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CLIMATE ENERGY FINANCE

Rising Tide: China's Outbound Cleantech Capital Surge Drives Global Collaboration Toward Net Zero

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About Climate Energy Finance

Climate Energy Finance (CEF) is an Australian based, philanthropically funded think tank established in 2022 that works pro-bono in the public interest on mobilising capital at the speed and scale needed to accelerate decarbonisation and the energy transition consistent with the climate science.

We conduct research and analyses on global financial issues related to the energy transition from fossil fuels to clean energy, as well as the implications for the Australian economy, with a key focus on the threats and opportunities for Australian investments, regional employment and value-added exports. Beyond Australia, CEF's geographic focus is the greater Asian region as the priority destination for Australian exports, particularly India and China. CEF also examines convergence of technology trends in power, transport, mining and industry in accelerating decarbonisation. CEF is independent, works with partners in the corporate and finance sector, NGOs, government and the climate movement.

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Caroline is passionate about empowering understanding, exchange and collaboration between Australia and China to accelerate net zero and deliver shared prosperity. She has a decade's experience in law, policy and international relations across Australian public administration and overseas. She has written many government and parliamentary research and policy papers, including the report of the Australian Senate Inquiry into the 2019-20 bushfires. Caroline has led in strengthening international partnerships across national defence, education and diplomacy, including preparing multiple policy briefings and research papers to support executives' and ministers' international engagements. A passionate interculturalist, Caroline is fluent in English, Chinese, French and Italian.

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We pay our respects to the Traditional Owners of the unceded lands on which we live and work.

Important information

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Foreword

David Olsson AM

As Climate Energy Finance releases this new report on China's global cleantech outbound direct investment (ODI), the international energy and trade landscape is being rapidly reshaped. Amid geopolitical uncertainty, one critical trend is accelerating: the global net zero transition driven by China's world-leading cleantech industries. Around the world, nations are competing to attract Chinese investment and technology partnerships, recognising the scale and impact of its innovation and capital.

Since the first edition of CEF's China ODI report in October 2024, energy and trade geopolitics have become more complex. The United States and China remain locked in escalating trade confrontation, compounded by the Trump Administration's roll back of climate policies and renewed focus on fossil fuels. By contrast, China continues to integrate its climate, energy and economic strategies into a cohesive national agenda that frames decarbonisation as both an environmental and industrial policy.

China's investment in energy transition technologies last year exceeded the combined investment of the United States, European Union and the United Kingdom combined. Chinese firms have committed more than US$180bn of ODI in cleantech since the start of 2023 – up 80% since CEF's report a year ago. Partnerships span Indonesia, Türkiye, Brazil, Hungary, Spain, Kazakhstan, Zambia and Saudi Arabia, advancing projects on electric vehicles, solar and wind, batteries, waste-to-energy, and green hydrogen. These collaborations are helping to drive decarbonisation and electrification while delivering major economic benefits across emerging and advanced economies alike.

Australia remains an exception. While many nations are strengthening industrial and technology links with China's green leaders, our engagement remains largely limited to trade. Chinese ODI into Australia fell to just US$882m in 2024 – the third lowest year since 2006 and a fraction of its 2008 peak of US$16bn.[1] Today, China accounts for only 1.5 per cent of aggregate ODI into Australia.

The Australian government's flagship decarbonisation and green re-industrialisation plan, Future Made in Australia (FMIA), aims to position the nation as a competitive renewable energy and green industry hub. Achieving this ambition will require unprecedented levels of capital investment, including from foreign partners. Around 70% of investment in Australian clean energy projects already comes from overseas.

China is at the forefront of technology and expertise in areas of our domestic ambition: renewables infrastructure, onshore value-adding of energy transition materials such as critical minerals and green iron, and cleantech supply chain manufacture. Australia does not have the domestic industrial base, technical expertise, skills or homegrown capital to do it alone. Yet major cleantech partnerships with China's innovators – whose balance sheets, technologies and supply chains dominate the global clean energy economy – remain conspicuously absent here. Our failure to engage in strategic investment and technology partnership in these key sectors puts at risk our capacity to deliver on the key goals of FMIA.

Australia has an opportunity to align economic ambition with geopolitical reality. Preserving our security relationship with the United States should not preclude deeper collaboration with China in areas of shared economic and climate interest. A more nuanced and strategic approach to green energy statecraft – one that attracts investment while safeguarding national security – is essential to building economic resilience, securing our sovereign capabilities, and ensuring our competitiveness in a decarbonising world.

[1] KPMG and University of Sydney, Chinese investment in Australia shifts from acquisitions to greenfield, 31 March 2025.

To this end, the report recommends establishing an Australia-China Green Transition Cooperation Framework to underpin co-investment in renewables supply chains and infrastructure as well as cooperation in R&D and innovation. It also proposes reforms to foreign investment processes, and an 'Invest Australia' one-stop shop for investors to provide clear pathways for green investment aligned with FMIA and net zero priorities.

I commend this report to policymakers and industry leaders. It highlights both the vulnerability and the opportunity for Australia before us: to engage more strategically with China's green capital and industrial expertise, in support of Australia's energy transition, competitiveness and long-term prosperity.

David Olsson AM is National President, Australia China Business Council

Executive Summary

China's cleantech capital surge is reshaping the global geoeconomic landscape

A new geoeconomic order is emerging. Centred around China and the developing world. Built upon Chinese technology and supply chains. Global Chinese technology leaders have become the economic driving force of the energy transition, leveraging their unmatched scale and competitiveness in the manufacturing and deployment of clean technologies (cleantech) like solar panels, batteries, and EVs.

CEF's tracking shows that Chinese firms have committed more than US$180bn of Outward Direct Investment (ODI) in cleantech since the start of 2023 — up 80% since CEF's Green Capital Tsunami report a year ago.

Trump's re-election and a new wave of unilateral decisions by the United States that undermine global trade, energy and climate action have added to global uncertainty. This has prompted many countries to explore or deepen diplomatic and economic ties with China, partly to de-risk from an unpredictable US and diversify their economic and energy partnerships to meet development, energy security and sustainability goals, as seen most recently in the case of South Africa.[2]

In 2025, energy security, competitiveness, and sustainable development remain top priorities for many countries across these regions. In many countries, green industrial policies aiming to localise production in high value sectors like EVs and batteries, have attracted Chinese capital, technology and knowhow. Increasingly, this is taking the form of diversified, cross-border public-private partnerships in renewables, electrification and cleantech manufacturing, although the trend remains uneven and shaped by multiple structural factors beyond China's involvement.

A series of high-level bilateral and regional diplomatic engagements in 2025 (Appendix B) between China and primarily Global South countries have catalysed a new wave of cleantech projects and initiatives, as Beijing capitalises on "the United States' and the West's moral and relative material decline"[3] to further expand its soft power and influence in the developing world.

Chinese outbound green investment is contributing to, if not solely driving, a broader shift in the global economic centre of gravity toward emerging economies in Asia, the Middle East, Africa, and Latin America. Over 75% of projects in Net Zero Industrial Policy Lab's (NZPIL) China Low Carbon Technology FDI (Foreign Direct Investment) database are located in these regions.[4]

What is happening globally — and why it matters

Amid shifting global power dynamics in the era of disruption and disorder, many countries in the Global South have set national visions for sustainable development with a focus on securing low-cost energy and cultivating higher-value added industries to boost jobs and competitiveness. The cleantech economy represents a flourishing form of South-South cooperation, where national development goals meet China's techno-industrial might. While the United States sees China's rise as a threat, many developing countries are inspired by its success and aim to emulate it.

Countries are not merely attracting Chinese investment by introducing incentives such as competitive tax rates and fast-tracked approvals; they are strategically orienting it to create local value. Green industrial policy tools being deployed include import bans on certain cleantech products to incentivise investment in local manufacturing, local content requirements, and capacity-building incentives to promote skills and training development. This has led increasingly to joint

[2] SCMP, China set to benefit as South Africa looks to diversify away from US, 29 November 2025.
[3] Foreign Policy, Why the Global South Won't Give Up on China, 25 August 2025.
[4]

venture-based projects with diversified local and global partners, and the establishment of joint R&D, innovation and training centres.

Key highlights include:

- In Brazil, Envision Energy will develop **Latin America's first Net-Zero Industrial Park**, focusing on Sustainable Aviation Fuel (SAF), green hydrogen, and ammonia, while BYD opened its largest facility outside Asia, the US$1bn Camaçari EV plant for export to Latin America.
- Chile saw China Southern Power Grid undertake the US$4bn acquisition of Transelec SA and progress its JV with local partners to build a new US$1.5bn 1,342km grid transmission line.[5]
- Peru saw China Three Gorges commission its US$560m, 209MW hydro-electricity project at San Gabán III.[6]
- In Laos, Power China completed the US$950m 600MW 'Monsoon Wind Power' farm.
- Construction began on CATL's **US$6bn Indonesia Battery Integration Project** which spans the full battery value chain from mine to recycling
- Spain landed one of Europe's largest battery JVs: the **€4.1bn CATL–Stellantis Zaragoza 50GWh gigafactory**, with construction underway since November 2025.
- In France, China's AESC started production at its **EV battery gigafactory in Douai**.
- In Saudi Arabia, a Saudi-Chinese consortium agreed to produce 20GW of ingots and wafers annually, while China's Shanghai Electric announced its partnership with Masdar, the Abu Dhabi-based future energy company, to develop the **$US1.1bn 2GW Al Sadawi solar project**.
- In Morocco, China's Gotion High-Tech plans to invest in a **US$5.6bn battery gigafactory**, with a focus on serving the European and Middle Eastern markets
- In Nigeria, China's LONGi secured a deal with the Nigerian Government and local developer APPL Hydrogen Ltd for a **$US8.27bn green hydrogen project**.

These examples highlight that global Chinese firms are indispensable partners for energy transition and green industrialisation projects, whether in batteries, EVs, grid and transmission infrastructure, solar, wind, or green hydrogen. Benefits include meeting rising energy needs, reducing energy costs, upgrading technologically, and boosting employment, R&D and skills. This is accelerating a structural reordering of global production networks and labour division.

Countries able to adapt to the new Asian-led economic order by partnering strategically with Chinese firms— using green energy statecraft to maximise their competitive advantage[7] — are accelerating their green industrial transitions and economy-wide decarbonisation, while building long-term economic resilience.

While this report highlights examples of Chinese–host country cooperation, state capacity and well designed policies are necessary for maximising benefits and mitigating risk. Countries such as Indonesia, Brazil and Hungary demonstrate both the benefits **and** the complexity of partnering with Chinese firms at scale.

[5] bnamericas, Permitting nod for US$1.5bn Chile HVDC power line a 'key milestone', 6 Nov 2025.
[6] Seetao, The San Gabán III Hydropower Station in Peru Starts Power Generation, 8 May 2025.
[7] Elizabeth Thurbon et al, Green Energy Statecraft for Comprehensive National Security, December 2024.

Partnering with Chinese firms requires a *risk-management framework* with four elements:

(1) Economic balancing – Host countries must ensure that large Chinese investments complement rather than dominate domestic industrial ecosystems, protecting space for local firms and skills.

(2) Political hedging – Nations like Indonesia, Malaysia, and Brazil have non-aligned foreign policy to preserve strategic autonomy, being open to global partnerships including with China and Western countries. Their success depends on smart geopolitical balancing without triggering external pushback.

(3) Regulatory and environmental safeguards – Successful cooperation requires strong governance: transparent permitting, labour protections, environmental standards, and clearly structured JVs to avoid asymmetric dependence.

(4) Social licence and community acceptance – Particularly for minerals, renewables, and large industrial parks, early engagement with local communities is essential to avoid backlash or political contestation.

Countries that proactively manage these risks are better positioned to benefit from Chinese cleantech capital while preserving national autonomy, ensuring that cleantech investment serves long-term domestic development goals.

