UK-APAC Tech Growth Programme

Northeast Asia's sustainable technologies market – opportunities for UK companies

March 2025

Intralink

Funded by UK Government

Contents

Executive summary

Japan, Korea and Taiwan all have ambitious plans to decarbonise their economies so are looking for help to achieve this. These three markets are open to sustainable technologies that will help to achieve this across the board. British companies looking to sell into the region should be prepared to deal with cultural and language barriers, but with persistence and finding the right partners and customers the rewards can be reaped.

Japan

Japan's GBP 12.7bn sustainable technologies market is driven by the country's commitment to achieving carbon neutrality by 2050, providing opportunities for foreign companies in this space. Government initiatives such as the Green Growth Strategy and programmes led by the Ministry of Economy, Trade, and Industry provide incentives and funding for innovation across sectors like hydrogen, renewable energy, smart grids, batteries, and the circular economy. Hydrogen and ammonia are key focus areas, with investments in green hydrogen production, advanced electrolysers, and storage technologies to support energy transition goals. Renewable energy presents opportunities in offshore wind, targeting 45 GW by 2040 and urban solar technologies, particularly compact and efficient solutions for densely populated areas. Additionally, Japan's ageing grid infrastructure and increasing renewable penetration drive demand for smart grid technologies, AI-powered management systems, and energy storage solutions such as solid-state batteries and battery recycling systems.

The circular economy is another growth area, with technologies for waste-to-energy, material recovery, and plastic recycling in high demand.

Foreign companies can access the market through partnerships with local companies such as Mitsubishi and Hitachi, participation in METI or NEDO-funded projects, or by establishing a local presence. Trade events like World Smart Energy Week also offer promotional and networking opportunities. While navigating strict regulations and cultural barriers is essential, Japan's robust focus on sustainability and decarbonisation offers a promising market for innovative foreign companies.

Korea

Korea has started to take its carbon emissions seriously. The country has recently set a net-zero roadmap and committed with 11 of the largest conglomerates to invest GBP 55.5bn by 2025 to drive decarbonisation across the economy. Key areas include renewable energy, energy efficiency, industrial processes decarbonisation, circular economy, and CCUS. Although Korea's heavy reliance on manufacturing and export demand poses a great challenge to eliminate emissions, the increasing local adoption of sustainable solutions, spurred by environmental regulations and growing consumer awareness is driving market growth.

Korea faces several challenges in advancing sustainability technologies, including its reliance on hard-to-abate industries and the need to develop cost-efficient renewable energy and energy storage solutions. Despite these obstacles, significant opportunities exist in renewable energy (offshore wind, high-efficiency solar), hydrogen production and storage technologies, industrial decarbonization, advanced CCUS solutions, and next-generation batteries for transportation.

With much of the weight of the decarbonisation efforts being shouldered by new technologies that are yet to be proven, we expect ample opportunities for cutting-edge UK sustainability technologies in the market. Establishing the appropriate entry strategy and creating a strong presence in Korea will be key to achieving success for UK companies.

Taiwan

Taiwan's sustainable technology market is experiencing significant growth, driven by a confluence of factors. Public sector support, through policies and incentives, plays a crucial role in fostering innovation and attracting investment. The island's strong technological capabilities, particularly in electronics and semiconductor manufacturing, provide a strong foundation for the development of cutting-edge sustainable smart technologies. Furthermore, a growing environmental consciousness among the public and global trends towards sustainability are creating a favourable environment for the growth of this sector.

Key areas of focus include renewable energy, particularly solar and wind power, energy efficiency, and the circular economy. Taiwan's thriving startup ecosystem, with significant public sector support, is also contributing to the development of innovative sustainable technologies. While challenges such as land constraints and supply chain sustainability exist, Taiwan has the potential to become a global leader in sustainable solutions by leveraging its strengths and addressing these challenges effectively.

There are opportunities in renewable energy especially in solar energy and other renewable sources such as wind power. There's an emerging market for smart building technologies and green materials. Companies in this space, like BSF Innovation, are starting to be noticed. Moreover the Taiwanese authorities offer incentives to promote sustainable technologies. These are either through supply side tax breaks or demand driven through subsidies for consumers.

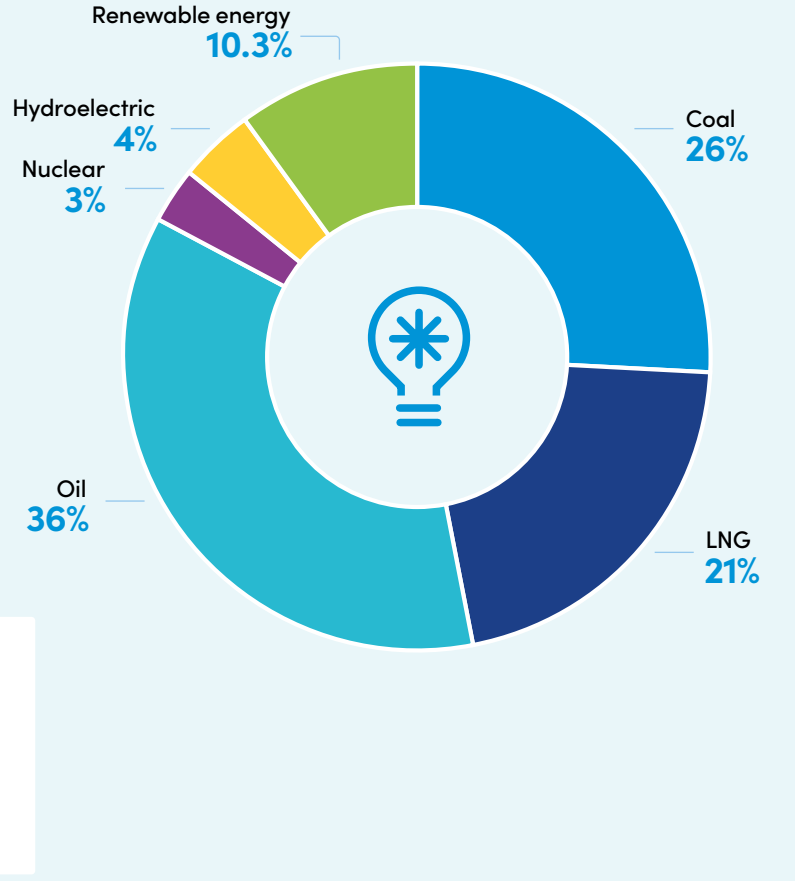
Japan's sustainable technologies market

Market overview

Size of the market

Japan is committed to developing sustainable technologies as part of its environmental and economic strategy, as evidenced by the Ministry of Economy, Trade, and Industry (METI)'s Green Growth Strategy, which aims to achieve carbon neutrality by 2050. The green transformation market doubled in value in FY2022 to GBP 12.7bn – the market's rapid growth can be attributed to the obligatory disclosure of information based on the TCFD (Task Force on Climate-related Financial Disclosure) in the prime market of the Tokyo Stock Exchange. As a country highly aware of the impact of climate change and resource depletion, Japan has also been focusing on integrating sustainable practices across various sectors. This effort is reflected in both governmental policies and private sector investments. The Japanese green technology and sustainability market is anticipated to grow at an annual rate of 19.2% between 2024 and 2032.

Japan's energy mix



Japan's sustainable technology market encompasses a wide range of products, services and technologies, including renewable energy, energy efficiency and environmental management systems. Currently, of Japan's is still heavily dependent on imported fossil fuels representing 83.5% of the energy mix. However, in recent years, there has been significant growth in renewable energy sources such as solar and wind power. According to the International Energy Agency (IEA), Japan's installed solar photovoltaic capacity reached over 70 GW in 2023.

The government has also set ambitious targets for increasing the share of renewables in the energy mix to 36-38% by 2030.

Japan is highly competitive in Green Transformation (GX) technologies, particularly in fields like storage batteries, hydrogen, and semiconductors. The country is a global leader in energy carriers such as hydrogen and ammonia, with significant advancements in ammonia utilization technology for power generation. Additionally, Japan is at the forefront of material-based technologies for carbon recycling chemicals, boasting high-quality patents that surpass those of other countries.

These strengths highlight Japan's leadership in the green transformation industry, positioning it as a key player in sustainable energy solutions.

Total patent assets of startups and corporates

	Japan	China	South Korea	United States	Germany	France	United Kingdom
Automotive/ battery storage	41,301	19,664	16,488	17,888	7,399	2,999	493
Hydrogen	10,408	7,189	4,084	4,447	1,851	1,133	770
Semiconductors/ telecommunications	8,374	7,799	2,238	8,126	1,899	731	243
Food supply/ agriculture, forestry, and fisheries industry	253	108	139	140	12	20	13
Next generation solar for homes and buildings	487	1,418	302	402	70	16	5
Offshore wind power	118	396	72	112	96	63	35
Carbon recycling	1,137	1,730	490	1,727	334	387	69
Maritime industry	208	205	331	231	196	32	52
Ammonia fuel	111	133	23	168	30	36	9
Lifestyle	38	255	23	168	30	26	9
Nuclear power	66	221	27	339	15	28	66
Logistics, human traffic and civil infrastructure	645	4,146	923	1,772	355	171	65
Aerospace industry	24	37	5	155	6	69	9
Recycling	442	3,563	457	1,636	158	173	79

Source: Ministry of Economy, Trade, and Industry

However, in terms of green transformation startups, the number and size of start-ups lag behind those overseas, with only about one-eighteenth of the number of start-ups in the US, and one-third of the size of procurement.

Despite Japan's policies in advancing green technologies in the market, Japan's startups mainly focus on the fields of agri-food tech, smart home and other energy management and alternative plastics – in Japan, start-ups are likely to be created in areas which are closely related to everyday life.

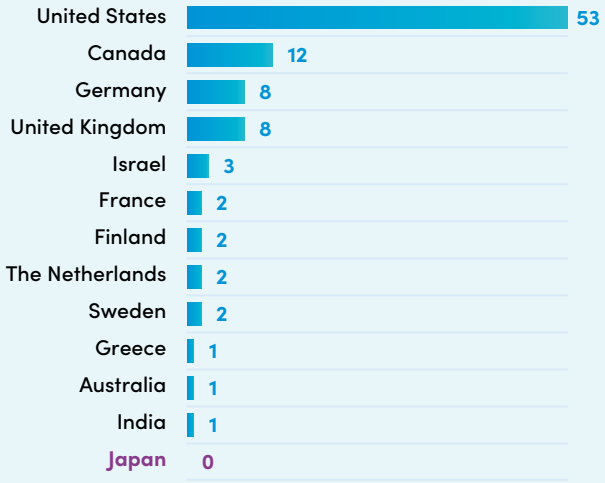
There are no domestic start-ups in cleantech technologies, such as steel and lithium extraction, due to the fact that Japan mainly relies on raw material imports. Japan's major corporates are, however, making efforts to change this.

In response to the need to create global cleantech companies in Japan, Mitsubishi Estate is in the process of establishing the Japan Climate Tech Lab, an innovation centre specialising in climate tech that was set to open in Autumn 2024. The aim of the lab is to promote innovation through collaboration between industry, government, and academia.

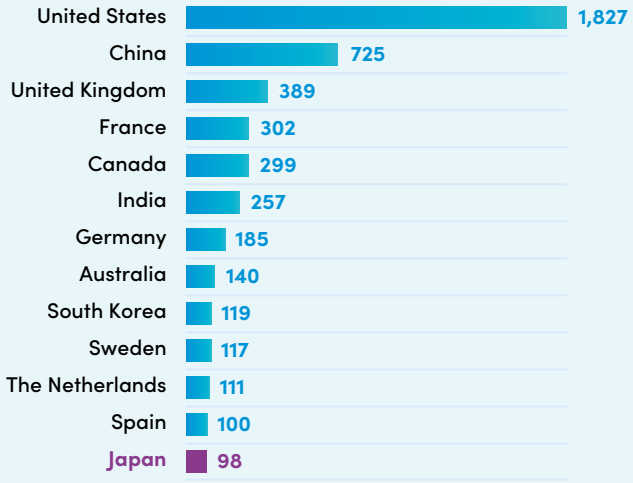
The lab also intends to promote collaboration with and investment in start-ups; in the ecosystem are VCs like Energy and Environment Investment and Marunouchi Innovation Partners, specialising in investment in companies tackling environmental challenges, and SUITz Tokyo, an accelerator program focused on increasing efforts to tackle climate change in Japan. One of the VCs in the ecosystem, Marunouchi innovation partners, has already invested in a US-based climate tech company and has expressed continued interest in startups in Asia and the West.

Number of startups in Greentech and sustainable technologies space in 2022

Number of cleantech startups



Number of climate tech startups



Source: Ministry of Economy, Trade, and Industry

Market trends

Japan's sustainable technology sector is marked by significant advancements in renewable energy and energy efficiency. Japan is expanding its energy mix to incorporate more green technologies, with notable investments in solar and wind power. Alongside this, Japan is excelling in energy efficiency through innovations like smart grids and advanced energy storage systems, positioning itself as a global leader. However, challenges remain in integrating renewable energy into the existing grid, necessitating sophisticated management technologies to ensure system stability and maximise efficiency.

Japan is also at the forefront of hydrogen fuel cell technology and electric vehicles, with companies like Toyota and Honda leading the way in the development of hydrogen-powered mobility solutions.

The nation's commitment to hydrogen infrastructure underscores its strategic approach to clean transportation solutions.

Furthermore, Japan's lack of resources is driving the development of the circular economy, particularly in waste management and recycling. It has implemented recycling legislation such as The Law for Promotion of Effective Utilization of Resources and developed advanced technologies for resource recovery, setting high standards for sustainability. The electric vehicle battery market is another growing sector, with government support driving advancements in solid-state and lithium iron phosphate batteries. Ammonia is also gaining traction, playing a key role in agriculture and industrial applications.

Japan's lack of resources is driving the development of circular economy practices and a widespread waste management and recycling ecosystem. This is backed up by recycling legislation setting high-standards for sustainability and resource recovery.

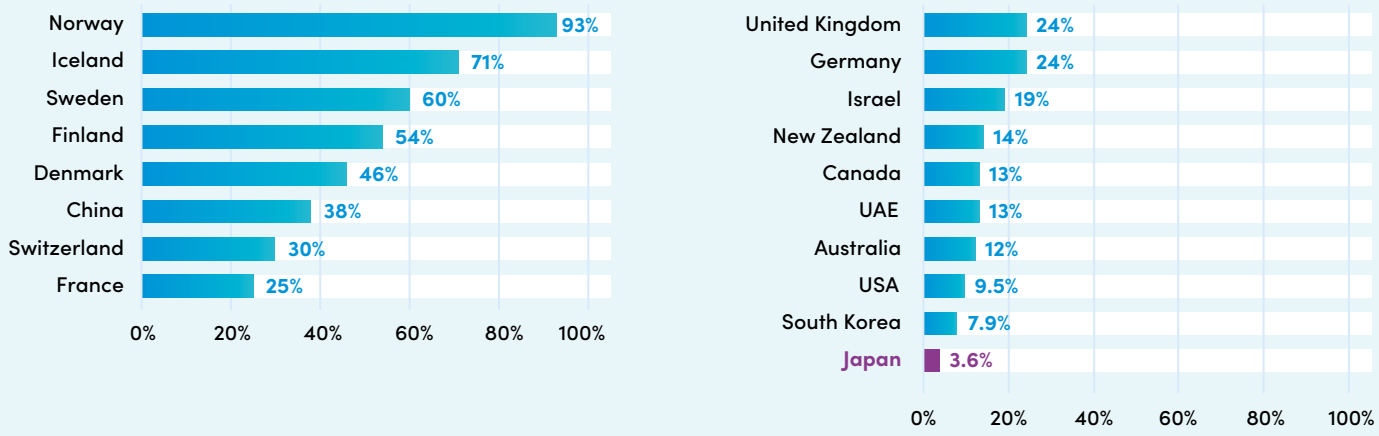
Challenges

Although there is significant interest in developing sustainable technology solutions Japan faces significant challenges in the implementation of green transformation. These include a delayed start compared to nations like those in the EU, which have long-established frameworks for decarbonisation; an uneven trading system, where subsidised international competitors and trade barriers hinder fair competition; and a low carbon price, which offers insufficient economic incentives for businesses to adopt low-carbon technologies and reduce emissions.

The high cost in deploying sustainable technologies such as energy conservation, expanding renewable energy, advancing hydrogen energy usage, and developing CO_2 storage and utilisation technologies is a key barrier to wider adoption. Substantial upfront capital is required to deploy these advanced sustainable technologies, posing financial barriers for smaller companies and public projects. This is especially evident in the very low adoption rate of EVs and fuel cell vehicles in Japan in comparison to other developed countries.

Additionally, Japan's reliance on imported raw materials, such as rare earth elements essential for green technologies, makes it vulnerable to global market fluctuations and supply chain disruptions. This dependence increases costs and threatens the stability of large-scale deployment of some products. This was the key driver between the UK and Japan signing an MOU on cooperation on critical minerals in 2023 to help bolster supply chains. Japan's ageing infrastructure also presents challenges, as it requires significant upgrades to support new technologies. Modernising the electrical grid, expanding electric vehicle charging networks, and retrofitting buildings for energy efficiency are costly and complex, potentially delaying the implementation of sustainable solutions.

EV adoption rate by country



Source: Enechange

Government initiatives

METI is the driving force behind Japan's ambitions to achieve net zero, devising industrial plans, setting policy and guiding lawmakers on legislative reforms. Government support in the form of incentives and subsidies is administered by the NEDO.

Hydrogen strategy

The Japanese government has made substantial investments in hydrogen technology through the revised Basic Hydrogen Strategy, unveiled in 2017. This strategy outlines an ambitious plan to invest over GBP 76.2bn over the next 15 years, focusing on advancing key technologies such as fuel cells and water electrolysis. The goal is to increase hydrogen utilisation to 12 million tonnes annually by 2040, reflecting Japan's commitment to becoming a global leader in hydrogen energy.

