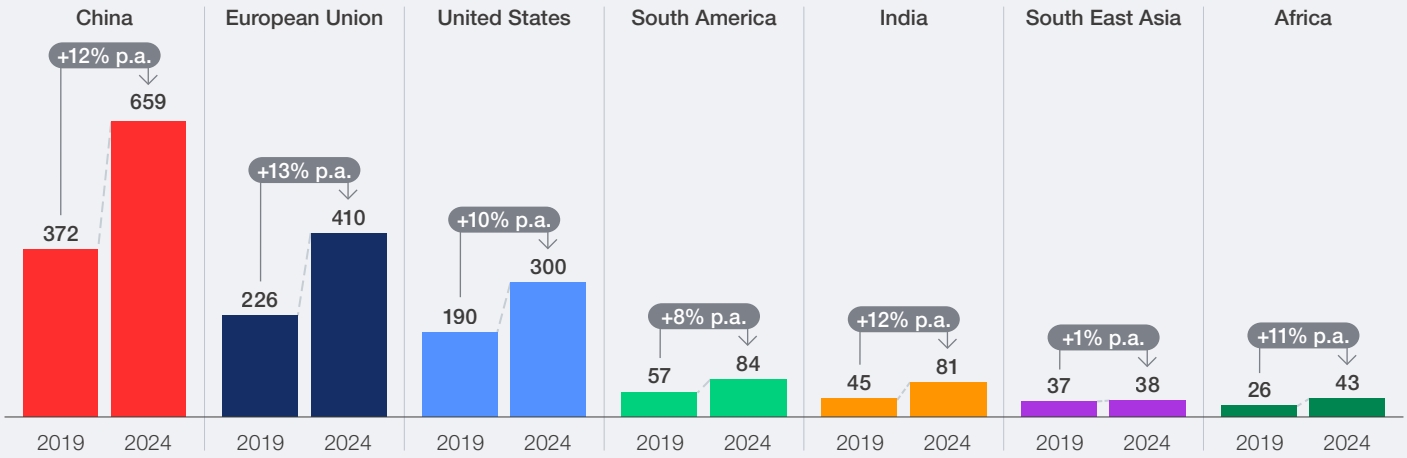
China spends more

Clean energy investment has surged globally, but China still leads the world by volume of spend. Its investment rose from $372 billion in 2019 to $659 billion in 2024 (12% CAGR), far ahead of Europe's $410 billion (13% CAGR) and the US's $300 billion (10% CAGR).[31] This data, sourced from the IEA, includes investments in renewable, grids, storage, nuclear, other clean power, energy efficiency and end-use, and low-emission fuels (see Figure 8).

FIGURE 8 **China's clean energy investment – global comparisons ($ billion)**

China spends more than any other region or country on clean energy investment

Annual investment in clean energy, by selected country and region ($ billion, 2019 and 2024)



Notes: 2024 values are estimated – these may evolve when IEA publishes 2024 actuals. "Clean energy" includes renewable power, grids and storage, nuclear and other clean power, energy efficiency and end-use, and low-emission fuels.

Sources and further notes: IEA and BCG.[32]

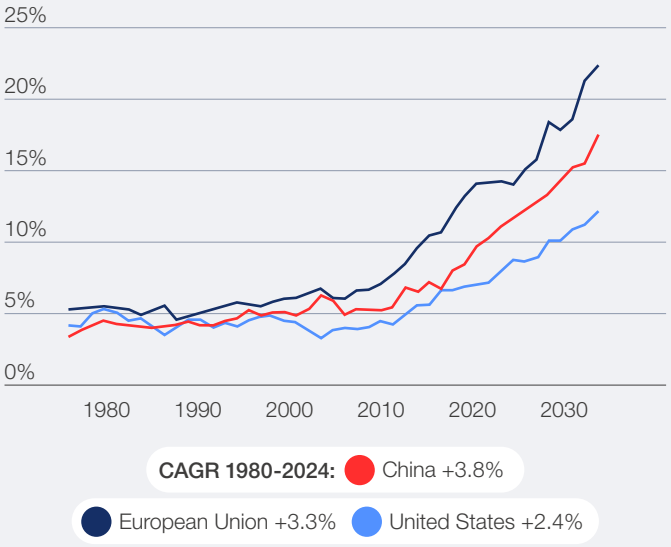
China grows renewables faster

As well as investing more than any other country or region in clean energy, China also grows renewables faster. Even though it is still heavily reliant on coal-fired power generation, China is accelerating the adoption of renewables into the energy mix at a faster pace than any other major economy (see Figure 9). China's solar PV capacity has almost quadrupled and its wind capacity has doubled since 2020.[33] While Europe still leads in the overall share of renewables in the energy mix (22% of primary energy consumption), China has almost closed the gap in just over a decade and is already delivering more than 60% of global capacity additions (see Figure 9). Europe is the second growth market, while US deployment remains uneven.

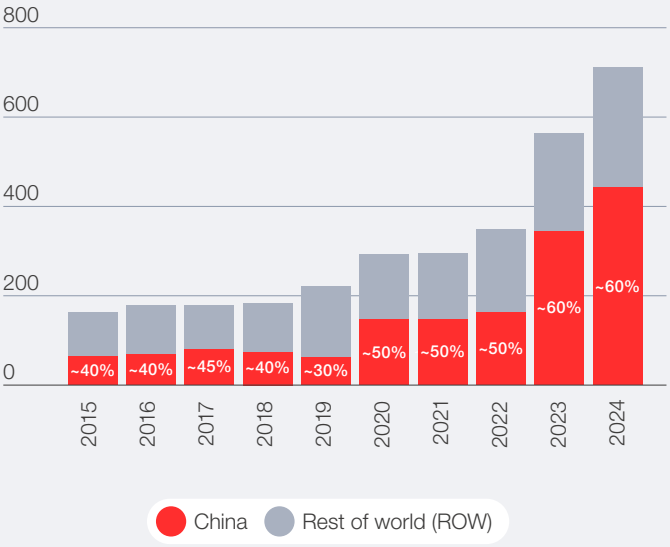
FIGURE 9 | **China's renewable energy growth vs. EU, US, ROW (1980-2024)**

China has significantly electrified its energy mix and leads global renewables growth

Renewable energies' share of primary energy consumption (%, 1980-2024)



Renewable electricity capacity additions (GW, 2015-2024)



Notes: Renewable electricity capacity additions refer to net additions. 2024 values are based on both actual and estimated additions.
Sources: see endnote.[34]

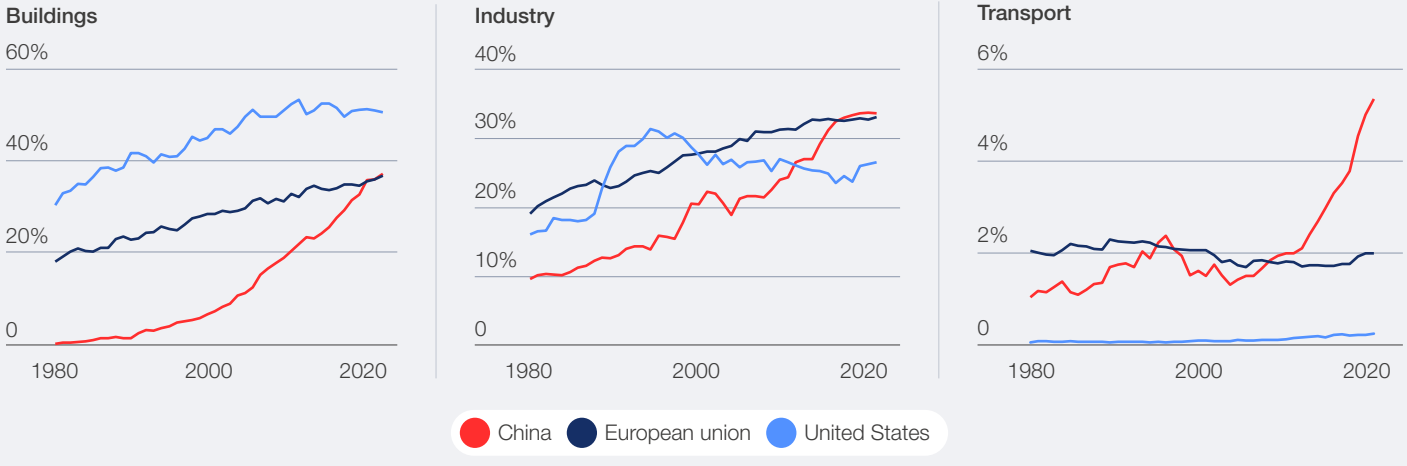
China leads the global path towards an "electric economy"

Electricity now covers more than 35% of energy use in buildings, 30% in industry and 4% in transport (see Figure 10). With over 12 million charging stations and the largest global market for electric vehicles, China has become the world leader for transport electrification.[35] As a result, China now matches or surpasses Europe in each of these sectors and Chinese national emissions fell for the first time in 2025, even as economic activity and energy demand continued to rise.[36,37]

FIGURE 10 | **China's electrification of key sectors, vs. EU & US (1980-2023)**

China is accelerating electrification faster than any other economy

Electrification across key sectors (% share of final energy consumption, 1980-2023)



Source: Rocky Mountain Institute (RMI) analysis of International Energy Agency data.[38]

China is also leading on innovation

China's export profile has shifted dramatically from traditional "old economy" manufacturing goods such as appliances, furniture and clothing to a "transition economy" that manufactures solar, wind and batteries.[39] It has built this new economy by establishing leadership over entire value chains, from raw material processing and refining to component manufacturing and final assembly. Meanwhile, fierce domestic competition has helped cultivate national champions capable of scaling-up globally.

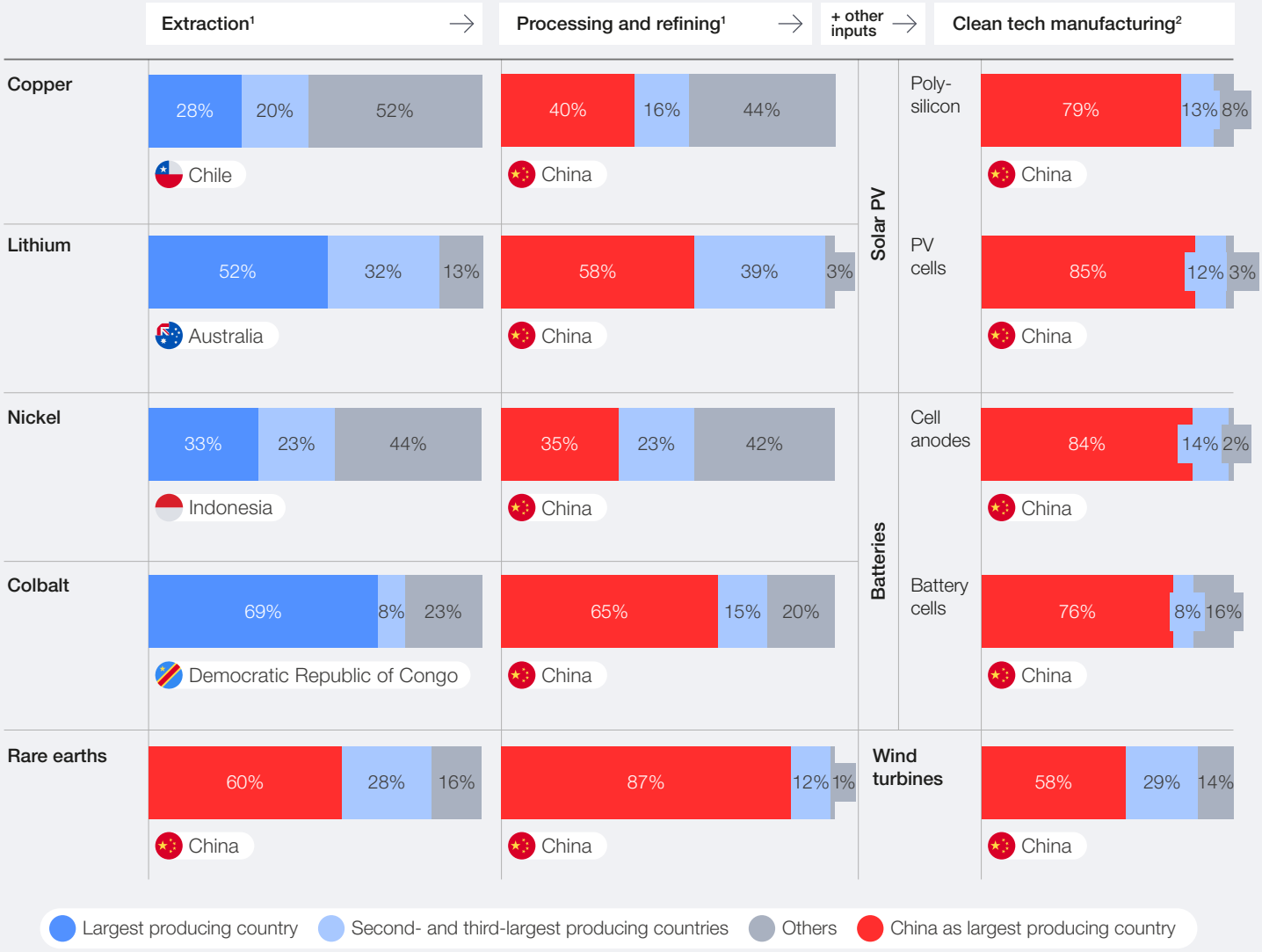
Figure 11 illustrates the depth of China's positioning in solar PV, wind turbines and batteries, and the scale of the lead it has established in these technologies. For the first time, the epicentre of innovation is moving away from traditional Western hubs towards China. For example, the European Union, despite being an early climate champion, has struggled to translate its ambition into innovation leadership. While the continent excels in regulation and early-stage research and development (R&D), it faces persistent challenges in scaling-up innovations from universities, institutions and companies into wide-scale competitive industrial capabilities. Meanwhile, the US, long regarded as an innovation pioneer across sectors, is slipping behind in the clean tech race, now holding second place in patent filings for most decarbonization technologies (see Figure 12).

> The epicentre of innovation is moving away from traditional Western hubs towards China.