"China's cleantech makers are now looking much more to overseas markets, as demand at home stabilises and the global energy transition speeds up. And that's where the dilemma kicks in. Almost everyone agrees you can't hit climate goals without working with China. But once cooperation moves to actually making clean products together, worries about over-reliance and 'de-risking' suddenly grow louder. The real challenge isn't to cut China out, it's to build more diversified, resilient supply chains that still tap into China's know-how while helping other countries grow their own clean industries. If they don't, by the time their local industries finally get going, Chinese companies may have already pulled even further ahead."

Dr Muyi Yang, Senior Energy Analyst, Ember

Implications for Australia

As China's global cleantech ODI aligns with the green-industrial ambitions of economies across Southeast Asia, the Middle East, Africa, Europe and Latin America, Australia faces a pivotal moment.

Chinese ODI in Australia has fallen sharply – down 85% since 2018, and now just 1.5% of total foreign investment. 2024 recorded the third lowest value and number of transactions since 2006 at just US$882m, a fraction of the peak of US$16bn in 2008.[8] This trend should not be read as an inevitability, but rather as a signal of the urgency for Australia to modernise its investment and foreign-economic policy settings to enable strategic partnership with the world's cleantech leader while mitigating risks.

Why? Australia's clean-energy ambitions are well-known, but execution is constrained by deficits in supply chains, capability and infrastructure, undermining the credibility of Australia's net zero and FMIA plans and ability to compete in the global clean-industry race.

Under the Australian Energy Market Operator's step change scenario, the National Electricity Market will need to triple grid-scale variable renewable energy by 2030, and increase it six-fold by 2050 to meet rising energy needs. Around 70% of capital invested in Australian renewable energy projects comes from foreign investors.

The scale of capital, infrastructure and technology required for Australia's energy transition presents a major challenge and opportunity: foreign investment and global partnerships are indispensable. World-leading global Chinese companies – dominant in solar, batteries, grid infrastructure, EVs, electrolysers and resource-processing supply chains – offer the capital and capabilities Australia needs to build sovereign capacity, accelerate decarbonisation, diversify its economy, and strengthen competitiveness.

Australia's green energy statecraft choices, including its security alignment with the United States and more restrictive approaches to investment screening, have contributed to a cautious approach vis-à-vis Chinese firms in the renewable energy sector.

As this report details, the choice does not have to be binary. Countries as diverse as Indonesia, Malaysia, Saudi Arabia, Brazil, Spain, Hungary, Egypt and Morocco are attracting significant investments into renewables, electrification and green manufacturing, while boosting political and economic ties with China. Why? To reduce energy costs, access critical knowhow and technology in high value sectors, strengthen competitiveness, and increase strategic autonomy.

The pace of green industrialisation is accelerating while the impacts of climate change are increasingly severe and frequent. For Australia, fossil-fuel rents no longer underwrite prosperity, and the US is no longer the centre of global economic or political gravity. In the Asian-led economic order where FDI, trade, supply chains and industrial development are tightly interconnected, countries that can quickly adapt their economic and political settings to seize opportunities for investment and economic integration will be better positioned to prosper on the foundations of energy security and economic resilience. Countries that don't risk being left behind.

That risk is particularly acute for Australia, as a small, trade-exposed, and resource-based economy in the Asia Pacific facing a stagnating economy and productivity. There is no option but ambition, vision and reform to ensure long-term economic resilience. Australia can turn challenge into opportunity by choosing strategic agency and integration with Asia, over isolation and irrelevance. A forward-looking economic diversification agenda must combine strategic **investment attraction and openness to all global partners**, including its largest trade partner China, to build human capital, infrastructure and connectivity for a knowledge-driven, resilient economy.

[8] KPMG and University of Sydney, Chinese investment in Australia shifts from acquisitions to greenfield, 31 March 2025.

Recommendations for the Australian Government

1. Develop an Australia–China Green Transition Cooperation Framework. This could include the establishment of the following:

a) **Net Zero Investment Cooperation Working Group** chaired by the China Australia Free Trade Agreement (ChAFTA) Committee, drawing experience from the Chinese-Swedish Working Group on Green Transition Investments, and harnessing the enduring relationships between UNSW and the Chinese solar PV industry, to create the institutional framework required to 1) enable knowledge sharing and access to up-to-date information regarding energy transition industry and technology trends in China 2) identify and facilitate investments into Australia's net zero priority sectors, e.g. renewable energy infrastructure, skills, and innovation; and

b) **Green Transition R&D and Innovation Cooperation mechanism** to identify and promote cooperation in R&D and innovation aligned with the forthcoming recommendations from the Australian Government commissioned Strategic Examination of Australia's R&D system.

2. Boost institutional and human capacities to attract and guide FDI into strategic sectors, especially infrastructure, innovation, and skills. Establish a well-resourced, dedicated agency, **Invest Australia,** leveraging the existing expertise in DFAT and Export Finance Australia whilst also drawing from international best practice, including Invest New Zealand, Hungarian Investment Promotion Agency, IDA Ireland, EDB Singapore, Malaysia Investment Development Authority, to make targeted investment promotion a strategic pillar of statecraft to support the implementation of the Net Zero and FMIA plans.

3. Progress foreign investment regime reform. Increase transparency in foreign investment review rules and decision-making to reduce investor certainty, building on recent developments in Treasury's newly opened Single Front Door Portal:[9] define clear criteria for national-interest assessments of projects in "transformative" sectors; develop a "green lane fast track" for strategic projects informed by evidence-based assessment of technology-specific risks to national security in consultation with trusted, independent international experts or institutions; and publish reasons for decisions (positive and negative), as recommended in previous parliamentary and government reports.[10]

4. Create an independent, non-profit, non-partisan research and advisory centre to provide government and industry with evidence-based assessments of technology-specific risks and opportunities in the net-zero transition, informing investment decision-making. A dedicated Centre for Emerging Technology and Security modelled on the UK's Centre for Emerging Technology and Security (CETaS), would bridge the divide between risk mitigation and innovation enablement.

5. Expand sovereign, non-partisan, cross-sectoral China capability to support strategic, future-oriented engagement in the form of a China in the 21st Century Knowledge Exchange Centre. Its aims should be to build sovereign China capability in Australia with a focus on understanding current economic, social and political trends in China and its evolving relationships with the rest of the world, to foster nuanced discussion and institutional capability to engage strategically in our national interest. This should leverage the work of the National Foundation for Australia-China Relations and the UTS Australia-China Relations Institute. [11]

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[9] Australian Government, Australia's Investor Front Door, 1 September 2025.
[10] 2016 Senate Economic References Committee inquiry into the foreign investment review framework, Foreign Investment in Australia: Productivity Commission Research Paper, June 2020.
[11] Australian Government, National Foundation for Australia-China Relations.

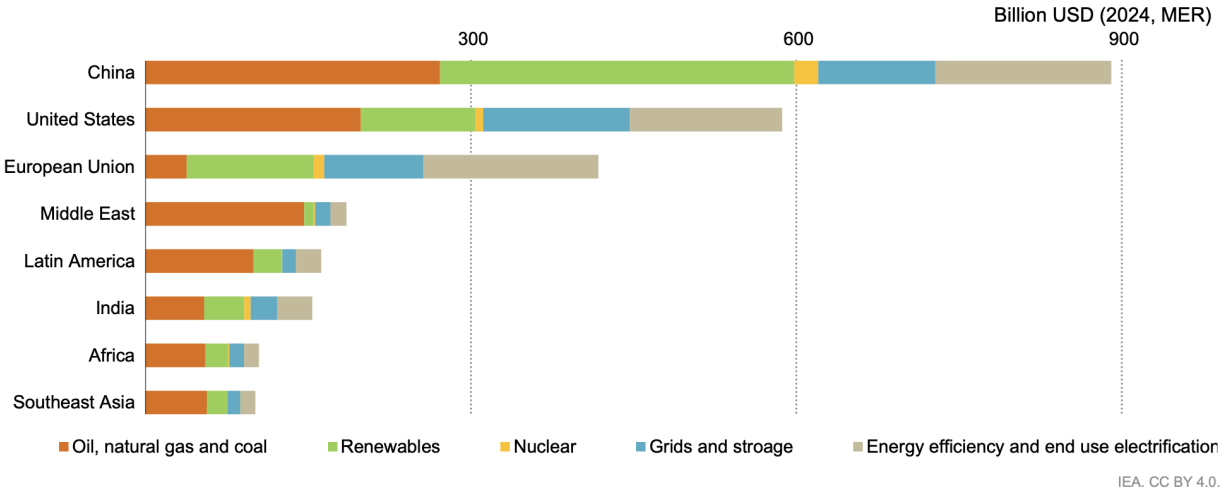
Section 1. China is the Engine Room of the Global Techno-Industrial Revolution

1.1. China's Global Cleantech Value Chain Dominance in 5 Charts

Whether it's critical minerals processing, solar PV, or battery manufacturing, Chinese firms control not only these supply chains but, critically, hold world-class industrial and technology expertise in these green industries. As Alicia Garcia-Herrero, Chief Economist for Asia Pacific at Natixis, put it, "It is the technology embedded in the industrial products, in the industrial capacity … that makes China impossible to avoid. Everything you buy has a Chinese component in it."[12]

China's manufacturing cost advantages stem fundamentally from achieving unprecedented economies of scale combined with complete vertical integration of the supply chain. Between 2018 and 2024, China accounted for 80% of global investment in manufacturing facilities for solar, wind, battery and hydrogen technologies.[13]

Figure 1.1.1: China Leads the World in Energy Investment

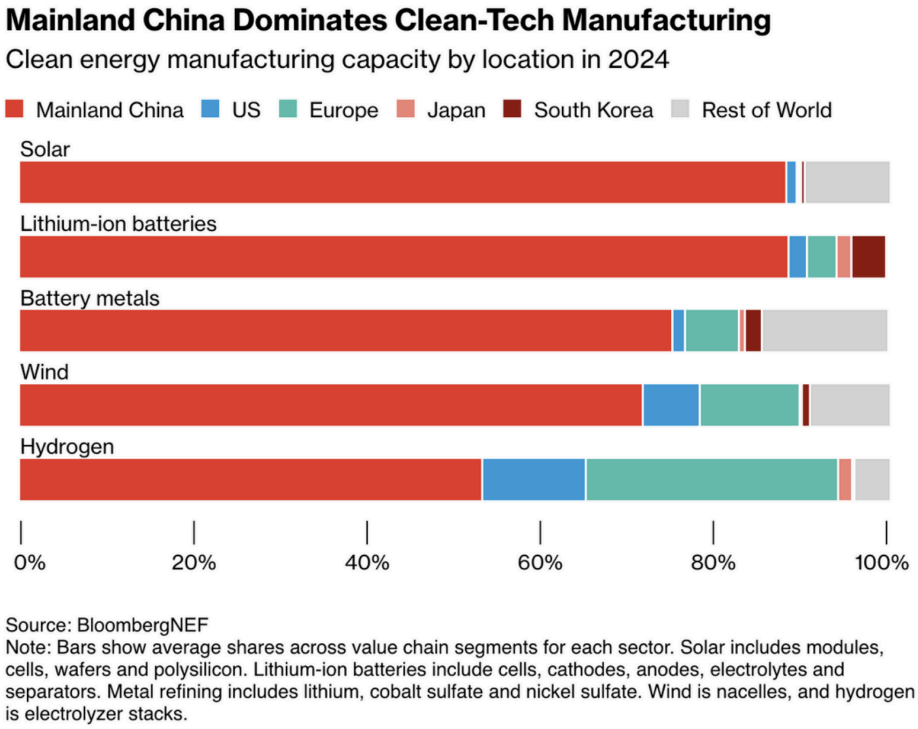


More than one-quarter of global energy investment takes place in China. Most of the growth in spending in recent years has been in fossil fuel importing countries looking to bolster their energy security by accelerating transitions

Source: IEA World Investment Report 2025

[12] SCMP, 50 years on, has China left Europe behind in the race for a hi-tech future?, 28 September 2025.
[13] IRENA, Global landscape of energy transition finance 2025, November 2025.

