

Climate policy proposals: Creating four enablers for business transformation

Introduction

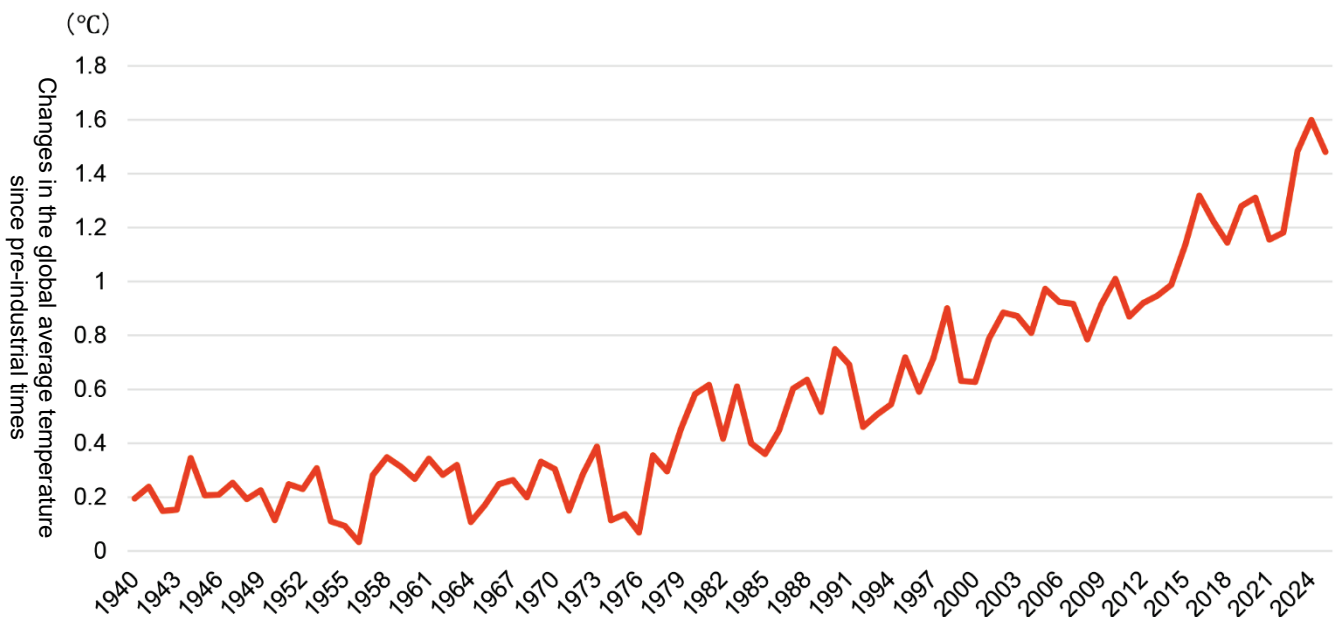
In 2024, the global average temperature rose more than 1.5 degrees Celsius (°C) above pre-industrial levels. The need for global climate action is growing, yet the state-centred framework for international cooperation is increasingly fragile, making business-led transformation more important than ever. Driving corporate behaviour change, however, involves numerous challenges that individual companies cannot resolve on their own—from designing effective regulations and incentives to ensuring a fair and equitable trade environment. Against this backdrop, experts at PwC Intelligence, the think tank division of PwC Consulting LLC, have drawn on their individual perspectives to identify four enablers of corporate decarbonisation and put forward proposals for achieving it. They also outline the role that professional services firms should play in climate action.

1. Background issues

(1) Economic challenges caused by climate change

In 2024, the global average temperature was the highest on record, rising 1.55°C above the pre-industrial level and exceeding the Paris Agreement target of less than 1.5°C.¹ As of November 2025, the increase stood at 1.48°C, making it likely to be the second-warmest year on record (**Figure 1**).

Figure 1 Changes in the global average temperature



Source: Compiled by the authors, based on data from Copernicus Climate Change Service

¹ WMO(2025) “WMO confirms 2024 as warmest year on record at about 1.55°C above pre-industrial level”

Widespread and substantial impacts attributed to climate change, along with the related losses and damages, have become increasingly evident. For instance, the growing frequency and intensity of wildfires and typhoons worldwide due to rising temperatures are claiming human lives and destroying infrastructure and assets. These losses and damages also encompass threats to human health and well-being, including deteriorating mental health and the spread of infectious diseases.

Climate change also entails tremendous economic losses. Nine major meteorological disasters in 2024 alone, including Hurricane Helene in the US, caused more than US\$400 billion in damages. Associated insurance payments reached US\$150 billion, undermining the financial performance of the insurance industry.² In the western US, the intensification of wildfires has created areas where private insurance no longer provides coverage, which has become a growing social issue.

With the temperature increase already approaching 1.5°C, further losses and damages are projected, underscoring the urgent need for action. In 2023, the Intergovernmental Panel on Climate Change (IPCC) published its sixth assessment report, which states, ‘Even without accounting for all the benefits of avoiding potential damages, the global economic and social benefit of limiting global warming to 2°C exceeds the cost of mitigation in most of the assessed literature (*medium confidence*)’.³

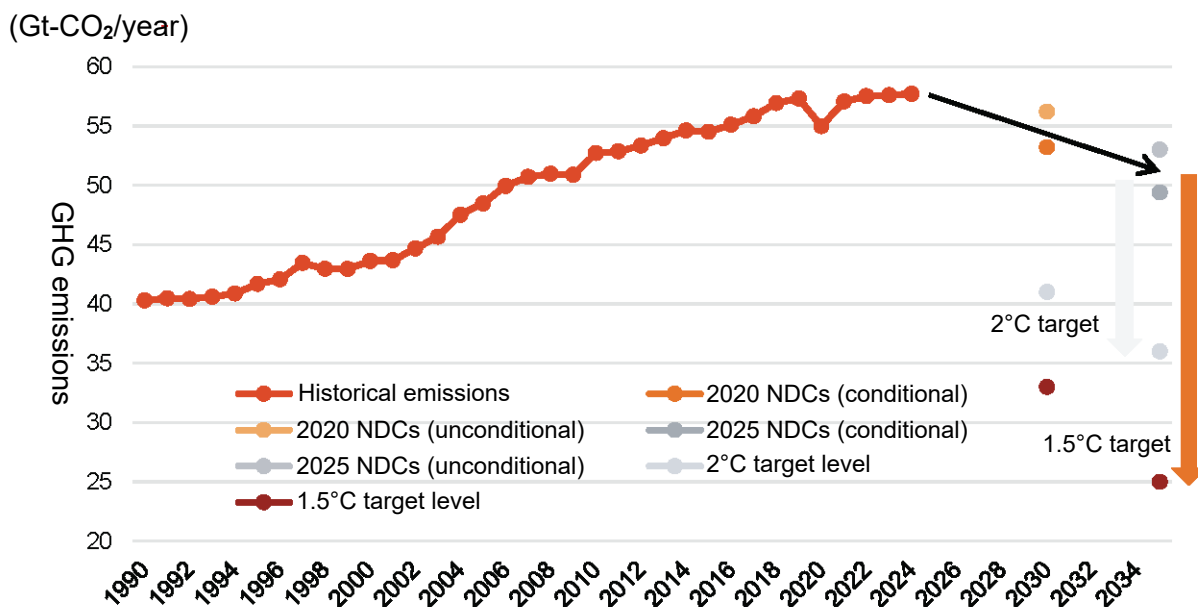
(2) Little progress in cutting greenhouse gas (GHG) emissions