FIGURE 11 **China's global share in major greentech sectors**

China leads the world in greentech processing, refining and manufacturing

Energy transition and clean energy technologies (% global share)

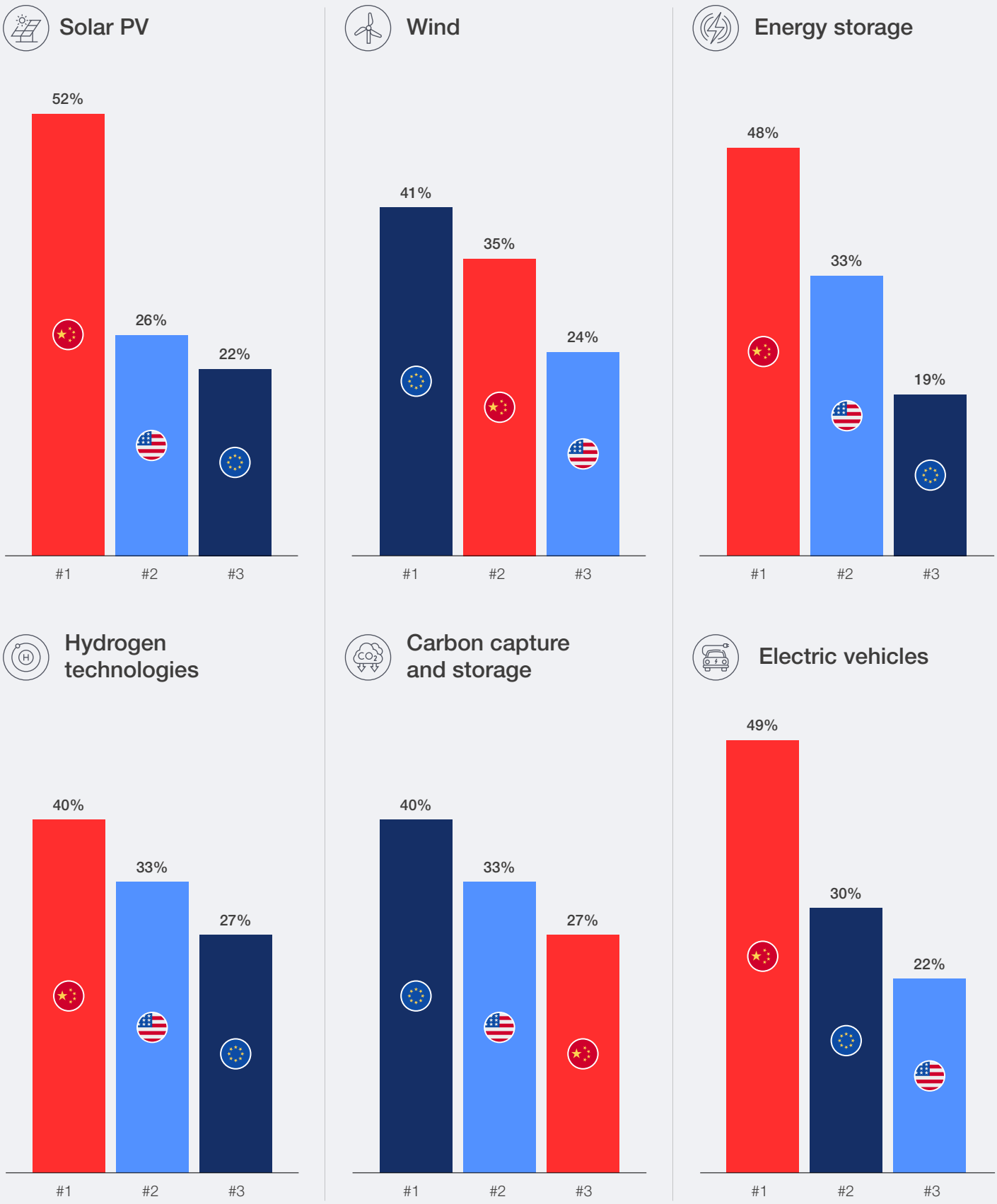


Notes: 1. 2019 data. **2.** 2021 data.

Source: BCG.[40]

China is the world's top patent holder for solar PV, energy storage, hydrogen and EVs

Ranking of patents filed per decarbonization technology (% share of new & cumulative active patents)



Note: Data is based on last five years available.

Sources: see endnote.[41]

OBSERVATION 4

Energy independence is an increasing driver of low-carbon investments

Recent geopolitical tensions have demonstrated the vulnerability of global energy supply. As countries scramble to become more resilient, ramping up renewable investments is becoming a key lever. Energy exporters have always had an outsized influence in global geopolitics. But the fallout of Russia's invasion of Ukraine and the subsequent global energy crisis has elevated the potential of this lever to generate disproportionate economic impacts. Europe's haste to replace Russian imports disrupted established supply chains, rerouted shipments meant for Asia and emerging markets, and elevated the bargaining power of alternative suppliers. This demonstrated a clear lesson: even in a globalized world, dependence on external suppliers can leave countries' economies exposed, making energy independence a much stronger national security imperative. As a result, countries have been reassessing their exposure to external shocks.

Governments across the globe are now weaving energy independence into national energy and industrial strategies, with renewables benefiting across a range of energy solutions. For example:

Japan's Strategic Energy Plan (2025) targets 60-70% of its power mix from domestic decarbonized solutions by 2040 (40-50% renewables and 20% nuclear, despite the challenges faced by the industry after the 2011 Fukushima disaster).[42]

South Korea's 2022 Energy Policy Direction of the New Government seeks to cut reliance on fossil fuel imports from 81% in 2021 to below 60% by 2030, increasing nuclear to 30% of the mix and expanding domestic energy security measures.[43]

Türkiye's 2022 National Energy Plan identifies its 70% import dependency as a critical vulnerability and commits to diversifying supply routes and boosting domestic renewables and nuclear as a response.[44]

Europe's REPowerEU and Green Deal Industrial Plan aim to cut fossil imports while accelerating renewables, low-carbon hydrogen and domestic battery value chains.

India's Production Linked Incentive (PLI) schemes subsidize solar modules, advanced batteries and low-carbon hydrogen to reduce import dependence and build local capabilities – doubling solar capacity by 2030.

This momentum suggests that energy security, not just climate ambition, can be a powerful driver of low-carbon investment – even as some countries also explore domestic fossil resources in parallel.

> **Energy security is a critical priority for a developing country like India. We are rich in renewable energy resources, so the more energy we produce domestically, and the more equipment we manufacture to enable that, the safer and more resilient we become in the current context. India is thus increasingly focused on tapping all available local resources. That's why the government continues to advance low-carbon solutions like green hydrogen and green ammonia to reduce import dependence and enhance strategic autonomy.**
>
> Sumant Sinha, Founder, Chair & CEO of ReNew

OBSERVATION 5

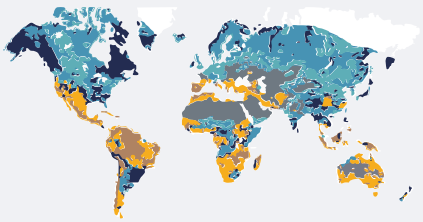
Climate adaptation markets are becoming material, including in the Global North

In an increasingly warming world, solutions that help companies and countries adapt or build resilience are becoming as critical as those for mitigation. The markets for these solutions extend beyond the Global South – long the frontline of climate impacts – into the Global North, where risks are mounting just as rapidly.[45]

With a warming climate, extreme weather events will continue to become more frequent and severe, with commensurate increases in damage. The need to protect against these impacts will continue to grow (see Figure 13). Low- and middle-income countries face the greatest vulnerability, due to their higher-than-average exposure to extreme weather, generally weaker infrastructure, limited financial means to invest into resilience, and a higher economic reliance on agriculture and outdoor labour. But developed nations are also under pressure. In the US, droughts threaten water resources and storms threaten infrastructure, while wildfires in California in January 2025 caused an estimated $250 billion in damage.[46] In Europe, Spain's deadly floods in 2024 were a reminder that growing risks also loom in other advanced economies.[47]

FIGURE 13 **A glimpse of a possible 3°C world – every region will be affected in different ways**

Change in total annual precipitation
Change in precipitation (mm)



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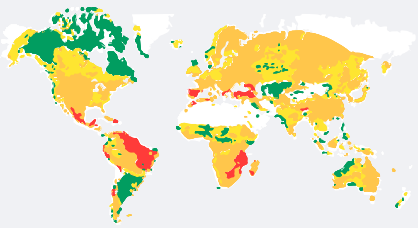
Likelihood of 1-year droughts
Annual likelihood (%)



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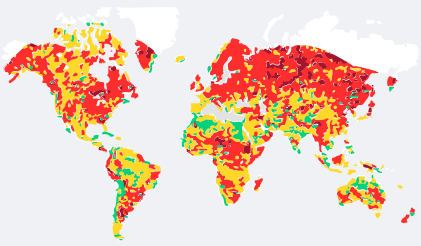
Change in frequency of historical "1-in-100-year" storm
Times more/less frequent



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Changes in precipitation volume, drought likelihood and storm frequency will require new commercial solutions to manage more frequent and severe weather events

Source: see endnote.[48]

Not surprisingly, there is already a sizeable market to address these risks, standing at $1.1 trillion today and expected to grow rapidly (see Figure 1).[49] Proven and practical solutions exist, with multiple sub-sectors reaching multi-billion-dollar markets, double-digit growth rates and attractive margins. Solutions such as waterproofing materials, flood diversion products, green roofs, advanced metering infrastructure and catastrophe risk analytics are already commercially viable and widely deployed. Meanwhile, early-stage solutions are gaining traction, especially in areas such as flood defence, immersion cooling, leak detection and microgrids for data centres. These technologies are being increasingly integrated into urban planning and infrastructure projects. Solutions at even earlier stages of development or deployment also show future potential. Examples include climate analytics, nanoparticles for heat-reflective windows, self-healing concrete, high-resolution weather forecasting, scenario-based climate modelling and localized risk analytics.

Rising climate risks will catalyse new markets. In the years ahead, governments, corporations and municipalities will put resilience at the centre of their agendas to safeguard communities and economies. As climate events intensify, markets will expand into new geographies, much like wildfire management, which in just two years has rapidly grown in Europe following major fires in Greece and Portugal.[50]

The next wave of innovation is already taking shape, for example:

- **Urban water management** solutions are evolving to deliver more integrated, nature-based systems in response to the uneven distribution of precipitation (from torrential downpours and flash floods to prolonged dry spells and droughts).[51]
- **Advances in climate analytics**, from AI-driven forecasting to satellite-enabled monitoring, are laying the foundation for predictive adaptation, giving governments, businesses and communities the foresight to act before climate disasters.[52,53]
- **In agriculture**, breakthroughs in climate-resilient seeds are expected to accelerate, protecting food systems in regions most exposed to drought and heat.[54]
- **In construction**, new generations of materials designed to withstand floods and extreme temperatures are emerging.[55]

The pace of innovation will only intensify. In a world that continues to warm, entirely new solutions – smarter, faster and more targeted – will appear, including some that cannot yet be imagined today.

> **Green markets are no longer emerging; they are accelerating. Demand for low-carbon technologies, sustainable materials and climate-smart solutions is growing across every sector. The companies that respond now will be the ones that define the next wave of industrial and economic leadership.**
>
> Feike Sijbesma, Founder and Co-Chair, Alliance of CEO Climate Leaders; Chair, Supervisory Board Royal Philips

3

Companies in the green economy often outperform

Analysis of several thousand companies show green revenues have grown faster and companies in green markets often enjoy lower cost of capital and higher valuations.

As the total size of the green economy is poised to surpass $7 trillion within this decade, opportunities still abound. Recent changes in the global environment should not dissuade companies from making bold (albeit well-informed) investments. For many of the companies that have already made those moves, the bet has paid off. Several Boston Consulting Group correlation analyses show that on average these companies are exposed to higher-growth markets, typically obtaining access to cheaper capital and outperforming on revenue-focused multiples. As a result, they often grow faster and excel in capital markets.[56]

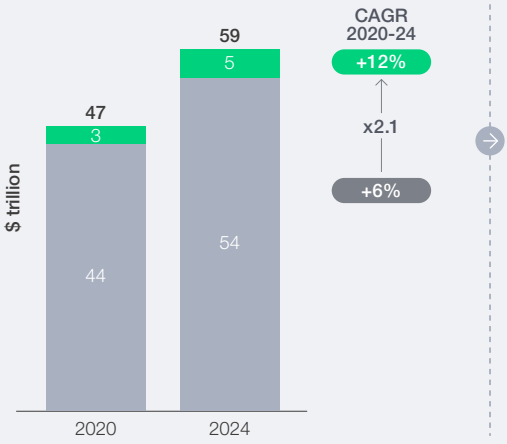
3.1 Companies grow green revenues faster than conventional lines on average

Given the strong growth of the underlying market segments, it is not surprising that green revenues grow faster than conventional ones. Between 2020 and 2024, the 6,500+ publicly listed global companies[57] analysed by London Stock Exchange Group (LSEG), a global provider of financial markets infrastructure, grew green revenues in aggregate by 12% annually – twice as fast as conventional business lines (see Figure 14). Growth was strongest among companies where green products made up a material part of their business: more than half of the companies achieving a CAGR greater than 30% over the surveyed period had at least 10% green revenues in 2024.

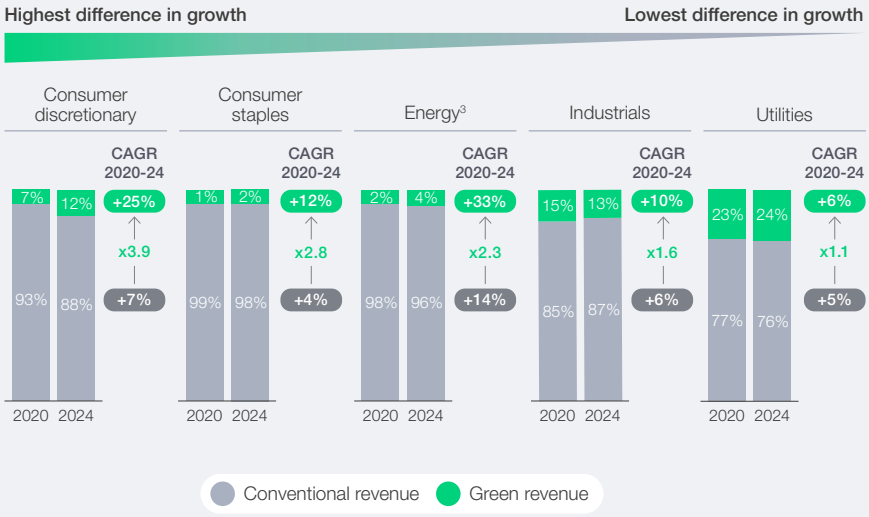
FIGURE 14 **Conventional vs. green revenues, average and by industry (2020-24)**

Green revenues grew on average 2x faster than conventional revenues from 2020 to 2024

Conventional vs. green revenues evolution ($ trillion, n=6,964, 2020-24)



Conventional vs. green revenues evolution, selected industries with high green opportunities[1,2] ($ trillion, n=3,052, 2020-24)



Notes: The analysis includes only companies with a minimum end-market capitalization of $1 billion, regardless of whether they engage in green or conventional activities. For LSEG's definition of "green revenues", see Appendix 3. **1.** Selected industries, excluding real estate, information technology, healthcare, communication services, financial industries and materials (n=3,912). **2.** These industries are defined in detail in Appendix 2. **3.** Energy industry includes oil & gas companies.

Sources: see endnote.[58]

More than half of the companies achieving a CAGR greater than 30% over the surveyed period had at least 10% green revenues in 2024.