An example of the private sector adopting this strategy is Kawasaki Heavy Industries. In 2022, Kawasaki Heavy Industries, with the support of the governments of Japan and Australia, successfully completed a pilot project to transport liquefied hydrogen from Australia to Japan by ship. Central to this achievement was the development of the world's first and only liquid hydrogen carrier, the Suiso Frontier. This vessel, akin to an incredibly efficient thermos flask, can transport large quantities of liquid hydrogen at atmospheric pressure at an ultra-low temperature of minus 253 degrees Celsius without additional cooling.

Kawasaki Heavy Industries aims to establish hydrogen supply as a viable business by 2030 and is currently working on scaling up a fleet of vessels and onshore storage tanks to support mass hydrogen supply.

Carbon capture and storage (CCS)

Another significant development in sustainable technologies in Japan is the recent introduction of legislation to enhance Carbon Capture and Storage (CCS) technology. Enacted in May 2024, this law established a permit system to streamline the process of capturing and storing CO2 from various industrial sources. The legislation also includes provisions for government subsidies to offset initial costs and incentivise private sector investment in CCS technologies. Japan aims to significantly boost its CCS storage capacity with projections ranging from 120 to 240 million tonnes by 2050. This regulatory framework is a crucial component of Japan's strategy to achieve net-zero carbon emissions.

Circular economy

In the realm of waste management and circular economy, Japan has made notable strides with the Plastic Resource Circulation Act, which came into effect in April 2022. This legislation introduces comprehensive regulations for the entire lifecycle of plastics, from production to recycling, addressing Japan's significant challenge with plastic waste and promoting more sustainable practices.

Energy storage solutions

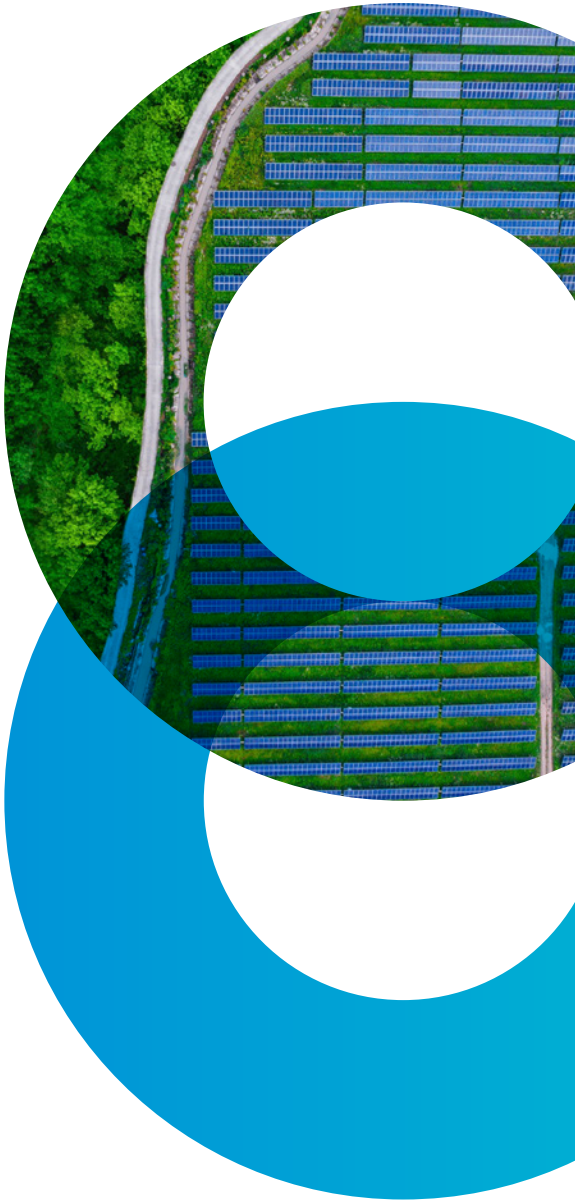
Japan is investing heavily in energy storage technologies. The government has allocated up to GBP 1.7bn in subsidies to support the development of storage batteries, including substantial funding for major manufacturers. This investment is not limited to battery management systems - italso supports research into advanced battery technologies, such as solid-state and lithium iron phosphate batteries, which are critical for improving energy density and safety. It underscores Japan's focus on enhancing battery technology and securing a stable supply chain for energy storage solutions.

Ammonia

In 2021, METI introduced an updated Road Map for Fuel Ammonia, focusing on its use in thermal power plants and as a shipping fuel. Japan plans to import 3m tonnes of clean ammonia by 2030, with demand rising to 30m tons by 2050. Additionally, Japan aims to commercialise ammonia-fuelled ships by 2028 to help meet the International Maritime Organization's goal of cutting shipping emissions by over 50%. By 2050, Japan intends to establish an ammonia supply network with a capacity of 100m metric tonnes per year to meet domestic and global demand.

RE 100

RE100 Japan, launched in 2020, is an offshoot of the global RE100 initiative, which encourages businesses to commit to using 100% renewable electricity. Its mission is to accelerate Japan's transition to clean energy by offering companies the necessary support and framework to adopt sustainable power sources. By working closely with stakeholders and government bodies, RE100 Japan promotes the use of renewable energy, helping businesses contribute to national climate goals and reduce their carbon emissions. Participants include major corporations from various sectors, such as AEON, Eisai, KDDI, LY Corporation, Fujitsu, Sony, Kao, and Kirin Holdings.



Key players

Given the lack of startups in Japan, much of the innovation and adoption of green technologies is being done at large corporations or heavy industry companies or smaller, more specialised, environmentally focused companies.

Figure 4 provides examples of companies that play a major role in the sustainable technologies.

Examples of key players in sustainable technologies

Hydrogen Suppliers
ENEOS, Iwatani, Air Liquide, Kanadevia

Gas Equipment Suppliers
Air Liquide, KITZ, NIPPON STEEL, AIR WATER

Gas/Power Companies
CHUBU Electric Power, TEPCO, OSAKA GAS, Kansai Electric Power

Energy
Fuji Electric, Panasonic, KYOCERA

Fuel Cell Companies
IHI, TOSHIBA, AsahiKASEI

Stationary
TOSHIBA, Fuji Electric, AISIN, Kanadevia, Panasonic, MITSUBISHI HEAVY INDUSTRIES, LTD.

Mobility
AISIN, TOYOTA L&F, TOYOTA, HONDA, Kanadevia

Marine
Kanadevia, IHI, Kawasaki, MITSUBISHI HEAVY INDUSTRIES, LTD., TOYOTA, NIHON SHIPYARD

Industry
TOSHIBA, Iwatani, IHI, JGC, OBAYASHI, KOBELCO, CHIYODA CORPORATION, MITSUBISHI HEAVY INDUSTRIES, LTD., AIR WATER

Infrastructure
IHI, Air Liquide, idemitsu, AISIN, Iwatani, ENEOS, MITSUBISHI HEAVY INDUSTRIES, LTD.

EPC companies
CHIYODA CORPORATION, TOYO ENGINEERING, IWATEC CORPORATION

Supply chain
ENEOS, IHI, idemitsu, Kawasaki, Iwatani, Kansai Electric Power, MITSUBISHI HEAVY INDUSTRIES, LTD., Marubeni

Regulatory bodies
NEDO, MLIT, METI, 環境省 Ministry of the Environment

Research institutes
AIST, 東京工業大学, 山梨大学, KYUSHU UNIVERSITY

Source: Intralink research

The following are profiles of some companies that are a representative sample of some of the leading companies in the development of sustainable technologies in Japan.

Corporates

Toyota Motor Corporation

Toyota Motor Corporation is focused on hydrogen-powered transport and advanced energy storage solutions. The Mirai, Toyota's hydrogen-powered electric vehicle, operates using electricity from on-board hydrogen fuel cells, advancing zero-emission transportation. The company is also pioneering the HIBARI hydrogen hybrid train, developed in collaboration with JR East and Hitachi. This train combines hydrogen fuel cells with a storage battery, aiming for commercial use by 2030.

Toyota is also receiving subsidies from the Japanese government – the support amounts to GBP 648.9m, aimed to enhance Japan's battery supply chain and advancing technologies like solid-state and lithium iron phosphate batteries by 2026.

Mitsubishi Corporation

Mitsubishi Corporation has developed CO2-SUICOM, a special type of concrete that absorbs carbon dioxide as it hardens. This innovative material traps and stores greenhouse gases, effectively reducing emissions.

Mitsubishi Heavy Industries Engineering has also introduced KM-CDR, a solvent capable of capturing over 90% of CO2 from flue gases produced by power plants and other industrial facilities. This technology enhances the efficiency of carbon capture and reduces industrial emissions.

Daikin

Daikin Industries is the world's largest air-conditioning company. The company developed a subscription-based service that offers energy-efficient air conditioners to small stores and homes. Its service ensures the end-of-life is taken care of, and it recovers refrigerants from disused units, which ensures potent greenhouse gases with a global warming potential 600 to 2,000 times greater than CO2 are not released.

Nippon Steel Corporation

Nippon Steel has formed a consortium with JFE Steel, Kobe Steel, and the Japan Research and Development Centre for Metal to further develop Hydrogen-Based Steelmaking technologies. Japan's steel manufacturers, including Nippon Steel and JFE Steel, are also actively pursuing green steel initiatives as part of their commitment to achieving carbon neutrality by 2050. Key strategies include investing in hydrogen-based direct iron reduction (DRI) and carbon capture and storage (CCS) technologies. In December 2023, Nippon Steel began using hydrogen in blast furnaces and achieved a 33% reduction in carbon dioxide emissions from the blast furnace process.

Japan's lack of cleantech startups places much of the domestic innovation responsibility on large corporations and heavy industry companies.

Startups

Chemican

Chemican, founded in 2015, focuses on the responsible use of chemicals to address environmental pollution and climate change. Chemican's software solutions assist businesses in monitoring their Safety Data Sheet (SDS) information, ensuring compliance with safety regulations.

Zeroboard

Zeroboard, founded in 2021, specialises in helping companies visualize and reduce their greenhouse gas emissions. The company offers a cloud-based platform that allows businesses to track and visualize their Greenhouse emissions from production activities.

PowerX Inc,

PowerX Inc, founded in 2021, is a company specialized in advanced electric vehicle battery technology. The company is known for producing high-efficiency EV batteries that enable ultra-rapid charging and exceed industry standards in charging capacity.

Sustineri

Sustineri, founded in 2021, is focused on innovative solutions for carbon management. The company's flagship product, Carbon Offset Cloud, automatically calculates CO2 emissions and offers solutions for offsetting them. Sustineri also provides web and cloud-based services that assist companies in their sustainability transformation efforts.

Spiber Co., Ltd.

Spiber, founded in 2007, is focused on the development of synthetic structural protein materials, known for its innovative product, Brewed Protein. It is an artificially synthesized silk-like material. This protein is designed to be a sustainable alternative to petrochemical-derived materials such as plastics.

Opportunity areas for UK companies

Japan's clean energy investment in 2023, mostly in overseas startups, was GBP 24.7bn, which is 0.8% of its GDP. In comparison, China is investing 3.8%, the US 1.1%, and Germany 2.2% - this shows that investment to date is relatively low at this time, compared to fellow developed countries. Given the depth and breadth of Japan's sustainability technologies, there are opportunities across the board.

Main areas for opportunity in sustainable technologies sector for UK companies

Area	Technologies	Japanese market demand
Hydrogen and ammonia	Fuel cells, electrolysers, hydrogen liquefaction systems, transport and storage (e.g., pipelines, tankers, storage tanks, and carriers)	○ Emphasis on green hydrogen production ○ Reduction in the cost of hydrogen is the emphasis. Significant opportunities for companies offering cost-effective production technologies, ammonia synthesis, and advanced hydrogen storage solutions (e.g., solid-state storage or cryogenic storage) ○ Collaboration with energy firms on hydrogen import/export infrastructure
Renewable energy	Offshore wind turbines, floating wind systems, solar PV modules, inverters, urban solar panels, bifacial PVs, wind farm O&M (operations and maintenance), and grid integration systems	○ Large-scale offshore wind farm deployment across the whole supply chain. ○ Technologies enabling floating wind solutions, efficient O&M strategies for offshore environments, and compact solar designs for urban settings ○ Advanced solar manufacturing equipment and integration technologies
Power/ electricity	Smart grid systems, AI-powered grid analytics, microgrid solutions, demand-side management tools, and grid-scale energy storage	○ Japan's ageing grid infrastructure requires modernisation ○ Technologies that enhance grid stability, enable real-time monitoring, and optimise renewable energy integration into the grid ○ Advanced microgrids for disaster resilience and demand-response systems for peak load management
Batteries	Solid-state batteries, advanced battery materials (e.g., silicon anodes, solid electrolytes), recycling technologies for lithium-ion batteries, and Bat-tery Management Systems (BMS)	○ Rapidly growing EV and renewable storage markets ○ High interest in durable, high-capacity batteries and innovations that reduce dependency on critical materials like cobalt ○ High interest in efficient battery recycling and reuse, as well as advanced BMS for safety and performance optimisation
Energy man-agement	IoT-enabled energy platforms, smart sensors, real-time monitoring systems, AI-driven energy efficiency solutions, and building energy man-agement systems (BEMS)	○ Demand for energy efficiency is growing in both residential and industrial sectors ○ Increased demand for smart energy platforms that analyse and reduce energy use, sensors for industrial equipment efficiency, and integrated BEMS solutions for urban buildings are in demand ○ Technologies that provide interoperability and scalability
Circular economy	Advanced recycling technologies, waste-to-energy systems, bioplastics, industrial symbiosis platforms, and closed-loop material recovery systems	○ Promotion of resource efficiency and sustainability. ○ Increased demand for cutting-edge recycling methods for plastics, e-waste, and industrial materials, as well as innovative waste-to-energy technologies (e.g., gasification and pyrolysis), ○ Increased demand for solutions enabling circularity in supply chains, such as bioplastics and industrial symbiosis platforms

Source: Intralink research

Below are some examples of successful collaborations between Japanese and foreign companies.

Success case:
SMAP Energy x Enechange

The partnership between London-based SMAP Energy and Enechange is a strategic collaboration aimed at enhancing energy technology solutions, particularly in the context of Japan's evolving energy landscape. Both companies, focus on leveraging data to improve energy efficiency and facilitate the transition to a low-carbon society. Enechange acquired SMAP Energy in 2021, allowing it to integrate advanced smart meter data analysis capabilities into its offerings. This relationship aims to create innovative products and services that enhance demand response initiatives and optimise energy consumption for both businesses and consumers, ultimately contributing to global decarbonisation efforts.

Success case: Moixa Energy Holdings x Itochu x TEPCO

Moixa, Itochu, and TEPCO have formed a strategic partnership to advance energy storage solutions in Japan. Moixa, a UK-based smart battery company, has been collaborating with Itochu, a major Japanese trading firm, to integrate its Gridshare platform with Itochu's Smart Start home energy storage systems. This initiative aims to manage a cluster of 3,500 home batteries, creating what they claim is the largest battery network globally, with an initial capacity of 35 MWh. TEPCO, one of Japan's largest utility companies, has invested in Moixa, supporting their expansion into the Japanese market, which is experiencing increasing demand for modular home storage solutions.

Through this collaboration, the companies plan to enhance energy-sharing capabilities and establish virtual power plants that optimise energy use and facilitate peer-to-peer transactions.

Success case:
Open Utility x Toshiba (Investment)

Toshiba Energy Systems & Solutions Corporation (Toshiba ESS) invested in Open Utility Ltd. (Piclo), a UK-based startup that operates a marketplace for trading distributed energy resources (DER), in 2023. This partnership aims to deepen Toshiba's understanding of DER ecosystems in Europe and the US and to develop services for future flexibility markets. The investment supports Japan's goal to increase renewable energy's share in its electricity mix from 36% to 38% by 2030, addressing potential power grid congestion through efficient use of DERs like storage batteries and electric vehicles. Founded in 2013, Piclo has been providing its trading platform since 2018, securing contracts with major companies such as Enel and UK Power Networks.

Success case:
Ceres Power x Denso

Denso Corporation signed a manufacturing license agreement in August 2024 with Ceres Power Holdings, a leader in solid oxide cell stack technology, to enhance the practical application of Solid Oxide Electrolysis Cells (SOECs) for hydrogen production through water electrolysis. The cell stacks, crucial for separating steam into hydrogen and oxygen, will leverage Ceres' innovative metal-ceramic technology for high output, combined with Denso's ceramic expertise from the automotive sector.

This collaboration aims for mass production of high-quality cell stacks and the swift implementation of SOECs, supporting the development of hydrogen as a key next-generation energy source for a carbon-neutral society.

Success case:
Octopus Energy x Tokyo Gas

In 2023, Octopus Energy launched its first dedicated offshore wind fund, backed by a GBP 190m cornerstone investment from Tokyo Gas, aiming to invest GBP 3bn globally by 2030. This fund seeks to enhance energy security and reduce reliance on fossil fuels, focusing on both traditional fixed offshore wind turbines and innovative floating turbines. Octopus has already made significant investments in UK and European offshore wind projects and is poised to tap into the trillion-pound global offshore wind industry projected to grow from 64 GW to 447 GW of installed capacity in the next decade.

Routes to market

The Japanese market is perceived as difficult to enter, and Japanese companies are often slow-moving. However, once developed, relationships with Japanese companies are long-lasting and can be lucrative. Japan values commitment and it is important to get it right the first time. If companies fail or do not deliver, Japan is not usually forgiving to companies seeking to re-enter the market.

The steps to market entry are like any market expansion, however, there are some Japan-specific factors to consider:

- Speed – the rule of thumb is to add 6 to 12 months to your usual sales cycle
- Extensive Q&A during technology validations – Japanese companies assess all possible risks and draw plans for response measures, including low-probability hypothetical scenarios
- Specific use cases – Japanese companies expect concrete information about specific applications and benefits they can expect from utilising a new technology
- Track record – Japanese companies tend to avoid being the first movers even if a solution is widely used overseas. Securing your first Japanese customer is crucial for success in the Japanese market
- NDAs – Japanese companies agreeing to NDAs is a sign of commitment, but this process can take months to sign.
- POCs – Japanese companies need to test that the technology works in a Japanese environment before making any decisions
- Decision making process – Japan follows a consensus-based bottom-up decision-making process that involves gaining approvals from various stakeholders. A top-down approach is often useful to gain initial traction, but you will likely be referred to a technical team to go through the evaluation
- Language – few people speak English, but reading ability is significantly higher than speaking. Because of this technical support in Japanese in the local time zone and staged localisation of the technology are often essential.