Climate change is primarily caused by anthropogenic GHG emissions. Based on its assessment of scientific evidence, the IPCC has concluded that it is ‘unequivocal’ that human activity is the cause of global warming.⁴

GHG emissions have risen consistently worldwide. In developed economies such as the US, the EU, and Japan, however, emissions have shifted to a downward trend, driven by industrial transformation—including a decline in heavy industry production—as well as improvements in energy efficiency and a transition to renewable energy. In emerging economies, particularly China and India, GHG emissions have surged alongside economic development, accounting for an increasingly large share of global emissions. Prompt reductions in these economies are therefore essential.

Net zero is now regarded as theoretically feasible, with multiple viable scenarios having been put forward. At the same time, the aggregate of Nationally Determined Contributions (NDCs) submitted by governments to the United Nations under the Paris Agreement falls far short of the 2°C target, let alone the 1.5°C target (Figure 2).

Figure 2 GHG emission pathways and reduction projections based on NDCs



Source: Compiled by the authors from Climate Watch. ‘NDC Tracker’.

² Gallagher Re, 2025. *Natural Catastrophe and Climate Report: 2024*. No distinction is made as to whether or not the recorded meteorological disasters and their increasing severity were caused by anthropogenic climate change.

³ IPCC, 2023. ‘Summary for Policymakers.’ In *Climate Change 2023: Synthesis Report* (as provisionally translated by the Ministry of Education, Culture, Sports, Science and Technology [MEXT], the Ministry of Economy, Trade and Industry [METI], the Japan Meteorological Agency [JMA], and the Ministry of the Environment [MOE])

⁴ IPCC, 2023. ‘Summary for Policymakers.’ In *Climate Change 2023: Synthesis Report* (as provisionally translated by the Ministry of Education, Culture, Sports, Science and Technology [MEXT], the Ministry of Economy, Trade and Industry [METI], the Japan Meteorological Agency [JMA], and the Ministry of the Environment [MOE])

International cooperation under strain

Since the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992, governments have been negotiating for more than 30 years at the Conference of the Parties to the UNFCCC (hereafter ‘COP’) and other forums. Progress may have been far from sufficient, but the fact remains that these negotiations have produced one international agreement after another despite the entangled, and sometimes clashing, interests of the countries involved (**Figure 3**). In particular, the 2015 Paris Agreement was a landmark achievement, as it called on all countries, including developing nations, to make efforts to reduce GHG emissions.

Recent developments, however, have cast a shadow over international cooperation. In 2025, the US announced its withdrawal from the Paris Agreement, and in 2026 it announced its exit from the UNFCCC altogether. The EU, long a leader in climate action, is finding it increasingly difficult to maintain unity amid shifting domestic political landscapes among its member states, and feels increasingly compelled to balance climate ambitions with industrial competitiveness. At COP30 in 2025, a spirit of international cooperation was maintained, thanks in part to the leadership of host country Brazil. Nevertheless, uncertainty over future prospects continues to deepen.

Against this backdrop, a growing number of countries that have achieved significant economic growth—China being a prime example—are pursuing energy transition from the standpoints of energy security and new industry development. Meanwhile, emerging economies such as Brazil and India are taking the lead in areas more accessible to them, such as biofuels.

Figure 3 Key negotiation outcomes from the Paris Agreement onward

Year	Conference name (site)	Key negotiation outcomes
2015	COP21 (Paris, France)	- Adopted the Paris Agreement. Agreed to hold temperature increases well below 2°C and to pursue efforts to limit them to 1.5°C. Called for all countries, including developing nations, to make efforts to reduce GHG emissions in a post-2020 framework for combating global warming.
2019	COP25 (Madrid, Spain)	- Called for raising ambitions based on IPCC’s Special Report on 1.5°C, released in 2018 (raising the targets of 2030 NDCs).
2021	COP26 (Glasgow, the UK)	- Resolved to pursue efforts to achieve the 1.5°C target. Agreed on the phasedown of coal power generation (Glasgow Climate Pact).
2023	COP28 (Dubai, UAE)	- Published the agreement on the first Global Stocktake, a process for evaluating global progress in achieving the Paris Agreement goals every five years. - Approved a roadmap to a transition away from fossil fuels. Committed to tripling renewable capacity and doubling energy use efficiency.
2024	COP29 (Baku, Azerbaijan)	- Decided to set the goal of providing US\$300 billion in climate finance annually by 2035. - Decided on rules for an international carbon market.
2025	COP30 (Belém, Brazil)	- Received a proposal to quadruple the demand for sustainable fuels. Officially launched the Tropical Forests Forever Fund (TFFF). - Agreed on the Global Goals on Adaptation (GGA).

Source: Compiled by the authors

(3) Need for industrial and business transformation

Under the circumstances described above, transforming the way industry and business operate has enormous potential for climate action. This is because almost everything needed for human survival, including energy and food, is supplied by businesses.