Higher green growth is widespread across sectors. In nine of the largest 11 sectors,[59] green revenues grew faster than conventional revenues over the analysed period. Energy stands out with strong double-digit growth across all areas: the sector's green revenues grew at 33% CAGR from 2020 to 2024 – over twice as fast as conventional revenues at 14%. Nearly all sectors achieved double-digit compound annual growth rates in green business. Even in industrials, which already had the largest green revenues in absolute terms, demand for green solutions still grew at almost 10%. This sector is a perfect example of a market where green activities continue to grow rapidly, while some "grey markets" are losing momentum and even stagnating.[60]

BOX 2 | **Green growth is strong among the Alliance of CEO Climate Leaders**

In a separate survey, companies in the World Economic Forum's Alliance of CEO Climate Leaders[61] reported similar results to the wider market, with green revenues growing two times faster than conventional ones. Alliance members achieved an average 8% growth per annum in green revenues between 2020 and 2024 (across categories including electric vehicles, clean chemicals and energy-efficient equipment) compared with 4% for their conventional businesses.[62]

> **Across our portfolio, we are seeing strong market demand that translates into top-line growth. Green solutions have become a key driver of growth.**
>
> Katharina Beumelburg, Chief Sustainability & New Technologies Officer, Heidelberg Materials

3.2 Companies in the green economy typically obtain access to cheaper capital

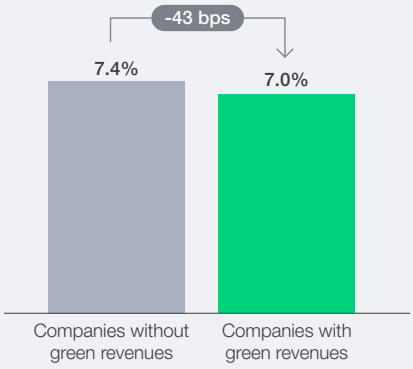
Companies with green revenues can benefit both when raising equity and borrowing capital. They often enjoy better financing terms, including lower weighted average cost of capital (WACC). BCG analysis found a correlation consistent across all industries that companies with green revenues secure a lower cost of capital at an average of ~43 basis points (bps) less than companies without green revenues (see Figure 15 for detailed WACC discounts on selected industries).

Notably, new debt financing vehicles often offer lower-cost financing to companies funding green projects (e.g. green bonds). A lower risk profile of companies in green markets can also justify a lower cost of debt. Leading financial institutions highlight that companies with access to cheaper capital can often generate higher share prices.[63] This means that secondary share issues and mergers and acquisitions transactions are less dilutive. A better valuation may support lower interest rates, lowering overall capital costs. As a result, companies with access to cheaper capital can invest in green growth opportunities more easily and efficiently – creating a virtuous cycle that improves revenues, overall financial performance and market valuations.

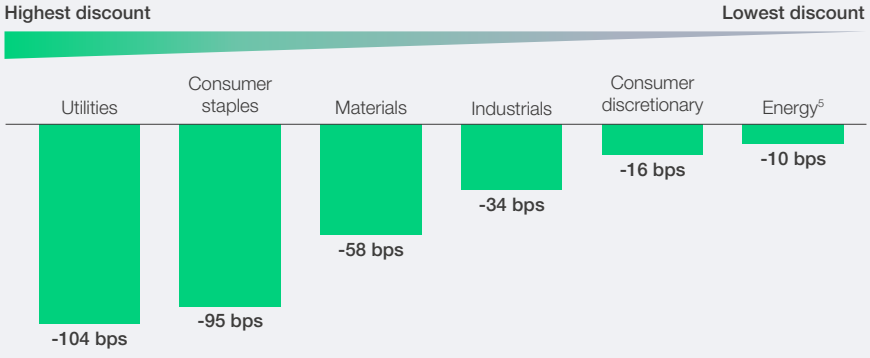
FIGURE 15 | **Access to capital for companies with and without green revenues (2024)**

Companies in the green economy accessed capital at up to 104 bps less than non-green competitors

Average WACC[1] of companies with vs. without green revenues (WACC, n=7,760, 2024)



WACC discount[2] for companies with green revenues vs. companies without green revenues, selected industries with high green opportunities[3,4] (bps, n=4,167, 2024)



Notes: The analysis only includes companies with a minimum end-market capitalization of $1 billion regardless of whether they engage in green or conventional activities. **1.** Simple average weighted average cost of capital (WACC). **2.** Discount is calculated as the difference of the average WACC of companies with green revenues minus average WACC of companies without green revenues. Companies with green revenues are defined as all companies with green revenues in 2024 according to Refinitiv database. **3.** Selected industries excluding real estate, information technology, healthcare, communication services and financial industries (n=2,593), even if these industries also show a WACC discount for companies with green revenues vs. companies without green revenues. **4.** These industries are defined in detail in Appendix 2. **5.** Energy industry includes oil & gas companies.

Sources: see endnote.[64]

3.3 Companies in the green economy often benefit from higher valuations

Companies that show meaningful green revenues often outperform on revenue-focused valuations, reflecting positive investor sentiment. This premium exists across time, across regions and in a number of different industries.

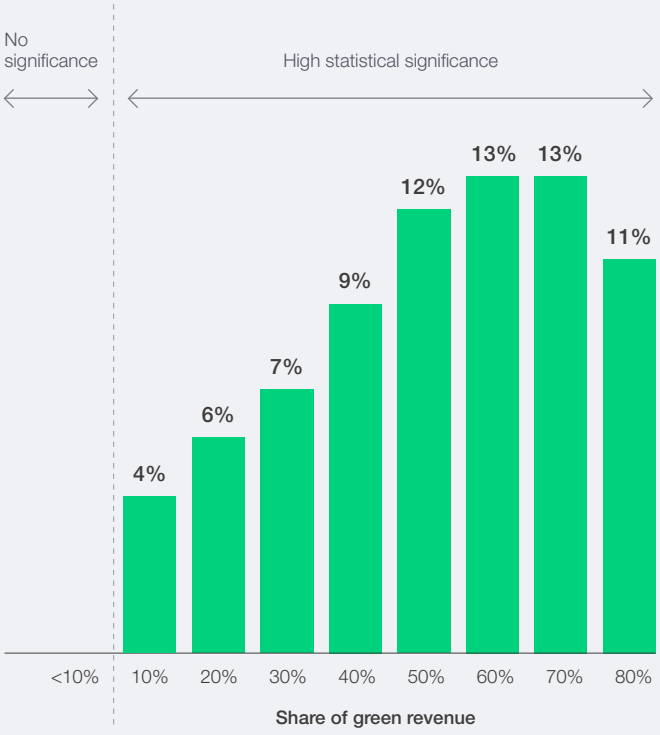
Analysis covering 2016 to 2024 found that companies with a share of green revenues over 10% achieved higher price-to-revenue (P/R) and enterprise-value-to-revenue (EV/R) multiples in capital markets (see Box 3). The P/R metric serves as a quick gauge of short-term shifts in investor sentiment, while EV/R captures overall capital structure and long-term market value. What is more, this premium correlates with the share of green revenues that companies achieve. For example, companies with around 20% of green revenue enjoyed 6% P/R and 6% EV/R multiple expansion (see Figure 16). For companies with around 60-70% of green revenue, this premium was more than twice as high. These effects were robust across time, persisting beyond one year and across pre- and post-COVID periods.

> **It's not "environment vs. economy" – it's the same playbook. Sustainability and competitiveness are intertwined. For too long, the myth persisted that climate action was a feel-good add-on or a drag on the balance sheet. The truth? When you lean into decarbonization, you're solving for business fundamentals – cutting operating costs, preserving capital and hardening resilience.**
>
> Katie McGinty, Vice President, Chief Sustainability and External Officer, Johnson Controls

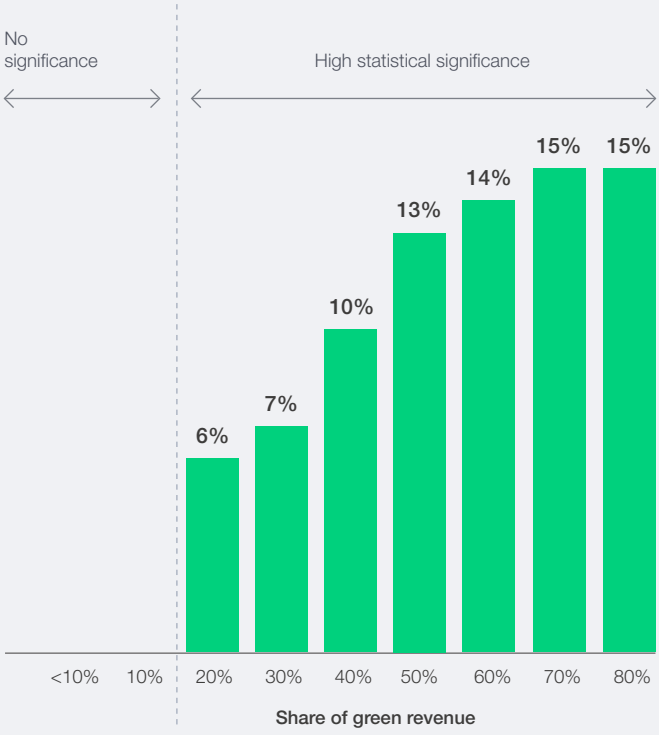
FIGURE 16 **Valuations for companies, by share of green revenues (2016-24)**

Companies with over 50% green revenues attracted valuations 12-15% higher than non-green competitors

Average impact of green revenue on **P/R**, by share of green revenue (2016 to 2024)



Average impact of green revenue on **EV/R**, by share of green revenue (2016 to 2024)



Notes: P/R = price-to-revenue, EV/R = enterprise-value-to-revenue.

Sources: see endnote.[65]

> Many sectors showed some form of valuation premium for companies with a higher share of green revenues. In no sector was there a valuation discount.

This revenue valuation premium is robust across a number of industries – and especially pronounced in sectors where one would expect it. Many sectors showed some form of valuation premium for companies with a higher share of green revenues. In no sector was there a valuation discount. In sectors such as utilities (e.g. power generation, renewable electricity, grids) and industrials, which are directly linked to the transition, "greener" companies benefitted the most. So do companies in some close-to-consumer sectors selling more sustainable consumer products (e.g. consumer staples).[66]

The key drivers behind this premium are, of course, somewhat speculative. The valuation premium is not automatic: to build investor confidence, companies must demonstrate profitability, a credible right to win and also communicate a clear green narrative. However, this premium clearly exists and brings many other benefits. Companies with green offerings tend to be exposed to higher-growth markets. They are more likely to benefit from supportive regulation. They are often able to achieve cheaper financing (as described above) and may be perceived to carry less long-term downside risk – all factors that build investor confidence and ultimately business valuations.

BOX 3 About BCG's valuation analysis

This BCG valuation analysis covered more than 2,000 companies reporting green revenues from the Financial Times Stock Exchange (FTSE) Russell dataset. To ensure institutional relevance and data quality, BCG focused on companies with market capitalizations above $1 billion – those most likely to offer consistently high-quality financial disclosures.

BCG conducted statistical regressions at the global and industry levels to isolate the impact of green revenue growth from other financial signals. The dataset tracks revenue shares linked specifically to green activities as defined by LSEG across more than 48 markets. To understand the impact of green revenues on valuations, BCG analysis focused on revenue multiples as these metrics provide insights into investor perceptions and company value.

The price-to-revenue (P/R) multiple offers a measure of investor sentiment, responding to shifts in revenue performance and market expectations. Conversely, the enterprise-value-to-revenue (EV/R) multiple captures broader structural valuations and companies' overall capital structure. Analysing both P/R and EV/R multiples reveals how green revenue growth can simultaneously influence investor sentiment and company valuations.

4 How to grow in the green economy: lessons from past winners

Successful CEOs build strong purpose and strategy, a unique value proposition and a lean operating model. Winning CEOs scale up fast with *growth accelerators*.

The green economy is growing. Companies operating in it on average manage to grow faster, get access to cheaper capital, build competitiveness for the future and can (accordingly) be valued at a premium on capital markets. However, winning in this market is not always easy. This chapter explores success factors to build businesses in this space – and what can be learned from past winners.

4.1 CEO guide to growing in the green economy

Green growth is not fundamentally different from other growth endeavours. However, green markets can be more difficult to navigate as they are often more nascent and rely on technologies that are still at the beginning of their maturity curve. Companies that succeed demonstrate a strong purpose and strategy, a compelling value proposition and an agile operating model. Importantly, they leverage three "growth accelerators", which include the ability to reach tech maturity while rigorously pushing cost efficiency, shaping and navigating regulation and ecosystems, and accessing smart capital.

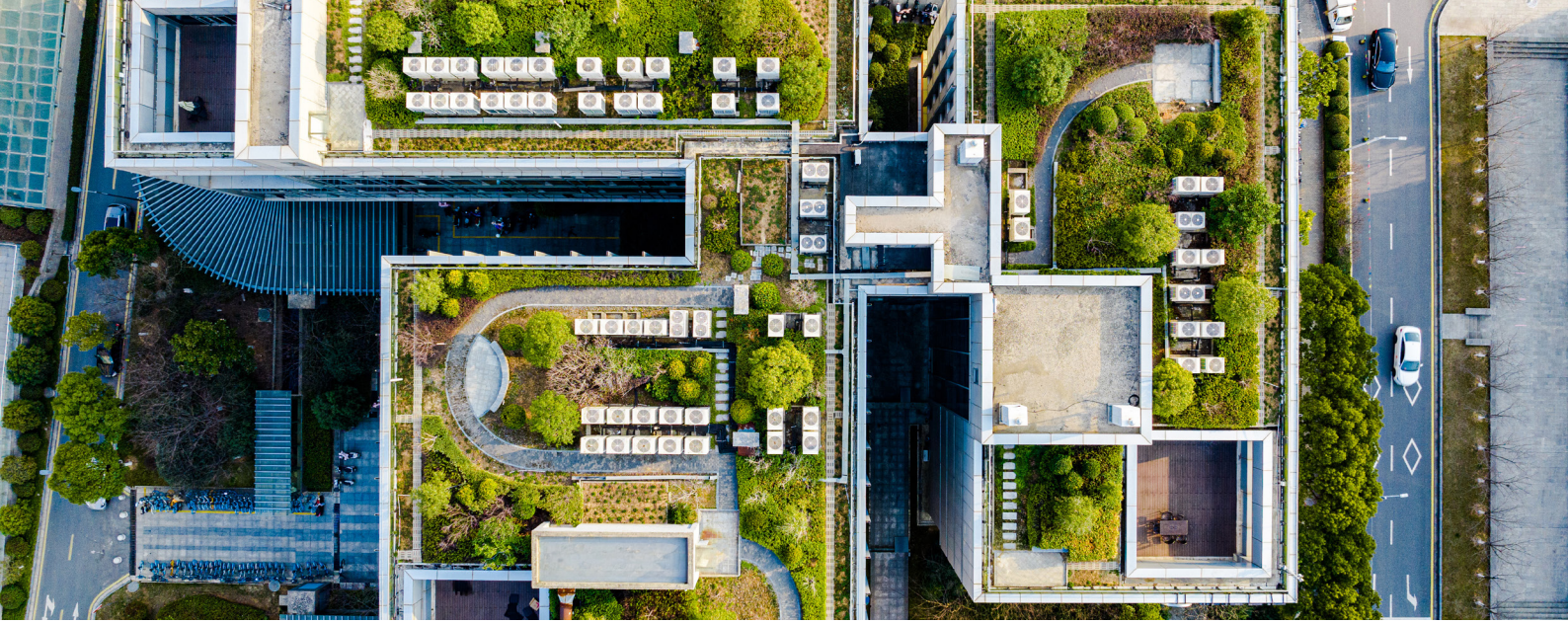
Based on industry experience and insights from interviews with a dozen members of the Alliance of CEO Climate Leaders, this chapter presents four critical priorities for CEOs (see Figure 17), alongside select case studies that bring these priorities to life:

- Purpose and strategy
- Value proposition
- Operating model
- Growth accelerators

> **Remember: this isn't about virtue signalling. It's about building a business that wins in a volatile world. Or as I like to say, there is no trade-off – sustainability is good business.**
>
> Katie McGinty, Vice President; Chief Sustainability & External Officer, Johnson Controls

FIGURE 17 **Four CEO priorities for green growth**

Sources: Expert calls, CEO interviews, BCG analysis.