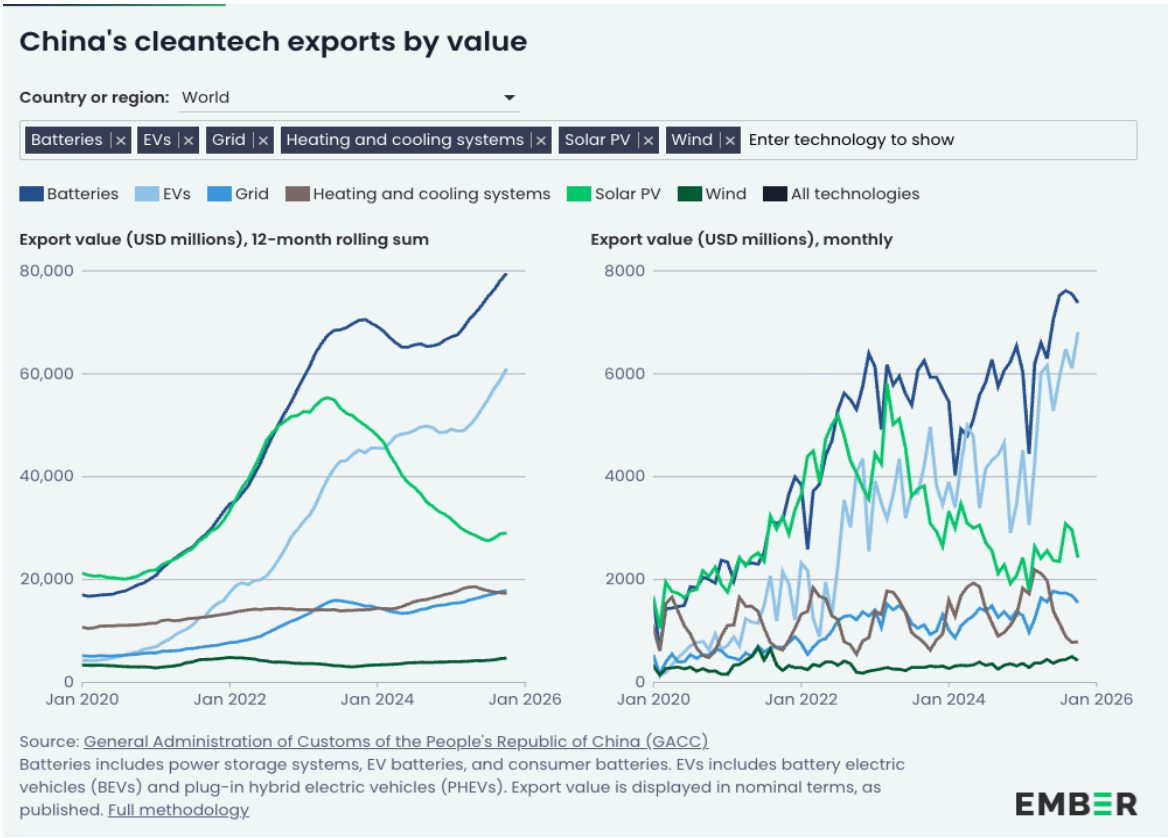
Figure 1.1.2: China's cleantech manufacturing capacity, 2024



Source: BloombergNEF
Note: Bars show average shares across value chain segments for each sector. Solar includes modules, cells, wafers and polysilicon. Lithium-ion batteries include cells, cathodes, anodes, electrolytes and separators. Metal refining includes lithium, cobalt sulfate and nickel sulfate. Wind is nacelles, and hydrogen is electrolyzer stacks.

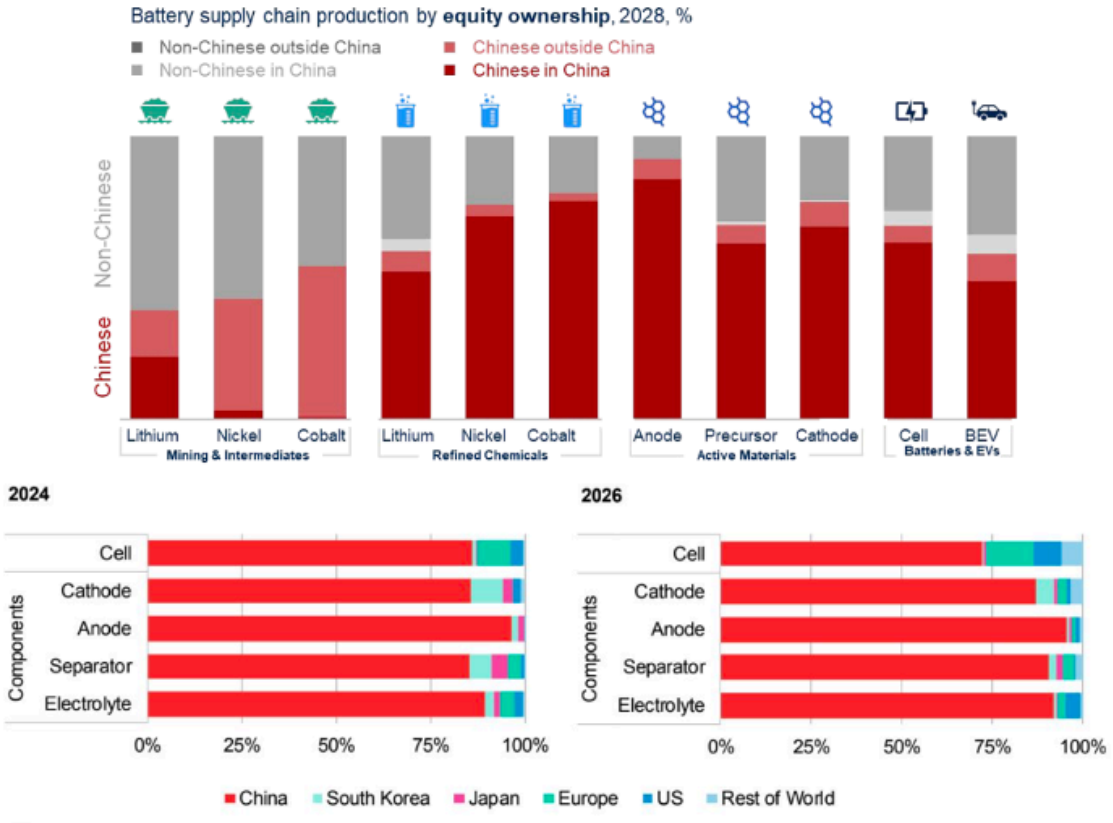
Source: BloombergNEF

Figure 1.1.3: China's cleantech exports by value



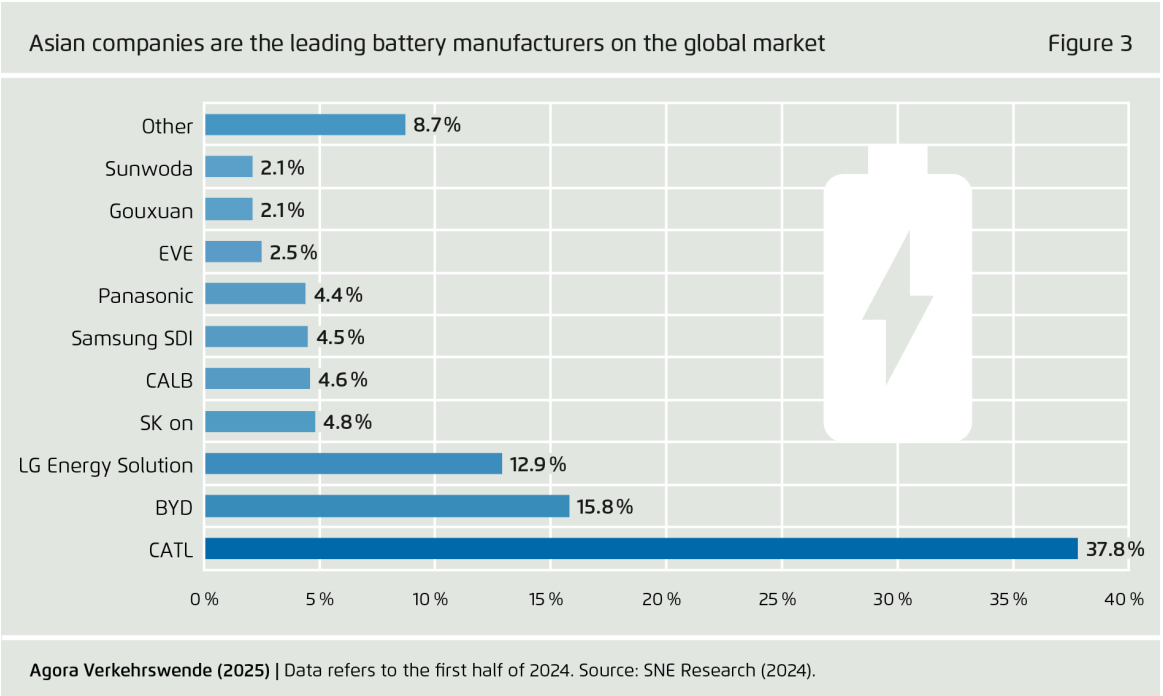
Source: Ember, China Cleantech Exports Data Explorer

Figure 1.1.4: China's Ownership Of The Battery Supply Chain



Source: 2024 Battery Report, Volta Foundation

Figure 1.1.5: 6 of the global top 10 battery manufacturers are Chinese



Source: Agora Verkehrswende, A strong European battery industry for a strong automotive sector

1.2. EMDEs Expand and Deepen Integration into Green Value Chains

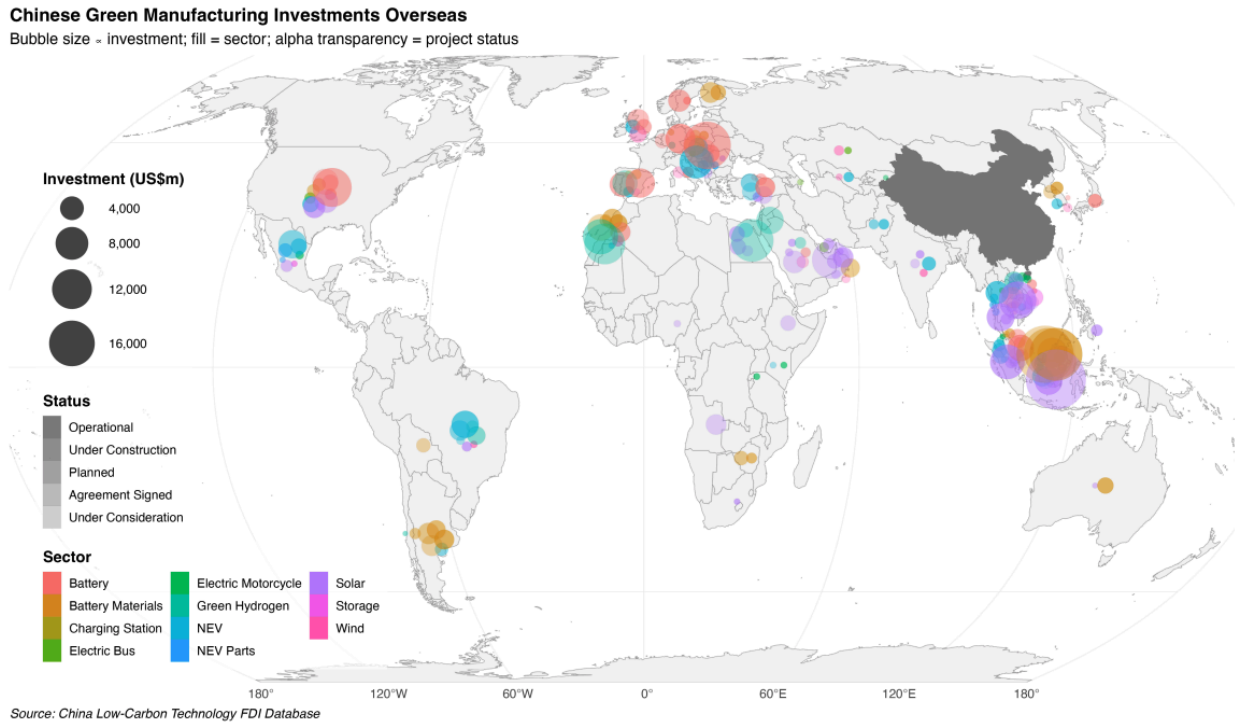
As CEF covered in our 2024 Green Capital Tsunami report,[14] China's cleantech outward investment since 2022 continues to trend in Emerging and Developing Economies (EMDEs). The surge in green manufacturing investment represents a substantial opportunity for these countries to host green ODI and enhance their participation in the global green technology market.[15]

Chinese investment brings critical finance, technology, and innovation that help countries reduce energy costs, meet rising energy demand while progressing toward their climate targets. It also facilitates cross-border trade integration through shared technical standards.