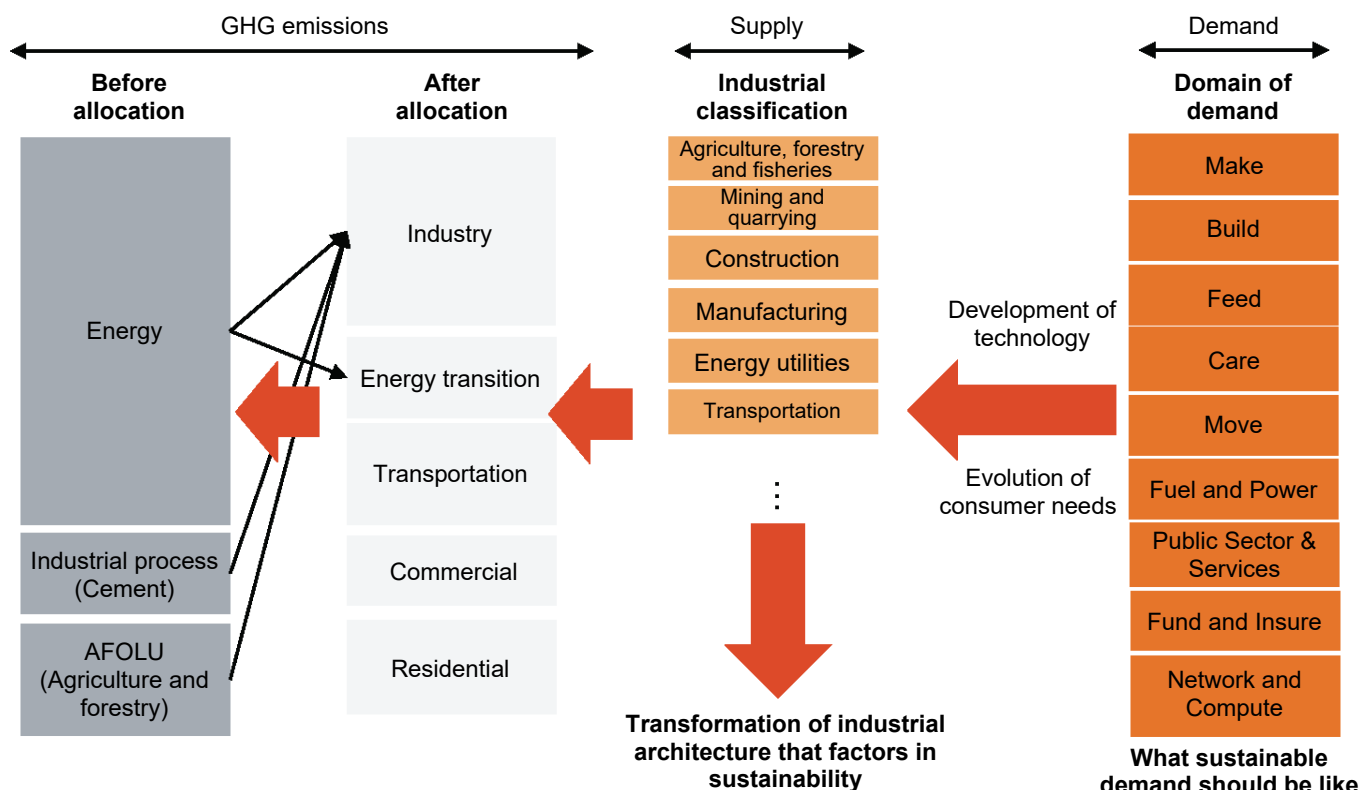
Business leaders are already aware of the need for such transformation. Amid complex megatrends—climate change, technological disruption, a fracturing world, and demographic shifts—CEOs around the world share a sense of urgency about the need to fundamentally change the way they do business. A recent PwC survey showed that 42% of CEOs worldwide believe their company will not be economically viable beyond the next ten years if they continue with their current business model.⁵ The same survey found that climate-related investments were six times more likely to have resulted in increased revenue (33%) than decreased revenue (5%). In addition, nearly two-thirds of CEOs reported that climate-related investments had either reduced costs or had no significant impact on costs. The

⁵ PwC Japan Group, 2025. ‘Nearly three-in-five CEOs optimistic about global economic outlook as they plan headcount increases and continued AI rollout: PwC 2025 Global CEO Survey’.

number of companies with science-aligned emission reduction targets validated by the Science Based Targets initiative (SBTi) has grown to more than 12,000,⁶ suggesting that corporate climate action is increasing globally.

Artificial intelligence (AI), geopolitical shifts, and other megatrends are also changing the way we live and work, giving rise to new consumption trends and patterns, yet fundamental human needs remain unchanged. Sectors and industries are therefore set to be reconfigured around these needs (**Figure 4**)⁷, and this ongoing transformation presents a prime opportunity to embed sustainability into business from the outset. The growing popularity of rooftop solar generation, for example, could see housing suppliers venturing into the energy business through supply-demand management involving electric vehicles (EVs) and home appliances—effectively merging housing demand with energy demand. Similarly, amid growing health consciousness and evolving food channels, plant-based proteins could be offered as the default option. And the rapidly growing AI services sector could be required to source its electricity from decarbonised generation.

Figure 4 Relationships between GHG emissions and industry/demand



Source: Compiled by the authors

(4) Why policy proposals?

Encouraging corporate behaviour change requires the appropriate design of regulations and incentives through a public policy approach. At present, however, many economic incentive schemes actually work to the detriment of the global environment.

For instance, enormous environmentally harmful subsidies are a source of global concern. The World Bank estimates that in 2021, the world paid out US\$577.7 billion in direct subsidies for fossil fuels and US\$635 billion in agricultural subsidies deemed harmful to the environment.⁸ If the negative externalities arising from these subsidies—including health hazards caused by climate change, air pollution, and water contamination—are treated as implicit subsidies, the total would reach US\$6–10 trillion.⁹ The International Monetary Fund (IMF) estimates that appropriate fossil fuel subsidy reform could reduce GHG emissions by 43% relative to 2019 levels by 2030.¹⁰

Nevertheless, tax systems and subsidies need to be discussed as part of socioeconomic policy while taking their

⁶ SBTi webpage. Accessed 2 December 2025.

⁷ In its research report 'Value in motion', PwC predicts demand evolution and industry reconfiguration by 2035, converging with such evolution. For detail, see the [PwC webpage](#) (in English).

⁸ World Bank (2023) "Detox Development, Repurposing Environmentally harmful Subsidies"

⁹ These subsidies are enormous in amount given the COP's estimate that developed countries need to provide developing countries with a total fund of US\$1.3 trillion in assistance and investment.