Purpose and strategy: a green ambition that works with your corporate strategy

Successful companies embed green growth at the core of their strategy, defining a clear **ambition** anchored in their broader corporate strategy and purpose. Strong C-suite responsibility for this vision is vital to foster real engagement and empower employees to take risks. More importantly, C-suite ownership instils confidence in investors and employees that green growth remains a priority despite shifting narratives or public noise.

CASE STUDY 1

Schneider Electric – Anchoring green **ambition** in purpose to drive sustainable growth

BOLD AMBITION

Schneider Electric's vision is: "To create impact by empowering all to make the most of our energy and resources, bridging progress and sustainability for all." To embed sustainability in the business and drive decarbonization, efficiency and resilience across industries and geographies, the company created the Schneider Sustainability Impact (SSI) programme. The company focused on three key levers to bring about this transformation: electrification, automation and digitalization.

The approach worked. By 2024, 90% of Schneider Electric's revenues aligned with the EU Taxonomy for green activities.

Its revenues grew fourfold, from €9 billion in 2003 to €38.2 billion in 2024. At the same time, Schneider Electric earned repeated recognition as the world's most sustainable company, by TIME Magazine/Statista and Corporate Knights, reflecting both its market leadership and its ability to deliver measurable impact at scale.

> **Sustainability isn't a side project: it's a core pillar of how we operate and create long-term impact.**
> Olivier Blum, CEO, Schneider Electric

Sources: Executive leadership interview with Schneider Electric.

Successful CEOs start by identifying where their company already has a credible **right to win** – such as in segments where it has established customer trust, proven technological or topic expertise, or privileged access to supply chains. Building from these positions of strength allows them to allocate capital to areas with the highest likelihood of return.

> **We don't separate "green business" from our "core business" – because sustainability is hard-wired into how we operate. Our growth comes from helping our customers deliver positive sustainability outcomes.**
> Matthew Pine, CEO, Xylem

Quantified goals and performance **metrics** across financial targets and **green standards** must flow from this strategy to keep the organization in lockstep and clearly communicate value to investors and customers. This is particularly important for customers of green products, as it demonstrates credibility in the product and its green "claims". While measurements may be industry-specific, companies can consider using life-cycle assessments (LCAs), product carbon footprints (PCFs) and chain-of-custody (CoC) methodologies. Transparently communicating green standards in external communications can materially strengthen the value proposition and build a culture of trust with customers and investors.

CASE STUDY 2

Heidelberg Materials – Scaling-up carbon-captured cement through novel **green standards** (chain-of-custody models)

GREEN STANDARDS

In June 2025, Heidelberg Materials inaugurated the world's first industrial-scale carbon capture facility in the cement industry at its Brevik plant in Norway. This demonstrates the viability of carbon capture and storage (CCS) for the cement industry and enables production of the first carbon-captured net-zero cement at scale.

Customers can purchase Heidelberg Materials' net-zero cement – known as "evoZero" – either as a physical product shipped directly from Brevik or as a virtual product, whereby local cement from any Heidelberg plant in Europe is paired with a Brevik-issued environmental attribute certificate (EAC). Such novel chain-of-custody models are critical to building the business case for CCS: they enable Heidelberg Materials to reach first-mover customers seeking net-zero products – even in markets where CCS is not yet scaled-up – while helping to avoid additional transport emissions and costs.

Sources: Executive leadership interview with Heidelberg Materials.

> **It is important to promote the acceptance for innovative market-based mechanisms, such as chain-of-custody models. This drives demand and supports the business case for deep decarbonization.**
>
> Katharina Beumelburg, Chief Sustainability & New Technologies Officer, Heidelberg Materials

Insights from Brevik are already informing a dozen additional CCS projects across the company, some aiming for full plant decarbonization by 2030, providing a blueprint for broader industrial adoption and allowing for the scale-up of Heidelberg Materials' net-zero product offering that helps customers achieve their CO_2 reduction targets.

Value proposition: a compelling solution that is not just green, but fundamentally competitive

Effective companies develop a sharp **unique selling proposition** rooted in genuine customer needs and built around real and latent demand. While this might seem obvious, it remains a common pitfall for companies in the green economy. "Being green(er)" is not a value proposition in itself – it only becomes valuable when it serves a genuine demand and continues to meet that demand at a competitive quality and cost. Too many early-stage companies in technologies such as low-carbon hydrogen or e-fuels are failing on quality and cost competitiveness.

Equally important is building robust **business cases** that demonstrate both environmental and financial value. For companies, this means quantifying the financial upside of sustainability and identifying opportunities where customers might be willing to pay a green premium for a solution. When there is no green premium it is critical to quickly compete with conventional, "grey" solutions on value.

Finally, leaders de-risk their value proposition by actively shaping it via early **offtake** agreements. By signalling market confidence and demonstrating tangible value, these agreements help set direction for customer preferences, provide critical proof points to the market and ensure revenue certainty.

> **My biggest lesson: keep it simple for your teams and for your customers. Don't just focus on building great products – make adoption simple for your customers. The easier you make it for customers to succeed, the faster they create value for their communities.**
>
> Matthew Pine, CEO, Xylem

CASE STUDY 3

Johnson Controls – A **business case** rooted in customer demands to save energy and costs, while reducing emissions

BUSINESS CASE

Johnson Controls offers high-efficiency heat pumps to meet growing customer demands for cost reduction, energy efficiency and lower carbon emissions – particularly to meet the economic and sustainability needs of hospitals, public sector buildings and industrial facilities.

For example, a Spanish food company used the company's heat pumps to achieve ~€1.5 million in annual energy savings, while reducing CO_2 emissions by ~2,000 tonnes. Another customer, a Danish hospital, cut emissions by ~80-90% and reduced energy costs by ~80%. Such success stories have strengthened Johnson Controls' competitiveness and driven adoption of its green technologies.

Sources: Executive leadership interview with Johnson Controls.

> **Sustainability is not a trade-off. It's the strategy that future-proofs our customers.**
>
> Katie McGinty, Vice President; Chief Sustainability & External Relations Officer, Johnson Controls

Operating model: A new model, built for rapid scale

Building any growth business requires a focused culture and an agile, accountability-driven **team**. Many successful companies rely on lean, integrated teams that unite technical, commercial and sustainability expertise, upskilling existing talent and coordinating tightly across functions to scale up quickly without added bureaucracy. Others, however, establish distinct growth units with dedicated capabilities, governance and financing to give new green businesses the focus and flexibility they need. The key is to be clear on which model fits the company's strategy and avoid getting stuck between the two.

CASE STUDY 4

Xylem – Strengthening culture and **teams** to foster green growth

CULTURE & TEAMS

Xylem's senior leadership team realized that to achieve the impact envisioned in the company's stated purpose – "empowering customers and communities to build a more water-secure world" – they could not just rely on technology. They needed to develop a high-impact culture built around three core behaviours: innovation, empowerment and accountability.

By anchoring this culture within its operating model, the company ensured organizational alignment among its 23,000 global workers. This in turn enabled the company to transform its performance and accelerate growth in high-impact areas, such as digital solutions for water management, advanced treatment systems and customer-centric water services.

Sources: Executive leadership interview with Xylem.

A **sustainable supply chain** becomes a critical enabler of scale as demand accelerates. Successful leaders secure reliable access to critical materials and inputs by diversifying across regions and, where needed, integrating further along the value chain to reduce exposure to bottlenecks and price shocks. Embedding sustainability early helps manage supply risk, meet tightening regulatory standards and protect margins as demand grows.

Finally, leading CEOs **leverage tech (including AI) and existing assets** as multipliers for scale. They automate core processes to cut cost and error, use analytics to anticipate demand and manage resources, and deploy digital tools to track performance and emissions. For capex intensive sectors, in particular, leveraging and upgrading existing assets can help companies expand capacity with lower additional costs and complexity.

CASE STUDY 5

Heidelberg Materials – Leveraging existing assets to increase circularity in concrete production

EXISTING ASSETS

Heidelberg Materials has developed "ReConcrete", an innovative recycling process that selectively separates demolition concrete into sand, gravel and recycled concrete paste (RCP). The RCP is then exposed to exhaust gases from the production process, allowing CO_2 to chemically bind within the material. Once carbonated, the reclaimed paste can partially replace energy-intensive clinker in composite cements, thereby acting as natural carbon sink.

By leveraging existing assets, Heidelberg has improved its operating model and secured a competitive supply chain advantage by becoming its own supplier, proving at industrial pilot scale that concrete can be fully recycled without loss of quality.

Sources: Executive leadership interview with Heidelberg Materials.

Growth accelerators for winning in the green economy

While getting the fundamentals right is key to all companies in the green economy, leaders go further with "growth accelerators" that are particularly important for success in green markets.

Enable a route to tech maturity and cost efficiency

Growing a business in the green economy often requires scaling-up an immature technology in a regulated, infrastructure-heavy sector or in a market setting that is still imperfect, posing extra challenges to grow. Many emerging technologies rely on favourable regulation and require a premium to work profitably. That is not in itself a problem, but over time it creates a ceiling to growth. "It's green, so it can be more expensive" only works as a strategy for a niche of the market. Winning companies in the past have been those that most rigorously push for technology maturity and bringing down costs.

For example, the success stories of renewables and electric mobility may have been kick-started by strong regulatory support, but they took off thanks to massive advances in technology and rapidly declining costs (see Chapter 2). Many promising companies fall into the trap of neglecting cost efficiency and overestimating how long customers will be prepared to pay a green premium, instead of focusing on improving affordability.

CASE STUDY 6

Holcim – Innovating to scale up decarbonization in a **cost-efficient** manner

COST EFFICIENCY

Holcim aims to lead in sustainable building and carbon reduction by embedding climate and circularity in its strategy and decarbonizing the cement and concrete value chain. Central to Holcim's approach has been using innovation to save costs and meet ambitious customer needs.

The company has invested consistently in R&D to optimize production processes; and it has scaled up manufacturing efficiently to reduce unit costs and enhanced energy efficiency across operations to lower overall cost-to-serve.

This disciplined use of innovation has made decarbonization and circular construction profitable. Holcim achieved 30% revenue growth and 60% EBIT growth in Europe between 2021 and 2024.

> **We found a correlation between sustainability and profitability.**
>
> Miljan Gutovic, CEO, Holcim

Sources: Executive leadership interview with Holcim.

CASE STUDY 7

OCP Group – Investing in nascent **technologies** through a balanced portfolio

TECH MATURITY

OCP Group's growth strategy builds on the interplay between mature solutions and nascent innovations. Large-scale assets such as renewable energy integration, efficiency upgrades, water desalination and recovery, and digitalized mining and logistics deliver immediate, low-risk reductions in emissions and resource intensity. These proven levers generate near-term impact, strengthen financial resilience and provide operational stability.

At the same time, OCP invests in emerging solutions such as green hydrogen and ammonia, carbon capture for hard-to-abate phosphoric acid emissions, advanced electrification and circularity models that are not yet mature but hold significant potential. In short: mature assets pay for the journey today, while nascent solutions define the destination tomorrow.

> **To those navigating the early stages of green transformation: think of sustainability as the growth engine of your strategy, not a compliance challenge. Make it central to your value creation, align it with your country's natural endowments – in our case Morocco's renewables and agriculture – and invest early in innovation and partnerships. By turning climate challenges into opportunities, leaders will shape the next era of global competitiveness and shared prosperity.**
>
> Hanane Mourchid, Chief Sustainability & Innovation Officer, OCP Group

Sources: Executive leadership interview with OCP Group.

Shape and navigate ecosystems and regulation (including via partnerships)

In parallel, securing alignment and partnerships with governments and other stakeholders remains vital. Immature technologies require regulatory support to scale up. Companies investing into green materials need a certain level of offtake security from willing buyers – and benefit from unified transparency standards that initially may not exist. With many new or technical fields emerging, governments and corporations alike benefit from collaboration to share expertise and set standards that can help to grow the industry.

> **Policy engagement is just as critical. We don't wait for regulation – we help shape it.**
>
> Christophe Beck, CEO, Ecolab

Winning companies have been able to shape and navigate supportive regulations, as well as to rally support, standards and coalitions in their broader ecosystems. Take utilities, whose scaling-up of renewables is typically achieved by discussing tariff structures, permitting frameworks and investment approvals with regulators. Or the shipping industry: the International Maritime Organization's direction on introducing a carbon price for shipping came on the back of major players such as Maersk advocating in favour of one, even as governments delay a consensus.[67] In sectors such as chemicals, where a lack of homogenized standards remains a roadblock for adoption of greener products, company initiatives can serve as a blueprint, such as Dow's Carbon Footprint Ledger which applies existing carbon accounting frameworks (e.g. ISO 14067, Greenhouse Gas Protocol, mass balance accounting) to certify low-carbon products.[68]

Regulatory frameworks will continue to evolve in the years ahead and companies will need to develop tailored strategies for each market and adapt those strategies as policies shift. However, companies should avoid the mistake of assuming policy support or public funding will be permanent, particularly considering election cycles. Over-reliance on regulatory backing during market scale-up can leave businesses exposed when policies shift or funding is reduced.

> **To unlock [full potential], policy and regulations must be aligned with and support investments and the industry's efforts to sustainably scale and create long-lasting value.**
>
> Rasmus Errboe, CEO, Ørsted

CASE STUDY 8

IKEA (Ingka Group) – Working across private and public sectors to **shape regulation** on mattress recycling

SHAPE REGULATION

Ingka Group, the largest retailer in the IKEA franchise, has invested in RetourMatras, a leading mattress recycler with the capacity to process 1.5 million mattresses annually in the Netherlands, allowing up to 85% of materials (e.g. foam, metal, textile) to be recovered. In cooperation with various brand-owners, including Ingka and the Dutch government, an extended producer responsibility scheme was formed, which diverts over 2 million disposed mattresses per year from incineration to recycling, avoiding 76 kg of CO_2 emission per mattress. By leveraging its multinational presence, Ingka is taking lessons learned and shaping recycling policies across multiple regions, accelerating the transition to a circular economy.