Market exploration

Before entering the Japan market, thorough market research is vital to identify opportunities. Understanding industry needs and the competitive landscape allows companies to tailor offerings, mitigate risks, and capitalise on trends. Being proactive enhances the chance of successful entry and sustained growth. Business models and routes to market may differ, and often, there are more partners involved in transactions, for example, system integrators and trading companies.

Participating in a sustainability-related trade show could help a company to get a feel of what the Japanese sustainability ecosystem is like.

Greentech and cleantech events in Japan

Event	Date	Website
Japan Energy Summit and Exhibition	18–20 Jun 2025	www.japanenergyevent.com
Connecting Green Hydrogen Japan	Oct 2025	www.japan.gh2events.com
Material Week Japan	Oct 2025	www.material-expo.jp/tokyo/en-gb.html#
Green Factory Expo	21–23 Jan 2026	www.fiweek.jp/tokyo/en-gb/visit.html?co=hubnavi
Convertech 2026	28–30 Jan 2026	www.mfg.cj-exhibition.com/index.html
Green Transformation Week	17–19 Mar 2026	www.decarbonization-expo.jp/spring/en-gb.html
Smart Energy Week	19–21 Feb 2026	www.wsew.jp/spring/en-gb/about.html

Source: Intralink research

Market research

A company seeking to enter the Japanese market will require a strong understanding of industry needs specific to its product and the competitive landscape. Especially identifying the relevant target Japanese companies and what UK companies can offer that will be better than what is available locally. The UK-APAC Tech Growth Programme or information provided by Japanese government agency JETRO can be useful at this stage.

Exploring opportunities

The next step is to visit Japan and validate the opportunity through direct conversations with Japanese companies. Japan has become more open to online meetings since COVID-19, which is fine for initial discussions, but a visit to Japan for face-to-face meetings with the stakeholders is necessary to gauge real interest and start building relationships.

A Japan visit can be done as part of a mission organised by the UK Department of Business and Trade (as a stand-alone event or in conjunction with a trade show), an independent self-organised visit, or a visit planned by a local partner. Other options could include joining open innovation programs of Japanese companies, partnering with an accelerator, or attending a conference.

It is increasingly possible to conduct initial meetings in English, because they will likely be with corporate departments they operate internationally. However, as discussions progress and become more technical, a lack of Japanese translation will become an issue or slow down the process. It is best to have a Japanese speaker on the team or hire an interpreter for key meetings. Localising materials is helpful but in the initial stage may not be needed.

Initial engagement with international departments of Japanese companies will be possible in English, but technical discussions will require Japanese language capability. Localising materials is not required until conversations develop.

Market entry strategies

A UK company can initially explore opportunities while overseas, but as things become more serious it is recommended to establish a local presence to effectively drive discussions with Japanese companies and show commitment to the market. Establishing a Japanese entity from the start can be expensive, risky and time-consuming. It is more common to start by appointing a local partner while continuing to visit Japan to progress discussions.

Channel partners

Entering the Japanese market as a climate tech or clean tech startup that offers developed products, components or services can be effectively achieved by partnering with a local channel partner, who can provide access to a wide customer network, help manage relationships and offer technical support. It is essential to dedicate time to selecting and training the right partner depending on the company's business goals. There are three main types of channel partners that companies could consider when entering the Japanese market.

Types of channel partners in Japan

Channel partner	Definition	Strengths	Weaknesses	How they make money
Hydrogen and ammonia	○ Act as intermediaries who purchase products from manufacturers and sell them to resellers or directly to businesses and consumers. ○ Manage inventory and logistics	○ Strong logistics and inventory management ○ Established local network ○ Ability to handle bulk orders	○ Limited technical expertise in specialised sustainability tech. ○ May focus more on volume than niche markets.	○ Markups ○ Volume-based incentives
Trading Companies	○ These large firms operate across multiple industries and facilitate domestic and international trade. ○ Often handle complex transactions and connect manufacturers with various sectors	○ Extensive networks and connections in both domestic and international markets ○ Strong financial and operational capacity ○ Language proficiency ○ Expertise in import procedures	○ May prioritise high-volume, low-margin products over niche solutions ○ Lack of specialized knowledge in sustainability tech	○ Transaction fees ○ Commissions ○ Margins
Resellers and system integrators	○ Entities that buy products, often from distributors or manufacturers, and sell them directly to end customers ○ Typically more focused on specific industries such as renewable energy or energy-efficient technologies	○ Close relationship with end customers ○ In-depth knowledge of specific sustainability products and solutions ○ Ability to offer tailored solutions	○ Limited scalability. ○ Often regionally localised, so may not have broad market reach ○ May lack the operational infrastructure of larger partners	○ Margins ○ Service fees

To maximise the effectiveness of your distribution strategy, consider employing a local sales agent or an initial direct employee to support your distributors and drive market expansion.

Agent

Appointing a local sales agent – an individual or an organisation - to carry out business development activities and negotiations on your behalf will provide an advantage of having in-country support and a way to effectively manage relationships and business discussions with Japanese companies. In Japan, a sales agent typically earns money through commissions on sales, retainers, or fees for ongoing representation. This strategy allows you to augment or replace them by hiring local staff. This strategy is particularly suitable for companies with complex solutions or components that need to be integrated and so require extensive communication with potential customers.

Joint venture

A joint venture can be an efficient market entry strategy, but it may take a long time to select the right partner, determine the structure of the joint venture and negotiate the terms. This is often done for strategic reasons and for larger-scale deployment of technologies or solutions in Japan or globally. This can be manufacturing or the development of infrastructure projects.

Licencing

Direct licencing and franchising can be the most straightforward market entry strategy as it can be accomplished without a local partner or establishing a Japanese entity. However, a UK company will often require Japanese-speaking staff (or a bilingual person in Japan) and in-country technical resources to facilitate the conversations with potential partners and agree on all of the technical and commercial terms and conditions of any contracts put in place.

Investor

Although Japanese VCs and CVCs invests smaller amounts in the energy sector relative to their counterparts overseas, seeking investment from a Japanese VC or corporate venture capitals and leveraging its connections to secure initial deals is another strategy a company seeking to enter the Japanese market could explore. An example of a VC in the sustainable technologies space is Energy Environment Investment (EEI), which was established in 2006. LP Investors in the fund include Kyushu Power Electric, Mitsubishi UFJ Bank, Toshiba, and Daiichi Life Group. The EEI has invested in overseas startups like GreenCom Networks AG from Germany (acquired by Enphase Energy) and belongs to a network of VCs, financial institutions, and business enterprises.

Setting up local entity

Japanese companies value a local presence, so it may be favourable to establish an entity in Japan once initial business and relationships have been established. The main types of entity a UK company can choose from are a representative office and a subsidiary.

Representative office

Representative office is the most basic form of in-country representation and a good option for the initial stage of market entry. It can engage in market research, information gathering, purchasing, and advertising, but cannot perform sales activities. No formal registration is required but it will need support from the main office or the local representative to open bank accounts or rent property.

Subsidiary

Japanese employees prefer to be hired by a Japanese entity; therefore, it is recommended to set one up when hiring local staff. A foreign company will typically choose between a joint-stock corporation (Kabushiki-Kaisha (K.K.)) or a limited liability company (Godo-Kaisha (G.K)). There are service providers that assist with the registration – the process usually takes six to eight weeks and costs GBP 7,000 - 8,000.

South Korea's sustainable technologies market

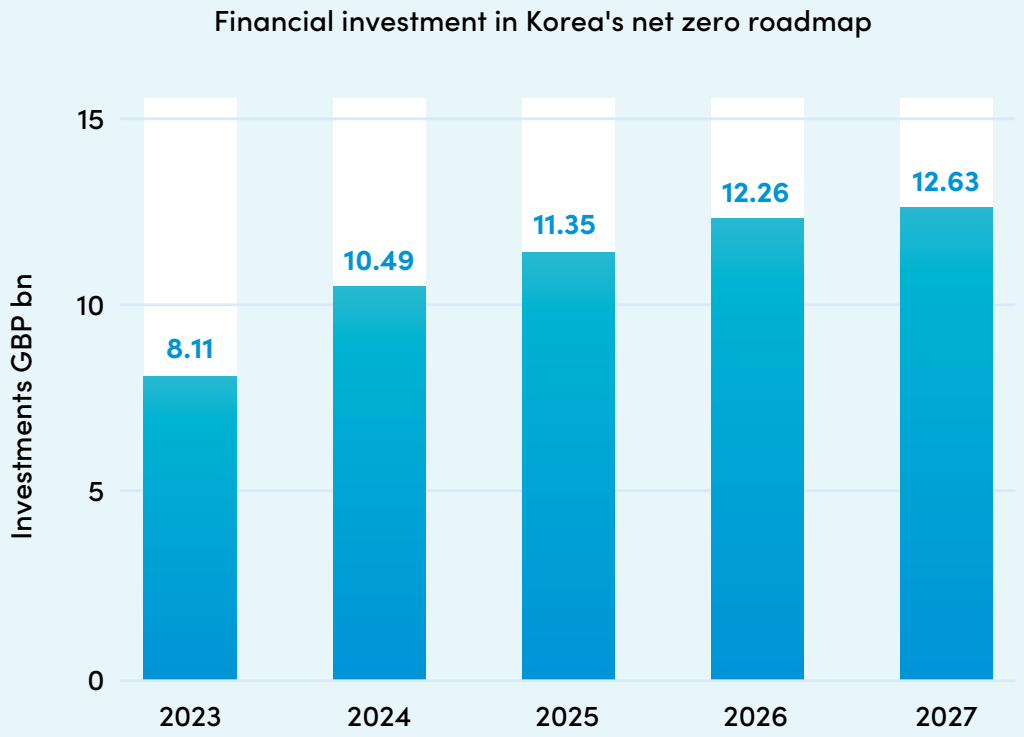
Market overview

Size of the market

In 2021, South Korea (hereafter Korea) was the world's 10th largest carbon emitter, responsible for 1.7% of the world's emissions. As such, Korea committed to carbon neutrality by 2050, with two outlined scenarios focusing on key areas such as energy, industry, transportation, buildings, and CCUS. Korea's Basic Plan for Carbon Neutrality and Green Growth was then announced in 2023 to lay down the roadmap to achieve its 2030 goals.

To understand Korea's sustainability priorities, it is important to understand its industry structure. Korea's reliance on exports and manufacturing meant that in 2018, Korea's peak emission year, energy accounted for 37 % of the carbon emissions, followed by Industry with 36%, and transport with 13%. Hence, Korea must focus on these three areas and secure key technologies to achieve its net zero goals.

Korea's carbon neutrality investment



Source: Green transition institute

As renewable energy only accounts for 9% of the energy mix, Korea has still a lot to do in terms of new and renewable energy. While the share of nuclear, renewables, and gas in power generation is projected to increase, the share of coal is anticipated to decline sharply. With electricity demand forecasted to hit 1,200 TWh by 2050—more than double 2018 levels—energy efficiency is crucial, with the national target of 25% improvement by 2027. Korea's reliance on hard-to-abate industries like steel, cement, and petrochemicals presents emission reduction challenges, as necessary technologies are still in development. In addition, transportation will focus on electrifying land transport and adopting alternative fuels for marine transit.

To tackle these challenges, the Korean government in March 2023 identified 100 core carbon-neutral technologies categorised into four sectors: energy transition, transportation, industry, and environment, spanning over 17 focus areas. These technologies are further classified by maturity of the Korean technology into technologies where Korea is leading, following or has a big gap to fill with leading countries.

To develop these technologies, both public and private funding have been on the rise. In 2023, the government announced the Climate Tech Industry Promotion Strategy with the aim to invest KRW 145tn (GBP 80bn) by 2030 in cleantech (energy), carbon tech (CCUS), ecotech (resource circulation), foodtech (argitech), and geotech (adaptation, monitoring) through public-private partnerships.

The strategy will foster 10 climate tech unicorns and generate 100,000 related jobs by 2030. Additionally, the basic plan for carbon neutrality lays out an investment plan by 2027, increasing from GBP 8.1bn in 2023 to GBP 12.6bn in 2027.

Private investment in sustainable technology in South Korea amounted to GBP 1bn in 2022. While it still lags behind more advanced countries, Korea's investment demonstrated the highest growth rate (337%) compared to 2021, with 4.9% of current domestic startups focusing on sustainable technology. R&D investment in climate technology is mostly around renewable energy, batteries and ESS, with new technologies such as CCUS and new energy increasingly gaining interest.

Market trends

Renewable energy

Power generation in Korea has increased by 13.7% in 2023 compared to 2013, reaching 588TWh and accounting for 32.7% of total emissions. Coal still remains the main energy source at 31.4% , followed by nuclear at 30% and LNG and 26.8%. Renewable energy use has been steadily increasing and yet only accounted for 9% in 2023. The key area of focus is phasing out coal and increase reliance on renewable energy, nuclear energy and hydrogen-based power generation including fuel cells and hydrogen/ammonia combustion. Nuclear energy and renewables including wind and solar are set to be the main energy sources in 2038 accounting for 35.6% and 32.9% of the energy mix respectively.

The current government administration has shifted focus to nuclear and wind power with plans to develop a 170MW small modular reactor (SMRs) by 2028 and give a stronger role to wind power by adjusting the target ratio of solar:wind energy from 87:13 in 2021 to 60:34 in 2036. Due to land constraints, offshore wind holds promise for Korea, with capacity expected to hit 12GW by 2030, compared to 5GW for onshore.

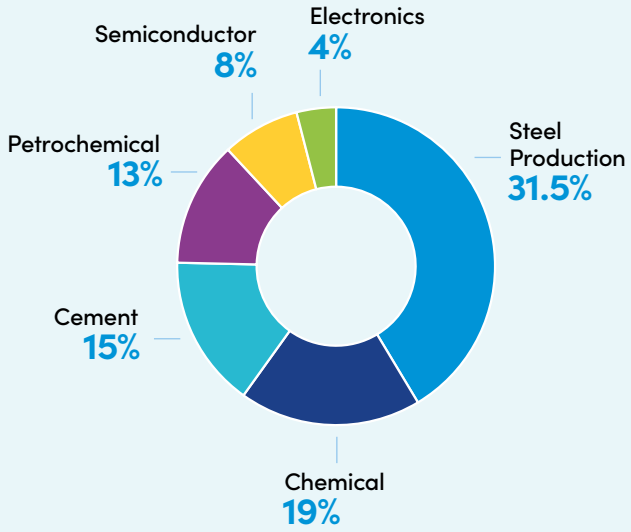
As of last year, Korea's total wind power capacity stood at 1.9GW—just 1.4% of the country's 137GW total power capacity and 11.5% of its 15.8GW renewable capacity. By March 2024, permits for 83 offshore projects totaling 27GW had been issued. To compete globally, Korean firms are focusing on large-scale turbines (>20MW), with players like Doosan partnering with Siemens Gamesa.

Industry

Due to Korea's heavy reliance on energy intensive industries such as steel, petrochemicals and semiconductors, the industry and manufacturing sector accounted for 37.6% (246MT) of the total GHG direct emissions in 2022, with steel, chemical, petrochemical and cement industries being the main sources of emissions.

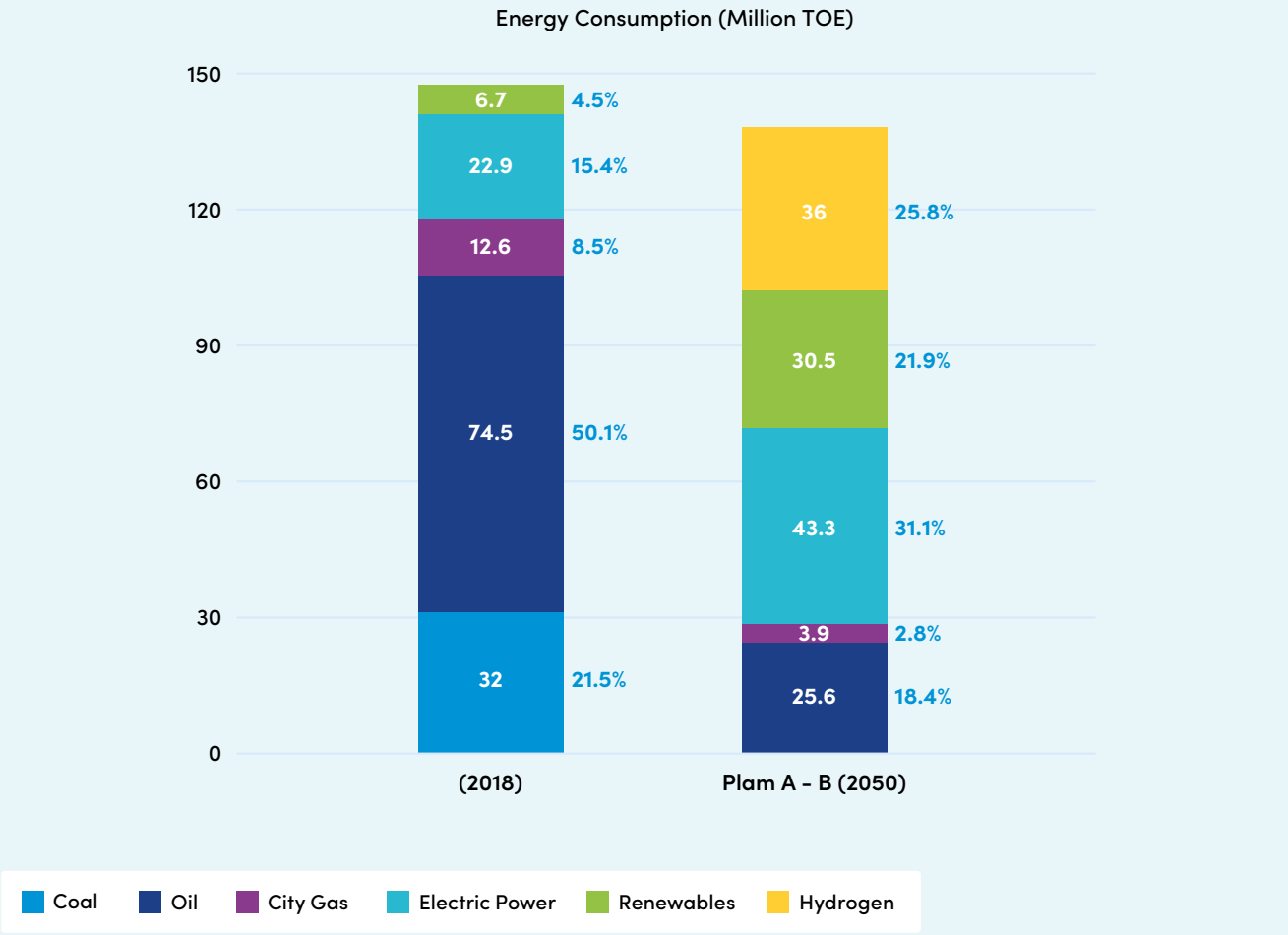
With the goal to reduce 2050 emissions by 95% for steel, 53% for cement and 73% for petrochemicals, the government deployed KRW 935bn (GBP 577mn) for low-carbon technology R&D, as well as KRW 147bn (GBP 90mn) in loans for large-scale projects.