The October 2024–25 period marked the consolidation of China's position as the dominant global investor in clean-energy manufacturing and infrastructure, **with ~US$80bn in disclosed new projects across 26 countries**, driven by private companies.

The pattern of these investments reveals an increasingly sophisticated outward industrial strategy — diversified across geographies, technologies, and partnership models — reflecting both short-term factors such as domestic market saturation and companies' market diversification amid rising trade protectionism, as well as China's strategic global positioning in the clean economy as part of a long-term development strategy — a structural shift from export-oriented manufacturing toward a form of green globalisation.

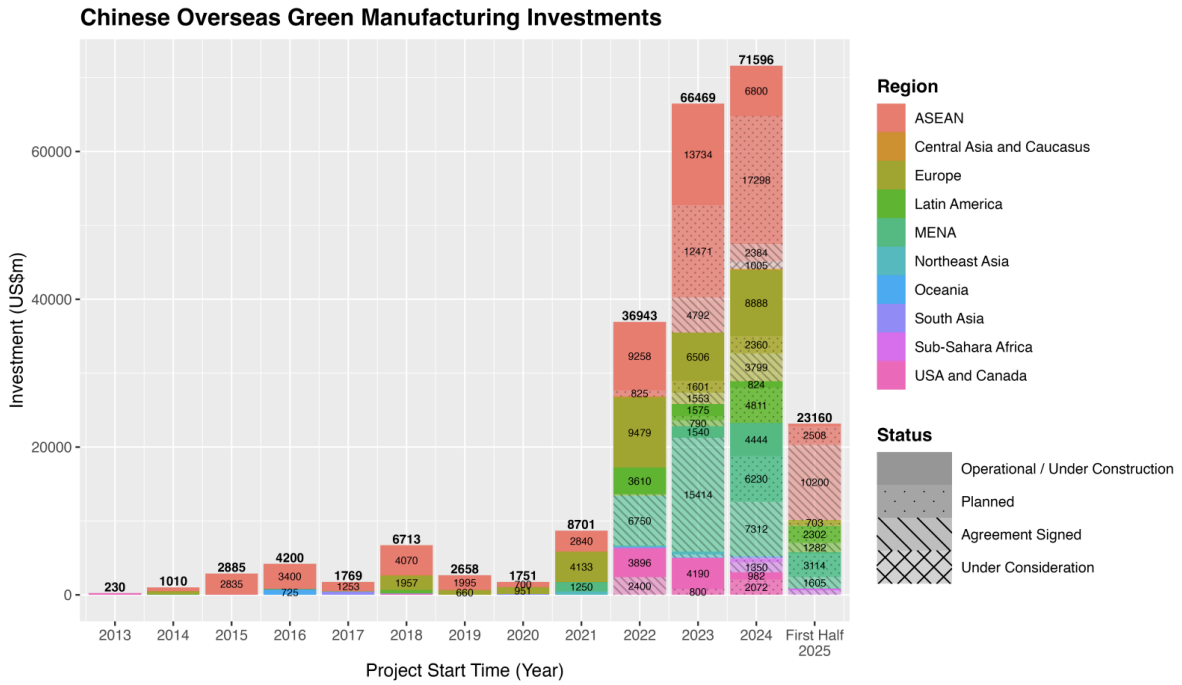
Figure 1.2.1: Global Distribution of Chinese overseas green manufacturing projects by technology and project status



Source: Net Zero Industrial Policy Lab

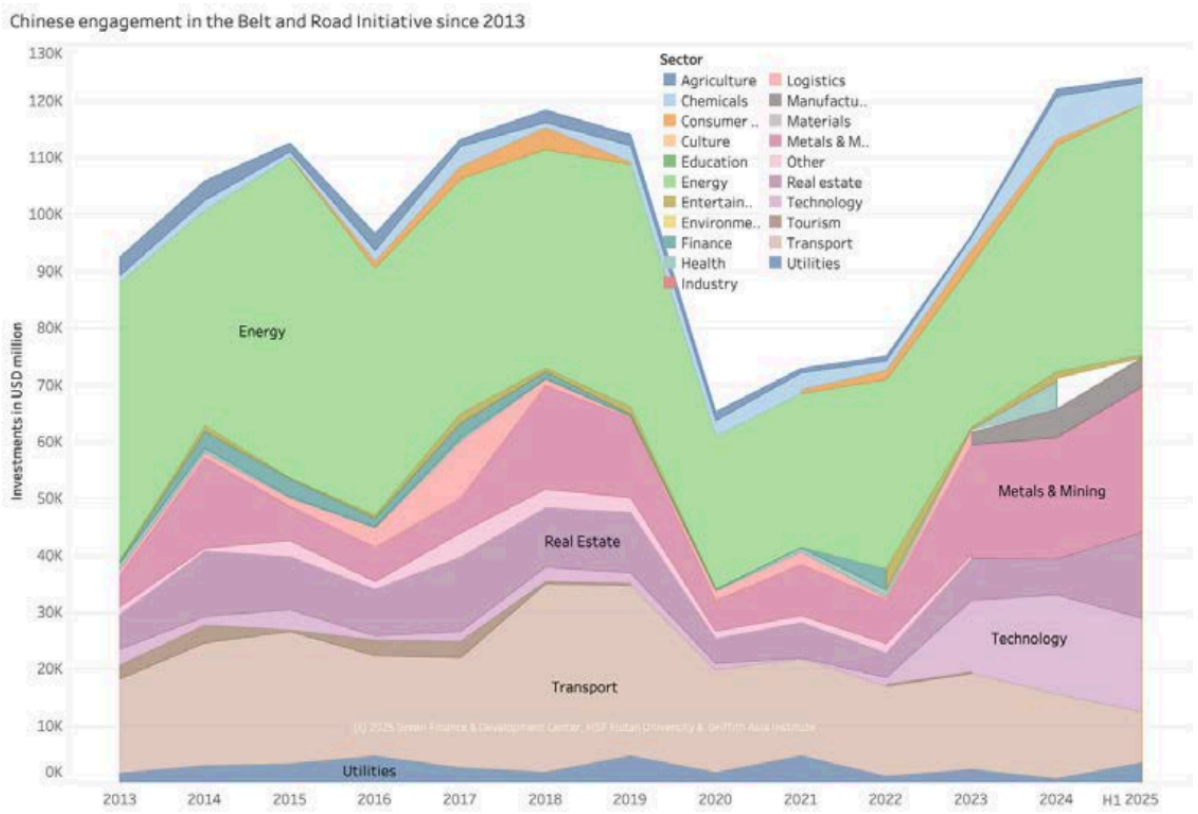
[14] CEF, Green capital tsunami: China's >$100 billion outbound cleantech investment since 2023 turbocharges global energy transition, October 2024.
[15] Net Zero Industrial Policy Lab, China's Green Leap Outward: The rapid scale- up of overseas Chinese clean-tech manufacturing investments, 9 September 2025.

Figure 1.2.2: Chinese Overseas Green Manufacturing Investments 2013-25



Source: [Net Zero Industrial Policy Lab]

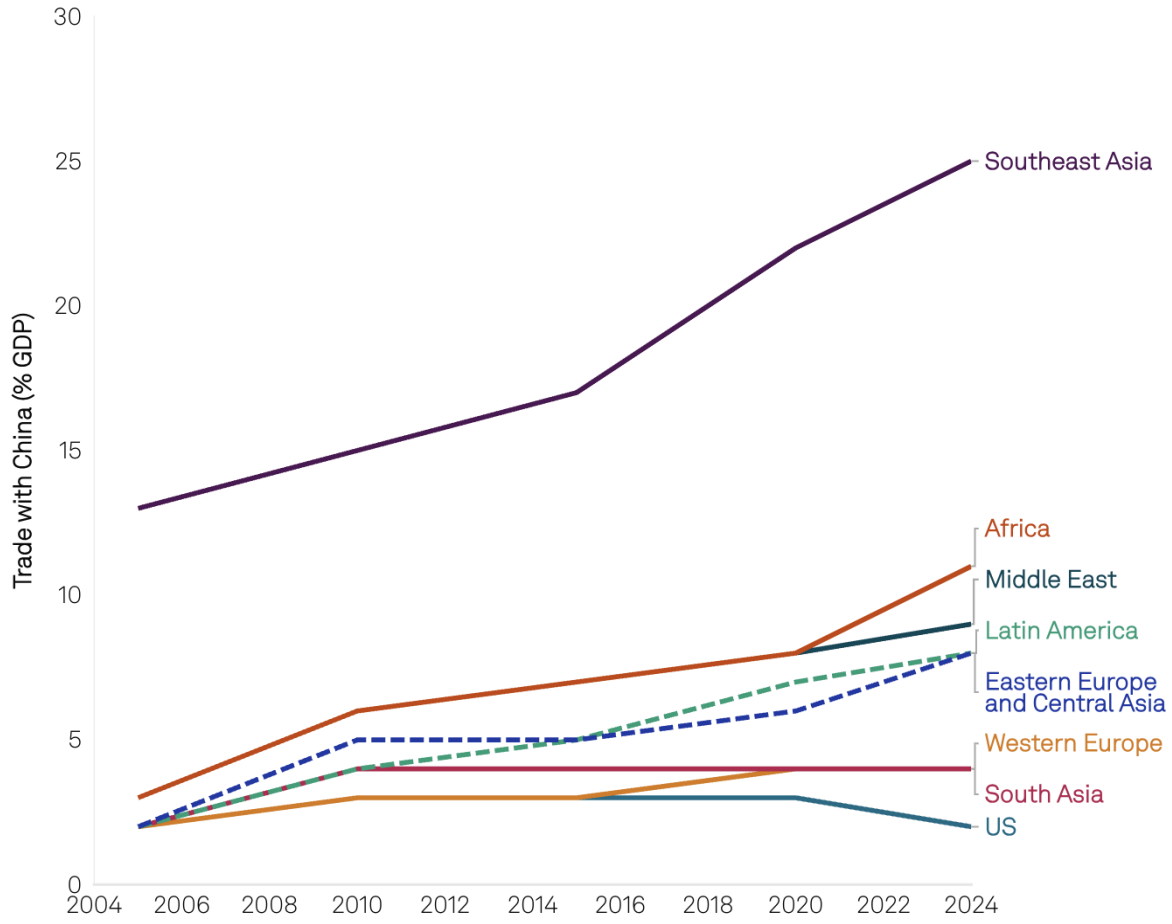
Figure 1.2.3: Chinese engagement in the BRI since 2013



Source: [China Belt and Road Initiative (BRI) Investment Report 2025 H1]

Geographically, Southeast Asia remains the primary manufacturing hub, led by Indonesia and Malaysia, where projects such as CATL's US$6bn integrated battery complex and GCL Technology's ASEAN-wide renewables footprint underscore the region's increasing economic integration with China (see Figures 1.2.4).