Key policy actions advocated by the company include:

- Prioritizing recycling through legislation.
- Requiring mandatory harmonized municipal collection systems.
- Supporting a mattress extended producer responsibility (EPR) blueprint for the EU.
- Asking for public reporting on collection and recycling rates, as well as on how collected funds are spent to support national and EU recycling targets.
- Allowing mattresses disposed for recycling to cross EU borders.

Sources: Executive leadership interview with Ingka Group.

Unlock smart capital and diversified financing

Naturally, scaling-up new businesses requires substantial investment. Green projects can require massive upfront capital expenditure and may come with higher risk than traditional company initiatives, making access to financing a key challenge for leadership. Successful companies try to overcome this by leveraging an array of potential investment sources – ranging from traditional finance to blended public subsidies and support schemes, green investment funds, development banks, foundations and more. Many leading companies have leveraged a combination of these sources to bring down their cost of capital. One way to help unlock this is to lead in tracking results that demonstrate value to investors, using traditional financial metrics such as ROI and industry-specific KPIs.

CASE STUDY 9

ReNew – Accessing diversified **capital** to drive India's energy transition

SMART CAPITAL

ReNew has grown into one of India's leading independent renewable power producers with a diversified pipeline of more than 28 GW across wind, solar, storage and emerging green fuels. In addition, ReNew provides end-to-end solutions in a just and inclusive manner in the areas of clean energy and value-added energy offerings through digitalization, storage and carbon markets that are increasingly integral to addressing climate change.

Operating in a capital-intensive sector, ReNew has had to consistently raise capital to sustain high growth rates. Financing has therefore been central to its strategy, not just as a source of funds but as a competitive differentiator in scaling-up quickly and cost-effectively.

ReNew has relied on a diversified set of financing sources to fund rapid expansion. It has freed up balance sheet capacity for new builds by selling stakes in operational projects to long-term investors such as pension and sovereign wealth funds. The company has partnered with global investors including Goldman Sachs, Abu Dhabi Investment Authority, CPP Investments and JERA, building a stable equity base and credibility in international markets. In addition, ReNew has attracted concessional financing from institutions such as British International Investment – the UK's development finance institution (DFI) – and other DFIs, lowering the cost of capital and enabling investment in emerging technologies.

With this diversified financing approach, ReNew has achieved compound annual growth rates of 18-20%. Every 5 MW of capacity effectively financed an additional 1 MW the following year. Today, ReNew has transitioned to a more balanced model, where internal cash flows and selective divestments fund 2.5-3 GW of new capacity each year, sustaining growth while strengthening profitability.

Sources: Executive leadership interview with ReNew.

4.2 Different avenues to success

Selecting the best pathway towards growing a successful green business requires a clear understanding of the strategic play and an accurate assessment of the company's starting point. It depends on factors such as target customer segment, distinctiveness of the value proposition and potential to scale up. Companies that thoroughly evaluate these elements will be well-positioned to select the most appropriate avenue for the opportunity at hand. Some promising routes to scale up green businesses include growing organically, through mergers and acquisitions, or through partnerships. This section explores each route in more detail, illustrated by case studies.

Organic growth

While the development of green businesses often requires new skills and expertise, it is also true that many companies have valuable existing assets and capabilities that could be leveraged for an organic green market opportunity. These could include intellectual property, installed infrastructure, R&D prowess and partnerships. The critical point is to recognise whether what a company already has is strong enough to grant real access to a new green market – and the inherent right to win over time.

CASE STUDY 10

Bayer drives **organic growth** through agricultural R&D-led innovation

ORGANIC GROWTH

For Bayer – one of the world's largest agricultural companies – climate change is already reshaping its core markets, making innovation not optional but existential. New seeds, for example, can take over 10 years to develop, meaning today's R&D must anticipate the climate conditions a decade from now.

Bayer invests over €2 billion annually in agricultural R&D, significantly more than competitors, and now benefits from a steady pipeline of innovations. These include: short-statured corn, developed to increase resilience to drought and reduce lodging (bending or collapsing) from extreme winds; gene-editing to reduce pesticide volumes and make plants more resilient; and direct-seeded rice, which cuts methane emissions, reduces water use by almost half and allows double cropping. Farmers benefit from higher yields and reduced input costs, while food systems gain from improved soil and water management.

> **R&D budgets are the true sustainability reports. If your R&D budget is not aligned with your sustainability goals, then the rest is noise. Go with the R&D budget to understand the future of the company.**
>
> Matthias Berninger, SVP Public Affairs, Science and Sustainability, Bayer

Sources: Executive leadership interview with Bayer.

CASE STUDY 11

Schneider Electric scales up energy management solutions through **organic growth** investments

ORGANIC GROWTH

Developing and scaling-up digital energy management solutions is core to Schneider Electric's strategic growth plans. To achieve this, the company leveraged decades of operational technology (OT) expertise and millions in R&D investments to develop "EcoStruxure", a platform for real-time energy monitoring and control that is now a cornerstone of its organic growth.

By combining OT with advanced IT (e.g. cloud computing, analytics, cybersecurity, IoT), this open and interoperable platform can scale up across geographies and industries, enabling the company to expand adoption in energy-intensive sectors worldwide. The platform has reinforced the company's competitiveness through a differentiated, software-centric model and generated recurring revenue streams.

Sources: Executive leadership interview with Schneider Electric.

Mergers and acquisitions (M&A)

For companies expanding outside their core remit, targeted M&A can accelerate access to critical capabilities and technologies, quickly expand a company's existing offering and help build scale in high-growth segments. Two partners with complementary strengths, either upstream or downstream, can unlock opportunities together that neither could capture alone. This supports the creation of synergies that accelerate impact and greater scale. However, as with any M&A, there are the usual caveats around integration and financial risk.

CASE STUDY 12

Holcim leverages **M&A** as a driver of profitable growth

M&A STRATEGY

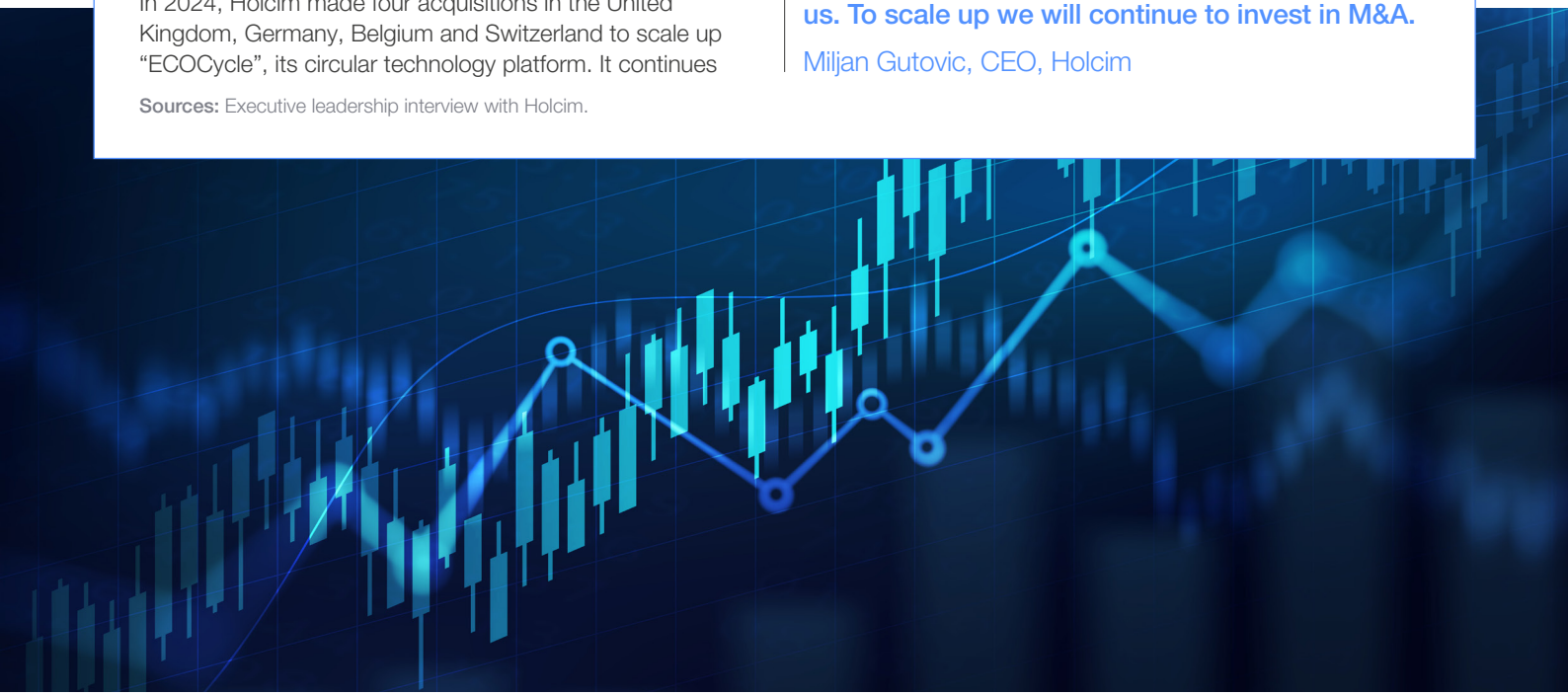
Holcim has pursued an active M&A strategy to capture profitable growth and add value. Holcim completed more than 100 deals between 2018 and 2024 to optimize its portfolio. The company strategically redeployed capital from divestments into various growth opportunities, including circular construction.

In 2024, Holcim made four acquisitions in the United Kingdom, Germany, Belgium and Switzerland to scale up "ECOCycle", its circular technology platform. It continues to expand its portfolio, strengthening its competitiveness and creating new avenues for profitable growth.

We see M&A as a great opportunity for growth. Circular construction is a new business model for us. To scale up we will continue to invest in M&A.

Miljan Gutovic, CEO, Holcim

Sources: Executive leadership interview with Holcim.



Partnerships

In many instances, green business ventures depend on activating a broader ecosystem that aligns select partners across the value chain to build infrastructure, shape standards and generate the market demand needed to scale up emerging technologies.

In such situations, an effective model is to establish strong partnerships through alliances, joint ventures and similar. The key consideration for a CEO is to understand the distinct and differentiated role their company must play in a bigger partnership model – for example, orchestrator, integrator, operator, supplier, broker or developer. Companies in the green economy often collaborate more readily than elsewhere, both to mitigate higher risks and because of a shared belief that meaningful climate action requires collective effort rather than isolated initiatives.

Collaboration isn't a nice-to-have; it's the engine of innovation.

Katie McGinty, Vice President; Chief Sustainability & External Officer, Johnson Controls

CASE STUDY 13

Ecolab and Digital Realty unlock green growth in smart water solutions through private **partnerships**

PARTNERSHIPS

The rapid expansion of data centres, fuelled by AI and digitalization, is intensifying pressure on water and energy resources. In 2025, Ecolab launched a direct-to-chip liquid cooling solution, known as “3D TRASAR”, to improve uptime, cut water use and optimize energy efficient cooling in the sector.

To scale up impact, Ecolab partnered with global operators such as Digital Realty, to integrate monitoring, performance insights and onsite expertise across entire facility fleets. These collaborations create durable revenue streams that expand as each new site is added to the platform. In a US pilot with Digital Realty, the AI-powered solution is expected to reduce water use by up to 15% across 35 data centres, extend equipment life and avoid withdrawing up to 126 million gallons of potable water annually from local watersheds.

Sources: Executive leadership interview with Ecolab.

CASE STUDY 14

Bayer, Bunge and Chevron de-risk a new value chain by **partnering** via a joint venture

PARTNERSHIPS

Decarbonizing aviation fuel requires new sustainable raw materials (e.g. plant-based crops) that do not compete with food production or trigger land-use change. “CoverCress”, now a product in Bayer’s portfolio, is a low-input rotation crop grown between corn and soy in the US Midwest. This crop improves soil quality and creates new farm income while supplying a low-carbon oil suitable for renewable diesel and sustainable aviation fuel (SAF) production.

Recognising that crop innovation alone would not secure adoption, CoverCress Inc. (CCI) reached a commercial processing/offtake agreement with Bunge Chevron Ag Renewables (BCAR) – a Bunge/Chevron joint-venture – making BCAR the key counterpart to CCI as both processor and offtaker. In parallel, Bayer acquired a 65% majority stake in CCI, while Bunge and Chevron retained the remaining 35%. This offtake agreement locks in demand and gives farmers and processors confidence in the crop’s long-term marketability, while aligning the entire value chain from seed innovation through processing to end-use under a de-risked commercial framework. This partnership is helping transform CoverCress from a breeding innovation into a commercial feedstock within a decade of R&D.

Sources: Executive leadership interview with Bayer and Bunge.

> **Partnering along the entire building value chain is a new sign of leadership. It helps to de-risk legal, financial and regulatory shifts.**
>
> Miljan Gutovic, CEO, Holcim

4.3 Lessons from past winners

The list of reasons why the green economy represents a massive growth opportunity is long and well understood. But how companies can seize the opportunity to build valuable new green businesses is far from straightforward. Over the last couple of years, CEOs have witnessed this firsthand. A summary of some of their lessons learned is presented below in Box 4.

BOX 4 **Lessons from past winners**

DOs: Top advice for CEOs entering or growing in the green economy

1

Personally champion your green ambition:

Sustain a clear, driven vision and embed green growth deeply into your core strategy rather than as a side initiative or compliance requirement.

2

Insist on business case rigour:

Align your purpose and strategy with value creation, building a resilient operating model.

3

Future-proof your market:

Invest in R&D and early pilots to prove your concept before rapidly scaling-up to industrial level.

4

Proactively manage expectations on financials:

Bring investors and employees along the profitability journey – in some immature markets short-term profitability may not be the best measure.

5

Overcome silos early:

Be open to unconventional partnerships with players throughout the value chain, financial institutions, governments and even peers to evolve your industry's ecosystem.

DON'Ts: Common pitfalls for CEOs to avoid

1

Misguided value proposition:

Over-indexing on a green narrative without a robust business case or commercial viability against decarbonization alternatives.

2

Underemphasising costs:

Putting too much trust in the long-term ability to charge a green premium while neglecting the need to rigorously slash unit economics.

3

Overreliance on policy:

Expecting perpetual policy support or public funding during market scale-up.

4

Incrementalism:

Lacking boldness and understanding of green customer value, for example offering a product with "-10% carbon footprint" rather than a "truly net-zero" product.

5 Call to action: how business and government can accelerate the green economy

Green technologies and business models are surging ahead. Companies and governments alike can make sure they don't miss the window of opportunity by prioritizing 10 key actions.

The green market represents a huge opportunity with plenty of unmet future demand for companies to serve. It also provides a material opportunity for governments to accelerate GDP growth, strengthen resilience and create jobs. This chapter presents some priority actions that both companies and policy-makers could take to enable them to seize these opportunities (see Box 5).

BOX 5 **How to accelerate green growth – a summary**

Companies		Policy-makers		
1 Enable customers to make greener choices	2 Build the business case for green products	1 Set clear and reliable long-term decarbonization targets	2 Use public procurement to create early demand	3 De-risk private capital to grow green investment and boost innovation
3 Shape and create demand	4 Influence the rules of the market	4 Remove obstacles to green technology and infrastructure	5 Align economic incentives for green investments	6 Develop standards for green markets

5.1 For companies: plenty more opportunities to harvest

"The global GDP impact from climate inaction could be around three times more costly than the ~$4 trillion needed annually to combat climate change.