Carbon emission per industrial sectors



Source: NGMS, Graphics

Roadmap for industry sectors



Source: 2050 Korea Carbon Neutrality Roadmap & 2030 Basic Plan

The steel, chemical, and cement sectors are expected to account for around 70% of total greenhouse gas reductions in the industrial sector by 2050. Key decarbonisation strategies identified include electrification of industrial processes, utilisation of hydrogen and bioenergy, and the introduction of CCUS (carbon capture, utilisation and storage) technologies. The steel industry can reduce emissions by focusing on hydrogen-based steel production technologies, while the chemical industry can transition to biomass-based raw materials.

Additionally, the cement industry can significantly reduce coal dependency by shifting production methods to use renewable energy and electricity and finding new materials and processes. Circular economy is rapidly evolving in Korea driven by both government policies and corporate initiatives. The government has recently updated laws to promote a shift toward circular practices, particularly in reducing plastic usage, increasing the use of bioplastics and promoting industrial recycling.

Hydrogen

The hydrogen economy is pivotal to Korea's net-zero ambitions, with the 2050 Carbon Neutrality Roadmap ultimately emphasising 'green' hydrogen produced via electrolysis powered by renewable energy. Korea is expected to move from its reliance on hydrogen from by-products of naphtha cracking to green hydrogen, 82% of which will likely be imported by 2050 according to MOTIE. The hydrogen market size is forecast to more than double in size from KRW 11tn (GBP 6.21bn) in 2021 to KRW 26.8tn (GBP 15.1bn) by 2030 while the demand for hydrogen is estimated to grow to 3.9m tonnes by 2030 and 27.6m tonnes by 2050.

For hydrogen production, Korea plans to develop 10MW-scale electrolysers including technologies like PEM and Alkaline electrolysis but also emerging ones such as SOEC and AEM. However, renewables-powered electrolysis only accounts for 1% of Korea's hydrogen production.

For fuel cells, Korea has been quite active in the past decades in developing PAFC, MCFC, and PEMFC technologies, and has more recently advanced in higher efficiency SOFC systems through collaboration with UK and US leading firms such as Ceres Power and Bloom Energy. The current installed fuel cell capacity is approximately 875MW with a projected annual growth rate of 21%. Most installations are primarily utility scale PAFC and MCFC systems, while residential and commercial markets, dominated by SOFC and PEMFC are yet to develop.

Fuel cell technology status

Company	Product	Capacity	Original technology	Application field
POSCO Energy	MCFC	300KW, 2.5mw	Fuel Cell Energy	Utility
Doosan	PEMFC PAFC SOFC	600W, 1KW, 5KW, 10kW 400kW 200-500kW	Fuel Cell Power Clearedge Power Ceres Power	Residential/commercial Utility Commercial/Utility
SK Ecoplant	SOFC	300kW	Bloom Energy	Utility
S-Fuel Cell	PEMFC PAFC	1-10kW 100kW	CETI, GS Fuel Cell S-Fuel Cell	Commercial Utility

As for storage, Korea aims to scale up liquid hydrogen production tenfold by 2030, increasing output from 0.5 to 5 tonnes per day and developing the necessary infrastructure, including liquid hydrogen storage tanks, vaporisers, and hydrogen refuelling stations (HRS). By 2040, Korea plans to commercialise 40,000m³ liquid hydrogen tanks and expand the hydrogen pipeline network.

Transportation

The transport sector accounted for 13.2% of Korea's total emissions in 2022 . Korea saw a yearly 3% increase in the number of vehicles on the road annually from 2013 reaching 25.5 million in 2023 , which spurred the government to encourage eco-friendly vehicles. The number of eco-friendly vehicles exceeded 600,000 in 2024 , accounting for 21.3% of all vehicles on the road.

Korea's 2030 Basic Plan and 2050 net zero strategy for transportation focus on reducing demand by encouraging public transportation and decarbonising road, rail, aviation and maritime transport. A significant focus will be on the deployment of ZEVs, with the government aiming for 4.5 million ZEVs on the road by 2030. Achieving this target will depend on robust charging infrastructure, with plans to establish 1.23 million BEV charging stations and over 660 hydrogen refuelling stations by 2030.

In the battery sector, cathode, which accounts for the largest share of production costs, has been the focus of technological advancements in lithium-ion batteries, including LCO, LFP, and NCM developments. Beyond cathodes, the growth of the battery circular economy—encompassing energy storage system (ESS) adoption for stable power grid operation and renewable energy integration, repurposing EV batteries for ESS, and recycling valuable materials—will further accelerate advancements in secondary battery technologies.

CCUS

As it is challenging to reduce all emissions in Korea's industries, capture, storage, and utilisation (CCUS) technologies are vital for Korea. According to the Net-Zero roadmap published in April 2023, CCUS technology is expected to contribute about 3.8% to achieving Korea's 2030 NDC target, and its contribution is projected to increase significantly to 8-12.3% by 2050 to support carbon neutrality goals.

For carbon capture, Korea plans to have the commercial technology to capture 1MtCO2e annually at a cost of approximately GBP 50 by 2030. In terms of storage, the focus is to reach a storage capacity of over 40 MtCO2e by 2030 and 120 MtCO2e by 2050, with cost levels of GBP 50/ton and GBP 45/ton, respectively. However, due to storage limitations within Korea, Korea plans to establish hubs for exporting surplus CO2 to overseas storage sites.

For carbon utilisation, the Korea Institute of Science & Technology Evaluation and Planning (KISTEP) estimates that Korea's CCUS technology lags approximately five years behind the leading US technologies. In Korea, the leading patent applicants for CCUS are research institutes, with the Korea Institute of Energy Research (KIER) leading in capture technology, and the Korea Institute of Geoscience and Mineral Resources (KIGAM) leading in storage and utilization. In addition to research institutes, petrochemical companies such as LG Chem and Kolon industries are actively looking for new ways to use captured carbon.

Challenges

Reliance on hard to abate industries

- Manufacturing accounts for 28% of the nation's total GDP. Heavy reliance on the industrial sector poses a challenge for achieving carbon neutrality as emissions arise inherently from the manufacturing processes
- In the steel and cement sector, the cost efficiency of green technology, the development new technologies such as hydrogen steel production or new aggregates for cement to reduce carbon emission are key obstacles
- International regulations such as the European Carbon Borden Adjustment Mechanism (CBAM) put burden on price competitiveness for Korean companies

Geographical challenges and fierce price competition on renewable energy

- Korea's geographic conditions impose significant constraints on the development of large-scale onshore wind or solar farms, with limited availability of sites capable of supporting projects exceeding 100 megawatts (MW)
- While offshore wind farms are free from such land area restrictions, enabling the potential development of large-scale projects at capacities of 1 to 2 gigawatts (GW) or more , it is still challenging due to Korea's low wind speed conditions that require long turbine blades to maximise efficiency
- In the solar energy sector, the market penetration of low-cost Chinese solar equipment has led to a steady decline in the average operation rates of domestic solar companies. In response to the competition from low-cost Chinese modules, Korea needs to not only focus on solar module manufacturing but also expand their solar project development and secure their supply chain

Safety concerns for ESS and limited hydrogen production capacity

- Although the government and industry see renewable energy powered electrolysis as a key element in its hydrogen production strategy, Korea lags behind leading OECD companies and is likely to depend on imports of clean hydrogen
- The adoption of ESS in Korea faced significant setback in 2019 due to series of fire incidents followed by joint public-private investigation, identifying battery anomalies as the primary causes. Due to uncertainty of ESS safety issues, domestic ESS industry was driven into stagnation. The number of new ESS installations plummeted from 975 sites (3,836 MWh) in 2018 to 127 in 2021, and further to just 94 in 2022 . Starting 2023, Korean companies are now actively developing and producing lithium iron phosphate (LFP) batteries for ESS applications due to their relatively lower fire risk compared to the original nickel-cobalt-manganese (NCM) batteries

Government initiatives

Net Zero roadmap

In October 2021, Korea issued its "2050 Carbon Neutrality Roadmap" which laid out two scenarios enroute to achieving carbon neutrality by the middle of the century. The roadmap has laid out sector-specific targets for the energy, industry, transportation, agriculture, buildings, hydrogen and CCUS, and waste sectors.

In March 2023, Korea further announced its plans on how to achieve the 2030 NDC in the "National Basic Plan for Carbon Neutrality and Green Growth". The key focus will be the energy and industrial sectors which account for around 70% of the country's total emissions. Both scenarios emphasise expanding renewable energy, hydrogen-based generation, and advanced technologies like fuel cells, carbon-free turbines.

RE100 support

The Korean government has outlined comprehensive policies to support the RE100 initiative, aiming to boost the use of renewable energy and help businesses transition to sustainable practices. Key measures include creating a fair and transparent power market where renewable energy can compete with traditional sources, revising pricing systems to reflect actual production costs, and ensuring the independence of power grid operators. The government also plans to raise renewable energy targets in alignment with its 2050 carbon neutrality goal and integrate Power Purchase Agreements (PPAs) into its energy policy roadmap.

Renewable Portfolio System

To accelerate the shift to renewable energy, the government introduced the new Renewable Portfolio System in 2012, requiring power companies with installed power capacities of over 500MW to produce an increasing proportion of their power using renewable energy. RPS obligators include the KEPCO subsidiaries (KHNP, KOSPO, KOMIPO, WP, EWP, KOEN), two public utilities (KDHC and K-water) and 16 independent power producers (IPP) such as SK E&S, GS Power and POSCO Energy.

Renewable Portfolio Standard (RPS) targets

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2012 Ratio (%)	8	9	10	10	10					-	-
2023 Amended ratio (%)	-	-	-	13.0	13.5	14.0	15.0	17.0	19.0	22.5	25.0

Source: Ministry of Trade, Industry and Energy (MOTIE)

Hydrogen strategy

The Korean government has set goals in terms of technology, industrial clusters and regulations to boost Korea's competitiveness in the hydrogen industry. Korea aims seven strategic technology areas to be on the same level as global leaders: electrolysis, liquid hydrogen ocean carriers, tube trailers, HRS, fuel cells for mobility, fuel cells for power generation and hydrogen turbines. The government is also establishing technology-specific hydrogen clusters across the country with a budget of nearly KRW 1.17tn (EUR 982m) to stimulate technology specialisation. In 2022, the National Assembly passed the Hydrogen Economy Promotion and Hydrogen Safety Management Act called 'Hydrogen Act'. The Hydrogen Act makes provisions for hydrogen equipment safety requirements, high-level certification processes and the roles and responsibilities of various government agencies.

Carbon capture and storage (CCS)

CCUS technology has been selected as part of the '100 Core Technologies for Korean Carbon Neutrality' in 2023. In addition, the National Assembly passed the new Act on the Capture, Transportation, Storage and Utilization of Carbon Dioxide in February 2024 which is scheduled to take effect in 2025. Based on this law, systematic support is expected for large-scale facility investments by companies. In addition, the law also includes regulations to systematically establish CCUS, such as requiring registration for capture operators, approval and permits for transportation and storage operators.

Circular Economy (Industry)

In 2023, South Korea announced the "Industrial Growth Strategy through Circular Economy Revitalization" to help decarbonise key industries. The strategy focuses on easier regulation for recyclable resources, upgrading sorting facilities and adopting advanced technologies, strengthening packaging management and providing incentives to exemplary companies. In addition, the government unveiled the Circular Economy 9 initiative (CE9) in 2023, targeting nine key industries—petrochemicals, steel, non-ferrous metals, batteries, electronics, textiles, automobiles, machinery, and cement—to promote circular economy.

MOTIE's strategy to revitalize the circular economy

Industry	Cement	Electronics, textile	Battery	Steel, nonferrous metal	Petrochemical
Focus	Alternative fuels, raw materials	Eco-design principles	Recycling, re-use	Use of scrap	High-value raw materials, pyrolysis oil production

Source: The Carbon Neutrality and Green Growth Committee

Key players

The key players in cleantech vary from one area to another. However, the general trend is that early-stage technologies or areas, tend to be dominated by SMEs and startups, while the larger, more mature markets see the emergence of large conglomerates.

An example of this is the EV Charging market, which until recently was dominated by SMEs, but has recently seen the entry to market of the LG, Hanwha, SK and Lotte groups as the market has started to mature and become profitable.

Key players

Renewable energy

- KEPCO
- Doosan Heavy Industries & Construction
- OCI
- GS Energy
- Hanwha Solutions
- Hyundai Engineering & Construction
- Samsung C&T
- SK E&C
- POSCO
- Samsung Heavy Industries
- Unison
- Doosan Enerbility
- SeAH Steel
- Orbitech
- KOEN

Industry

- POSCO
- Hyundai Steel
- Dongkuk Steel
- SsangYong C&E
- Sampyo Cement
- Hanil Cement
- LG Chem
- Lotte Chemical
- LG Display
- SK innovation
- Samsung Electronics

Hydrogen

- GS Energy
- S-Oil
- SK innovation
- Hyundai Oilbank
- Doosan Heavy Industries & Construction
- S-Fuelcell
- Hyundai Engineering & Construction
- SPG Hydrogen
- Kogas
- KEPCO
- Bumhan
- Hyosung
- Lotte Chemical
- Air Liquide
- 주식회사 덕양 Deokyang Co., Ltd.

Transportation

- Hyundai Motor Group
- KGM Commercial
- Woojin
- Hyundai Mobis
- LG Energy Solution
- Mando
- kakaomobility
- SOCAR
- Samsung SDS
- SK on

CCUS

- Korea Institute of Energy Research
- KEPCO
- SK E&S
- Hyundai Motor Group
- Lotte Chemical
- Hyundai Oilbank
- SK materials
- DSME
- KSOE Korea Shipbuilding & Offshore Engineering
- Hyojin Autotech

Renewable energy

Doosan Enerbility completed the development of floating 8MW class wind turbines in late 2022 while Unison is developing 4.3MW wind turbines at Gunsan. EPC companies are also increasing investments into offshore wind technologies with SK Ecoplant acquiring a 31% stake in wind substructure company Samkang MNT to form SK Oceanplant. Daewoo E&C further signed a joint development agreement with Dutch floating wind structure company MonoBase Wind to develop wind turbine floaters by 2025.

While solar plants are not uncommon in Korea, space constraints mean that developers are increasingly looking at floating solar farms. In November 2021, Scotra completed a 41MW floating plant at the Hapcheon Dam, the largest in Korea at the time but that will be dwarfed by the planned 2.1GW Saemangeum floating solar plant that is being developed by Hanwha Solutions and currently has 297MW installed capacity. Both projects use modules from Hanwha Q Cells which recently announced a KRW 2tn (GBP 1.2bn) investment in its solar manufacturing operations in the US to increase its production capacity and develop next-generation perovskite solar panels.

Traditionally strong in nuclear power plant construction and installation, Korean conglomerates are now rushing to grab their share in the rapidly developing SMR market. The SK Group invested KRW 354bn (GBP 200m) in Bill Gates' Terrapower and Doosan Enerbility, Samsung C&T and GS Energy are examples of investors in other market leaders such as US NuScale Power and X-Energy. Hyundai E&C has signed an exclusive agreement with US based SMR developer Holtec International to collaborate on SMR development and projects across the entire nuclear power value chain.

Industry

In a bid to reduce industrial emissions, six Korean steelmakers including POSCO and Hyundai Steel established the Green Steel Committee in 2021. They announced their commitment to 2050 carbon neutrality by creating a KRW 150bn (GBP 93m) joint fund between 2023-2025 to support low-carbon technologies including electric furnaces, hydrogen direct reduction technology and increasing the use of scrap steel. POSCO further announced investments of GBP 11bn for low-carbon steel production technologies and has partnered with UK Primetals Technologies for developing hydrogen technology to this end.

In the cement industry, an increasing adoption of alternative fuels and raw materials have reduced GHG gas emissions by 20% between 2014 and 2022. Ssangyong C&E, Korea's largest cement producer, committed to completely transition from bituminous coal by 2030 and will invest KRW 280bn (GBP 171m) by 2030 in low-carbon facilities. Sampyo Cement has also committed to invest KRW 200bn (GBP 125m) until 2026 in recycling facilities, waste heat recovery facilities and carbon capture with the aim of cutting emissions by up to 35% by 2030.

For the petrochemical industry, there is a trend to develop green products and cut emissions during the manufacturing process. SK is broadening its recycling efforts across batteries, plastics, and e-waste, building integrated value chains that span collection, recycling, and energy recovery, with SK Ecoplant leveraging AI to optimise waste management. CJ CheilJedang has developed biodegradable plastics, focusing on PHA, a highly eco-friendly material that fully decomposes in marine environments, while LG Chem pioneered chemical recycling techniques like supercritical pyrolysis to repurpose waste plastics, highlighting a broader industry shift toward circular and closed-loop systems.

Hydrogen

The hydrogen ecosystem consists of a set of players including hydrogen producers and users, gas and power utility companies and fuel cell equipment manufacturers. Korea's largest suppliers such as Deokyang and SPG source much of their hydrogen as a by-product from Korea's three petrochemical complexes but are increasing production from steam methane reformers due to the limited amount of by-product gas available.