Figure 1.2.4: Southeast Asia's rapid trade integration with China



Source: S&P Global, China Inc. heads to Global South in the age of tariffs

Rising investment from China in energy transition supply chains, rapid digital adoption, and supportive policy frameworks are further shaping the region's position and helping to transform ASEAN into a deeply integrated hub for global supply chains.[16]

Europe, however, accounted for the largest cluster of battery-related investments — driven by battery gigafactories in Hungary, Spain, Portugal, each tied to EU decarbonisation and industrial-policy frameworks such as REPower EU and the 2035 ICE ban.[17]

Meanwhile, the Middle East and North Africa emerged as the fastest-rising destination, anchored by Morocco, Egypt, Saudi Arabia, and Oman, which together attracted roughly US$7bn in disclosed capital. These projects illustrate how Gulf and North African economies are advancing bold economic diversification agendas by investing in the development of non-oil sectors including manufacturing and renewables.

[16] ASEAN Investment Report 2025.
[17] European Parliament, EU ban on the sale of new petrol and diesel cars from 2035 explained, 11 March 2022.

By scale and structure, Chinese outward investment increasingly favours large-ticket, multi-phase projects. 26 of the 47 projects identified in Appendix A exceeded US$100m (55%), and 12 topped the US$1bn threshold, signalling a decisive shift toward megaprojects that integrate upstream and downstream value chains.

The majority were established as joint ventures or diversified partnerships between Chinese technology leaders and host-country firms or public investment vehicles — exemplified by CATL–Stellantis in Spain, JA Solar in Oman, and Gotion–CDG Invest in Morocco. In contrast, manufacturing projects in Hungary, Türkiye, and Malaysia tend to be wholly owned or operated by Chinese firms seeking fast market entry through established industrial parks.

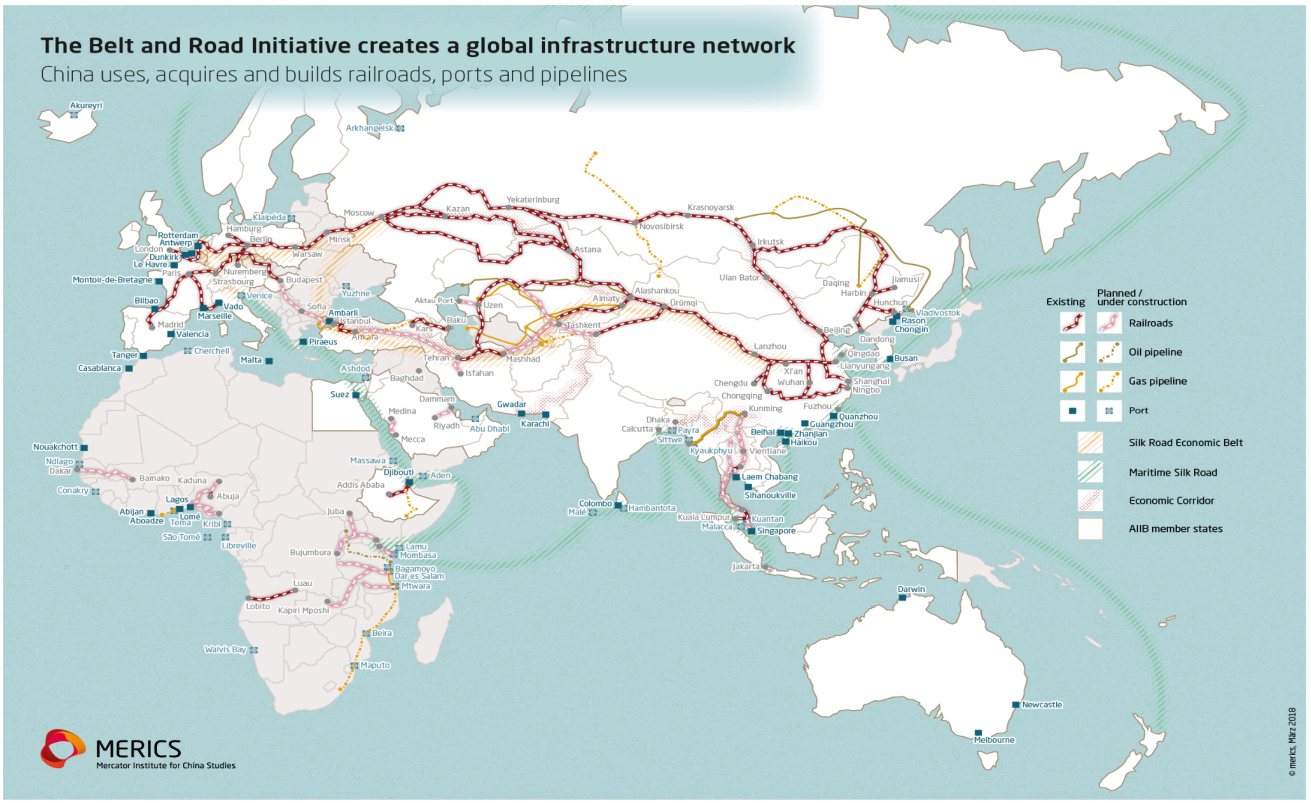
Technologically, the data points to China's widening dominance across the full clean-energy manufacturing chain. Batteries and related materials accounted for over half of total disclosed value, followed by solar-PV equipment and emerging hydrogen projects. Battery and EV investments in Europe — particularly CATL, CALB, and AESC — reflect strategic localisation to avoid import tariffs, while solar-PV and inverter plants in ASEAN and Middle East and North Africa showcase Chinese companies' efforts to diversify export markets amid Western trade restrictions. New hydrogen and electrolyser manufacturing ventures in Morocco, Egypt, and Saudi Arabia indicate an early extension of this model into next-generation decarbonisation technologies.

Human capital is a foundational requirement for any nation seeking to build economic resilience. Education and skills in critical STEM fields are a core condition for the development of green industries. The ODI surge has also come with the establishment of R&D and training centres, demonstrating the knowledge spillover benefits of ODI that host governments seek from Chinese firms.

Finally, China's cleantech industrial dominance is becoming increasingly central to its national economic and political interests. Deepening cooperation with BRI partner countries has become Beijing's strategic pillar for building its geopolitical influence in line with its consistent positioning as champion of the Global South to "better bridge the development gap between the North and the South" (Figure 1.2.5).[18]

[18] Chinese Government, Xi Jinping's speech at the Shanghai Cooperation Organization Plus Conference, 1 September 2025.

Figure 1.2.5: Belt and Road Initiative Global Infrastructure Network



Source: [Mapping the Belt and Road initiative: this is where we stand]

Section 2. How Countries are Capitalising on China's Green Energy and Technology Leadership

A structural transformation is underway in the global economy. The rapid expansion of China's cleantech manufacturing ODI is accelerating the reconfiguration of global supply chains and shifting the gravitational centre of global commerce towards EMDEs, with a focus on BRI partner countries (146 to 150 countries).[19]

From the perspective of Chinese firms, Trump's trade war launched in March 2025 has further increased uncertainty and sharpened their attention to **long-term risk mitigation through market diversification, with a focus on countries not hit by Trump's tariffs that offer favourable investment environments**. The Chinese Government has further urged firms to seek cooperation with local firms in BRI countries. According to the latest statistics published on the Chinese Ministry of Commerce "Going Global" Service Platform website, from January to September 2025, Chinese enterprises made RMB215 billion in non-financial direct investment in BRI countries, up 24.7% year-on-year (equivalent to US$30bn, up 23.7%).

With changing global dynamics and shifting investment patterns, countries are faced with increasing competition to attract investments to advance their green transition efforts. The EV and battery sectors in particular are seen as important for boosting employment and skills, moving up the value chain, and upgrading technologically.

2.1. Southeast Asia Remains Principal Destination for Chinese Cleantech ODI

2025 has seen a downturn in new solar manufacturing investments in Cambodia, Thailand, Malaysia and Vietnam following the US' further imposition of steep tariffs on solar panels from these four countries. Instead, there has been a continuing trend of big ticket renewable energy, battery and EV manufacturing projects in Indonesia, Malaysia and Thailand alongside structural adjustments to facilitate diversified finance, trade and investment partnerships, technology transfer, and workforce development.

Indonesia

In the past two years, Indonesia has struck significant green deals with China, totalling US$22.6bn, covering clean energy and cleantech investment, such as EVs, lithium batteries, photovoltaic products and industrial infrastructure for renewable energy.[20]

Indonesia is pursuing bold economic transformation under its Golden Indonesia 2045 vision to become a developed country and the world's fourth-largest economic power by 2045. Indonesia aims to achieve 23% renewables in its primary energy mix by 2025 and 31% by 2050, underpinned by its Long-Term Strategy for Low Carbon and Climate Resilience 2050.

Under the 2025-2045 National Long-Term Development Plan, Indonesia is developing an **integrated EV supply chain** and aims to become one of the world's top three producers of EV batteries by 2027. The country is seeking to take advantage of natural resource abundance, particularly nickel, to create a domestic EV market, with strong state backing for downstream industrialisation to increase employment and productivity. It aims to produce EV batteries with a total capacity of 140GWh per year by 2030, which will account for between 4 to 9% of global demand. Recently, Indonesia has legislated new local content requirements for BEVs - starting 2026, BEVs produced locally must include at least 40% local content, increasing to at least 80% by 2030.

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[19] Green Finance and Development Center, Countries of the Belt and Road Initiative (BRI).
[20] Dialogue Earth, Is Chinese finance enough to feed Indonesia's clean energy push? 11 August 2025.

In June 2025, construction began on the **US$6bn Indonesia Battery Integration Project i**n West Java, a joint venture between CATL and state-owned Indonesia Battery Corp. and PT Aneka Tambang. The complex will span the full battery value chain and multiple sites over 2,000 hectares, including nickel mining and processing, battery materials production, and recycling to a battery manufacturing facility with an initial annual production capacity of 6.9GWh. This also reflects CATL's long-term strategic plan for localizing its supply chain in Southeast Asia.

These energy transition and green industrialisation goals have led to further strengthening of China-Indonesia economic ties. China is Indonesia's largest trading partner, with bilateral trade reaching US$147.8bn in 2024, a year-on-year increase of 6.1%. China is also Indonesia's second-largest source of foreign investment, with a combined investment of US$13.9bn in 2023 alone. Indonesia is China's second-largest investment destination in ASEAN.

Since October 2024, cooperation and integration between Indonesia and China continued to expand across green energy infrastructure and industry, waste-to-energy, minerals processing, and technology, buoyed by strengthening diplomatic ties which saw President Prabowo conduct two state visits to China followed by Chinese Premier Li Qiang's state visit to Indonesia, and the two countries holding their first-ever 2+2 ministerial dialogue (foreign and defence ministers meeting) (see Figure 2.1.1 below).