The times of optimism, when any green business model seemed to wield unlimited potential, have passed. Still, on average, companies in the green economy have outgrown and outperformed[69] – and this trajectory looks set to continue. The fundamental need for green technologies and business models – to decarbonize and build resilience against extreme weather – the superiority of (some) green technologies and the demand for green products in (some) consumer markets will continue to push growth forwards.

Four opportunities for corporate leaders to accelerate the green economy

Companies can make sure they don't miss this window of opportunity by doing the following:

1. **Enable customers to make greener choices**: There is an underserved market for truly sustainable products that too few companies have tapped.[70] Companies that are early to market should realize outsized growth.
2. **Build the business case for green products**: By bringing down the cost of green technologies and accelerating mainstream adoption, companies could significantly expand the total addressable market, protect margins and position themselves competitively.
3. **Shape and create demand**: Demand for green solutions is still nascent in many sectors. That does not mean it is not there. Companies could activate this demand by understanding and marketing their true value, securing partnerships on initial offtake, aggregating demand through coalitions – such as the World Economic Forum's First Movers Coalition[71] – and, if needed, adapting their go-to-market strategy.
4. **Influence the rules of the market**: Companies could collaborate with regulators and peers to help transform policy goals into actions – by co-shaping incentives, removing investment barriers and bottlenecks, and partnering on streamlined standards.

"Make sustainability part of how your business runs, not just what it stands for. It's how you drive efficiency, stay competitive and build resilience in a changing world. The shift won't happen through intention alone: it takes leadership, investment and collaboration at scale.

Olivier Blum, CEO at Schneider Electric

5.2 For policy-makers: an opportunity to build resilience and growth

The green economy creates economic growth and resilience – both attractive opportunities for government to seize. In 2023, clean energy alone accounted for almost 10% of global GDP growth, contributing about $320 billion to the world economy.[72] By bringing power generation into domestic hands, the clean energy sector helps countries and regions enhance their energy security, such as Europe in its shift away from Russian oil and gas.[73] It also creates jobs: solar and wind accounted for 16.2 million jobs globally in 2023.[74] Most importantly, in a warming world, acting now is far cheaper than paying to fix climate damage later. Analysis shows that the global GDP impact from climate inaction could be around three times more costly than the ~$4 trillion needed annually to combat climate change.[75]

Six opportunities for policy-makers to accelerate the green economy

> **Government intentions are very critical. In India, we had a big runway because of government setting the right targets and regulations.**
>
> Sumant Sinha, Founder, Chairman & CEO, ReNew

Not all this green growth will happen on its own. Some needs to be nurtured and some could be accelerated through policy intervention. Policy-makers could consider pursuing the following six opportunities:

1. **Set clear and reliable long-term decarbonization targets**: This will provide businesses with adequate planning security – since frequent shifts in government ambition, regulation and funding can stall private capital deployment and erode trust.
2. **Use public procurement to create early demand**: Governments in Organisation for Economic Co-operation and Development (OECD) countries spend $6.5-8.5 trillion (12-13% of OECD GDP) on procurement every year.[76] While green public procurement policies are in place in almost 90% of these countries, many lack the rigour and scale needed to create meaningful green demand.[77,78]
3. **De-risk private capital to grow green investment and boost innovation**: Scaling-up green technologies depends on mobilizing private investment, yet many projects face high perceived risks and uncertain returns. De-risking through guarantees, concessional capital, long-term offtake agreements and stable policies could further lower the cost of capital and attract institutional investors.
4. **Remove obstacles to green technology and infrastructure**: Permitting delays, infrastructure gaps and skills shortages slow deployment more than technology costs.[79] By fast-tracking permitting for green projects, upskilling the workforce and modernizing grid infrastructure, countries could significantly ease this bottleneck.
5. **Align economic incentives for green investments**: To unlock the full potential of green markets, governments could align incentives so that subsidies, carbon pricing and targeted support mechanisms collectively create a level playing field for low-carbon solutions. This could include reviewing existing fossil fuel subsidies, which remain substantial across multiple markets.
6. **Develop standards for green markets**: In a number of markets, the lack of standards still creates unnecessary transaction costs. To unlock trust and enable scalability, governments could establish robust and consistent standards (e.g. what qualifies as “green”) and align these across jurisdictions.

Conclusion

The green economy is no longer a distant promise: it is here, expanding fast and already creating trillions in value.

There has long been speculation about whether the green economy could deliver further financial benefits. This report highlights that it is no longer a distant promise. The green economy surpassed $5 trillion in value last year and by 2030 it is projected to grow to over $7 trillion.

For businesses, this market is already offering major opportunities to outgrow and outperform, by capturing burgeoning demand for green products and emerging technologies. For governments, it provides opportunities to accelerate GDP growth, strengthen economic resilience and create new jobs.

But leaders cannot afford to wait. Building green businesses takes time and those who delay run a growing risk of falling behind as the market accelerates. Alongside the insights and lessons, this report offers a guidebook for leaders looking to capture value in one of the fastest developing markets on the planet. There is still time to bet on the green economy.

Appendix 1: Definitions of green economy segments

Segment		Subsegment	Description
Mitigation	1 Energy supply & optimization	1.1 Renewable power	(Utility-scale) onshore/offshore wind, solar (PV) and hydropower generation
		1.2 Geothermal energy	Deep geothermal, enhanced geothermal systems (EGS)
		1.3 Nuclear power	Small/advanced modular reactors, conventional large-scale reactors, fusion
		1.4 Waste-to-energy (e.g. for biomass and gas)	Treating & converting waste to energy/heat (biomass/biogas from agri, MSW[2], sludge, C&I[3] waste)
		1.5 Hydrogen and derivatives	Equipment, components and services for green/blue hydrogen and derivatives, incl. fuel cells
		1.6 Energy storage	(Utility-scale) battery energy storage systems (BESS)
		1.7 Electricity grids	Transmission and distribution grids
		1.8 Flexibility management	Smart grids/meters and virtual power plants (VPP)
		1.9 Distributed energy	Small-scale distributed energy (e.g. microgrids), residential/C&I[3] storage, HEMS[4] and DERMS[5]
		1.10 District energy	Centralized heating/cooling generation
		1.11 Energy contracting & energy service companies	Energy service companies (ESCOs) and contracting providers
	2 Industrials & buildings	2.1 Low-carbon materials	Low carbon steel, cement, bulk chemicals and functional materials
		2.2 Building energy management & automation, incl. EMS[1]	Energy efficiency solutions in buildings (energy management systems)
		2.3 Machinery efficiency	Electrification of machinery and equipment, sustainable mining tech (stationary) and high-efficiency motors
		2.4 Industrial green heat	Retrofitted/built-in heat supply for industrial processes (e.g. C&I[3] heat pumps, waste heat recovery)
		2.5 Green packaging	Sustainable design (e.g. lightweighting) and reusable materials
		2.6 Green heating	Heat pumps, hybrid boilers and low-emission heating systems
	3 Transportation & mobility	3.1 Road transportation electrification	Passenger electric vehicles (EVs), heavy-duty and medium-duty trucks
		3.2 Aviation and marine propulsion	Propulsion of vessels using electrical power or hybrid systems, engines for alternative fuels, etc.
		3.3 Sustainable logistics	Route optimization software, fleet management software, mobile business models (e.g. fuelling)
		3.4 Electric charging infrastructure	Charging equipment for public or private electric vehicle (EV) networks
		3.5 Biofuels	Bio-based sustainable aviation fuel (1st and 2nd generation), ethanol & bio/renewable diesel
		3.6 Synthetic fuels & e-fuels	Ammonia as fuel, methanol and e-fuels

Segment		Subsegment	Description
Mitigation	4 Food, agriculture & land use	4.1 Green fertilizers	Bio-based fertilizers, green ammonia and nitrate fertilizers, microbial & soil-enhancing additives
		4.2 Alternative protein	Bioreactors and production technologies (e.g. for plant-based proteins, cultivated meat)
		4.3 Farming technologies	Bio-crop protection, farming infrastructure (e.g. irrigation, lighting), indoor farming
	5 Carbon & methane management	5.1 Carbon capture utilization & storage (CCUS)	Point source, pipelines and infrastructure, industrial carbon reuse, sequestration/mineralization
		5.2 Gas capture, incl. methane	Capture gas byproducts from coal and oil production
		5.3 Engineered carbon removal solutions	Direct air capture (DAC) and bioenergy with carbon capture and storage (BECCS)
		5.4 Nature-based carbon removal solutions	Nature-based carbon sinks (e.g. forestry, wetlands, agriculture)
	6 Circularity & waste management	6.1 Sorting technology	Sorting technology for construction, demolition, MSW[2] and hazardous waste
		6.2 Paper and wood recycling	Fibre recovery systems and recycling plants for paper, cardboard and wood materials
		6.3 Plastics recycling	Mechanical and chemical recycling systems converting plastics into secondary raw materials
		6.4 Metals, batteries and e-waste recycling	Metal smelters, EV battery recycling plants, electrical material recovery systems
		6.5 Construction, demolition waste (CDW) recycling	Crushing and sorting plants, concrete reclaimers and aggregate recovery systems
		6.6 Textile recycling	Fibre regeneration systems, chemical depolymerization and mechanical shredders for textiles
	7 Financial & enabling solutions	7.1 Carbon measurement and accounting	GHG accounting & reporting, carbon footprint analytics, regulatory compliance and standards
		7.2 Carbon markets and services	Carbon credit exchanges, trading platforms, verification and offset registries
		7.3 Sustainable finance solutions	Green and sustainability-linked bonds, climate insurance, ESG investment funds
Adaptation and resilience	1 Food resilience		Climate-adapted agri systems (e.g. smart irrigation) & inputs (e.g. drought-tolerant seeds)
	2 Infrastructure resilience		Flood defences, drainage and climate-resilient infrastructure design
	3 Health resilience		Emergency services, equipment and systems for climate-related health risks
	4 Business & community resilience		Climate forecasting, risk assessment and adaptation planning solutions for businesses & public
	5 Water resilience		Integrated urban and industrial water efficiency, conservation and desalination systems
	6 Energy resilience		Grid-level backup, microgrids and decentralized energy solutions
	7 Biodiversity resilience		Terrestrial ecosystem protection, restoration and rehabilitation

Note: 1. EMS = energy management system. **2.** MSW = municipal solid waste. **3.** C&I = commercial and industrial. **4.** HEMS = home energy management system. **5.** DERMS = distributed energy resource management system.

Source: Boston Consulting Group and Temasek.[80]

Appendix 2: Definition of Industry Classification Benchmark (ICB) industries

1. Technology

Consists of companies that are primarily engaged in the advancement of the information technology and electronics industries. It includes companies developing integrated computer systems and services, application software not specific to industry market segments, and digital platform providers that generate revenue from advertising contents and derive subscription fees from an advertiser. Also included are companies that develop next-generation electronics and related components. Disruptors leveraging "new" technology will not automatically earn their inclusion in the technology industry. Rather, individual company technology applications and services will be reviewed as to the markets they serve. Examples include companies that provide healthcare, technology equipment, electronic entertainment (video games), e-retailers and transaction processing service companies.

2. Telecommunications

Consists of companies that own and operate telecommunications infrastructure to provide content delivery services. Also included are manufacturers of telecommunications equipment and components.

3. Healthcare

Consists of companies that manufacture healthcare equipment and supplies or that provide healthcare-related services such as lab services and in-home medical care, and operate healthcare facilities. Also included are companies involved in research, development and production of pharmaceuticals and biotechnology products and medical cannabis producers.

4. Financials

Consists of companies engaged in savings, loans, securities investment and related activities, such as financial data and information providers. Other examples include mortgage/consumer/corporate financing, investment banking and brokerage, asset management and custody, insurance and mortgage real estate investment trusts (REITs).

5. Real estate

Consists of companies engaged in real estate investment, development and other real estate-related services. Also includes equity REITs. Mortgage REITs are classified under the financials industry.

6. Consumer discretionary

Consists of companies that provide products and services directly to the consumers and their purchasing habits are cyclical in nature (discretionary). Includes companies that manufacture and distribute household durable goods, apparel, home electronic devices, leisure equipment and automotive and related parts. The services segment includes hotels, restaurants, retail/e-retail, passenger transportation and other leisure facilities. It also includes media companies that engage in entertainment content creation and traditional advertisement. It excludes web-portals/hosts that generate revenue through advertisement, which are classified under technology – consumer digital services.

7. Consumer staples

Consists of companies that provide products and services directly to consumers and their purchasing habits are non-cyclical in nature (staples). Includes companies that manufacture, distribute and/or retail food, beverages and other non-durable household goods. It also includes drug-retailing companies as well as agriculture, fishing, ranching and milling companies.

8. Industrials

Consists of companies engaged in the manufacturing and distribution of capital goods and providers of business support services. It includes aerospace, weapons/defence, commercial vehicles, construction materials, industrial machinery and equipment manufacturers. The service segment includes commercial transportation services, business support, maintenance and security services, international trade, transaction processing and diversified logistic support services.

9. Basic materials

Consists of companies that extract or process raw materials and manufacturers of semi-finished goods, such as chemicals, textile, paper, forest products and related packaging products. Metals and minerals miners, metal alloy producers and metal fabricators are also included.

10. Energy

Consists of companies that engage in energy extraction, processing and production activities, as well as those that produce related energy equipment. It includes both renewable and non-renewable energy companies. Companies that primarily engage in distribution of energy are classified in the utilities industry.

11. Utilities

Consists of companies that distribute electricity, gas and water. Most companies in this industry are heavily affected by government regulation. It also includes companies that provide waste, recycling and related environmental services.

Source: London Stock Exchange Group (LSEG).[81]

Appendix 3: LSEG definition of green revenues

"Green revenues" are defined using the London Stock Exchange Group's FTSE Russell Green Revenues Classification System (GRCS), which covers 10 green sectors, 64 subsectors and 133 micro sectors. The 10 green sectors include:

1. Energy generation
2. Energy equipment
3. Energy management & efficiency
4. Environmental resources
5. Environmental support services
6. Food & agriculture
7. Transport equipment
8. Transport solutions
9. Waste & pollution control
10. Water infrastructure & technology

FTSE Russell has developed a proprietary estimation model to calculate best estimates of green revenues data, using a structured, transparent and repeatable process. This is aligned to the European Union Green Taxonomy.

The Green Revenues data model is applied to nearly 99% of total global market capitalization, capturing 19,000+ public companies across 48 developed and emerging markets. This ensures coverage of FTSE Russell's broadest equity indexes, including the full range of indexes in the FTSE Global Equity Index Series and the Russell US Indexes.