SK Group, POSCO, Hyundai Oilbank, and Hyosung Heavy Industries are all intensifying efforts in hydrogen production to meet ambitious goals for both blue and green hydrogen supply. SK Group is aiming to produce 280,000 tonnes annually by 2025, starting with an initial 30,000 tonnes in 2023, and investing KRW 18tn (GBP 10.6bn) across the hydrogen value chain by 2030. Hyundai Oilbank aims to shift its core business by reducing its refining operations to 45% by 2030, producing 100,000 tons of blue hydrogen by 2025. Meanwhile, Hyosung Heavy Industries is making strides in liquid hydrogen, investing KRW 1tn (GBP 590m) to produce 39,000 tons annually.

In the fuel cell and hydrogen usage, the SK Group has partnered with Bloom Energy to develop solid oxide fuel cell (SOFC) technology and acquired stakes in Plug Power to bolster its fuel cell production and infrastructure. In addition, Hyundai Motor Company is advancing fuel cell technology for a variety of applications, including vehicles (FCEVs), drones, urban air mobility (UAM), trams, and portable devices.

Transportation

Hyundai Motor Company announced its goal to hit net zero by 2045 and plans to increase the share of electric vehicles to 30% by 2030 and 80% by 2040 with aims to achieve 100% transition to renewable energy by 2045. The company is also investing in electric charging solutions, battery recycling technology, and Vehicle-to-Grid (V2G) solutions to improve the grid stability. Although over 40% of Korea's EV Bus is imported from China, Hyundai Motor and KG Mobility, key electric bus manufacturers in Korea, are ramping up production to counter the influx of low-cost Chinese electric buses .

Lithium-ion batteries are expected to play a large role in the transportation transition and Korea is home to three of the top six EV battery companies worldwide: LG Energy Solutions, SK On and Samsung SDI. These companies are taking life cycle assessments (LCAs) of their operations, implementing RE100 at their overseas facilities and investing in battery recycling to reduce the emissions throughout the battery lifecycle. SK Ecoplant has recently signed an agreement with Ministry of Environment and five recycling companies to produce recycled materials from waste batteries and participate in refining the certification system with the system development support from the government.

For marine transport, Korea's shipbuilders are developing eco-friendly ships to join Korea's race to net zero.

Korea Shipbuilding and Offshore Engineering (KSOE) is developing its 20,000 cubic meter liquefied hydrogen carrier Hyundai LH3 with a commercialisation target between 2025 and 2027, while Samsung Heavy Industries received Approval in Principle (AIP) from the Korean Register (KR) for its 9,300 TEU ammonia-powered container ship .

CCUS

Oil & gas and petrochemical companies are increasingly investing in CCUS technologies. Companies like SK E&S, GS Caltex, and Kumho Petrochemical are actively developing and expanding CCUS projects to integrate key technology into their operations. SK E&S, in collaboration with Australia, is leveraging CCS technology in the Barossa gas field to produce low-carbon LNG, with plans to import 1.3m tons annually for blue hydrogen production. GS Caltex is enhancing its CCUS efforts as part of its Green transformation strategy, working with domestic companies to capture CO_2 from its Yeosu plant and convert it into useful chemical products while transporting excess CO_2 for underground storage.

Kumho Petrochemical is also investing in CCUS by building a CO_2 capture and liquefaction plant in Yeosu, expected to be operational next year. This facility will capture CO_2 from exhaust gases and convert it into carbonic acid. LG Chem built a 1,000 ton pilot plant at its Daesan facility to validate its DRM process, which uses captured carbon dioxide and methane to produce plastics while reducing CO_2 emissions by over 50%.

Startup ecosystem

South Korea has been focusing on green tech, with the government announcing plans in March to expand financial support for climate crisis responses. By 2030, it aims to provide KRW 452tn (GBP 255bn) in support, including KRW 9tn (GBP 5.9bn) for the green tech sector through a new Future Energy Fund involving six major banks. Private investments in South Korea's green tech are led by impact investors and large corporates .

Soopoong Ventures, a pioneering impact VC that established the country's first fund for early-stage green tech startups has launched multiple funds targeting energy, circular economy, and agri-food sectors. Envisioning Partners, with a focus on energy transition, sustainable agri-food, carbon tech, and climate change adaptation, raised a KRW 440bn (GBP 248m) fund in January 2023, with 62% of their investments directed toward green tech. D3 Jubilee Partners, specializing in impact investments, launched a KRW 285bn (GBP 168m) green tech fund in 2021 and plans to raise KRW 500bn (GBP 282m) this year. On the corporate VC side, POSCO Capital launched a KRW 22bn (GBP 13m) fund in 2018 and Samsung Engineering is investing KRW 30bn (GBP 18m) through Samsung Ventures' fund to grow their business in hydrogen, plastic recycling and CCUS. Lotte Ventures operates an ESG fund and plans to invest in global companies in waste and water treatment, recycling and battery solution technologies.

Key players

Energy & Hydrogen

ENlighten
Solar platform, funding and management
KRW 20.8bn (GBP12.7m) Series C

Eco Bio
Landfill biogas power production
KRW 27.5bn (GBP 16.8m) Series D

ENERGYX
Online Energy Marketplace Service
KRW 31.5bn (GBP 17.8m) Series B

ENCORED
AI based Energy analytics and forecast tool
KRW 18.6bn (GBP 11.3m) Series A

HnPower
SOFC and Hydrogen production
KRW 7bn (GBP 4.3) Series A

TERRALIX
Fuel Cell Powerpack production
KRW 14.8bn (GBP 8.7) Series B

BTE
Hydrogen charger component manufacturer
KRW 9.2bn (GBP 5.2m) Series A

FCMT
Fuel cell and electrolysis MEA manufacturing
KRW 12.1bn (GBP 6.8m) Series A

Battery & ESS

EPCHEMTECH
Li-Ion Battery Electrolyte
KRW 26.5bn (GBP 16.2m) Series C

SMLAB
Battery Nickel Anode material
KRW 106bn (GBP 64m) Series C

GRINERGY
Li-Ion battery technology for low temperature
KRW 66.3bn (GBP 37.4m) Series C

AIMS
EV Battery sharing platform
KRW 8.2bn (GBP 4.6m) Series A

Waste Management & Recycling

ECUBE LABS
Solar smart Waste Management
KRW 39bn (GBP22m) Series C

TE
Landfill Steel waste recycling

수퍼빈 superBin
AI-powered waste collection & recycling
KRW 47bn (GBP26m) Series B

reco RESOURCE CONNECTOR
Waste management software
KRW 12bn (GBP7.3m) Series B

CCUS

CE-TEK
Carbon Capture Absorbent
KRW 900m (GBP 508,497) Pre-A

LowCarbon
Pre-treatment descaling agent for thermal power generation
KRW 21bn (GBP11.8m) Series A

CARBON value
Next-generation CCS
KRW 100m (GBP 56,497) Seed

EN2CORE
CCUS plasma technology to convert CO2 to clean fuel
KRW 3.2bn (GBP 2.0m) Series A

Opportunity areas for UK companies

The Korean cleantech sector has many areas where technologies are still maturing, and as such collaboration with UK companies will be key to for Korea to achieve technology development roadmap in time. Below are some examples of international collaboration in cleantech and some areas where we see UK companies can contribute.

Partnership examples

Success case:
Dongyang Engineering x ODE (Renewable Energy)

Dongyang Engineering, specialist in offering services in shipbuilding and offshore plants and UK-based offshore wind company ODE partnered in 2021 to enhance Korea's offshore wind power sector. The collaboration focused on developing Korea-specific offshore substations by establishing a business cooperation framework covering design, financing, construction, and operations. With Dongyang Engineering's position in the local energy market and ODE's offshore wind experience globally, both parties leveraged each other's strengths to enhance competitiveness in large-scale offshore wind projects

Success case:
POSCO x Hazer Group (Industry)

POSCO has recently signed a Memorandum of Understanding (MOU) with Australia's Hazer Group, a company specializing in clean technology, to explore the application of Hazer's hydrogen and graphite production technology in POSCO's steel manufacturing processes. This collaboration aims to significantly reduce carbon emissions from POSCO's steel production. Hazer's technology, which utilizes natural gas or biogas feedstock and iron ore as a process catalyst, was attractive to POSCO due to both environmental benefits and cost competitiveness.

Success case:
Doosan Fuel Cell x Ceres Power (Hydrogen)

Doosan Fuel Cell entered a strategic partnership with UK-based SOFC technology firm Ceres Power to develop high-efficiency Korean SOFCs. The collaboration focused on localizing key components such as cells and stacks and creating production technology for mass manufacturing. Doosan signed a GBP 37m deal with Ceres to jointly develop a 10kw SOFC system, a 300kw utility scale system and build a 50MW manufacturing line, now operational, integrating Ceres' SOFC technology to manufacture fuel cell stacks capable of operating at reduced temperatures (less than 620°C), improving efficiency and lifespan.

Success case:
Linde's CCUS business collaboration (CCUS)

Linde signed a business agreement with GS Caltex and eight other domestic companies for collaboration on local CCUS projects. Linde will participate with GS E&C in carbon capture and liquefaction project and collaborate with GS Energy on overseas CO_2 storage and underground sequestration efforts. GS Caltex will develop the entire CCUS value chain while supplying blue hydrogen, Hyundai Glovis will secure the Approval in Principle for large scale liquefied CO_2 carriers transporting the CO_2 and Linde work with GS Energy will store and manage captured CO_2 in its facilities.

Main areas of opportunity for UK companies

Sector	Technology
Renewable energy	○ Large-scale offshore wind (>12MW) technologies and solutions, turbine materials, substructures, stabilisation systems, offshore surveys, engineering and operation & maintenance expertise ○ New materials and process improvements for high efficiency (>28%) solar PV systems ○ Virtual power plant (VPP) solutions, blockchain-based renewable energy network technologies ○ Solutions for utility-scale stationary fuel cell systems plus battery ESS and smart grid technologies ○ SMR technology, nuclear waste management disposal, nuclear plant operation systems
Industrial	○ Process improvement solutions, materials, and technologies for the hard-to-abate industries (hydrogen steel, cement materials, etc) ○ Petrochemicals: biomass and waste plastic processing solutions and technologies, biomaterials and plastics ○ Energy and equipment efficiency improvement solutions ○ Factory and facility energy management systems
Hydrogen	○ Hydrogen combustion and turbine technologies ○ SOEC, AEM, PCEC high efficiency electrolysis technologies over 50Wh/kg ○ Hydrogen production technology such as ammonia cracking and biogas to hydrogen ○ Advanced materials with properties related to thermal and pressure management, fibre composites, materials for cryogenic liquid storage of hydrogen and graphene solutions ○ Liquid hydrogen and ammonia plants, compressor/dispenser technologies, and efficient hydrogen storage solutions ○ Fuel cell membrane solutions, high-power density fuel cells such as SOFC, efficient fuel cell stacks, liquid cooled PEMFC systems
Transportation	○ Primary and auxiliary power fuel cell improvement solutions across all transport modes ○ Batteries: high-purity low-cobalt ternary batteries, high energy density technologies, next generation battery materials (solid-state, lithium sulphur, lithium air) ○ Solutions for EV charging stations (e-roaming, plug & charge, V2G) ○ Marine transport: Alternative fuel (Methanol, ammonia) powered ships, components
CCUS	○ Carbon capture key technologies (dry, wet, membrane) and new technologies including direct air capture ○ Cost competitive carbon capture technologies (devices, systems, key technologies) ○ Cost-effective and large-scale technologies suitable for steel, cement and petrochemical ○ Carbon utilisation technologies : new applications for carbon utilisation ○ Carbon storage : collaboration on carbon transportation storage fields, storage technologies and monitoring

Routes to market

Companies looking to enter Korea should carefully take into consideration commercial, technical and cultural factors. Depending on the area and technology, companies can approach the Korean cleantech market through direct sales from their countries, appointing an experienced partner, hiring a local employee through an employer of record or by establishing a local office.

While Korea is open to foreign green technology, it remains a unique market that poses significant market entry challenges. Foreign companies looking to expand in the Korean market needs to be prepared to overcome the following challenges:

1. **Language barriers:** Many decision makers, government, SMEs may not speak English. As such, ensure the decision-maker is involved, keep track of key communications, and summarise details via email for clear understanding
2. **Cultural and professional differences:** Korean companies value prompt communication, though larger corporates may respond more slowly. Stay responsive, establish clear timelines, and adapt to procedural differences to ensure effective collaboration
3. **Limited brand awareness:** Limited market recognition requires strategic efforts. Avoid overconfidence, invest in PR, and engage in local events to establish connections and gradually build brand recognition
4. **Preference for local services providers:** As local providers are often preferred as they are seen as more flexible and stronger in aftercare, emphasise unique selling points (USPs), remain flexible, and consider partnering with local entities to ease market entry
5. **Lack of local support:** Korean companies prefer having a local contact available when needed, so establish liaison support in Korea, or at least ensure support is available within a convenient time zone
6. **Poor market fit and inflexibility:** Technologies often require localisation to meet market needs. Stay open to feedback and consider alternative entry strategies such as free trials, government pilot projects, joint development, or licensing
7. **Extensive reporting requirements:** Korean companies may need detailed information to report to their management, and as such it is important to understand the purpose of each request and provide the necessary technical details to help proceed progress the discussions
8. **Partner selection risks:** Mismatched objectives and lack of transparency can hinder partnerships. Conduct thorough due diligence or engage consulting firms to ensure alignment and avoid committing to exclusive agreements prematurely
9. **Navigating government tenders:** Government tenders in Korea demand extensive documentation and collaboration with local entities. Familiarise yourself with platforms like the Public Procurement System (www.pps.go.kr) and consider joint bids with experienced Korean partners

Market exploration

Conducting thorough market research and establishing networks are critical steps before entering the Korean market. Gaining a deep understanding of industry needs and the competitive landscape enables companies to position their product, mitigate potential risks, and identify opportunities. Participating in exhibitions provides valuable insights into recent industry developments and facilitates the initial connections, increasing the likelihood of a successful market entry and sustained growth.

Greentech and cleantech events in Korea

Event	Date	Website
Seoul Mobility Show	3-13 Apr 2025	www.mobilityshow.or.kr
Gyeonggi Green Tech Expo	14-16 Apr 2025	www.eco.micehub-gov.com
International Green Energy Expo & Conference	23-25 Apr 2025	www.greenenergyexpo.co.kr
Korea Environment & Energy Trade Fair	9-11 July 2025	www.k-eco.or.kr
Korea Energy Show	27-29 Aug 2025	www.koreaenergyshow.energy.or.kr
Net Zero Expo	27~29 Aug 2025	www.netzeroexpo.or.kr
ESG Eco Expo Korea	24-26 Sept 2025	www.k-eco.or.kr
H2 Meet	29-31 Oct 2025	www.h2meet.com
Interbattery	11-13 Mar 2026	www.interbattery.or.kr

Market entry strategies

Companies can opt for different market entry strategies depending on their industry, technology and position in the market. We have laid out some of the market entry models and key market entry considerations below.

Direct sales from the UK

Some companies with specialised technologies may opt to sell or license their solutions directly to Korean partners or end users. However, this approach has its challenges, particularly the absence of local language skills, cultural insight, and real-time support due to time-zone differences. These issues can be mitigated by employing a contract-based local liaison who can address these gaps without requiring local incorporation or hiring. Important factors to consider are the key USPs for local customers, track record in the home country, local regulations, and high-quality after sale support. Another important factor is the willingness to offer PoCs or trials for little or no cost to gain trust.

Partnering with a reseller or distributor

An alternative market entry strategy is to collaborate with a well-established local company that complements your product, has experience in the target market, and can help navigate regulations and legal requirements. A local partner can handle essential tasks like certification, registration, market strategy consulting, sales, installation, technical training, maintenance, and technical support.

For hardware sales especially, even large multinational companies often rely on local partnerships in the early stages to minimise operational costs. When selecting a partner, you need to evaluate their customer base, network, complementary solutions, expertise in public procurement, commitment and transparency, and communication.

Hiring a local employee (Employer of Record – EOR)

Using an EOR is another way to establish a presence in Korea by hiring local employees without setting up a legal entity. An EOR manages compliance-related tasks such as employment agreements, payroll, and local taxes. Hiring a local employee, such as an engineer or tech support staff, may become necessary in industries like software, particularly after securing initial accounts that require on-the-ground support. When considering EOR services, you will need to evaluate revenue against the cost of hiring, compliance of the EOR with the local regulation, expertise in the specific area, pricing structure and whether HR services (Tax, Payroll, etc.) are included.

Establishing a local presence

There are three primary ways to establish a local presence in Korea: (1) a liaison office, (2) a branch office, or (3) a local corporation. Setting up a liaison office is straightforward but is limited to non-revenue-generating activities like market surveys, R&D, and quality assurance. A branch office allows for profit-generating activities, including sales and revenue exchange with the head office, but involves more complex administrative processes like documentation translation and registration. The most common approach is establishing a local corporation, which enables independent operations and direct local transactions. Key consideration includes whether the revenue justifies establishing an office, whether the company engages in revenue-generating activities, the location and whether to relocate staff or hire local employees.