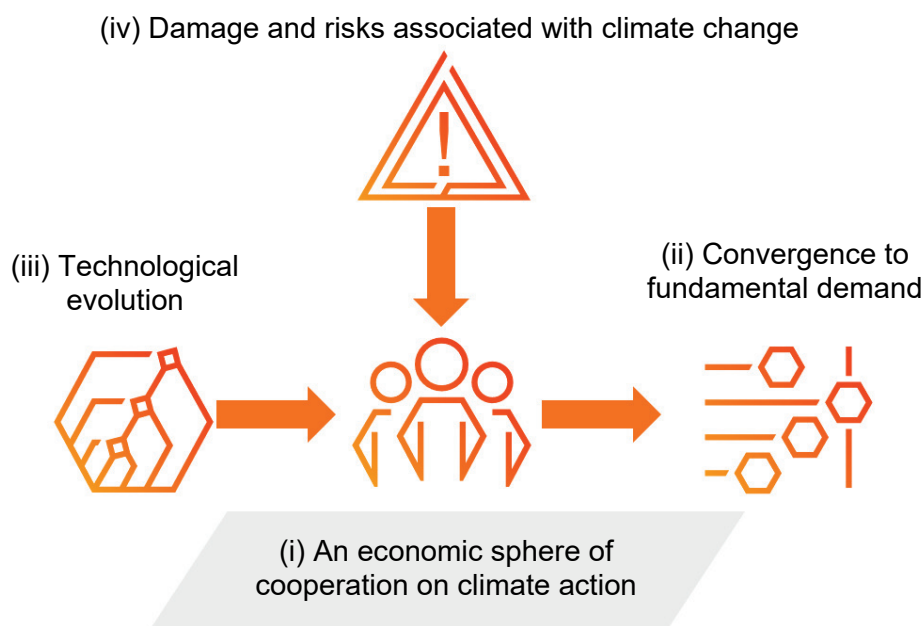
¹⁰ IMF webpage. 'Fossil Fuel Subsidies'. Accessed 2 December 2025.

macroeconomic impacts into account. Energy and food supply, in particular, are highly susceptible to geopolitical dynamics and require careful analysis of global trends before action is taken. In sum, climate change should be tackled as a complex challenge that spans all areas of human activity.

2. Assumptions and directions of our proposals

In formulating these proposals, it is necessary to squarely face the realities and challenges confronting businesses and identify measures that are practical from a public policy perspective. In this context, this report identifies four factors of particular importance, as shown in **Figure 5**. Given Japan's circumstances, it is especially important to move beyond the narrative that compulsory climate action will harm the country.

Figure 5 Relationships between the realities facing businesses and corporate transformation



Source: Compiled by the authors

The first factor is the essential need for a business environment that allows companies exposed to global competition to maintain their competitiveness. A situation in which environmental regulations differ from country to country and region to region is far from ideal. While many countries aim to achieve net zero by 2050, carbon pricing schemes differ significantly across jurisdictions, underscoring the need for greater harmonisation through international cooperation. Harmonising the cost of climate action and pursuing concerted measures within the largest possible economic sphere are therefore essential.

The second factor relates to the prospect that industries will be reconfigured to focus on fundamental human demand (convergence to the domains of fundamental human demand) as megatrends such as climate change, AI, and other technological advances become more prominent.¹¹ With further population growth and economic development on the horizon, industry needs to be rethought—both quantitatively and qualitatively—around fundamental human needs, incorporating sustainability within the limits of Earth's carrying capacity.

The third factor involves the ability of AI and other new technologies to drive innovation for climate action. AI is considered one of the general-purpose technologies with the potential to profoundly shape human history. It can be put to proactive use in both the mitigation and adaptation aspects of climate action while minimising adverse environmental impacts.¹² Japan lags behind the US and China in AI development itself, but could make a significant global impact by designing effective applications of AI for climate action—particularly in manufacturing, a sector where Japan holds a comparative advantage—while minimising the negative effects of high electricity and water consumption.

The fourth and last factor is the need to accurately assess the damages and risks associated with climate change

¹¹ In its research report '[Value in motion](#)', PwC presents a vision of industrial transformation converging on fundamental human needs.

¹² PwC Consulting LLC, 2025. '[Kiko Hendo Taisaku to AI Katsuyo: Hanyo Gijutsu no Onami o Toraeru](#)'. Kiko Hendo Taisaku o Kudosuru [Inobeshon Vol. 2](#). ('Climate action and the use of AI: capturing the surge of the general-purpose technology'. *Innovations that drive climate action* Vol. 2)

and carefully consider *adaptation*. With the global average temperature increase already approaching 1.5°C, climate change is affecting business activities through increased exposure to weather hazards, reduced labour productivity, and other channels. Businesses face an urgent need to take adaptation measures, which will in turn help strengthen the resilience of society as a whole.

Four enablers

In light of the above, the authors put forward four enablers of climate action as shown below:

(1) Enabler 1: Developing a decarbonised economic sphere

The first enabler is the development of an international *decarbonised economic sphere* that provides a level playing field for businesses.

(i) Current status and challenges of the world and Japan

The US withdrawal from the Paris Agreement underscores the need to reconfigure international cooperation on global warming. Yet discussions at COP30 and the latest G20 summit suggest that governments have not abandoned climate action. Rather, countries are demonstrating a clear intent to pursue their own climate strategies and policies while reconciling competing interests and considering their national circumstances. It is worth noting that a growing number of countries have introduced or are introducing carbon pricing, which environmental economists consider an effective tool for reducing GHG emissions.

A key driver of this trend is the EU's decision to introduce the Carbon Border Adjustment Mechanism (CBAM). CBAM imposes carbon charges on imported products according to the amount of GHGs emitted during their manufacturing process. For countries exporting to the EU, it is more advantageous to collect carbon taxes domestically and reinvest the revenue in environmental and social initiatives rather than pay border carbon taxes to the EU. This has prompted Japan and many other countries to adopt carbon pricing.

At the same time, efforts are growing to harmonise and coordinate the various carbon pricing schemes across countries. COP30 established the Open Coalition on Compliance Carbon Markets (OCCCM), proposed by host country Brazil and endorsed by 18 countries, including the EU, China, Canada, and Singapore. OCCCM aims to harmonise the standards of different national emissions trading systems, with the goal of reducing international market distortions and eventually linking different carbon credit trading systems.

If climate action costs are to be optimised, the free trade regime should be maintained. Some argue that China holds a disproportionately large share of the clean energy equipment market, including solar panels and storage batteries. It can also be argued, however, that China's low-cost products are facilitating the wider adoption of such equipment.¹³

COP30 also established the Integrated Forum on Climate Change and Trade (IFCCT). Unlike UNFCCC and the World Trade Organization (WTO), the IFCCT is not a framework that has binding power over participating countries. Rather, it is aimed at sharing ideas on solutions.

(ii) Desired policies

Japan should consider participating in OCCCM, which was established at COP30. Japan's emissions trading system, GX-ETS, will require the participation of high-emitting businesses with annual CO₂ emissions of 100,000 tonnes or more from April 2026. Japan, which has built up achievements through the Joint Crediting Mechanism (JCM) in Southeast Asia and elsewhere, can leverage these experiences to contribute to international efforts to expand institutional infrastructure. Notably, Singapore, which aims to become a hub for carbon credit trading in Asia, is also an OCCCM participant. Japan should seek to collaborate with Singapore where possible while also competing with it.

In addition, it is important for Japan to contribute to expanding international decarbonisation efforts by helping emerging economies develop their emissions trading systems through activities at OCCCM. Japan should also actively support its businesses in marketing environmentally competitive products and services overseas. Synergies are expected from coordinating these activities with those of the Asia Zero Emission Community (AZEC), which comprises Japan, Australia, and Southeast Asian countries and aims to achieve carbon neutrality within the community.