Source: London Stock Exchange Group (LSEG).[82]

Contributors

World Economic Forum

Emily Bayley
Head, Climate Action and Sustainability Reporting

Sebastian Buckup
Managing Director, Centre for Nature and Climate and Forum Foundations

Pelayo Gonzalez Escalada Mena
Lead, Corporate Climate Action

Pim Valdre
Head, Climate and Nature Economy, Member of the Executive Committee

Boston Consulting Group

Léa Boughanim
Consultant

Jens Burchardt
Managing Director & Partner

Stephanie Dunn
Project Leader, World Economic Forum Fellow

Katharina Hennes
Consultant

Patrick Herhold
Managing Director & Senior Partner

Mads Peter Langhorn
Managing Director & Partner

Rich Lesser
Global Chair

Cornelius Pieper
Managing Director & Senior Partner

Santhuri Reddy
Consultant

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Christophe Beck
Chair & Chief Executive Officer, Ecolab

Matthias Berninger
EVP and Head of Public Affairs, Science & Sustainability, Bayer

Katharina Beumelburg
Chief Sustainability & New Technologies Officer, Heidelberg Materials

Olivier Blum
Chief Executive Officer, Schneider Electric

Rasmus Errboe
Chief Executive Officer, Ørsted

Miljan Gutovic
Chief Executive Officer, Holcim

Simon Henzell-Thomas
Global Director, Climate and Nature, IKEA (Ingka Group)

Katie McGinty
Vice-President and Chief Sustainability & External Relations Officer, Johnson Controls

Hanane Mourchid
Chief Sustainability & Innovation Officer, OCP

Matthew Pine
Chief Executive Officer, Xylem

Feike Sijbesma
Founder and Co-Chair, Alliance of CEO Climate Leaders, World Economic Forum
Chair, Supervisory Board Royal Philips

Sumant Sinha
Founder, Chair & Chief Executive Officer, ReNew

World Economic Forum

Noam Boussidan
Programme Head, First Movers Coalition

Pedro Gomez
Head, Industry Agenda, Centre for Nature and Climate, Member of the Executive Committee

Akanksha Khatri
Head, Strategic Insight and Impact, Member of the Executive Committee

Espen Mehlum
Head, Energy Transition Intelligence and Regional Acceleration, Centre for Energy and Materials

Rob van Riet
Senior Advisor, Centre for Nature and Climate

Eric White
Head, Climate Resilience

Boston Consulting Group

Jose Luis Garcia
Knowledge Expert

Marco Giberti
Knowledge Expert

Moji Hashemi
Knowledge Expert

Siddharth Jain
Managing Director & Partner

Laura Latorre
Knowledge Expert

Yushan Lou
Knowledge Expert

Evgeniia Mingaleeva
Knowledge Expert

Kayleigh Sattler
Knowledge Expert

Simona Šimčáková
Consultant

Dave Sivaprasad
Managing Director & Partner

Vuk Trifkovic
Managing Director & Partner

Annika Zawadzki
Managing Director & Partner

Carrie Zhang
Associate Director

Production

Laurence Denmark
Creative Director, Studio Miko

Rose Chilvers
Designer, Studio Miko

Charlotte Ivany
Designer, Studio Miko

Jonathan Walter
Editor

Endnotes

1. Technology refers to companies that are primarily engaged in the advancement of the information technology and electronics industries – see Appendix 2 for a detailed definition of the technology industry. "Green economy" is based on the London Stock Exchange Group (LSEG)'s definition of cumulative green revenues (see Appendix 3).
2. See detailed figures in Figure 1. Sources:
   - Boston Consulting Group. (2025). *Sustaining the Private Capital Opportunity in Climate.* https://www.bcg.com/publications/2025/sustaining-the-private-capital-opportunity-in-climate.
   - Boston Consulting Group and Temasek. (2025). *The Private Equity Opportunity in Climate Adaptation and Resilience.* https://www.bcg.com/publications/2025/investment-opportunities-in-climate-a-and-r.
   - BCG analysis and expert interviews, 2025.
3. Sources: as per those in endnote 2.
4. Industry Classification Benchmark (ICB) is a globally utilized standard for the categorization and comparison of companies by industry and sector, developed by the London Stock Exchange Group (LSEG). It includes: (1) Technology, (2) Telecommunications, (3) Healthcare, (4) Financials, (5) Real estate, (6) Consumer discretionary, (7) Consumer staples, (8) Industrials, (9) Materials, (10) Energy, (11) Utilities – see Appendix 2 for more details.
5. Financial Times Stock Exchange (FTSE) All World Index refers to a market-capitalization weighted index representing the performance of the large and mid-cap stocks from the FTSE Global Equity Index Series.
6. Technology refers to companies that are primarily engaged in the advancement of the information technology and electronics industries – see Appendix 2 for the detailed definition of the technology industry. "Green economy" is based on LSEG's definition of cumulative green revenues (see Appendix 3).
7. S&P 500 refers to a US Stock market index representing all major industries.
8. Sources:
   - Analysis showcased in the first graph relies on data from: London Stock Exchange. (2025). *Investing in the green economy 2025.* https://www.lseg.com/content/dam/lseg/en_us/documents/sustainability/investing-in-green-economy-2025.pdf.
   - Analysis showcased in the second graph relies on a combination of data from S&P Global data extracted via the proprietary CapitalIQ data platform and from: London Stock Exchange. (2025). *Investing in the green economy 2025.* https://www.lseg.com/content/dam/lseg/en_us/documents/sustainability/investing-in-green-economy-2025.pdf.
   - Boston Consulting Group analysis.
9. Science Based Targets initiative (SBTi). (2025). *SBTi Trend Tracker*. https://files.sciencebasedtargets.org/production/files/SBTi-Trend-Tracker-2025.pdf.
10. Current policies – despite real progress – still put the world on track for ~3°C of warming by century's end. Source: Intergovernmental Panel on Climate Change (IPCC). (2022). *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-3/.
11. EM-DAT: The International Disaster Database. (2024). https://www.emdat.be/.
    - Note: EM-DAT's database classifies disasters into two groups of hazards: natural and technological. The natural group is further classified into hydrological, meteorological, geophysical, biological and climatological hazards. This report uses the term "climate-related disasters" to refer to those events referenced by EM-DAT's datapoint of disasters causing $3.6 trillion in economic damage since 2000. This terminology makes clear that these disasters are not "natural" but related to extreme weather events, which may or may not be individually attributable to climate change, but whose frequency and intensity is amplified by climate change.
12. This report draws on multiple perspectives to define the green economy, including frameworks from the European Union Green Taxonomy, Carbon Disclosure Project (CDP), London Stock Exchange Group (LSEG), University of Oxford, Temasek and Boston Consulting Group (BCG) analysis.
13. Boston Consulting Group. (2025). *Sustaining the Private Capital Opportunity in Climate.* https://www.bcg.com/publications/2025/sustaining-the-private-capital-opportunity-in-climate.
14. Boston Consulting Group and Temasek. (2025). *The Private Equity Opportunity in Climate Adaptation and Resilience.* https://www.bcg.com/publications/2025/investment-opportunities-in-climate-a-and-r.

15. Sources:
    - International Energy Agency. (2025). *World Energy Outlook 2025*. https://iea.blob.core.windows.net/assets/0a7a40a4-5dcb-4d6e-a7ad-76a1c90ec8eb/WorldEnergyOutlook2025.pdf.
    - International Energy Agency (IEA). (2025). *Renewables 2025 Analysis and forecasts to 2030*. https://www.iea.org/reports/renewables-2025.
    - International Energy Agency (IEA). (2024). *Renewables 2024 Analysis and forecast to 2030*. https://iea.blob.core.windows.net/assets/17033b62-07a5-4144-8dd0-651cdb6caa24/Renewables2024.pdf.
    - International Energy Agency (IEA). (2023). *Renewables 2023 Analysis and forecast to 2028*. https://iea.blob.core.windows.net/assets/96d66a8b-d502-476b-ba94-54ffda84cf72/Renewables_2023.pdf.
    - International Energy Agency (IEA). (2022). *World Energy Investment 2022*. https://iea.blob.core.windows.net/assets/b0beda65-8a1d-46ae-87a2-f95947ec2714/WorldEnergyInvestment2022.pdf.
    - International Energy Agency (IEA). (2021). *Renewables 2021 Analysis and forecast to 2026*. https://iea.blob.core.windows.net/assets/5ae32253-7409-4f9a-a91d-1493ffb9777a/Renewables2021-Analysisandforecastto2026.pdf.
16. Boston Consulting Group. (2025). *The Energy Transition's Next Chapter.* https://web-assets.bcg.com/f7/66/5d79c0a3446f85a5ab07c5d317a4/the-energy-transitions-next-chapter-sep-2025-r.pdf.
17. While this does not (yet) mean that transitioning to a fully renewable power system is economic, given increasing system integration costs with increasing volumes, it means that in most systems, there is a strong economic incentive to further scale up renewable technologies, which will result in strong future growth even in countries that do not actively support this.
18. The S-curve is a model that describes how new technologies are adopted over time, starting slowly, accelerating as they scale up and then levelling off as they mature.
19. EMBER. (2025). *The first evidence of a take-off in solar in Africa.* https://ember-energy.org/latest-insights/the-first-evidence-of-a-take-off-in-solar-in-africa/.
20. Sources:
    - International Energy Agency (IEA). (2025). *Renewables 2025 Analysis and forecasts to 2030.* https://www.iea.org/reports/renewables-2025.
    - Aurora Energy Research (July 2025). Central case.
21. Fraunhofer ISE. (2024). *Levelized Cost of Electricity Renewable Energy Technologies.* https://www.ise.fraunhofer.de/en/publications/studies/cost-of-electricity.html.
22. Sources:
    - BCG analysis based on data from the International Energy Agency and Intergovernmental Panel on Climate Change.
    - Lena Höglund-Isaksson et al. (2021). *The Role of Anthropogenic Methane Emissions In Bridging the Emissions Gap.* https://www.researchgate.net/publication/356162120_The_role_of_anthropogenic_methane_emissions_in_bridging_the_emissions_gap.
    - UN Environment Programme (UNEP). (2021). *Emissions Gap Report 2021: The Heat Is On*, pp.47-55. https://www.unep.org/resources/emissions-gap-report-2021.
    - Note: An earlier version of this analysis was published in 2023 (World Economic Forum and Boston Consulting Group. (2023). *The State of Climate Action: Major Course Correction Needed from +1.5% to –7% Annual Emissions*); it was revised in August 2025 for this report, based on updated competitiveness projections.
23. Sources:
    - For capacity and cost projections, the report leveraged: International Energy Agency (IEA). (2024). *Renewables 2024 Analysis and forecast to 2030*. https://iea.blob.core.windows.net/assets/17033b62-07a5-4144-8dd0-651cdb6caa24/Renewables2024.pdf.
    - For historical capacity and cost baseline, the report leveraged: International Renewable Energy Agency (IRENA). (2025). *Global Trends*. https://www.irena.org/Data/View-data-by-topic/Costs/Global-Trends.
    - BloombergNEF Annual Battery Price Survey.
    - Boston Consulting Group analysis.
24. Sources:
    - International Energy Agency (IEA). (2025). *Renewables 2025 Analysis and forecasts to 2030.* https://www.iea.org/reports/renewables-2025.
    - Boston Consulting Group analysis.
25. Sources and further notes:
    - International Energy Agency. (2025). *World Energy Balances*. https://www.iea.org/data-and-statistics/data-product/world-energy-balances.
    - International Energy Agency. (2024). *World Energy Outlook 2024.* https://iea.blob.core.windows.net/assets/140a0470-5b90-4922-a0e9-838b3ac6918c/WorldEnergyOutlook2024.pdf.
    - Boston Consulting Group, low-carbon hydrogen demand scenarios model (August 2025).

- Boston Consulting Group, CCUS global deployment scenarios model (August 2025).
- Boston Consulting Group, biofuels demand scenarios model (August 2025).
- Note 1: "Low-carbon hydrogen" includes hydrogen production and hydrogen derivatives. H_2 derivatives are normalized to H_2 input required.
- Note 2: "Biofuels" include liquid and gaseous biofuels, excluding solid biofuels. Liquid biofuels are converted from IEA estimations in EJ to Mtpa using an assumed lower heating value (LHV) of 32.5 MJ/kg. Gaseous biofuels are converted using a LHV of 50 MJ/kg.

26. Limited feedstock is a key barrier to scaling-up advanced biofuels. Current pathways such as hydrotreated esters and fatty acids (HEFA) rely on used cooking oil, animal fats or other waste lipids, which are scarce and can only cover a fraction of projected demand. Next-generation sources (e.g. residues, algae, synthetic fuels) remain immature and costly, creating structural scarcity risks and upward pressure on prices.

27. European Commission. (2025). *Clean Industrial Deal.* https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en.

28. Sources:
    - European Commission. (2025). 2025 *Annual Knowledge Sharing Report of the Innovation Fund – De-risking innovative low-carbon technologies*. https://op.europa.eu/webpub/clima/innovation-fund-2025/en/.
    - Boston Consulting Group analysis.

29. Sources:
    - International Energy Agency. (2025). *World Energy Balances*. https://www.iea.org/data-and-statistics/data-product/world-energy-balances.
    - International Energy Agency. (2024). *World Energy Outlook 2024.* https://iea.blob.core.windows.net/assets/140a0470-5b90-4922-a0e9-838b3ac6918c/WorldEnergyOutlook2024.pdf.
    - Boston Consulting Group, low-carbon hydrogen demand scenarios model (August 2025).
    - Boston Consulting Group, CCUS global deployment scenarios model (August 2025).
    - Boston Consulting Group, biofuels demand scenarios model (August 2025).
    - Note 1: "Low-carbon hydrogen" includes hydrogen production and hydrogen derivatives. H_2 derivatives are normalized to H_2 input required.
    - Note 2: "Biofuels" include liquid and gaseous biofuels, excluding solid biofuels. Liquid biofuels are converted from IEA estimations in EJ to Mtpa using an assumed lower heating value (LHV) of 32.5 MJ/kg. Gaseous biofuels are converted using a LHV of 50 MJ/kg.

30. Sources:
    - Poynting, M. & McGrath, M. (2025). China makes landmark pledge to cut its climate emissions. *BBC.* https://www.bbc.com/news/articles/cj4y159190go.
    - Abnett, K. (2025). China's new climate target 'falls well short', EU says. *Reuters.* https://www.reuters.com/sustainability/cop/chinas-new-climate-target-falls-well-short-eu-says-2025-09-25/.

31. Sources:
    - International Energy Agency. (2024). *World Energy Investment 2024.* https://iea.blob.core.windows.net/assets/60fcd1dd-d112-469b-87de-20d39227df3d/WorldEnergyInvestment2024.pdf.
    - Boston Consulting Group analysis.

32. Sources:
    - International Energy Agency. (2024). *World Energy Investment 2024.* https://iea.blob.core.windows.net/assets/60fcd1dd-d112-469b-87de-20d39227df3d/WorldEnergyInvestment2024.pdf.
    - Boston Consulting Group analysis.
    - Note: low-emissions fuels include modern bioenergy, low-emissions H_2-based fuels and CCUS associated with fossil fuels.

33. International Energy Agency. (2024). *Renewables 2024 Analysis and forecast to 2030.* https://iea.blob.core.windows.net/assets/17033b62-07a5-4144-8dd0-651cdb6caa24/Renewables2024.pdf.