Taiwan's sustainable technologies market

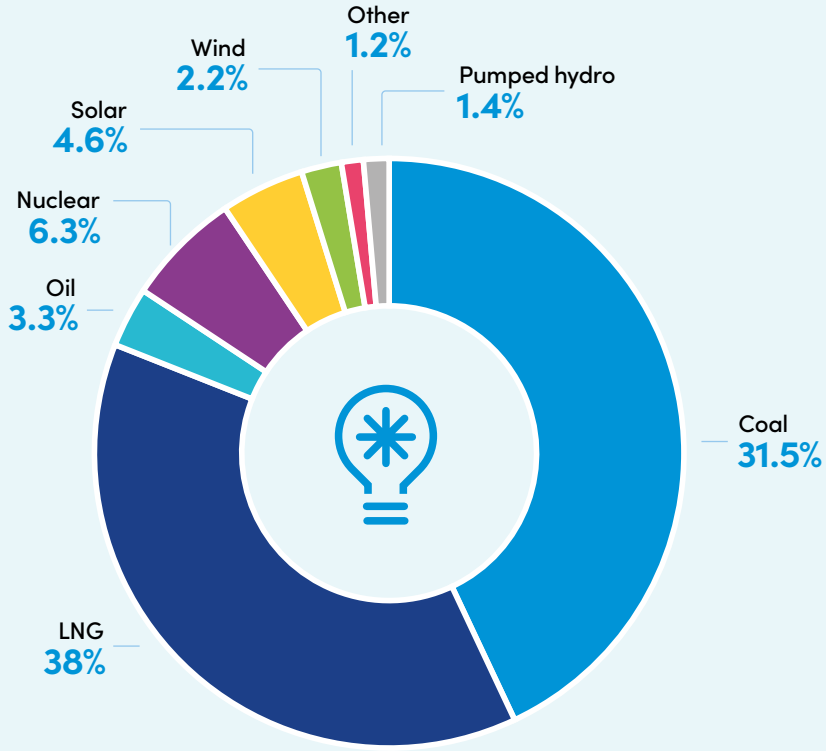
Market overview

Size of the market

Taiwan's sustainable technology market is a burgeoning sector, fueled by public sector support, technological innovation, and growing environmental consciousness. A key focus lies in renewable energy, particularly solar and wind power. The authorities have set ambitious targets for renewable energy generation, attracting significant investment and fostering innovation.

Energy efficiency is another crucial area, with efforts directed towards improving efficiency in buildings, industries, and transportation. This involves the development of energy-efficient technologies and the promotion of sustainable practices.

Taiwan's total energy generation by source (2023)



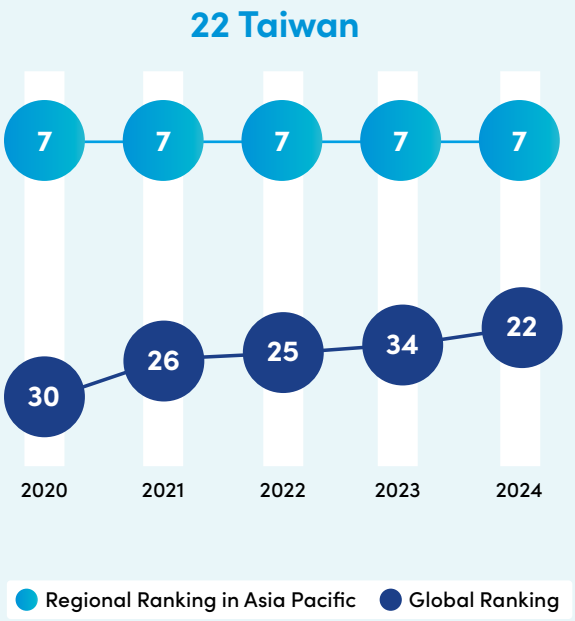
Taiwan is also embracing the principles of the circular economy, aiming to reduce waste, reuse materials, and recycle. This involves initiatives in waste management, recycling technologies, and sustainable materials. Additionally, the island is developing and implementing a wide range of green technologies, including water treatment solutions, air pollution control systems, and sustainable agriculture technologies.

Several factors drive this market:

- Public sector support, through policies and incentives, plays a significant role
- Taiwan's strong technological capabilities, particularly in electronics and semiconductor manufacturing, contribute to the development of innovative sustainable technologies
- Growing environmental concerns and global trends towards sustainability also fuel the market

Taiwan's startup scene has been steadily growing, with significant public sector support and a focus on innovation. The flagship initiative, Startup Island TAIWAN, has provided substantial funding to 241 startups, including sustainable technology startups, totalling GBP 79.8m (NTD 3.312bn) . This support has fostered a thriving ecosystem, with Taipei ranking 22nd globally in 2024, surpassing the United Arab Emirates.

Global startup ecosystem index 2024



Taiwan's technological prowess, particularly in hardware and IoT, provides a strong foundation for sustainable technology startups. The island's domestic market, with its strong consumer electronics and service industries, offers opportunities for startups to develop tailored solutions.

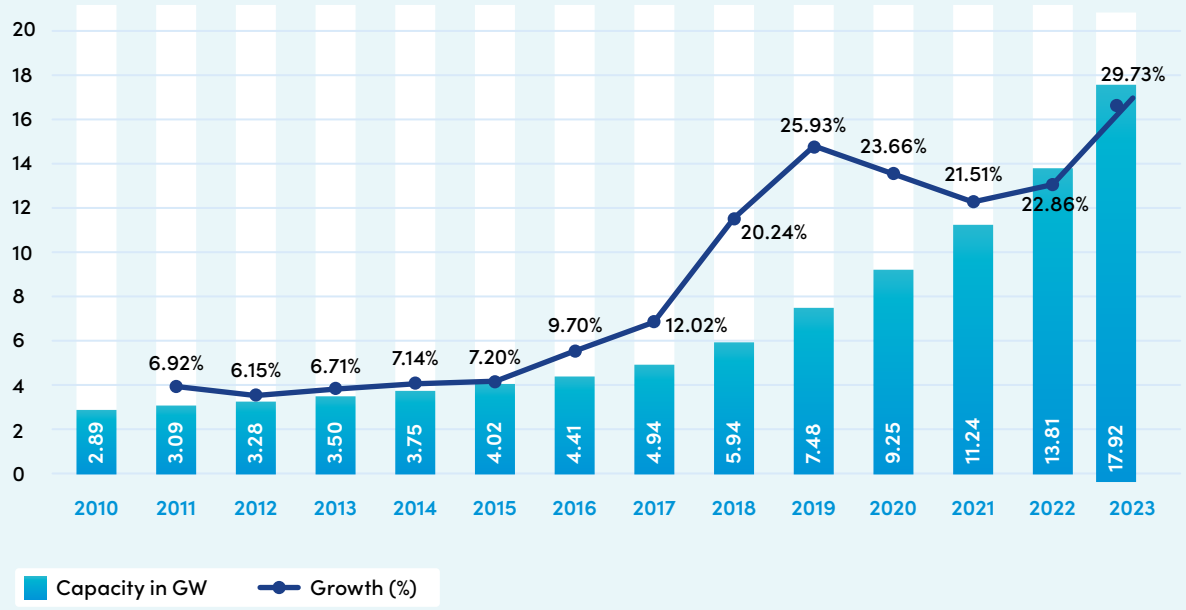
While challenges like land constraints, supply chain sustainability, public acceptance, and international collaboration exist, Taiwan's sustainable technology market presents significant opportunities for innovation, investment, and sustainable development. By leveraging its technological strengths, public sector support, and growing environmental awareness, Taiwan has the potential to become a global leader in sustainable solutions.

Taiwan's electricity generation per capita has grown from 10,776 kwh per capita in 2012 to 11,766 kwh in 2023. In 2023, Taiwan generated 281.47 TWh of electricity. Nearly 10 percent of power generation came from renewables in 2023, compared to over 50 percent in the UK. The RE (renewable energy) generation capacity is growing very quickly, mostly from solar PV and wind.

To achieve net zero emissions, Taiwan's authorities aim to facilitate growth in the following energy related sectors; solar photovoltaics, wind power, hydrogen energy, innovative energy (geothermal, bioenergy, and ocean energy), power systems and energy storage, and energy-conserving strategies, setting aside a total budget of GBP 1.1bn for 2023 alone.

The budget will reach nearly GBP 22.3bn cumulatively by 2030 and is expected to galvanise private investment of more than GBP 99bn and create an output value of GBP 146bn. These preliminary estimates focus on the energy industry alone, and only up to 2030. Many more opportunities abound for other sectors key to net zero transition, with yet unquantified industry output value up to 2050.

Total capacity of renewable energy in Taiwan from 2010 to 2023 (in GW)



Source: Statista, IRENA, Taipower

Market trends

Taiwan's sustainable technologies industry is undergoing a transformative phase. A key driver of this growth is the expansion of renewable energy sources. Companies like TPEnergy are at the forefront of developing large-scale offshore wind farms, harnessing the immense potential of Taiwan's coastal waters. Additionally, solar power, championed by companies like Solartech, continues to play a significant role, with a focus on both rooftop and ground-mounted solar systems. To further optimise renewable energy integration, advancements in battery technology, spearheaded by companies like ProLogium Technology, are enabling more efficient energy storage solutions.

The circular economy and resource efficiency are also gaining prominence. Taiwan is actively working to improve recycling rates and reduce waste generation through innovative technologies. Companies like ECOVE are leading the charge in waste reduction and recycling solutions. Moreover, the island is exploring ways to recover valuable materials from waste streams, minimising reliance on virgin resources. The development and adoption of sustainable materials, such as bio-based plastics and recycled materials, is also gaining traction, with companies like Chinatrust Commercial Bank (CTBC) investing in sustainable materials research and development.

Green building and smart city initiatives are reshaping Taiwan's urban landscape. The authorities, through agencies like the Ministry of Economic Affairs (MOEA), is promoting energy-efficient buildings and smart city projects. Companies like CTBC are actively involved in constructing green buildings and implementing smart city solutions, such as intelligent traffic management systems and waste reduction programmes.

The electric vehicle (EV) sector is also experiencing significant growth. According to the electric vehicles industry report by DIGITIMES , the market grew 60 percent in 2023 over the previous year, exceeding annual sales of 20,000 vehicles for the first time. The authorities, through incentives and supportive policies, are encouraging the adoption of electric vehicles. Companies like Gogoro are at the forefront of electric scooter innovation, while Foxconn is investing heavily in EV manufacturing.

Public sector support plays a crucial role in driving the growth of Taiwan's sustainable technologies industry. The authorities, through agencies like the MOEA and the Environmental Protection Administration (EPA), are providing various incentives, subsidies, and supportive policies to encourage innovation and investment in this sector.

For example in December 2022, Taiwan's Executive Yuan (cabinet) unveiled its 2023-2026 development plan for expanding EV adoption. GBP 142m (TWD 5.885bn) will go into extending purchase subsidies of up to GBP 170 (TWD 7,000) per vehicle, as well as rewarding residents who trade in old vehicles for EVs, incentivising businesses to install charging stations, and reskilling the automotive industry to transition towards widespread EV adoption from central authorities. In addition, funding from local authorities, which can vary substantially, form a significant part of subsidies for EV buyers. Municipal and county authorities provide between GBP 24 to GBP 580 (TWD 1,000 to 24,000) per vehicle for new buyers, compared to the flat GBP 170 per vehicle island-wide subsidy from the central authority .

By embracing these trends and leveraging its strong technological capabilities, Taiwan is well-positioned to become a global leader in sustainable technologies, contributing to a more sustainable and resilient future.

Challenges

Taiwan is committed to achieving net-zero emissions by 2050 but faces a variety of challenges across different sustainable technology sectors. Many of these difficulties stem from the island's unique geographic and economic context. For example, while Taiwan has significant potential for offshore wind energy, it lacks the experience and infrastructure necessary for large-scale deployment, and so the authorities have imposed localisation requirements on development, requiring foreign developers to work with local partners. This presents challenges for foreign firms, who must adapt to new supply chains and potentially face higher costs. Similarly, while Taiwan's solar PV industry is relatively mature, it faces land availability issues, particularly for ground-based installations. The densely populated island has limited space for large-scale solar farms, making rooftop solar a more viable option.

Taiwan also faces significant challenges in developing its hydrogen energy sector. While the authorities plan to significantly increase the use of hydrogen in power generation, transportation, and industry by 2050, the technology for large-scale hydrogen production and utilisation is not yet mature. This presents both a challenge and an opportunity for international collaboration. Taiwan will need to attract foreign expertise and technology to develop its hydrogen infrastructure, including production facilities, transportation networks, and storage solutions.

Another key area where Taiwan faces technological challenges is carbon capture, utilisation, and storage (CCUS). The cost of carbon capture remains high, and the technology is not yet commercially viable for wide-scale deployment.

Taiwan's CCUS industry also faces challenges related to the lack of existing storage sites, limited geological data for identifying suitable storage locations, and the need for advanced technologies adapted to the island's marine environments. These factors necessitate investment in research and development, demonstration projects, and international collaboration to accelerate the development of CCUS technologies. In addition to these technology-specific challenges, Taiwan faces broader challenges related to energy storage, resource recycling, promoting green lifestyles, and developing a robust green finance ecosystem.

These challenges highlight the need for integrated solutions that address not only technological advancements but also policy frameworks, market mechanisms, and public awareness. Taiwan's authorities have recognised these needs and has implemented various initiatives, such as the Climate Change Response Act, the Renewable Energy Development Act, and the Taiwan 2050 Net Zero Emissions Path. These initiatives provide a framework for promoting renewable energy, energy efficiency, carbon reduction, and sustainable development.

The success of these initiatives will depend on effective implementation, public-private partnerships, and international collaboration to accelerate Taiwan's transition to a low-carbon and sustainable future.

Taiwan is committed to achieving net-zero emissions and improving green infrastructure but currently lacks the experience and infrastructure to deploy at scale. Foreign expertise and technology is key to resolving these issues.

Government initiatives

Greenhouse gas reduction and management act

Taiwan's first net zero related legislation was the Greenhouse Gas Reduction and Management Act (currently known as 'the Climate Change Response Act'), which was passed in June 2015. The Act established five-year carbon reduction targets, with the goal of reducing greenhouse gas emissions to 50 percent of 2005 levels by 2050. The Act also emphasises cooperation between central authority ministries and local levels of responsibility.

Climate change response act

The amendment of the Greenhouse Gas Reduction and Management Act on 10 January 2023 came with the change of name to the Climate Change Response Act. This Act establishes Taiwan's goal to achieve net zero emissions by 2050 and outlines requirements to formulate decarbonisation and adaptation strategies. It defines a just transition and requires the authorities to consult with communities that are impacted by the transition, establishes island-wide just transition action programmes, and allocates funds towards such plans.

This Act prescribes multiple decarbonisation measures, including a cap-and-trade system, carbon levies for domestic emission sources, subsidies, and grants to incentivise green technologies, requirements to label carbon footprint on products, and a tax on imports of carbon intensive products designated by the regulatory authorities. There are also provisions setting out corresponding penalties for non-compliance. This Act also establishes a GHG Management Fund, which is derived from multiple sources, including carbon levies and the central authority's budget.

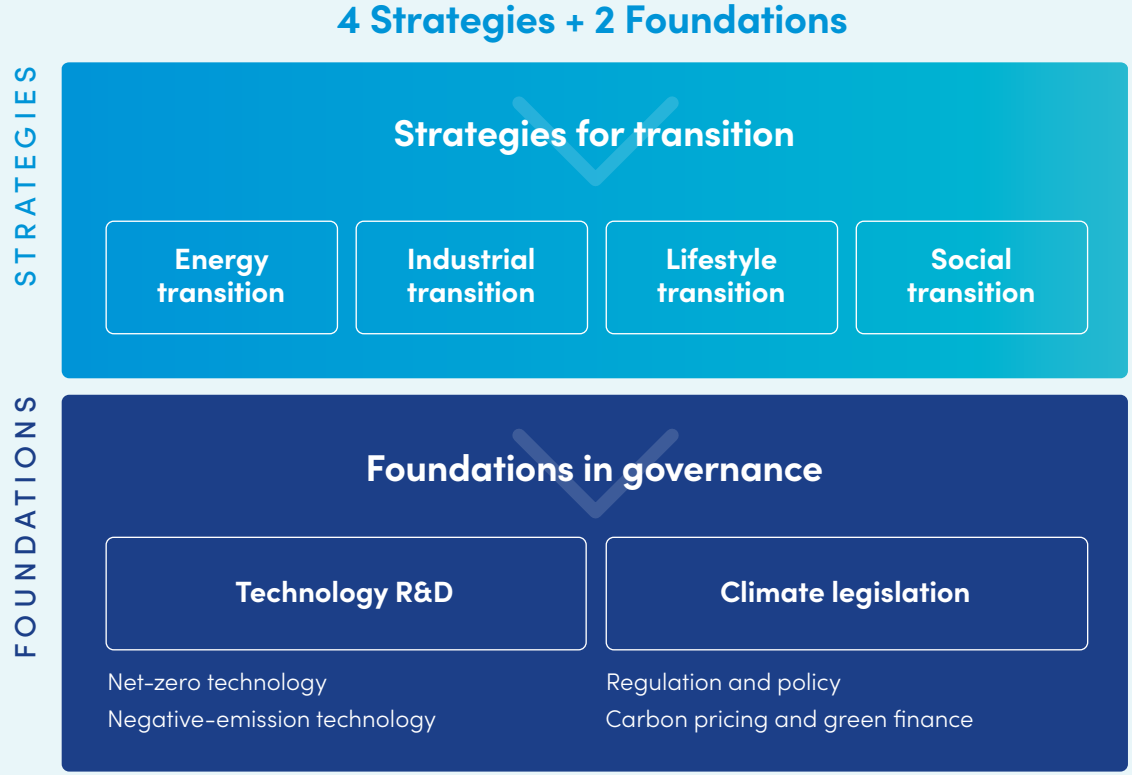
The renewable energy development act (REDA)

The REDA was passed in July 2009. It encourages RE use, promoting energy diversification, improving environmental quality, assisting relevant industries, and enhancing sustainable development in Taiwan. It requires the central authority to establish an RE development fund.

Taiwan 2050

In March 2022, the NDC announced the 'Taiwan 2050 Net Zero Emissions Path and Policy Overview', which provides the pathway to achieve net zero by 2050. This blueprint (also known as Taiwan 2050) aims to promote technology R&D and innovation in key areas, guide the green transition of industry, and drive a new wave of economic growth. Taiwan's 2050 net zero emissions pathway is based on the four major transition strategies of energy transition, industrial transition, lifestyle transition, and social transition, as well as the two governance foundations of technology R&D and climate legislation.

Taiwan's 2050 net-zero transition



Source: Ministry of Economic Affairs

12 key strategies

The NDC followed this up on 28 December 2022 with its '12 Key Strategic Action Plans for the Shift to Net Zero Emissions' – six of which involve the use of RE sources such as wind, solar, hydrogen (fuel cells), geothermal and biomass, as well as energy storage, energy conservation, carbon capture and others.

The key strategic action plans were finalised in April 2023. The figure is a summary of each strategy based on its current draft form.