Japan should also consider proactively participating in the IFCCT. In particular, Japan should propose to the

¹³ In fact, US reciprocal tariffs mean tremendous tariffs on solar panels manufactured in China and Southeast Asia, undermining the price competitiveness of solar power generation in the US.

international community that a fair and equitable trade environment be maintained so that rare earths and rare metals needed for clean energy products remain readily available, thereby safeguarding progress toward decarbonisation.

Figure 6 Specific proposals for the development of a decarbonised economic sphere

	Specific proposals	Relevant ministries and agencies
1	Consider participating in OCCCM and the IFCCT, both of which were established at COP30.	METI, MOE
2	Make a suggestion to the international community to maintain a fair and equitable trade environment in relation to rare earths and metals that are needed to support the global distribution and manufacturing of low-carbon products.	METI, MOE
3	Encourage Japanese businesses to expand their operations overseas in sectors where they can contribute to sustainable economic development in emerging economies.	METI, MOE, MOFA

Source: Compiled by the authors

(iii) Expected outcomes

Social and environmental benefits expected of these strategies:

- The participation of Japan will help to scale up a *decarbonised economic sphere*, thus helping to restore the momentum toward international climate cooperation.
- The playing field for businesses will be increasingly levelled and harmonised, thus avoiding the situation where Japanese businesses are placed in a disadvantageous position.
- An increasing number of emerging and developing economies will introduce a carbon pricing scheme, which in turn will pave the way for the supply of more low- and zero-carbon products and services, resulting in reduced GHG emissions.
- In OCCCM, Japan will share its accumulated experience with JCM, thus contributing to developing international carbon accounting standards as well as to connecting different carbon credit trading systems.
- The importance of trade in climate action will be confirmed, thus ensuring that Japan and other resource-poor countries have access to low- and zero-carbon fuels and materials and that Japanese products are traded on the global market.

Opportunities for businesses:

- These initiatives will constitute the first step in international cooperation toward a leveller and more harmonised playing field for businesses, thus making it easier for Japanese businesses to develop and invest in low- and zero-carbon products and services.
- The introduction of a carbon pricing scheme in an increasing number of emerging and developing economies will mean a large market for low- and zero-carbon products and services, which in turn will provide a good opportunity for Japanese businesses as well (helping to increase avoided emissions).

(2) Enabler 2: Industrial transformation driven by sustainable demand

The second enabler is the transformation of entire supply chains starting with demand-side actions such as expanding the market for sustainable products and services.

(i) Current status and challenges of the world and Japan

The biggest challenge for businesses pursuing green transformation is that new products and services often entail higher costs, at least in the near term. Over the medium to long term, costs are expected to fall as the market expands, but the key question is how to navigate this initial phase. While many consumers are certainly price-sensitive, estimates suggest that the additional cost is often only a few percentage points.¹⁴ Given that some consumers may not be able to absorb price increases, it is necessary to create an environment in which

¹⁴ IEA(2025) "Delivering Sustainable Fuels. Pathway to 2035"

they can make sustainable choices without undue effort.

Amid the ongoing industry reconfiguration, it is especially important to embed the concept of sustainability in each domain of demand.

Accordingly, more action is needed on the demand side as well as the supply side.¹⁵ An IPCC report finds that demand-side action could reduce GHG emissions by 40–70% in each of three sectors: buildings, land transport, and food.¹⁶ As it stands, however, frameworks that help consumers make appropriate choices are not fully developed. Rather, consumer subsidies that negatively impact the environment remain in place. What is needed is comprehensive action that combines financial incentives with effective information provision.

(ii) Desired policies

First and foremost, institutional frameworks are needed to encourage green consumption, particularly in relation to climate change. Advances in behavioural economics and evidence-based policy making (EBPM) now make it possible to design systematic measures. Such measures should address not only environmental concerns but also health-related aspects of food, clothing, and shelter—factors that resonate with consumers. They should also take advantage of technology wherever appropriate. The goal is to ensure that *consumers can make sustainable choices without undue effort*.

In step with the full-scale launch of Japan's GX-ETS in April 2026, the GX League has been holding discussions focused on *reducing Scope 3 emissions*.¹⁷ As businesses commit to reducing Scope 3 emissions, demand and markets for 'GX products'—eco-friendly goods with lower GHG emissions—are expected to expand.

Such approaches to consumers should be grounded in scientific evidence. If not based on clear and accurate information, however, they risk being perceived as greenwashing. The government therefore needs to strengthen measures against greenwashing and bolster consumer protection.

The government should begin discussions on which financial incentives and disincentives to deploy from a longer-term perspective. At the same time, the government should explore how to deliver food and energy more sustainably while ensuring food and energy security. This should take into account Japan's macroeconomic situation, where food and energy prices are higher than in many other countries.

Figure 7 Specific proposals for industrial transformation stemming from sustainable demand

	Specific proposals	Relevant ministries and agencies
1	Map and expand a comprehensive set of schemes and programs designed to encourage green consumption, together with measures to promote well-being in food, clothing and shelter.	MOE, METI, Ministry of Health, Labour and Welfare (MHLW)
2	Enhance consumer protection by, for example, combatting greenwashing	Consumer Affairs Agency
3	Start longer-term discussions on subsidy schemes and taxation arrangements for fossil fuels with attention given to implications for the macroeconomy and economic security.	Ministry of Finance (MOF), MOE, METI

Source: Compiled by the authors

(iii) Expected outcomes

Social and environmental benefits expected of these strategies:

- A larger sustainability-sensitive market will likely emerge in Japan, giving rise to high value-added market segments in which businesses should participate and invest. This will send a message to businesses that they should change their strategies accordingly.
- Subsidies that entail large negative externalities will be cut. This in turn will curtail public spending on health care and social welfare as well as on environmental actions, including those against climate loss and damage, thus improving the social return on public investment.

¹⁵ OECD(2025) "Unlocking the potential of demand-side climate mitigation strategies"

¹⁶ Creutzig, F. et al.(2023), "Demand, Services and Social Aspects of Mitigation", in Climate Change 2022-Mitigation of Climate Change, Cambridge University Press.

¹⁷ The term refers to all indirect emissions from the entire supply chain other than direct emissions from a business (Scope 1) and indirect emissions from it, including those associated with electricity purchase (Scope 2).

- Such a virtuous circle will help raise public awareness and strengthen support for and trust in climate action.
- Such demand-side action is increasing its importance in international discussions as well. The international sharing of Japan's good practices will help advance global action.