In February 2025, Indonesia **officially joined BRICS** as its 11th full member, as well as the **BRICS New Development Bank**. This was a strategic step seeking to reduce the country's reliance on international lenders, such as the World Bank and International Monetary Fund, whose decisions are dominated by Western countries.[21] At the same time, Indonesia welcomes clean energy investment from both China and the West, so long as it advances national development goals.[22]

Concurrently, **Indonesia launched a new sovereign wealth fund, Danantara**, with an initial US$61bn capital base, to serve as a key gateway for global investors in national development priorities,[23] including renewable energy and national industrialization and downstreaming projects.[24] **Danantara** has since forged investment partnerships with multinational institutions from China,[25] Japan,[26] and Saudi Arabia.[27]

Figure 2.1.1: Developments in bilateral partnerships in green industry, renewables and diplomacy - October 2024 - October 2025

Diplomatic and economic engagements	Manufacturing and minerals processing partnerships	Renewables and critical infrastructure partnerships
President Prabowo State Visit to China: 7 MoUs signed (green minerals, mineral resources, blue economy, sustainable fishing, water resources)	**LONGi–Pertamina NRE plan 1.4GW solar cell and module factory** (global tariff shift response) **PT Vale and China's GEM sign US$1.4bn investment**	**PLN–Huawei & PLN–SDIC deals:** Digital grid + hydropower study. **Indonesia approves China Harbour Indonesia to develop US$4.4bn Multi-Utility Tunnel**

[21] SCMP, Will Indonesia's plan to join Brics bank lead to heavier debt burden? 15 October 2025.
[22] Kevin Zongzhe Li, Indonesia's Energy Transition: Exercising Strategic Agency in Partnership with China, 27 August 2025.
[23] ASEAN Briefing, Indonesia Officially Launches New Sovereign Wealth Fund Danantara, 10 March 2025.
[24] President Prabowo Launches Danantara for Sustainable Investment Management, 24 February 2025.
[25] Antara, Danantara, China seek to boost long-term economic partnership, 23 May 2025.
[26] JBIC Signs MOU on Strategic Cooperation with Badan Pengelola Investasi Daya Anagata Nusantara of Indonesia, 11 July 2025.
[27] Danantara Indonesia Forges Strategic Partnership with ACWA Power to Drive Sustainable Energy Future, 3 July 2025.

Chinese and Indonesian Foreign and Defence Ministers hold high-level talks - China's first-ever 2+2 ministerial dialogue with any foreign country. President Prabowo attends military parade in Beijing and meets with President Xi despite ongoing protests at home. **PLN–China EXIM Bank renew MoU on energy transition financing:** financing for US$171bn transition plan, including renewable generation and 48,000-circuit km green transmission lines over 10 years.	**cooperation framework agreement to establish a high-pressure acid leach (HPAL) facility to process nickel laterite ore** (66,000 t MHP/yr + R&D hub). **BYD announces the US$1bn Subang EV factory** (150k units/yr) will be completed by the end 2025. Chinese EV maker Xpeng began local production in Indonesia, assembling the X9 MPV via CKD kits. **Huayou Cobalt replaces South Korean LG consortium in US$9.8bn Integrated EV battery project** (mining → HPAL → precursor → cathode → cells). **Chinese firm LBM invests US$95m in 31-hectare LFP and iron phosphate plant (Batang SEZ), including R&D centre and training for 1,000 local workers**	**(138.6km)** for new capital city Nusantara IKN. **Bakrie Group and Envision sign MoU to develop** 200MW floating solar + 200MW wind plants. **PT Maharaksa Blue Energy and China Tianying partner to build US$158.6m Waste-to-Energy plant** **Indonesia–Singapore–China launch 900MW solar + 1.2GWh BESS project** **MEBI-Huawei clean energy infrastructure MoU:** EV charging network + BESS deployment. **SUS Environment wins bid for US$200m Waste-to-Energy plant,** backed by Indonesian Ministry of Energy and Mineral Resources and Makassar City Government. **PT Magic Crystal Indo and CECEP Group announce strategic partnership to develop a** Waste-to-Energy Power Plant.

Progress was also made on the following major solar, EV and battery manufacturing projects:

- Geely begins Knock Down assembly in partnership with local car assembly company PT Handal Indonesia Motor.
- Trina Mas Agra Indonesia (joint venture between China's Trina Solar and local partners) opens Indonesia's largest integrated solar cell and module factory
- ANTAM–Indonesia Battery Corporation–CATL US$6bn integrated battery chain breaks ground (HPAL → precursor → cells).

Bilateral technology and training partnerships were also progressed, including:

- Solar Academy Indonesia launched a Huawei–Xurya–JJ-LAPP collaboration to support workforce training.
- UGM–Zhejiang–SUPCON technical mission (PLN load centre + Cirata floating solar).
- Renewable energy R&D MoA signed between Universitas Brawijaya's Faculty of Engineering–and Inner Mongolia University of Technology.

These partnerships reflect the effects of Indonesia's active industrial policy to support national development goals. **New local content rules** were introduced in September 2025 to incentivise companies' contribution to Indonesia's industrial ecosystem through research and development, Industry 4.0 adoption, technology transfer, environmental sustainability, and workforce localisation.[28]

> China, as the leader in clean technology, is a natural partner for Indonesia, a country endowed with many renewable resources. With the recent US government decision to back out from the Paris climate agreement, there is a vacant space of global leadership.
>
> Putra Adhiguna, managing director, Energy Shift Institute

Malaysia

In the past few years, most Chinese investments have been in the EV, battery and related industries, in line with Malaysia's New Industrial Master Plan 2030.

In Q22025, Malaysia became ASEAN's second-largest auto market by sales, after Indonesia, after drawing over $US6.2bn in EV-related foreign direct investment over the past three years.

December 2024 saw China's Ningbo Deye announce an investment of **US$150m** to build a manufacturing base for solar equipment.

April 2025 saw InvestSarawak and China Energy Engineering Investment Corporation sign an MoU to develop 2GW of renewable energy, battery storage, and supporting grid infrastructure, worth **US$1.35bn**. This came on the tail of President Xi's state visit to Malaysia which concluded with the signing of a Joint Statement on Building a High-level Strategic Malaysia-China Community with a Shared Future and 31 cooperation agreements among which covered expanded trade and services, deeper cooperation in artificial intelligence, the digital economy, the green economy, and rail infrastructure.

April 2025 saw Leapmotor and Stellantis launch their **US$5.7m** EV assembly operations in Kedah.

June 2025 saw Malaysian PV solutions provider Founder Group sign a **US$220m** MoU with Chinese polysilicon producer GCL Technology to explore, identify, assess and undertake renewable energy projects across Malaysia and ASEAN.

June 2025 saw major Chinese lithium-ion battery manufacturer EVE Energy announce that its Malaysian wholly-owned subsidiary would invest **US$1.2bn** to build a new energy storage battery facility in Kedah, with a planned construction period of 2.5 years.

August 2025 saw BYD announce it would build a Completely Knock Down assembly plant, with production expected to begin in 2026.

September 2025 saw the launch of Proton's first EV assembly plant. Proton is majority owned by Malaysian conglomerate DRB HICOM, with the remaining 49.9% stake held by China's Zhejiang Geely Holding Group.

Image: Malaysian Prime Minister Anwar Ibrahim launched Proton's first EV assembly plant on Sept 4

[28] Kusuma & Partners, Indonesia's New Local Content Rules: What Businesses Must Know Under MOI Regulation No. 35/2025, 11 November 2025.

Source: Straits Times, Malaysia's first home-grown EV to roll out of Tanjong Malim in drive towards auto hub goals

Thailand

March 2025 saw the Thai Board of Investment approve a **US$1bn** investment by Sunwoda Automotive Energy Technology, a top 10 global battery manufacturer, to establish Thailand's first large-scale upstream battery cell manufacturing facilities to produce batteries for EVs and energy storage systems, reinforcing Thailand's role in the regional EV supply chain.

Following the launch of Changan's EV manufacturing plant in Rayong, May 2025 saw Changan's Chairman pay a visit to Thai Prime Minister Paetongtarn Shinawatra and discuss plans to set up a research and development centre and regional office in Thailand. The state-owned company also plans to transfer technology to Thai auto parts suppliers and increase its Thai workforce from 600 to 2,000 employees, representing 90% of its total workforce, by next year.

July 2025 saw the launch of the **Thai-Chinese Dual Education Centre** which will offer the "Thai-Chinese Dual Degree in New Energy Automotive Technology". This is a 3-year international cooperation course between Thailand's Sakon Nakhon Technical College and China's Guangxi College of Mechanical and Electrical Technology, or 3 years both Thailand and China. Students will receive qualifications from both countries

Image: Launch ceremony of Thai-Chinese Dual Degree in New Energy Automotive Technology

Source: Sakon Nakhon Provincial Public Relations Facebook post

2.2. Middle East and North Africa - China's Green Silk Road

In the Middle East, the photovoltaic industry is benefiting from the policy dividends brought about by the country's transformation. Middle Eastern countries are actively attracting foreign investment through tax incentives, bidding subsidies, and green hydrogen incentive mechanisms. The Gulf Cooperation Council (GCC) region will need to invest US$60bn between 2025 and 2030 to add nearly 102GW of renewable energy capacity, the remaining amount toward its goal.[29]

Saudi Arabia is advancing an $8.3bn investment in 15,000MW solar and wind power projects by 2025, including mega-projects such as Sudair 2 (1500MW) and Al-Rass 2 (1800MW) of independent photovoltaic power producers (IPPs), while the UAE is offering land subsidies to encourage foreign investment in factory construction. These policies align closely with the BRI, lowering entry barriers for Chinese companies and supporting a complete value chain from module export to localized factory construction.

China's energy engagement across the Middle East and North Africa is undergoing a structural shift: once centred on oil imports, it is now increasingly defined by large-scale investments in solar, wind, hydropower and green-tech manufacturing, reflecting China's domestic pivot toward renewables and its broader transition from "barrel diplomacy" to "kilowatt-hour diplomacy."

Saudi Arabia

KSA's Vision 2030 reforms, launched in 2016, are transforming the country by diversifying its oil-dependent economy into a global hub for advanced industry, clean energy, logistics, and technology. To expand the non-oil economy, it has targeted increasing the share of non-oil exports in non-oil GDP from 18.7% to 50% by 2030.

Saudi Arabia is China's largest trading partner in the Middle East, and China is Saudi Arabia's largest trading partner, with bilateral trade topping US$107.5bn in 2024. Saudi Arabia has long been China's

[29] Center on Global Energy Policy, Renewable Energy Development in the GCC: Progress Made and Challenges Ahead, 1 October 2025.

largest supplier of crude oil. Nearly a quarter of KSA's crude exports — 24.3% — went to China in early 2025.

Yet, Vision 2030 reforms have catalysed expanded cooperation in renewable energy and green economy. This strategic focus has led to the steering of Chinese capital to KSA's clean energy infrastructure build-out and solar manufacturing facilities (see Figure 2.2.1 below).

March 2025 also saw Saudi multinational **ACWA Power** announce it would open its first overseas **Innovation Centre** in Shanghai, including an R&D Centre and Green Energy Laboratory.[30] The facility will focus on developing and deploying innovative solutions in five key areas: photovoltaics, wind, energy storage, green hydrogen, and seawater desalination.

November 2025 saw Chinese wind turbine manufacturer Envision Energy sign a seven-year deal with ACWA Power on production facilities for wind turbine components in KSA and the supply of machines for projects in the wider Asian region.[31]

Figure 2.2.1: Announced green energy and manufacturing projects in Saudi Arabia Oct 2024 - Nov 2025

Project	Company / Partners	Investment ($US)	Status / Timeline
Cleantech manufacturing			
20GW Ingot and Wafer Factory[32]	TCL Zhonghuan (China), PIF, Vision Industries	Undisclosed	Announced July 2024
Solefiori – 6GW HJT Module Factory[33]	Solefiori (China) + MODON (Industrial Property Authority)	Undisclosed	Announced June 2025
Renewable energy generation			
1GW Al Masa'a solar plant + 400MW Al Henakiyah solar plant[34]	France's EDF Renewables (France) + SPIC Huanghe Hydropower Development Co (China)	850 million	December 2024
2GW Al Sadawi solar project[35]	Masdar (UAE) + GD Power (China) and Kepco (South Korea)	1.1 billion from eight regional and international banks	August 2025

Morocco

Morocco is accelerating its energy transition by aiming for a leading position in the global electric battery industry, underpinned by energy transition goals to increase the share of renewables in its electricity capacity to 52% by 2030 and to 80% by 2050. Morocco is seeking to establish itself as a strategic green industrial hub, capturing the momentum of Chinese green technology giants and responding to growing European demand.

Trade between Morocco and China reached a record level of US$59.81bn in the first seven months of 2025. This marks a historic milestone in the economic cooperation between the two nations, representing a 19.1% increase compared with the same period in 2024. Morocco emerged as Africa's fourth largest importer of Chinese solar panels.