Taiwan's 2050 net zero transition 12 key strategies

Energy

Key strategy #1: wind + solar PV

Taiwan aims to significantly increase its reliance on offshore wind and solar photovoltaic (PV) energy sources to decarbonise its power sector. This involves expanding the installation of wind turbines and solar panels across the island and into territorial waters, harnessing renewable energy to reduce reliance on fossil fuels and mitigate greenhouse gas emissions

Key strategy #2: hydrogen

Embracing hydrogen as a clean energy solution, Taiwan is investing in the development and utilisation of hydrogen technologies. This includes the production of green hydrogen through electrolysis powered by renewable energy, as well as its application in transportation, industry, and energy storage, thereby fostering a sustainable energy ecosystem

Key strategy #3: innovative energy

Taiwan is committed to fostering innovation in energy technologies to drive the transition to a low-carbon future. This involves supporting research and development initiatives aimed at discovering and commercialising breakthrough technologies that can revolutionise energy production, storage, and utilisation, thereby accelerating the transition to a sustainable energy landscape

Key strategy #4: power systems & energy storage

Recognising the importance of energy storage in enhancing grid stability and reliability, Taiwan is investing in the development and deployment of advanced energy storage systems. These systems, including lithium-ion batteries, small scale pumped hydro storage, and other emerging technologies. Enabling the integration of intermittent renewable energy sources and supporting the efficient management of electricity supply and demand

Low carbon

Key strategy #5: energy saving

Taiwan is implementing comprehensive measures to improve energy efficiency across various sectors of the economy. This includes upgrading infrastructure, implementing energy-efficient technologies and practices, promoting energy conservation behaviours, and establishing stringent energy efficiency standards for buildings, appliances, and industrial processes

Key strategy #6: CCUS

Taiwan is exploring CCUS technologies to mitigate emissions from industries such as power generation, cement production, and petrochemical refining. By capturing and storing carbon dioxide emissions or utilising them in industrial processes, Taiwan aims to reduce its carbon footprint and contribute to global efforts to combat climate change

Key strategy #7: carbon-free electric vehicles

Taiwan is accelerating the transition to carbon-free transportation by promoting the widespread adoption of electric vehicles (EVs). This involves incentivising EV purchases, expanding charging infrastructure, and supporting research and development in EV technology to make electric vehicles more accessible, affordable, and convenient for consumers

Key strategy #8: resource recycling and zero waste

Taiwan is implementing policies and initiatives to promote resource recycling and minimise waste generation. This includes implementing waste reduction measures, improving recycling infrastructure and practices, and fostering a circular economy mindset to maximise resource efficiency and minimise environmental impact

Environment

Key strategy #9: carbon sinks

Taiwan is enhancing its carbon sinks, such as forests, wetlands, and other ecosystems, to absorb and sequester carbon dioxide from the atmosphere. This involves conserving and restoring natural habitats, implementing sustainable forestry practices, and expanding green spaces to enhance carbon sequestration and biodiversity conservation

Key strategy #10: green lifestyle

Taiwan is encouraging sustainable lifestyles and consumption patterns among its population to reduce carbon emissions and environmental impact. This includes promoting eco-friendly behaviours, such as energy conservation, waste reduction, sustainable transportation choices, and conscious consumption habits, to foster a culture of sustainability and environmental stewardship

Key strategy #11: green finance

Taiwan is mobilising financial resources to support green projects and investments that contribute to climate mitigation and adaptation efforts. This includes providing incentives, subsidies, and financing mechanisms to facilitate investments in renewable energy, energy efficiency, sustainable infrastructure, and other green initiatives that align with Taiwan's climate goals

Key strategy #12: just transition

Taiwan is committed to ensuring a fair and equitable transition to a low-carbon economy, particularly for communities and industries that may be disproportionately affected by the transition. This involves providing support, training, and opportunities for reskilling and reemployment in emerging green industries, as well as implementing social safety nets and policies to mitigate the socioeconomic impacts of decarbonisation

Key players

Corporates

Taiwan Semiconductor Manufacturing Company (TSMC)

While primarily known for semiconductor manufacturing, TSMC is committed to environmental sustainability. They invest in energy-efficient technologies, water conservation, and waste reduction.

Delta Electronics

A global leader in power and thermal management solutions, Delta Electronics focuses on energy-efficient products and green energy solutions. They are actively involved in renewable energy projects and energy storage systems.

Foxconn (aka Hon Hai) Technology Group

As a major electronics manufacturer, Foxconn is increasingly prioritising sustainability. They are implementing eco-friendly manufacturing processes, reducing energy consumption, and promoting recycling initiatives.

Taiwan Power Company (TPC)

As Taiwan's primary electricity provider, Taipower is investing in renewable energy sources like solar and wind power to reduce reliance on fossil fuels. They are also exploring carbon capture and storage technologies.

CTBC Financial Holding

This financial institution is committed to sustainable finance. They provide green loans, invest in renewable energy projects, and promote environmental, social, and governance (ESG) practices.

Startups

Gogoro

This electric scooter company is revolutionising urban mobility with its battery-swapping technology. Gogoro's scooters reduce air pollution and noise pollution.

Wemo Scooter

A leading electric scooter sharing platform, Wemo Scooter promotes sustainable transportation by providing convenient and eco-friendly mobility solutions.

Prologium Technology

ProLogium Technology is a Taiwanese company specialising in the development and production of solid-state batteries. These batteries offer superior safety, energy density, and lifespan compared to traditional lithium-ion batteries. By focusing on solid-state battery technology, ProLogium contributes to sustainable technology development by enabling the widespread adoption of electric vehicles and other energy-efficient devices, reducing reliance on fossil fuels and mitigating climate change.

Violon Biotech

Violon Biotech is developing a technology that aims to capture carbon dioxide from the atmosphere and convert it into biomass, effectively removing it from the atmosphere and potentially contributing to carbon sequestration. Its approach involves using conservation, comprehensiveness, and scientific methods to address climate change and food security.

BSF Innovation

BSF Innovation develops a truly organic and green construction materials mixture extracted from black soldier fly larvae shells and food waste fibre and calcium, named WASTE2BUILD. This can be integrated with traditional building materials such as cement, plasterboards, bricks and emulsion paints with up to 40 percent substitution of recycled and organic material and similar reductions in carbon emissions.

Key players

Public Agencies/Regulators

- 國家發展委員會 National Development Council
- 經濟部 Ministry of Economic Affairs
- 經濟部能源署 Energy Administration Ministry of Economic Affairs

Corporates

- tsmc
- DELTA
- FOXCONN
- 台灣電力公司 Taiwan Power Company
- CTBC HOLDING 中國信託金控

Startups

- gogoro
- WeMo scooter
- ProLogium
- VIOLON FOR CARBON REMOVALS INTEGRITY
- Bsf INNOVATION

Opportunity areas for UK companies

Wind power

The UK's strength in offshore wind power presents significant opportunities in Taiwan, where the focus is on localising the supply chain. Bottlenecks exist in project financing and insurance, as well as the shortage of vessels and skilled personnel for operation and maintenance. Forming joint ventures with local partners can help UK companies overcome these barriers and participate in the rapidly growing offshore wind market. There is also strong demand for UK expertise in spatial inventory, supporting port and grid connection infrastructure, floating platform technology, training and development, and operation and maintenance optimisation.

Success case:
Flotation Energy

Flotation Energy is a leading offshore wind developer with a global combined 13 GW portfolio in both fixed and floating platforms. In Taiwan, its floating Chu Tin Project off the coast of Hsinchu will have a nominal capacity of 1.2 GW when completed.

Flotation Energy is a key player in Taiwan's floating offshore wind industry, boasting proven design and engineering expertise. The company is currently leading the development of the world's largest floating offshore wind farm in Scotland and faces minimal competition in Taiwan. Despite challenges in bureaucracy and relationship-building, it expresses confidence in Taiwan's economic outlook and the offshore wind industry's growth.

"Flotation Energy acknowledges the fair regulatory environment in Taiwan, emphasising collaboration with local entities and the importance of knowledge transfer. The British Office Taipei has played a supportive role, facilitating opportunities for Flotation Energy. The company advises sincerity and openness for success in Taiwan's wind energy industry and highlights the UK's potential contribution to Taiwan's offshore wind development. Lastly, Flotation Energy emphasises the importance of responsible practices, collaboration, and skill development for the long-term sustainability of the offshore wind industry in Taiwan".

Reggie Wu, Taiwan General Manager, Flotation Energy

Solar power

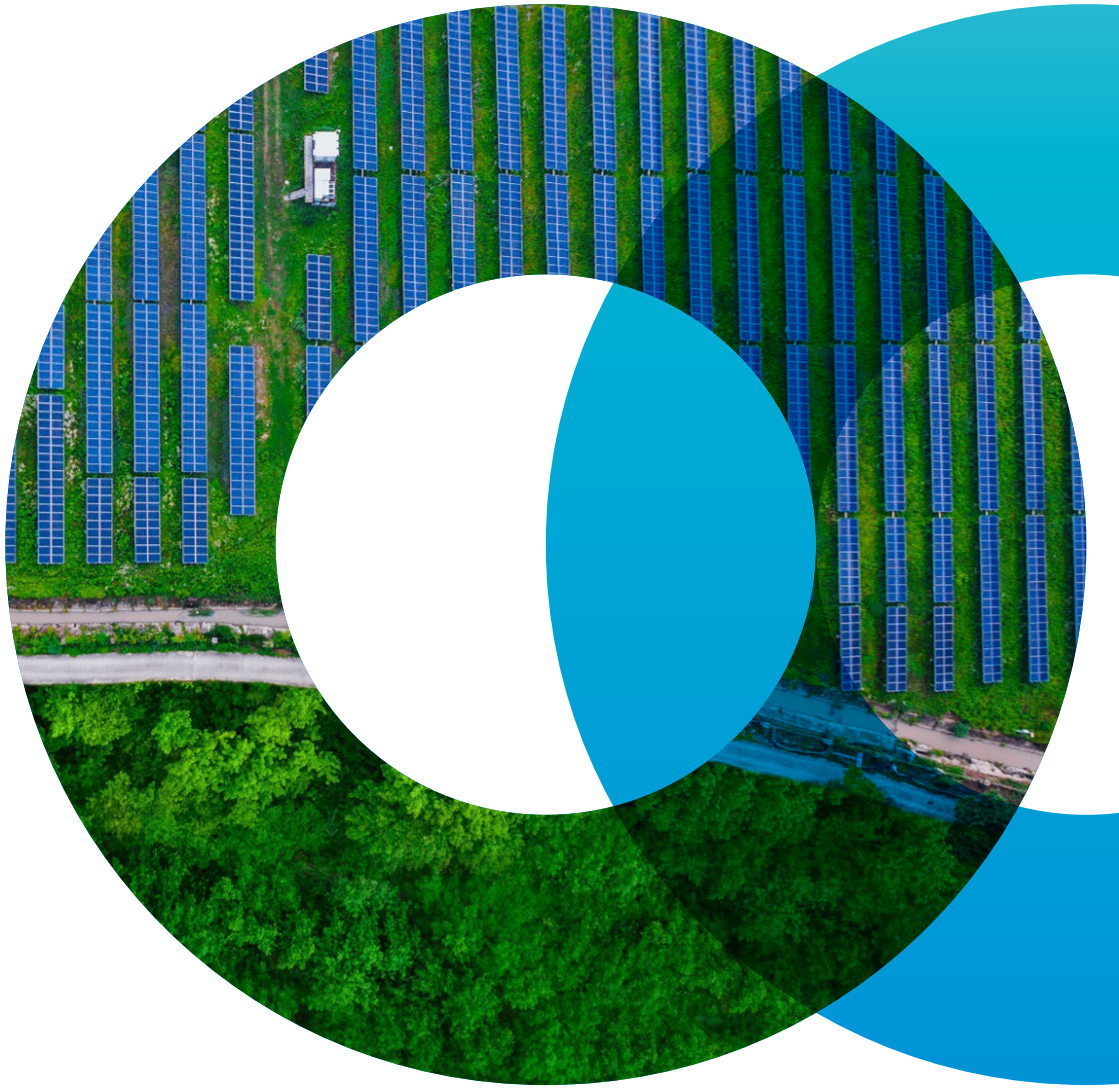
Taiwan's solar power capacity is expected to increase by over 500 percent by 2050. UK companies can contribute by sharing their experience in rooftop and agricultural solar deployment, reliable PV systems, PV recycling, solar efficiency, and grid connectivity, including energy storage solutions.

Success case:
Lightsource

Lightsource BP, developed a 150MW solar energy plant in partnership with Green Rock Energy from Germany. The project is located in Budai, Chiayi county. It is one of the largest fishery solar farms in Taiwan and generates 210,000 MWh per year.

"Throughout the process, Lightsource BP engaged environmental specialists as well as local fishermen to provide expertise and design a project with multiple benefits."

Lightsource



Hydrogen economy

Taiwan's ambition to develop a hydrogen economy creates multiple opportunities for UK companies across the value chain. In power generation, Taiwan seeks international technologies for large-scale hydrogen co-combustion. In transportation, opportunities exist in developing hydrogen power modules, integrating them into vehicles, and conducting demonstration projects. Taiwan's plans to import and domestically produce hydrogen open up possibilities in hydrogen production and supply chain development. Furthermore, Taiwan welcomes international collaboration in infrastructure development, including liquid hydrogen terminals, pipelines, storage, and refuelling stations.

Success case:
Ceres Power

Ceres Power, a UK headquartered leader in hydrogen and fuel cell technology, recently announced the signing of a long-term collaboration agreement with Delta Electronics. Headquartered in Taiwan, Delta is a leader in power and thermal management and a provider of green IoT solutions. The agreement, worth GBP 43m to Ceres, saw it licence its hydrogen energy stack portfolio to Delta. Ceres' stack will now be integrated with Delta's power electronics and thermal management technologies to help develop solid oxide fuel cell (SOFC) and solid oxide electrolysis cell (SOEC) systems for hydrogen energy applications. When production starts in 2026 it will target sectors including chemicals, energy, transportation, and steel. In addition to licensing key energy stack technologies, Delta will also establish a "Net-zero Science Laboratory" at its Tainan manufacturing complex to develop cutting-edge zero-carbon technologies, including hydrogen energy, and to enrich its own R&D capabilities in related application fields.

"Our partnership with Delta is exciting because it will test the commercial viability of our technology with pace and ambition. Delta is a company that is highly sophisticated when it comes to manufacturing with scale, precision, and low cost. It also has complementary businesses, in electronics components, power conversion and thermal management, which provide strong access to market. In turn, Ceres provides not only stack design, but also a licence to the factory blueprint that enables partners to condense the time from technology transfer to manufacturing. We will be working every step of the way with Delta to localise supply chains, and source equipment and skills to enable the fastest time to production and to accelerate the industry in Taiwan and beyond".

Tony Cohrane, Chief Commercial Officer, Ceres

Innovative energy

With geothermal and ocean energy being relatively new in Taiwan, there is a lack of a local equipment supply chain. UK companies with expertise in these areas have a strong advantage. In bioenergy, opportunities exist in biomass power generation transformation, establishing new biomass energy power generation units, and supplying wood pellets.

Energy storage

Taiwan aims to deploy 1.5 GW of energy storage systems by 2025 and 5.5 GW by 2030, focusing on lithium-ion battery energy storage systems. UK companies can provide expertise in solar PV energy storage and wind energy storage, leveraging their experience in integrating renewable energy into the grid. Opportunities also exist in collaborating with companies like Delta Electronics on bi-directional EV / power modules development.

Carbon capture

There are five key areas where UK companies can contribute to Taiwan's carbon capture efforts: (1) collaborative technology development for refinement, (2) holistic geological data integration, (3) advanced carbon storage solutions and site verification data, (4) best practices and policy research methodology to address just transition, and (5) advising on domestic regulations consistent with international norms.

Carbon-free vehicles

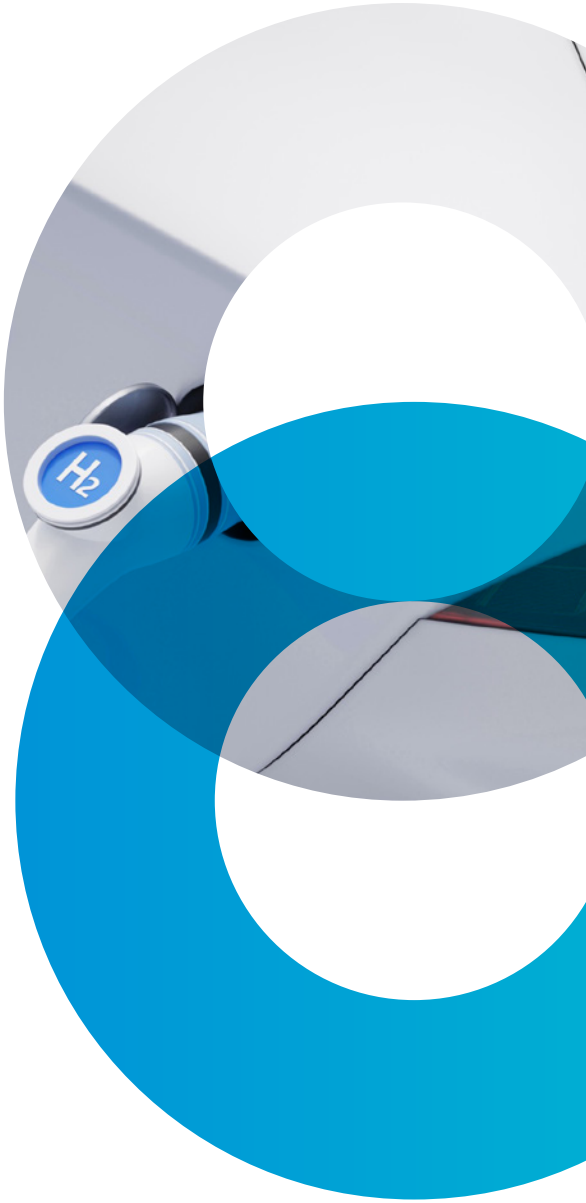
While Taiwan's carbon-free vehicles market is still relatively small, there is potential for growth in public charging infrastructure, insurance and maintenance services, and cybersecurity for EV charging and infrastructure. UK companies can capitalise on these emerging opportunities.