Opportunities for businesses:

- A larger sustainability-sensitive market will likely emerge, giving rise to high value-added market segments in which businesses should participate and invest. This can provide an opportunity for businesses to pass on additional costs to consumers.
- Supply chain players will work more closely together, giving rise to new ecosystems.
- New business opportunities will emerge, including those to use technology in demonstrating environmental value to consumers.
- Clearer guidelines against greenwashing will be developed, making it easier for businesses to conduct public relations activities.

(3) Enabler 3: Contribution to emission reduction with AI-enabled manufacturing

The third enabler is support for Japanese businesses in making proactive use of AI to help reduce GHG emissions at both the national and global levels.

(i) Current status and challenges of the world and Japan

The rapid, widespread adoption of AI comes amid mounting pressure on the world to take climate action. AI is expected to serve various functions—invention, planning, prediction, identification, quantification, and autonomous driving—and to be applied in numerous ways to address climate challenges (**Figure 8**). A major concern, however, is the surge in electricity demand at data centres associated with AI. The question is how to balance the use of AI with conservation of the global environment. Two conditions must be met to achieve both environmental conservation and economic growth: first, AI must be utilised as an enabler of climate action in both mitigation and adaptation; second, the environmental footprint associated with the wider use of AI must be reduced.

Figure 8 Types of functions served by AI and its applications in climate action

Type of functions	Examples of application in climate action
Invention	Exploring materials for high-performance, low-cost storage batteries with a low environmental footprint
Planning	Coming up with measures to cut the carbon footprint of specific products
Prediction	Reducing downtime in the manufacturing process with early prediction of irregularities
Identification	Automatic sorting-out of recycled materials with image identification technology
Quantification	Estimating the amounts of carbon sequestered in forests, soils and oceans with remote sensing technology
Autonomous driving	Putting autonomous vehicles into commercial use to increase car sharing

Source: Compiled by the authors

Japanese businesses lag behind their US and Chinese competitors in the AI sector. Amid the rapid advancement of physical AI and other new technologies, they face the risk of losing global competitiveness even in manufacturing, an industry in which they have traditionally excelled. To create disruptive innovation in climate action under these circumstances, the groundwork must be laid for the proactive use of AI.

(ii) Desired policies

Japan should seize the burgeoning climate tech sector as an opportunity for economic growth by encouraging the integration of emerging AI technologies with the strengths of Japanese manufacturers to boost their global competitiveness. To this end, there is an urgent need to secure and develop highly skilled professionals who can bridge manufacturing and AI.

Specific measures include attracting engineers from overseas, reskilling domestic engineers, and enhancing AI integration research at university science and engineering faculties. Since these measures often overlap with needs in sectors beyond climate tech, they should be implemented on a cross-sectoral basis.

Moreover, to address the growing global environmental footprint associated with the wider use of AI, Japan should lead the world in developing mechanisms for quantifying and visualising AI-related GHG emissions.

Figure 9 Specific proposals for contribution to emission reduction with AI-enabled manufacturing

	Specific proposals	Relevant ministries and agencies
1	Put arrangements in place that support domestic businesses in securing AI talent from abroad. Give tax breaks and other incentives to businesses that reskill domestic engineers.	MOFA, MOF, METI
2	Increase funds for AI integration research at science and engineering faculties at universities and offer more posts for such research.	MEXT, METI
3	Accelerate the development of international standards on estimating GHG emissions associated with the use of AI.	MOE, METI

Source: Compiled by the authors

(iii) Expected outcomes

Social and environmental benefits expected of these strategies:

- The wider application of AI will stimulate innovation creation in the climate tech sector, driving the advancement of disruptive technologies in both mitigation and adaptation.
- Training human resources capable of integrating AI technologies with manufacturing will likely have spillover effects, such as the growth of other manufacturing sectors than climate tech.
- Japan will be positioned to offer solutions to the global challenge of the growing environmental footprint associated with the increased use of AI. On the assumption that businesses will eventually be required to estimate their Scope 3 emissions, Japan can take the lead in developing the relevant rules.

Opportunities for businesses:

- Manufacturing companies will be able to accelerate the development of solution-oriented products designed to address climate change, thus capturing the market not only in Japan but also in the world, especially in a decarbonised economic sphere described earlier.
- Nurturing industries that derive value from the integration of climate tech and AI will open up new growth markets for the Japanese economy.

(4) Enabler 4: Loss and damage monitoring and adaptation measures

The fourth and last enabler is the development of an environment conducive to corporate adaptation measures as more losses and damages associated with climate change are manifesting themselves. The idea is to increase economic and social resilience.

(i) Current status and challenges of the world and Japan

Extreme weather events are becoming more frequent, and ecosystem services are increasingly degraded. Climate change is already affecting human society, with economically disadvantaged populations bearing the brunt of its adverse impacts, which can amplify social divisions and aggravate conflicts. There are concerns that such consequences could lead to political and geopolitical instability.¹⁸

Businesses therefore need to assess the specific effects of climate change—including the losses and damages that accumulate year after year. Based on these assessments, they must refine their day-to-day operations and revise their strategies. However, neither the government nor private enterprises are adequately assessing these effects in real time, resulting in insufficient feedback to the decision-making process for both mitigation and adaptation.

Businesses conduct risk analysis in line with the disclosure framework developed by the Task Force on Climate-related Financial Disclosures (TCFD). The challenge is that these analyses rely on predetermined scenarios for future projections. In Japan, the National Institute for Environmental Studies (NIES) operates the Climate Change Adaptation Information Platform (A-PLAT) under the Climate Change Adaptation Act. A-PLAT offers

¹⁸ Sekiyama, T., 2023. *Kiko Anzen Hoshō no Ronri: Kiko Hendo no Chiseigaku Risuku (Climate security: geopolitical risks of climate change)*. Tokyo: Nikkei Business Publications, Inc.

WebGIS, a tool for climate change projections,¹⁹ and is a comprehensive platform covering all of Japan. However, similar information is needed for regions where Japanese businesses are active, such as Southeast Asia and South Asia.

(ii) Desired policies

Japan should lead the world in developing a global-scale information platform for assessing and monitoring the physical risks of climate change. Such a platform should enable users to monitor meteorological disasters and conflicts worldwide on a map, assess the physical and financial extent of losses and damages, and view projected impacts. Businesses could overlay this information on their own assets and supply chains—from raw material procurement through to market distribution. This would help them assess their current situation and inform forward-looking investment decisions. The platform should also be designed to interface with the TCFD and other frameworks, complementing existing disclosure schemes.