34. Sources:
    - Our World in Data. (2020, updated 2024). *Energy Mix*. https://ourworldindata.org/energy-mix.
    - International Energy Agency. (2024). *Renewables 2024: Analysis and forecast to 2030.* https://iea.blob.core.windows.net/assets/17033b62-07a5-4144-8dd0-651cdb6caa24/Renewables2024.pdf.
    - International Energy Agency. (2025). *Global Energy Review 2025.* https://iea.blob.core.windows.net/assets/5b169aa1-bc88-4c96-b828-aaa50406ba80/GlobalEnergyReview2025.pdf.
    - Boston Consulting Group analysis.

35. The State Council, The People's Republic of China. (2025). *China sees robust increase in electric vehicle charging facilities.* https://english.www.gov.cn/archive/statistics/202501/28/content_WS6798b11ac6d0868f4e8ef3e4.html.

36. Centre for Research on Energy and Clean Air. (2025). *Analysis: Clean energy just put China's CO_2 emissions into reverse for first time.* https://energyandcleanair.org/analysis-clean-energy-just-put-chinas-co$_2$-emissions-into-reverse-for-first-time/.

37. World Economic Forum. (2025). *Clean energy has caused China's emissions to drop for the first time, but will they keep falling?* https://www.weforum.org/stories/2025/06/clean-energy-china-emissions-peak/.

38. Rocky Mountains Institute. (2024). *X-Change: The Race to the Top: Cleantech competition between China, Europe, and the United States*. https://rmi.org/wp-content/uploads/dlm_uploads/2024/03/X_change_the_race_to_the_top.pdf.

39. Citigroup. (2024). *China Economics: Out With the Old Three and In With the New Three.* https://www.citigroup.com/global/insights/china-economics-out-with-the-old-three-and-in-with-the-new-three.

40. Boston Consulting Group. (2024). *A Pivotal Moment for US Energy and Industrial Innovation.* https://media-publications.bcg.com/A-Pivotal-Moment-for-US-Energy-and-Industrial-Innovation-Whitepaper.pdf.

41. BCG analysis based on the following sources:
    - Reports and publications from US Energy Information Administration, European Commission, International Energy Agency, US Department of Energy, European Wind Energy Association, BloombergNEF, Benchmark Mineral Intelligence.
    - Boston Consulting Group. (2024). *A Pivotal Moment for US Energy and Industrial Innovation.* https://media-publications.bcg.com/A-Pivotal-Moment-for-US-Energy-and-Industrial-Innovation-Whitepaper.pdf.

42. Reuters. (2024). *Japan targets 40-50% power supply from renewables by 2040.* https://www.reuters.com/sustainability/climate-energy/japan-targets-40-50-power-supply-renewable-energy-by-2040-2024-12-17/.

43. S&P Global. (2022). *South Korean president unveils energy plan focused on cutting fossil fuel reliance.* https://www.spglobal.com/commodity-insights/en/news-research/latest-news/energy-transition/070522-south-korean-president-unveils-energy-plan-focused-on-cutting-fossil-fuel-reliance.

44. Republic of Türkiye, Ministry of Foreign Affairs. (2022). *Türkiye National Energy Plan.* https://enerji.gov.tr/Media/Dizin/ElGM/tr/Raporlar/TUEP/T%C3%BCrkiye_National_Energy_Plan.pdf.

45. Climate Copernicus EU. (2025). *Why are Europe and the Arctic heating up faster than the rest of the world?* https://climate.copernicus.eu/why-are-europe-and-arctic-heating-faster-rest-world.
    - Note: According to the ERA5 dataset of the Copernicus Climate Change Service (C3S), Europe is the fastest-warming continent and has warmed by approximately 0.53°C per decade since the mid-1990s. Since the 1980s, Europe's warming has outpaced the global average by a factor of two. Several factors explain this trend: changing weather patterns, reduced air pollution and geography (parts of Europe extend into the Arctic).

46. Vincent, R. (2025). Estimated cost of fire damage balloons to more than $250 billion. *Los Angeles Times.* https://www.latimes.com/business/story/2025-01-24/estimated-cost-of-fire-damage-balloons-to-more-than-250-billion.

47. BBC. (2024). *More than 200 killed in Valencia floods as torrential rain hits another Spain region.* https://www.bbc.com/news/live/cgk1m7g73ydt.

48. Sources:
    - Adapted from the Probable Futures climate tool in the context of a 3°C world at the end of the century: https://probablefutures.org/maps/?selected_map=change_in_total_annual_precipitation&version=latest&scenario=3&view=mercator#2.2/0/0.
    - Note: 3°C warming scenario map shows change relative to the conditions in a 0.5°C world, which represents a historical baseline. The global average surface temperature between 1971 and 2000 was approximately 0.5°C above that of 1850-1900. Probable Futures uses the CORDEX-CORE regional climate modelling framework.
    - World Economic Forum and Boston Consulting Group. (2024). *The Cost of Inaction: A CEO Guide to Navigating Climate Risk*. https://www.weforum.org/publications/the-cost-of-inaction-a-ceo-guide-to-navigating-climate-risk/.

49. Sources:
    - Boston Consulting Group, expert interviews.
    - Boston Consulting Group. (2025). *Sustaining the Private Capital Opportunity in Climate.* https://www.bcg.com/publications/2025/sustaining-the-private-capital-opportunity-in-climate.
    - Boston Consulting Group and Temasek. (2025). *The Private Equity Opportunity in Climate Adaptation and Resilience.* https://www.bcg.com/publications/2025/investment-opportunities-in-climate-a-and-r.
    - Note: Climate resilience market size is estimated taking into account nine sub-sectors: (1) Active cooling, (2) Passive cooling, (3) Climate-adapted agricultural inputs, (4) Climate resilient building/construction materials, (5) Built flood defence structures and drainage solutions, (6) Emergency/essential medical services and equipment, (7) Urban and industrial waste efficiency, (8) Climate forecasting and risk assessment, (9) Distributed energy solutions (data centres only).

50. For example, Munich-based OroraTech secured €25 million Series B funding for regional expansion and was awarded a €20 million contract by the European Space Agency to provide Greece with wildfire monitoring data. Source: OroraTech. (2024). *Greece First Country to Build a National Wildfire System Using OroraTech Technology*. https://ororatech.com/resources/news-blog/greece-first-country-to-build-a-national-wildfire-system-using-ororatech-technology.

51. For example, according to Reuters, the European Investment Bank committed to invest €15 billion in projects that help reduce water pollution, prevent water wastage and support innovative businesses in the water sector over the next three years. Source: Furness, V. & Abnett K. (2025). EIB commits 15 billion euros to protect EU's water resources. *Reuters*. https://www.reuters.com/sustainability/climate-energy/eib-commits-15-billion-euros-protect-eus-water-resources-2025-06-04/.

52. For example, AiDash uses satellite imagery and AI to help over 185 companies worldwide manage climate risks, with tools such as its Climate Risk Intelligence System (CRIS™) that enables predictive planning for wildfires, storms and other extreme events.

53. For example, in April 2023 Hydrosat secured $20 million, including a $15 million Series A round, to expand its satellite constellation and improve analytics for measuring water stress and climate impact via thermal infrared imaging. This supports agriculture, water-management and climate resilience applications.

54. For example, Bayer invests ~€2 billion annually in agricultural R&D to: develop short-statured corn, which reduces lodging from extreme winds and increases resilience to drought; use gene editing to further reduce pesticide volumes and make plants more resilient; and grow direct-seeded rice, which cuts methane emissions, reduces water use by almost half and allows double cropping (for more details, see case study in Chapter 4).

55. For example, Heidelberg Materials developed a pervious concrete offering natural infiltration and eliminating the need for a drainage system, storm sewers or retention ponds.

56. For details on how the analysis has been built, see BOX 3: About BCG's valuation analysis.

57. Notes:

- This sample only includes companies with at least $1 billion of market capitalization having green revenues or only conventional revenues.
- For LSEG's definition of "green revenues", see Appendix 3. Source: London Stock Exchange Group (LSEG), FTSE Russell. (2024). *Green Revenues 2.0 data model: Quantifying balance sheet exposure to environmental activities*. https://www.lseg.com/content/dam/ftse-russell/en_us/documents/other/green-revenues.pdf.

58. Sources:

- London Stock Exchange Group (LSEG). (2025). *FTSE Russell Green Revenues*. https://www.lseg.com/en/data-analytics/financial-data/company-data/ftse-russell-green-revenues.
- Boston Consulting Group analysis.

59. The 11 sectors mentioned correspond to the industries of the Industry Classification Benchmark (ICB) of the London Stock Exchange Group (LSEG): (1) Technology, (2) Telecommunications, (3) Healthcare, (4) Financials, (5) Real estate, (6) Consumer discretionary, (7) Consumer staples, (8) Industrials, (9) Materials, (10) Energy, (11) Utilities – see Appendix 2 for more details.

60. For instance, according to the International Energy Agency and S&P Global, the auto market is stagnating in mature economies. Total sales are roughly flat, with electric vehicles capturing most of the growth as internal-combustion models steadily lose share. Similarly, according to Plastics Europe, in the plastics segment of chemicals, demand for conventional fossil-based polymers has decreased in Europe since 2018 while recycled and bio-based plastics demand has grown.

Sources:

- International Energy Agency. (2025). *Global EV Outlook 2025: Trends in electric car markets*. https://www.iea.org/reports/global-ev-outlook-2025/trends-in-electric-car-markets-2.
- S&P Global. (2024). *2025 Auto Sales Forecast: 89.6M Vehicles Sales Worldwide*. https://www.spglobal.com/automotive-insights/en/blogs/2025-auto-sales-forecast-global.
- Plastics Europe. (2024). *Plastics - The fast Facts 2024*. https://plasticseurope.org/knowledge-hub/plastics-the-fast-facts-2024/.

61. The Alliance of CEO Climate Leaders refers to a coalition of global CEOs convened by the World Economic Forum, working to ensure a smooth transition to a low-carbon and climate-resilient economy. https://initiatives.weforum.org/alliance-of-ceo-climate-leaders.

62. These figures are based on the results of an Alliance members poll performed in July 2025 with a sample of ~30 companies.

63. For instance, the World Bank's International Finance Corporation (IFC) underlines that companies with lower costs of capital tend to have higher valuations and better returns for shareholders. Source: World Bank Group. *Promoting Sustainable Capital Markets*. https://www.ifcbeyondthebalancesheet.org/promoting-sustainable-capital-markets.

64. Sources:

- London Stock Exchange Group (LSEG). (2025). *FTSE Russell Green Revenues*. https://www.lseg.com/en/data-analytics/financial-data/company-data/ftse-russell-green-revenues.
- Boston Consulting Group analysis.
- Note: For a definition of green revenues, see Appendix 3.

65. Sources:

- London Stock Exchange Group (LSEG). (2025). *FTSE Russell Green Revenues*. https://www.lseg.com/en/data-analytics/financial-data/company-data/ftse-russell-green-revenues.

- CapitalIQ.
- Boston Consulting Group. (2025). *The Valuation Boost That Comes with Green Growth.* https://www.bcg.com/publications/2025/valuation-boost-comes-with-green-growth.
- Note: For a definition of green revenues, see Appendix 3.

66. Consumer staples industry consists of companies that provide products and services directly to the consumers and their purchasing habits are non-cyclical in nature (staples). It includes companies that manufacture, distribute and/or retail food, beverages and other non-durable household goods. It also includes drug-retailing companies as well as agriculture, fishing, ranching and milling companies.
67. The Marine Environment Protection Committee's extraordinary session (14–17 October 2025) adjourned for one year after failing to come to a consensus or call a vote on the Net-Zero Framework agreed in April. Work on the guidelines for implementing the framework will continue for a potential adoption in 2026.
68. Dow. *Decarbonizing value chains with the Carbon Footprint Ledger*. https://www.dow.com/en-us/brand/sustainability-science/carbon-footprint-ledger.html.
69. Refers to the analyses presented in Chapter 4 based on London Stock Exchange Group (LSEG) data.
70. Harvard Business Review. (2023). *Research: Consumers' Sustainability Demands Are Rising*. https://hbr.org/2023/09/research-consumers-sustainability-demands-are-rising.
71. Leveraging the purchasing power of its over 100 member companies, the First Movers Coalition works to scale up the market for breakthrough clean technologies critical to reach net zero in "hard-to-abate" industrial and transportation industries.
72. International Energy Agency. (2024). *Clean energy is boosting economic growth*. https://www.iea.org/commentaries/clean-energy-is-boosting-economic-growth.
73. International Monetary Fund. (2024). *The Energy Security Gains from Strengthening Europe's Climate Action*. https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2024/05/17/The-Energy-Security-Gains-from-Strengthening-Europes-Climate-Action-544924.
74. International Renewable Energy Agency. (2024). *Renewable Energy and Jobs: Annual Review 2024.* https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2024/Oct/IRENA_Renewable_energy_and_jobs_2024.pdf.
75. Estimate based on Swiss Re, World Bank, International Energy Agency, United Nations Environment Programme, CPI and Boston Consulting Group analysis.
76. Sources:
    - Organisation for Economic Co-operation and Development (OECD). (2025). *Government at a Glance 2025*. https://www.oecd.org/en/publications/government-at-a-glance-2025_0efd0bcd-en.html.
    - World Bank retrieved from Federal Reserve Bank of St. Louis (FRED). (2025). *Gross Domestic Product for OECD Members*. https://fred.stlouisfed.org/series/NYGDPMKTPCDOED.
77. World Bank. (2021). *Green Public Procurement: An Overview of Green Reforms in Country Procurement Systems*. https://documents1.worldbank.org/curated/en/157141636056129273/pdf/Green-Public-Procurement-An-Overview-of-Green-Reforms-in-Country-Procurement-Systems.pdf.
78. In some cases, procurement policies set strong technical standards but apply them to only a small fraction of total contracts, which limits market impact. In other cases, policies cover large volumes but use vague or non-binding sustainability criteria, which reduces their effectiveness in driving decarbonization.
79. In the European Union, the average permitting time for new renewable power projects is 3.5 years, with some wind projects facing delays of up to 7 years due to complex administrative procedures. Globally, permitting delays can extend renewable projects by up to 9 years.
80. Sources:
    - Boston Consulting Group. (2025). *Sustaining the Private Capital Opportunity in Climate.* https://www.bcg.com/publications/2025/sustaining-the-private-capital-opportunity-in-climate.
    - Boston Consulting Group and Temasek. (2025). *The Private Equity Opportunity in Climate Adaptation and Resilience.* https://www.bcg.com/publications/2025/investment-opportunities-in-climate-a-and-r.
81. London Stock Exchange Group. (2024). *Industry Classification Benchmark (Equity), v4.9.* https://www.lseg.com/content/dam/ftse-russell/en_us/documents/ground-rules/icb-ground-rules.pdf.
82. London Stock Exchange Group (LSEG), FTSE Russell. (2024). *Green Revenues 2.0 data model: Quantifying balance sheet exposure to environmental activities*. https://www.lseg.com/content/dam/ftse-russell/en_us/documents/other/green-revenues.pdf.

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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