Resource recycling

Taiwan's EPA (Environmental Protection Administration) has outlined four key strategies for improving resource recycling and material use efficiency: (1) green design and source reduction, (2) recycling and waste conversion to energy, (3) setting up a circular supply chain, and (4) establishing a digital product passport system. UK companies with experience in these areas can contribute to Taiwan's circular economy goals.

Green lifestyle

Taiwan is promoting green lifestyles across various aspects of life, including low-carbon diets, green design, living quality, low-carbon transport networks, "use instead of own" initiatives, and citizen dialogue. UK companies with products and services that align with these goals can find a receptive market.



Green finance

Taiwan's green finance strategy faces challenges such as insufficient greenhouse gas inventory information, a lack of clear definitions for "green" and "sustainability," insufficient climate and ESG data, and a shortage of professionals in sustainable finance. These challenges represent opportunities for UK companies and entities with expertise in these areas.

Just transition

The UK's experience in just transition initiatives provides valuable insights for Taiwan. UK think tanks, consultancies, and NGOs can assist Taiwan in addressing employment disruptions, industrial development goals, regional imbalance spillovers, citizen adaptation, and governance challenges.

Energy saving

Taiwan is focused on reducing energy consumption in the industrial and commercial sectors. UK companies can leverage their reputation for energy-efficiency technologies and services to offer solutions for industrial buildings and facilities, particularly in areas like Industry 4.0 and smart factory applications.

Green buildings

Taiwan is committed to transitioning to green buildings, aiming for 100 percent LED lighting in commercial buildings and high energy efficiency standards for new public buildings. This creates opportunities for UK companies in green building materials, energy-efficient appliances and lighting solutions, and residential renewable energy systems. There is also potential for collaboration with companies like Delta Electronics in developing building energy management systems.

Taiwan has ambitious sustainability targets that present opportunities in fintech, consulting, construction, energy, automotive and more. The UK's reputation for cleantech innovation places British companies to take advantage of this welcoming and collaboratively-minded market.

Routes to market

Market exploration

Before entering Taiwan's sustainable technologies market, thorough market research is vital to identify opportunities. Understanding industry needs and the competitive landscape allows companies to tailor their offerings, mitigate risks, and capitalise on emerging trends. Networking events and exhibitions such as Wind Energy Asia and Energy Taiwan are valuable mediums through which UK companies can gain initial leads and contacts.

Greentech and cleantech events in Taiwan

Event	Date	Website
Wind Energy Asia	(2026 dates to be published)	www.windenergy-asia.com/en/index.html
Smart City Summit & Expo (Taipei)	18 – 21 Mar 2025	en.smartcity.org.tw/index.php/en-us
Smart City Summit & Expo (Kaohsiung)	20-22 Mar 2025	en.smartcity.org.tw/index.php/en-us/about/scse-kaohsiung
e-Mobility Taiwan 2035	23-26 Apr 2025	www.e-mobil-ityshow.com.tw/en/index.html
Taiwan Carbon Neutral & Sustainabil-ity Expo	19-21 Jun 2025	cec.ctee.com.tw/green/en2022
Energy Taiwan & Net-Zero Taiwan	29-31 Oct 2025	www.energytaiwan.com.tw/en/index.html
Taiwan International Water Week	29-31 Oct 2025	www.taiwanintlwaterweek.com
TASS 2025 Sustainable Taiwan	6-8 Nov 2024 (2025 dates to be published)	tassasiaexpo.com/en

Source: Intralink research

Market entry strategies

Entering the Taiwanese sustainable technologies market can be a strong growth driver for UK companies' revenues. The Taiwan authorities and domestic companies are investing into sustainable technologies and welcome foreign partners.

Direct sales from the UK

The simplest option is direct sales of a particular sustainable product, technology, or service solution from the UK into Taiwan. The main downside is the lack of local time-zone customer support. This can be mitigated by using a local agent or business development consultancy, capable of bridging time-zone, language, and cultural gaps without the long-term commitment of local incorporation and hiring. Market-specific factors to consider include:

- Do you have a strong differentiator – something that sets you apart from your competitors in the market?
- Do you have a strong track record in other major markets?
- Are you willing to localise the product for the market and/or local regulations, if necessary?
- Are you ready to provide a Proof of Concept (PoC) at little or no cost to the customer? Taiwanese public sector-led initiatives, for example Taipei Smart City, do not pay suppliers for PoCs
- How do you provide after-sales support?
- Do you understand the local regulations? Do you need to adjust our business model to adapt?

Agents and business development consultancies

Business development consultancies or agents can help answer the above questions and provide sales channels on their own or in conjunction with a local distribution partner.

Sales agents are usually local industry veterans that have built up connections and relationships over their career and now use these to help foreign companies navigate the Taiwan market. This can be a relatively cost-effective way to hit the ground running, but it does have some drawbacks. For instance, there is no set way to find such a person, they often do not have a website, so it is usually a case of being introduced through industry connections or meeting at an exhibition.

Often such an agent will rely on the connections they already have, once these are extinguished, they often struggle to create new leads. This makes them potentially highly cost-effective at the beginning of a business development initiative but can create limitations further down the line, which often results in bringing in additional distribution partners, or a business development consultancy.

There are a range of business development consultancies, and it is important you find the right one for your technology and business needs. Services between firms vary widely – from initial market research assessments, market entry strategy initiatives, to others that may also provide a sales and/or business development team for you in Taiwan. Such a team will act as your sales team on the ground and provide you with a local office address overnight. It is important you use one that has experience with the renewables industry and make sure the team that is appointed to your account also has this experience.

Appointing a reseller or distributor

A local channel partner can provide services such as certification, registration, pre-sales, sales, consulting, installation, technical training, service maintenance and technical support. Even some large multinationals take this route in the early stages of market entry. Market specific factors to consider when seeking a partner include:

- Does the partner already serve the type of customer that you do?
- Does the partner have a good understanding of the market in general and your particular application?
- Does the partner already offer solutions similar or complementary to your offering?
- Is the partner focused on short-term wins or will it be able to drive your business in the long run?
- Does the partner have specific experience with public sector projects (if relevant)?
- Are you comfortable communicating with the local partner and is it transparent with you?
- Will the partner proactively promote and sell your product, or will your product simply be one among a catalogue of products?
- Do you need a sales agent or consultancy to help you manage the distribution partner?

Like anywhere else in the world, it is important to find a distribution partner that understands your product, has experience with similar technologies, and can be proactive in promoting your product. There is no one distribution partner that 'fits all'. It is important to find one that suits you, and to appoint the correct partners from the outset. For example, the size of partner can be important. A small firm partnering with a large distributor may find it is not given the time of day as its salespeople focus on large brand partners that make up most of their revenue. A smaller firm may work hard for you but might not have the connections or experience in your part of the industry value chain. It is key to find a balance between these two variables.

Establishing a local presence

There are broadly three ways of establishing a local presence: (1) a representative office, (2) a branch office or (3) a local corporation through foreign direct investment (FDI). Setting up a representative office is a simple process, but a representative office can only perform non-profit generating activities in Taiwan such as market surveys, R&D, and quality assurance. Setting up a branch office can be a complicated process that requires documentation to be translated, but it allows for sales activities and the exchange of revenues with the head office. The most common process for an overseas company to open a branch office in Taiwan is through FDI, where an initial investment is made by the head office, which in return owns stock in the branch.

The local corporation leads independent activities and is authorised to perform direct transactions. Factors to consider when establishing a local presence include:

- Is your business generating enough revenue in Taiwan to consider a local presence?
- Is Taiwan a strategic market for you, either in terms of securing use-cases or securing further funding?
- Do you need to engage in profit generating activities?
- Will you transfer staff from your head office or hire local staff?
- What location will you pick for your local presence?

There are many service companies that can assist you in setting up a local presence in Taiwan. Such companies can often also help with legal, HR, accounting, and payroll as well once the local company is established. In some cases, this could be the consultancy you may have used in your initial market entry or a specialised legal firm or consultancy that only provides this specific service. Make sure you speak to several companies to find the best one for you, but also ask third parties, especially others who have set up in Taiwan for their recommendations. The British Chamber in Taipei has a short guide here on how to set up business operations in Taiwan.

Barriers to market entry

In certain key industries such as OSW, rules have been drawn up for localisation or 'Made in Taiwan' provisions. These take the form of key components, machinery or engineering vessels, which must be 100 percent sourced from domestic companies, and become a trade barrier as UK companies cannot reuse existing (non-Taiwan) resources from previous projects. Such rules are baked into the tender process, with conditions favouring developers that can source locally getting the most points, and therefore awarded the largest and most profitable projects.

Other barriers are more subtle, but in almost all industries there are additional regulations that require more safeguards for a foreign company to operate in Taiwan, which an established domestic peer does not need. In general, this is an additional level of bureaucracy which must be addressed and diverts internal resources away from business development and deal making, in effect adding to the general cost of doing business in Taiwan.

Tender process

Public tender processes in Taiwan can be complex, with little or no English language documentation. UK companies are advised to appoint a local representative to handle the details of day-to-day communications and updates with authorities and tendering bodies.

Additional legal advice may also be needed to cover any Taiwan specific legal liabilities which can leave UK companies exposed. The following is a brief introduction to the process and does not constitute any 'official' Taiwan tender process guide.

In Taiwan, the tendering procedures include open tendering, selective tendering, and limited tendering.

Open tendering procedures: the procedures under which a public notice is given to invite all interested suppliers to submit their tenders.

Selective tendering procedures: the procedures under which a public notice is given to invite all interested suppliers to submit their qualification documents for a pre-qualification evaluation based on specific qualification requirements and, after the evaluation, the qualified suppliers are invited to tender.

Limited tendering procedures: the procedures under which, where no public notice is given, two or more suppliers are invited to compete or only one supplier is invited to tender.

The procuring entity should prepare the tender documentation based on the type of tendering procedures. The entity can stipulate the criterion of the bidder and other requirements the entity thinks suitable in the tender documentation.

For open tendering or selective tendering, an entity must publish a notice of invitation to tender or of qualification evaluation in the Government Procurement Gazette and make it available on the information network. The bidder should follow the requirements in the tender documentation and prepare the bidder documentation. The tender should be submitted in writing and sealed, by mail or personal delivery, and at the procurement entity or any designated place before the deadline for submitting tenders. Taiwan-wide calls for bids are published on the website for the Government E-Procurement System. Although the website is in English, it is advisable to check the Traditional Chinese portion of the website, as not all information is translated, or there may be unintended mistranslations or omissions.

Note that certain prospective bidders may be excluded from the competition for several reasons listed in Article 101 of the Government Procurement Law (GPL), such as poor performance under an earlier contract with a public agency, forgery of certificate or bidder documentation, bankruptcy, or discrimination against women or aboriginals.

In addition, it is also possible to exclude prospective bidders from the competition through a pre-qualification process which is specifically stated in the tendering documentation. Where a pre-qualification process has been established, only those that meet the requirements may submit a bid.

Relevant central authority initiatives

UK-Taiwan collaborative R&D

To promote collaborative research and development (CR&D) projects focused on industrial research, Innovate UK runs the UK-Taiwan Collaborative R&D funding competition with its counterpart the Department of Industrial Technology (DoIT) in Taiwan, investing up to GBP 2m in innovation projects each year. Proposals must include at least one partner from the UK and one partner from Taiwan. UK registered organisations must apply to and will be funded by Innovate UK. Taiwan partners must apply to and will be funded by the DoIT.

- The projects Innovate UK fund are expected to result in a new product, industrial process or service, be innovative, involve a technological risk, and have high market potential
- Applications are particularly welcome from the green energy technologies sector, for example, electric vehicles, hydrogen transportation, and renewable energy.
- Funding type is through a grant
- UK applicants can apply for a maximum grant of up to GBP 750k for each project
- The competition usually opens in late April each year and closes by late July. Specific deadlines may change from year to year. Check the official website for latest updates, eligibility, dates, and how to apply

Taiwan is open to international collaboration but has strict localisation provisions for its markets. Developers that can source key elements locally are more likely to be favoured for the most profitable projects.

About this report

This report is prepared as part of the UK-APAC Tech Growth Programme by Intralink Limited.

Exchange rates used in the report

GBP 1 = JPY 200

GBP 1 = KRW 1,770

GBP 1 = TWD 41.5

About Intralink

Intralink is an international business development consultancy specialising in Asia. Its mission is to accelerate companies' growth, innovation and green transition through cost-effective, results-driven global engagement.

The firm has 140+ multilingual employees across 15 offices in Japan, South Korea, China, Taiwan, Singapore, the US, the UK, France, Poland, and Israel.

Its teams on the ground in Asia – immersed in the business practices, cultures and customs of their markets – enable western companies to grow sales and forge partnerships in the region.

They also help Asian corporates to harness the power of global innovation and governments to grow their exports and attract foreign investment.

Intralink is different from other consultancies in not just developing the right strategies for its clients but taking a hands-on approach to generating commercial outcomes.

Intralink's clients range from startups to multinationals in the medical, energy, automotive, digital media, aerospace, software and other high-growth sectors, as well as government bodies. Many of these organisations are addressing the world's most pressing social and environmental challenges – and Intralink believes that cross-border collaboration will deliver a more prosperous, sustainable society.

Sam Leng
Project Manager

Paula Dizon
Senior Project Manager

Jaemin Ryu
Project Coordinator

Stewart Randall
VP, Deputy MD

Richard Lyle
VP, Head of Government Services

Ayoub Ouahidi
Director of Operations

About the UK-APAC Tech Growth Programme

The UK-APAC Tech Growth Programme is a government-backed initiative to support the UK's most innovative tech companies' expansion in the Asia Pacific region.

It spans eleven markets: Japan, Korea, Taiwan, Singapore, Vietnam, Malaysia, the Philippines, Thailand, Indonesia, Australia and New Zealand.

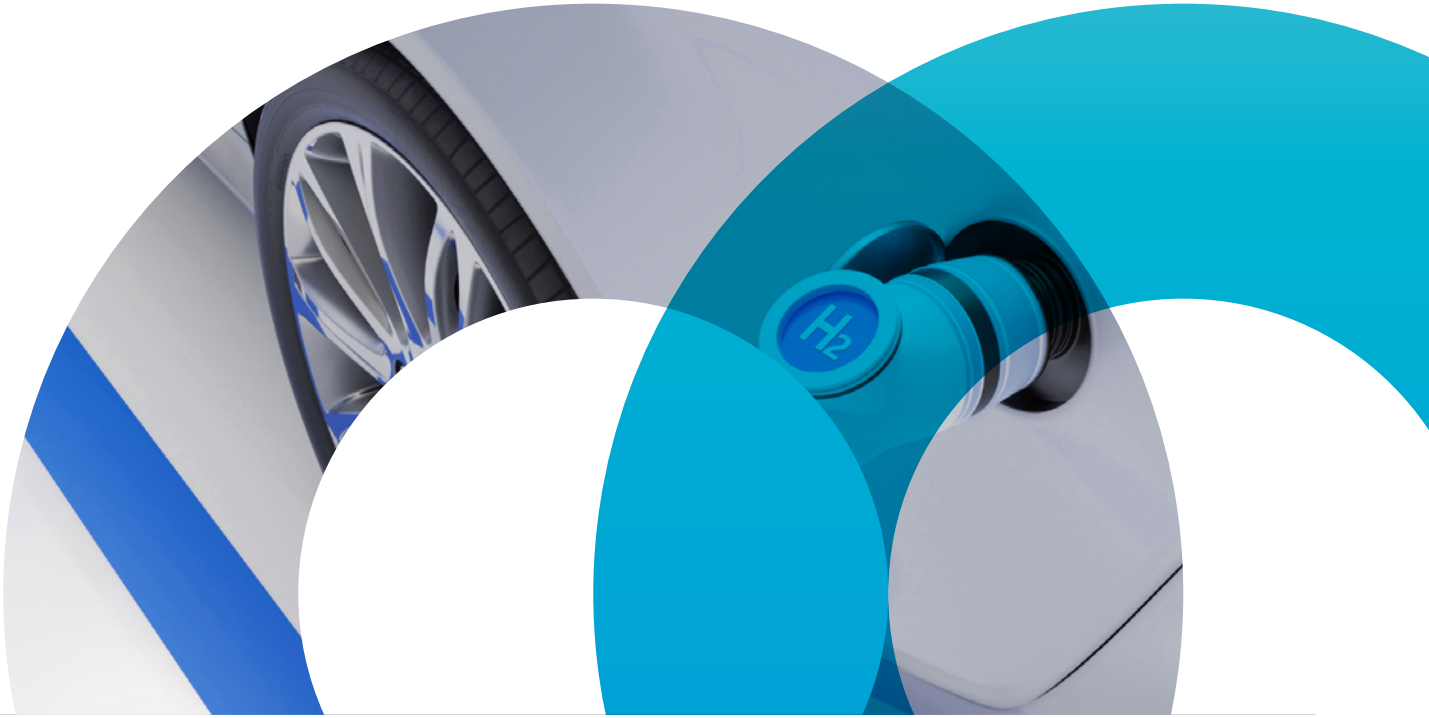
Any UK-headquartered technology startups and scaleups keen to develop opportunities in APAC are eligible for the programme.

The goal is to set the companies up for APAC success by helping them:

- Understand if there is an opportunity – and learn how to approach the region
- Validate which potential customers and partners will be interested in their technology – and get the customers' eyes on their product
- Accelerate in-market opportunities, secure partnerships and lay the foundations for commercial success in the target market(s)

Depending on the participants' readiness level, they can be selected for a wide range of free or subsidised activities – from business matching with major corporates to overseas missions, pitch events and bespoke in-market business development initiatives.

The programme is a joint initiative led by the Department for Business and Trade, the Department for Science, Innovation and Technology and Intralink.



UK-APAC Tech Growth Programme

Northeast Asia's sustainable technologies market – opportunities for UK companies

The information contained herein has been obtained from sources believed to be reliable, but is not guaranteed as to its accuracy or completeness. An effort has been made to go beyond simple data collection in this report: responses have been interpreted to elucidate the underlying processes, motives and relationships involved in the dynamics of the situations under investigation.

All references to factual data and properties should be recognised as respondents' perceptions of reality unless otherwise stated.

This report is not intended for, and should not be used as, an investment recommendation.

www.intralinkgroup.com

Intralink

Funded by UK Government