In addition, the government should research and promote insurance and financial schemes that encourage climate action, collect information on international good practices, and develop guidelines based on these findings. Individual businesses have limited capacity for adaptation on their own, underscoring the need for cooperation with local governments and communities. Close cooperation with the newly established Disaster Management Agency will be possible in this area. Businesses and local communities should collaborate on developing local climate change adaptation plans to strengthen resilience and enhance their effectiveness.²⁰

Figure 10 Specific proposals for loss and damage monitoring and adaptation measures

	Specific proposals	Relevant ministries and agencies
1	Develop an information platform, not only on a national scale, but also on a global scale, that is aimed at assessing and monitoring the physical risks of climate change by region.	MOFA, MOE
2	Conduct studies to develop and promote insurance and financial schemes that encourage climate action.	MOE, MOF
3	Work with the Disaster Management Agency (to be established in fiscal 2026) and local governments to draw up adaptation plans and to enhance their effectiveness.	Disaster Management Agency, Ministry of Internal Affairs and Communications (MIC)

Source: Compiled by the authors

(iii) Expected outcomes

Social and environmental benefits expected of these strategies:

- An information platform enabling businesses to analyse climate impacts will make those impacts on their operations more visible. This will in turn make it easier for each business to develop its own adaptation measures. Greater awareness of adverse climate effects will also encourage mitigation efforts.
- As part of its international development cooperation, Japan will replicate its good practices elsewhere to increase resilience in other countries and communities, thereby contributing to more resilient global supply chains.

Opportunities for businesses:

- There will be an increased demand for adaptation business that takes advantage of climate prediction systems and other new technologies, thus spurring the development of relevant markets and technologies.
- Insurance products that encourage action on climate change adaptation and mitigation will be developed. New market segments for insurance companies will be formed. Insurance payments will be reduced over the longer term.
- Cooperation with the Disaster Management Agency and local governments will help increase the resilience of business activities and local communities, enhancing the certainty of business continuity.

¹⁹ [A-adaptation-platform.nies.go.jp/webgis/index.html](https://www.a-nies.go.jp/webgis/index.html)

²⁰ As of October 2025, 47 prefectures, 20 ordinance-designated major cities, and 411 municipalities had a local climate change adaptation plan in place (according to [the Climate Change Adaptation Information Platform](#)).

3. The role of professional services firms in building a better society

The preceding section has laid out four enablers of climate action. To put these into practice, professional services firms have significant roles to play in driving transformation (**Figure 11**). In particular, they can deliver more impactful solutions through cross-border and global collaboration, combined with accurate assessments of conditions in each country and region.

Figure 11 Roles to be played by professional service firms in implementing the four proposals

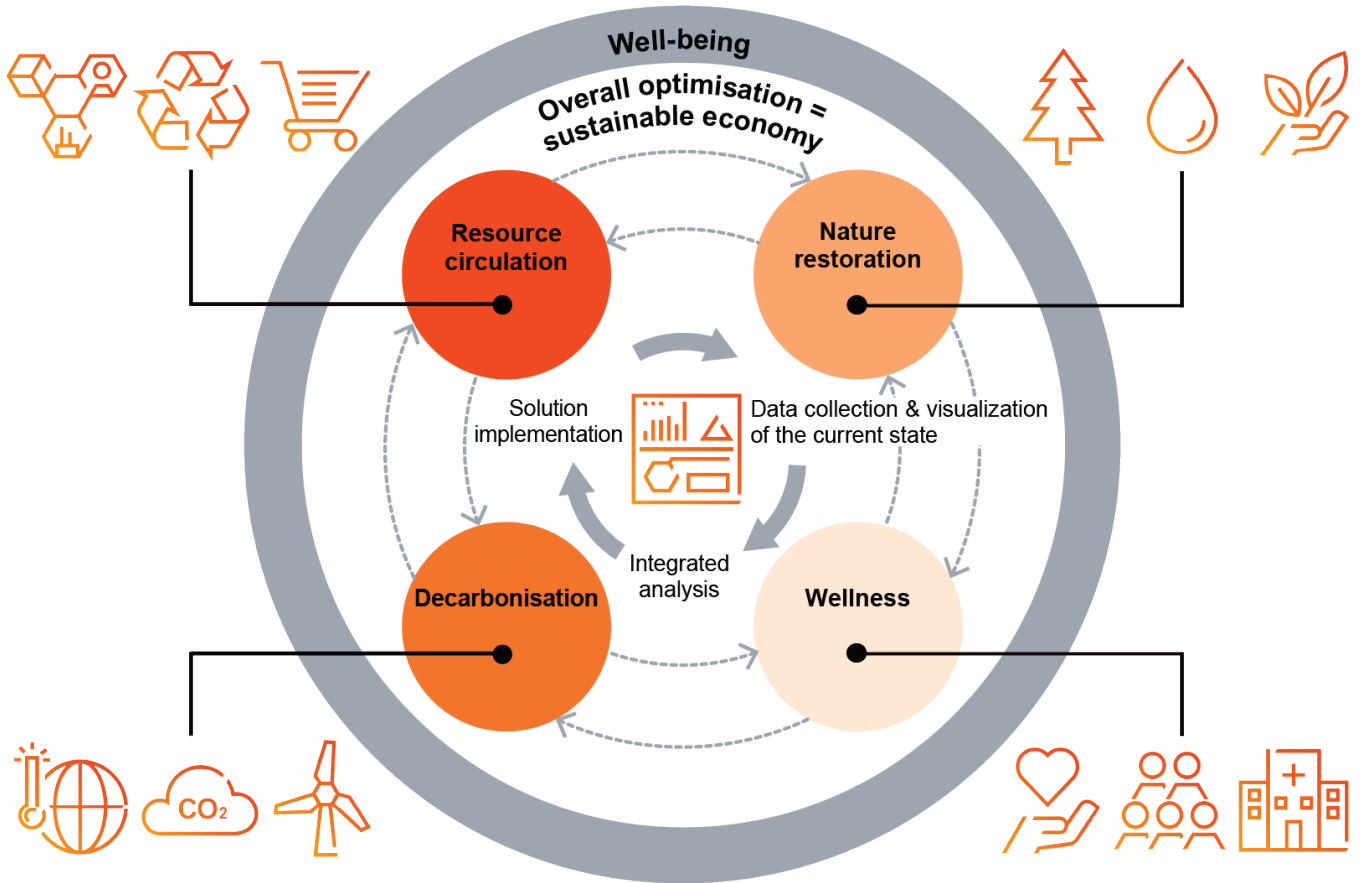
Proposal	Possible actions
Development of a decarbonised economic sphere	<ul style="list-style-type: none"> - Conducting detailed research and analysis of the carbon pricing schemes of various countries, identifying areas and items that need harmonisation based on such findings, and accordingly putting forward proposals, all in a global cooperation framework. - Offering consulting services to countries planning to introduce a carbon pricing scheme in an effort to develop a larger decarbonised economic sphere. - Offering comprehensive support for Japanese businesses in playing a more active role in an expanding decarbonised economic sphere.
Industrial transformation stemming from sustainable demand	<ul style="list-style-type: none"> - Showing what demand and industry embedded with sustainability should look like for each domain of demand as shown in PwC's 'Value in motion'. - Offering suggestions on ways to make systemic changes to the entire supply chain, including the use of technology to demonstrate environmental value to consumers. - Driving innovation further through the international sharing of corporate good practices.
Contribution to emission reduction with AI-enabled manufacturing	<ul style="list-style-type: none"> - Supporting new business launches with consulting services on industry trends analysis for the climate tech sector and on analysis of technological competitive advantages owned by businesses. - Supporting businesses in estimating GHG emissions associated with AI use and implementing measures to reduce such emissions, with consulting services.
Loss and damage monitoring and adaptation measures	<ul style="list-style-type: none"> - Offering consulting services for businesses to assess their climate risks and translate such assessment into strategy by taking advantage of built information infrastructure. - Serving as a coordinator between local governments and businesses to support efforts to enhance adaptation and resilience.