[30] ACWA Power, ACWA Power Launches its First Overseas Innovation Centre in China, 9 March 2025.
[31] Recharge, China's Envision closes wind turbine factories and supply deal with Saudi giant, 4 November 2025.
[32] Pvmagazine, TCL Zhonghuan-led consortium plans 20 GW ingot, wafer factory in Saudi Arabia, 17 July 2024.
[33] Pvmagazine, China's SoleFiori to build 6 GW HJT solar module factory in Saudi Arabia, 29 September 2025.
[34] Pvmagazine, EDF Renewables, SPIC win 1.4 GW of solar projects in Saudi Arabia, 6 December 2024.
[35] Pvmagazine, Consortium reaches financial close on 2 GW Saudi solar project, 20 August 2025.

Morocco has become a global player in the automotive industry. Over the past decade, the country has doubled its vehicle production capacity, reaching one million units in 2025. This achievement places Morocco among the world's top fifteen manufacturers and establishes it as the leading automotive hub in Africa.

With its stability and proximity to Europe, Morocco offers an ideal base for Chinese manufacturers seeking to localize their production to secure access to key markets. The Kingdom leverages its vast phosphate reserves, a crucial component for EV batteries, as well as its infrastructure such as the Tangier Med port. Added to this are competitive advantages including duty-free access to the European market, competitive costs for solar and wind energy, and a stable regulatory framework.

September 2025 saw Chinese group Gotion High-Tech announce plans to invest in a US$5.6bn battery gigafactory in Kenitra. This was followed by Morocco and China signing a MoU on establishing a strategic dialogue mechanism between their respective foreign ministries.

Progress was reported on a US$280m battery materials production plant first announced in 2024. China's Tianqi Chengdu Materials (TCM) confirmed that construction of its plant in Jorf Lasfar was expected to begin by the first quarter of 2026, with commissioning planned for the first half of 2028. The project, which still requires environmental and land approval, will benefit from local subsidies and customs and tax advantages granted by the Kingdom. In return, Tianqi commits to creating jobs and reaching an agreed production level by 2028, failing which the aid could be withdrawn.

As in many other countries with a growing base of Chinese cleantech ODI, Morocco and China have strengthened their collaboration in R&D. February 2025 saw the establishment of a **Morocco-China joint laboratory for green energy** and advanced materials in El Jadida - a collaboration between Shandong University and Chouaib Doukkali University.

Oman

Oman is also making strides in economic diversification under its Vision 2040 as it aims to become a regional hub for renewable and green industries. This structural transformation agenda is underpinned by its targets to achieve 30% of electricity from renewables by 2030, 60-70% by 2040, and net-zero emissions by 2050.

China is Oman's largest trading partner, with bilateral trade reaching US$36.7bn in 2024. China is also Oman's third-largest source of investment. Since Vision 2040, China has become a major partner in Oman's diversification and energy transition strategy, with late 2024-2025 marking several milestones in bilateral clean energy cooperation, including:

- China's Hainan Drinda New Energy to set up a 5GW solar PV cell manufacturing facility
- completion of the 500MW Manah I solar project by Chinese developer Shanghai Electric, in partnership with France's EDF
- a **US$200m** Energy Transition Fund established by Future Fund Oman, Oman Investment Authority and China's Templewater, to invest in clean electricity, clean fuels, energy storage, industrial e-fuels, smart mobility, renewable energy and low-emission data centres, signalling a deepening of Oman–China investment cooperation in the clean energy sector
- an MoU between Oman's Mawarid Turbine and Shanghai Electric Wind Power to develop a wind turbine manufacturing hub in the Special Economic Zone at Duqm (SEZAD), including technology licensing, knowledge transfer and a research centre
- a **US$564m** deal between Invest Oman, Sohar Port and Freezone and China's JA Solar to develop a solar manufacturing facility (6GW cells + 3GW modules), to position Oman as a key player in the clean energy value chain across the region.

Egypt

Egypt is pressing ahead with its clean-energy and industrial transformation under its Vision 2030 agenda (launched 2016). It aims to develop into a regional and global energy hub by exporting green

hydrogen and green ammonia and manufacturing renewable energy components locally. These goals are underpinned by its Integrated Sustainable Energy Strategy 2035. Last year, Egypt revised its targets upward, now aiming to generate 42% of electricity from renewable sources by 2030, with the country maintaining major reliance on gas.

Following a prolonged power outage crisis last year, Egypt has been stepping up efforts to attract more Chinese investment and expertise in renewable energy. Egypt is also an active BRI member, and officially joined the New Development Bank in 2023 and BRICS in 2024.

2025 saw an uptick in new investments announced on the sidelines of high level diplomatic engagements, particularly Egyptian Prime Minister Madbouly's attendance at the 2025 Shanghai Cooperation Organisation (SCO) Summit in Tianjin, including:

- March 2025: a **US$700m** project by Xinyi Glass to build a solar panel glass manufacturing facility earmarked for export, within Egypt's Suez Canal Economic Zone
- June 2025: China's Sunrev Solar announce plans to build an integrated industrial complex for solar components in Egypt's Suez Canal Economic Zone
- July 2025: China's National Development and Reform Commission of the People's Republic of China and Egypt's Ministry of Environment signed an MoU on Cooperation in Green and Low-Carbon Development
- September 2025: China Energy Engineering Corporation plans to invest **US$1bn** in Egypt over the next five years in renewable energy, seawater desalination and energy storage
- September 2025: **US$220m** project by a multinational consortium including China's leading manufacturer JA Solar, Bahraini investor Infinity Capital, Egyptian component repair group AH Industrial Management and UAE-headquartered investor Global South Utilities to develop a new manufacturing facility, with an annual production capacity of 2GW of solar cells, 2GW of solar modules and 1GWh of battery energy storage systems (BESS).

Source: China's Sunrev Solar to build 2 GW solar cell, module factory in Egypt

Central Asia to Türkiye

Alongside Russia, China is one of the most significant energy players in Central Asia, particularly in the fossil energy sector and energy infrastructure. In recent years, Chinese firms have deepened engagement in renewable energy value chains under the BRI framework, aligning with government priorities, particularly in Kazakhstan and Uzbekistan.[36]

[36] SWP Comment, The Gulf States, China, and Central Asia's Green Energy Sector, 5 January 2025.

Kazakhstan, Uzbekistan and Azerbaijan

Kazakhstan and Uzbekistan are two key wind power markets in Central Asia, and the region is expected to have a significant amount of wind power projects under development by 2030.

In May 2025, the Governor of Kazakhstan's Aktobe region, on an official visit to China, signed investment agreements including two wind power projects with a total capacity of 300MW. Under the agreements, SUNGROW will invest US$171m in a 200MW wind farm, with construction set to begin this year and full commissioning expected in 2027. Universal Energy will develop a second wind power project valued at $US48m, and is scheduled to go online by the end of 2025.[37]

In September 2025, during the Kazakh President Kassym-Jomart Tokayev's visit to China for the SCO Summit, Kazakh Energy Minister Yerlan Akkenzhenov held talks with China's National Energy Administration and senior executives of leading Chinese energy corporations, which led to agreements to develop further renewable projects including a 300MW solar power plant.[38]

April 2025 saw Sany Heavy Energy announce plans to sign an investment agreement with the Government of the Republic of Uzbekistan to build two wind farm projects, with total investments up to $US1bn.[39]

April 2025 saw Universal Solar sign an investment agreement with the Azerbaijani Government to build a 100MW solar power plant in Azerbaijan was signed by the Ministry of Energy and Universal Solar Azerbaijan LLC. It is scheduled to be commissioned in 2026. This agreement was made during the visit of the Azerbaijani President to China which saw 6 renewable energy cooperation agreements signed.[40]

Türkiye

Chinese companies have announced solar manufacturing facilities in Türkiye for domestic deployment and export to the US initially. Launched by the Turkish Government in July 2024, the High-Tech Investment Program (HIT-30) aims to attract US$30bn in foreign investment to localise production across high-tech sectors, including EVs, semiconductors, battery technologies, and renewable energy.

April 2025 saw Astronergy, the solar module unit of China's CHINT Group, announce plans to establish a US$500m solar cell factory in Türkiye, expanding its presence beyond its existing 850MW module assembly facility. It will be the country's **first fully foreign-owned solar cell factory**. The company will allocate 80% of its production for export, and develop an R&D and innovation centre.[41]

[37] Qazak Green, Chinese companies to build two wind farms with 300 MW capacity in Aktobe region, 5 May 2025.
[38] Qazak Green, Kazakhstan and China agree on new renewable energy projects, 3 September 2025.
[39] Sina Finance, Sany Heavy Energy plans to invest up to US$1 billion in two wind power projects in Uzbekistan, 2 April 2025.
[40] Ministry of Energy of the Republic of Azerbaijan, 6 documents on green energy have been signed with Chinese companies, 23 April 2025.
[41] Presidency of the Republic of Türkiye Directorate of Communications, CHINT to establish first fully foreign-funded solar cell factory in Türkiye (China), 3 April 2025.

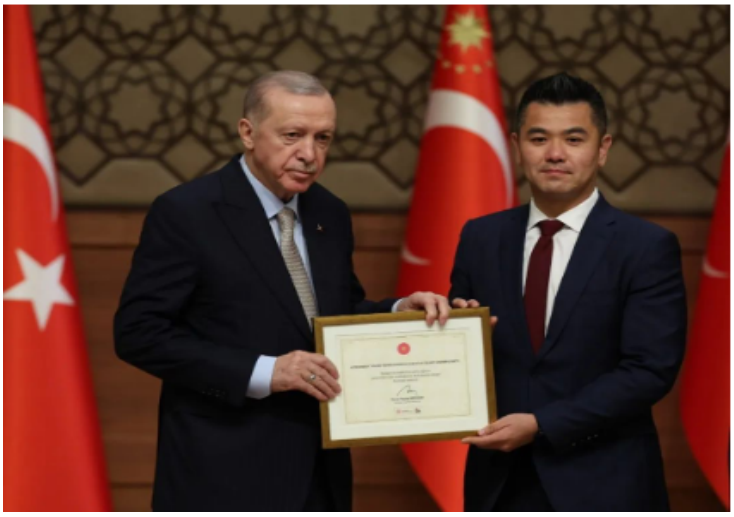


Image: Pvmagazine, Astronergy to build $500 million solar cell factory in Turkey

June 2025 saw Chinese solar technology company JTPV and Turkish company Schmid Pekintaş partner to build a 5GW solar cell manufacturing facility in Türkiye's western Black Sea region of Düzce. Initial target markets will be Türkiye and the U.S, particularly focusing on regions where Chinese solar products face import restrictions.[42]

> ***"Consistent policy support underpins the dominance of China's solar PV supply chain. European countries embraced PV in the early days when policy support cost relatively little, but as costs rose, those policies were cut or curtailed, leading to market volatility and ultimately a loss of competitiveness. Türkiye presents an interesting outlier: in 2016, a local content mandate enabled Türkiye's Kalyon Group to partner with state-owned China Electronics Technology Group Corporation (CETC) to develop the second phase of a 500MW solar PV industrial park, after South Korea's Hanwha Q-Cells, walked away from the project. This represents the trend of global partnerships highlighted in this report whereby Chinese companies are seeking partnerships with governments that seek to localise clean-tech manufacturing and have a stable relationship the USA."***
>
> *Professor Ned Ekins-Daukes, Head of UNSW School of Photovoltaics and Renewable Energy Engineering*

2.3. Europe-China Partnerships Key to Scaling European Battery Supply Chain

The collapse of Northvolt in November 2024 has dealt a heavy blow to the EU's ambition to develop a homegrown battery supply chain and underscored just how much the green transition still depends on supply chains dominated by China. This has reinforced the sobering reality that the European automotive industry is dependent on cooperation with Asian manufacturers, which are the global technology leaders for batteries.