Source: Compiled by the authors

The PwC Japan Group has already offered many services related to the environment and sustainability in Japan. It advocates a *holistic approach* that takes a comprehensive view of everything from climate challenges (decarbonisation) to nature (restoration), circular economy (resource circulation), and wellness, all aimed at overall optimisation (**Figure 12**).²¹ While this report focuses on climate change, climate action needs to be advanced in an integrated manner alongside measures across other environmental domains. In addition, adopting a *systemic approach* that pursues overall optimisation across industries, businesses, and organisations is an effective means of achieving industrial transformation.

²¹ PwC Japan Group, 2025. *Sasutenabiriri Shinjidai: Seika o Umidasu Horisutikku × Shisutemikku Apurochi (Sustainability transformation: the holistic and systemic approach that pays off)*. Tokyo: Diamond, Inc.

Figure 12 Conceptual rendering of the holistic approach

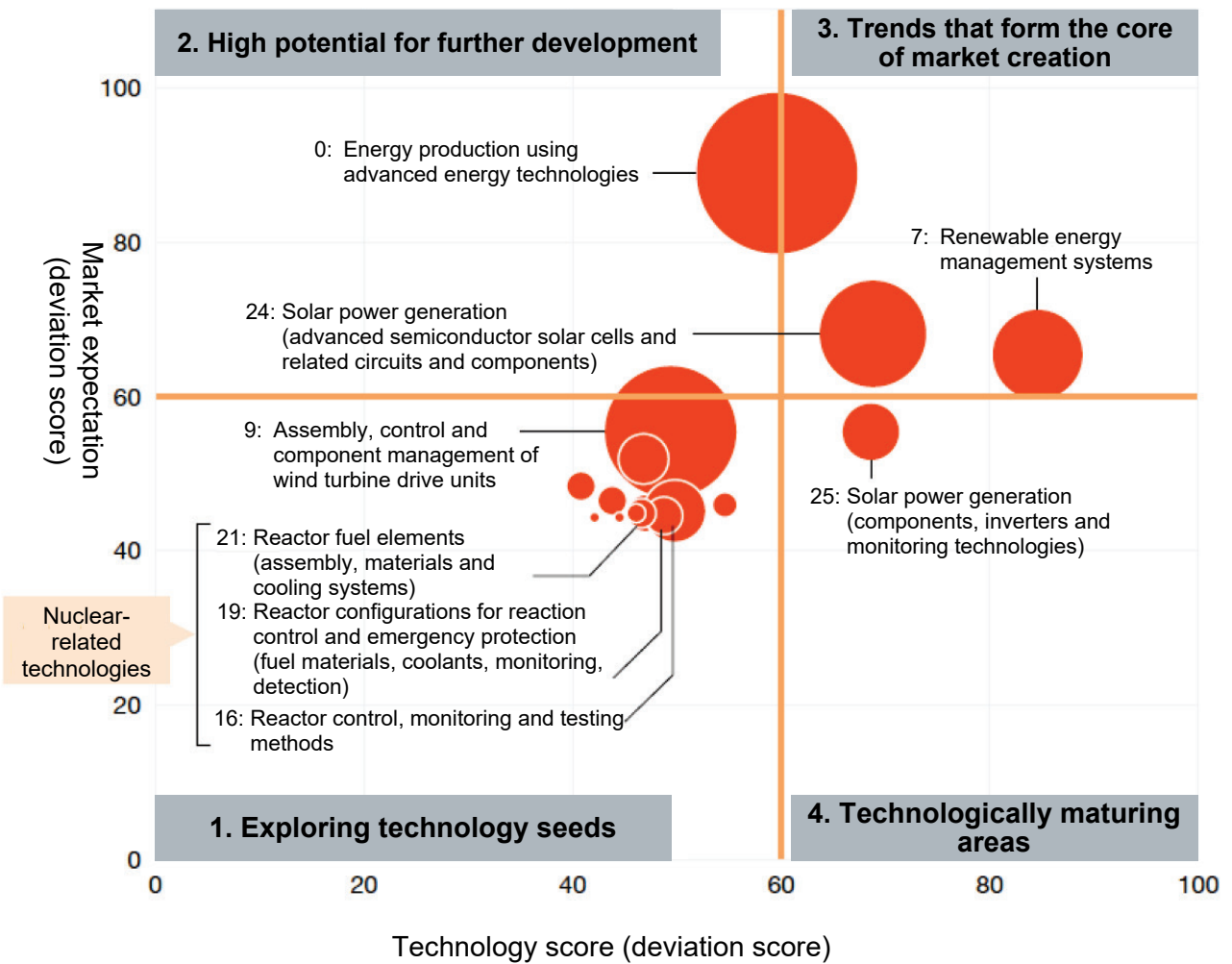


Source: Compiled by PwC

We also use *Intelligent Business Analytics*, a tool developed by PwC Consulting LLC, to analyse global patent data, corporate financial information, and investment trends with the help of AI, generating new insights for corporate strategic investment. In the climate change space, we have published a report on global trends in climate tech and GX-related technologies, along with the current status and future outlook for Japan, as a set of analytical case studies²² (Figure 13). These analyses of individual technologies help businesses identify the areas they should prioritize, enabling them to formulate more targeted strategies.

²² PwC, (2025). 'Global Climate Tech Trends: Current Status and Future Outlook for Japan'.

Figure 13 Analytical case study using Intelligent Business Analytics (energy sector)



Source: Compiled by PwC

We remain committed to supporting effective climate action by bringing together PwC's collective capabilities and track record, in partnership with private enterprises and policymakers alike.

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