As CEO of French multinational mining and metallurgy company Eramet, Christel Bories admitted: "In batteries, they are 20 years ahead; we have lost the war. 70% of electric vehicles and 85% of

[42] Daily Sabah, Chinese, Turkish firms to build 5 GW solar cell factory in Türkiye, 15 June 2025.

batteries worldwide come from China, and solar technology and production are almost entirely dominated by Beijing."[43]

In the race to compete for a slice of the EV battery pie, Spain, Hungary and Slovakia have attracted significant investments into flagship projects to localise battery production with a focus on creating jobs and developing regional economies. This is to ensure that European manufacturers keep pace with the technological changes linked to the clean energy revolution and secure future job growth inside Europe.

This is exemplified in Renault's opening of an **Advanced China Development Centre** (ACDC) in Shanghai last year to cut production costs. Benefiting from the advantages of a complete industrial chain, the production cost of Chinese new energy vehicles is on average about €10,000 lower per unit than in Europe, giving it an overwhelming cost advantage. As SCMP reported quoting Renault's Vincent Piquet:

"Competition from China entering Europe forced us to rethink how we organise EV and software elements at Renault…We concluded that we need a dedicated team focused solely on EV software to compete with emerging players from China by learning from China. We're not selling [these] cars in China, but we're leveraging the expertise and the Chinese ecosystem to be more competitive in Europe."

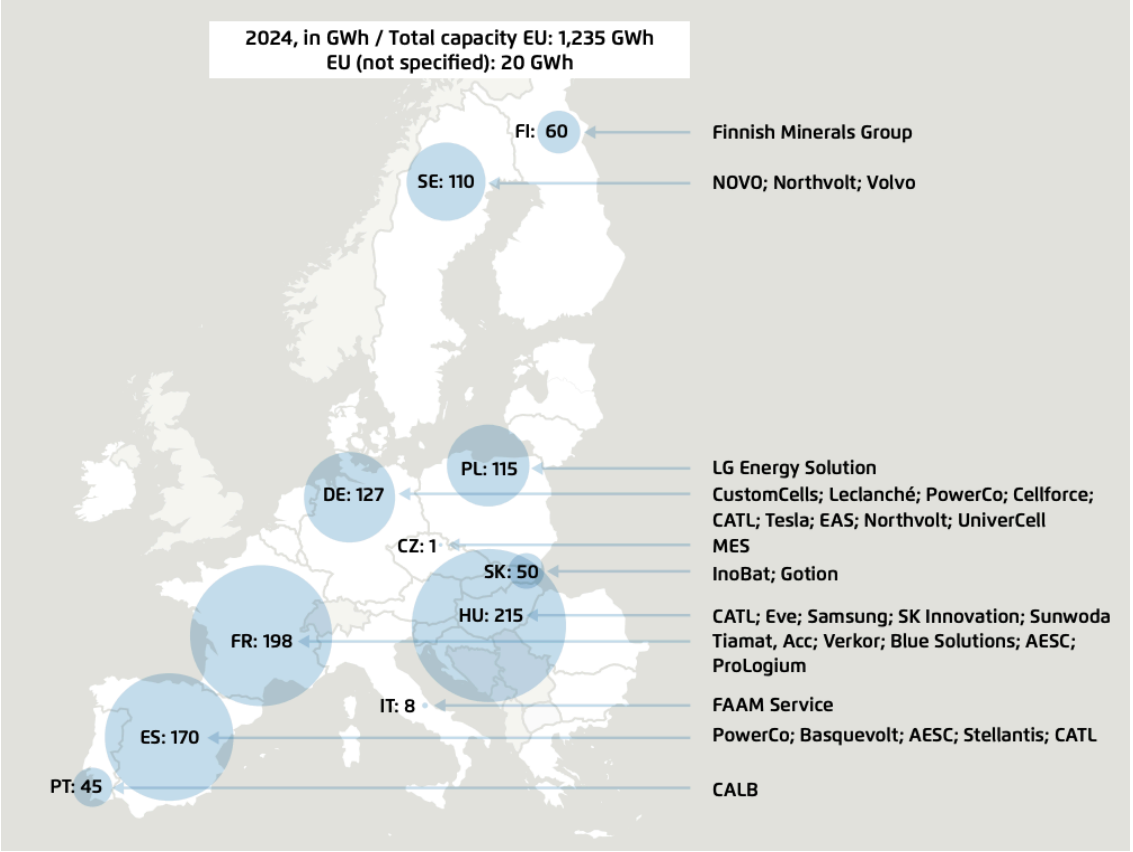
Hungary — Europe's 'battery state' and strategic bridge to Asia

In the last 3 years, Hungary has become the largest European recipient of Chinese battery-related FDI.[44] Its National Battery Strategy 2030 aims to position the country among the world's top three EV battery producers. Hungary's incentives — corporate tax cuts, land support, accelerated permitting, and generous state-aid packages — have been pivotal in attracting large-scale investment from Asian battery giants. This includes the landmark **€7.34bn CATL gigafactory in Debrecen** (including €800m in state aid), the largest single foreign investment in Hungary's history, with construction underway.

As a result, despite its population of only 9.7 million, Hungary has achieved remarkable outcomes in attracting investment from Asian battery manufacturers. While the industry was practically non-existent in 2017, by 2023, Hungary became the 3rd largest exporter of lithium-Ion batteries in the world behind China and South Korea,[45] and by 2024, it led Europe's battery cell manufacturing capacity, with ~20% capacity (see Figure 2.3.1 below).[46] German original equipment manufacturers active in Hungary are also partnering with Chinese EV battery plants.[47]

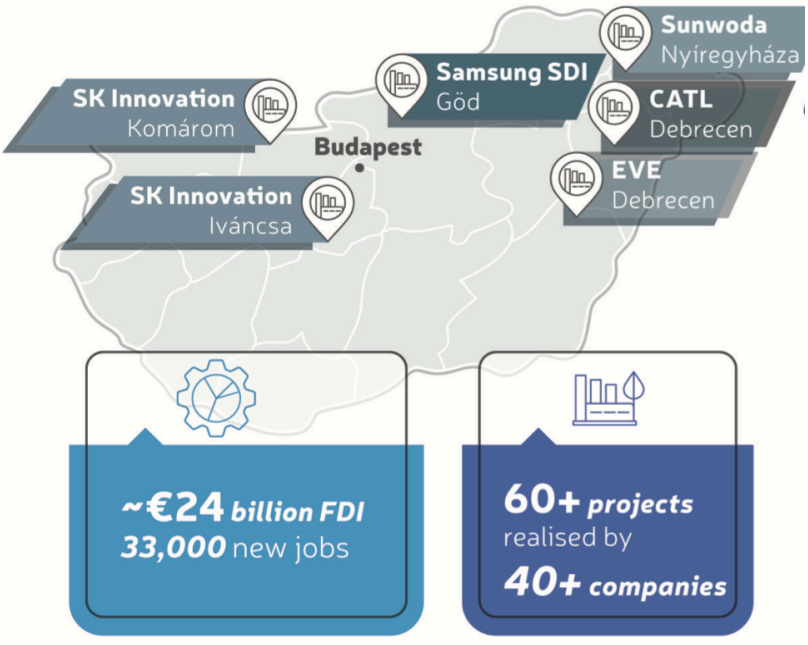
[43] Direct Industry Mag, Revitalizing the French and European Industry: 3 Strategies for a Global Comeback, 21 November 2025.
[44] MERICS and Rhodium Group, Chinese investment rebounds despite growing frictions - Chinese FDI in Europe: 2024 Update, 21 May 2025.
[45] OEC, Lithium-ions batteries in Hungary.
[46] Index, The "battery bible" has been published - so Hungary won't become a landfill, 5 June 2025.
[47] Oxford Energy Institute, 2025 EVS AND BATTERY SUPPLY CHAINS ISSUES AND IMPACTS, April 2025.

Figure 2.3.1 - Hungary leads Europe's battery cell manufacturing capacity, 2024



Source: Agora Verkehrswende

Figure 2.2.2 - Confirmed and operating battery manufacturing plants in Hungary



Source: Hungarian Trade Promotion Agency

2025 saw smaller new battery-related investments following the surge in 2022-24, notably:

- BYD is planning to invest €80.25m in expanding its electric bus and track manufacturing capacity and establishing an R&D test lab in Komárom[48]
- BYD announced it would open its European headquarters and establish a European R&D centre in Budapest
- Chinese lithium-ion battery electrolyte producer KunlunChem is building its first European plant in Szolnok, with a €100m investment[49]
- South Korean company Shinheung is planning to expand its battery component manufacturing capacity in Monor, worth €115.5m.[50]

These investments have been enabled by Hungary's "economic connectivity strategy" — its deliberate positioning as a bridge between East and West. Hungary's rise as Europe's EV manufacturing hub reflects a national strategy to integrate simultaneously with German automotive value chains, Chinese cleantech ecosystems, and broader Eurasian energy and logistics corridors. As Dr Ágnes Szunomár put it, "Hungary, which relies heavily on the automotive industry, cannot afford to forgo the transition to EVs."[51]

Its strategy of economic connectivity and cooperation necessitates geopolitical balancing. Hungary's "Opening to the East" policy, launched in 2010 under PM Viktor Orbán, marked a strategic pivot toward deeper economic and investment ties with Asia to rebalance Hungary's dependence on Western investors. In 2015, Hungary became the first European country to sign a BRI cooperation agreement with China. Budapest maintains one of the EU's closest relationships with Beijing.

Hungary has effectively positioned itself as the leading European battery hub, leveraging its centrality within Europe's automotive industrial ecosystem. The model — high Chinese capital intensity, technology transfer, and deep supply-chain localisation — provides Hungary with jobs and embedded long-term industrial capacity, including through training cooperation.

October 2024 saw University of Debrecen and the Hungarian subsidiary of CATL sign a strategic cooperation agreement to promote the practical training of technical professionals, the development of curricula, and the implementation of joint research projects in the field of battery technology and energy industry.[52]

[48] Hungary Today, BYD Breaks Ground on New Electric Bus Plant in Komárom, 27 June 2025.
[49] Hungary Today, Chinese Company Picks Hungary for Its First European Factory, 7 March 2025.
[50] Hungary Today, South Korean Battery Component Manufacturer Expands Capacity in Monor, 20 October 2025.
[51]
[52] Hungary Today, Cooperation between the University of Debrecen and CATL for Skilled Workforce, 16 October 2024.

Image: CATL Debrecen signs strategic cooperation agreement with the University of Debrecen, Oct 24

However, attracting these billion-dollar investments also exposes it to trade-offs such as:

- geopolitical risk from EU–China trade tensions (e.g. EU probe into BYD factory);[53] and
- environmental and water impacts from battery gigafactories, although controls are being implemented.[54]

Overall, Hungary demonstrates how proactive and strategic industrial policy can attract multi-billion-dollar battery investments in a short timeframe.

Spain

Spain is rapidly emerging as a key destination for Chinese EV-related investment, leveraging its strong automotive base, ambitious electrification policies, and proactive diplomatic engagement with Beijing. Under the PERTE VEC programme and its national energy and climate plan, Spain aims to secure a central role in Europe's battery supply chain and position itself as a competitive manufacturing hub for the EV transition.

This ambition was decisively reinforced in December 2024, when CATL and Stellantis announced a landmark 50–50 joint venture to build a **lithium iron phosphate (LFP) battery gigafactory** in Zaragoza. Valued at up to **€4.1bn**, including €300m in EU funding, the facility will have an annual production capacity of up to 50GWh, with operations scheduled to commence by late 2026. Once operational, it will become CATL's third European battery plant, following Germany and Hungary, and one of Stellantis' most important battery-production assets in Europe.

The strategic investment was enabled by Spain's industrial strategy to attract high-value foreign manufacturers into the EV and battery ecosystem. Through targeted incentives, streamlined permitting, and EU-aligned supply-chain requirements, Madrid has sought to secure Spain's place as a core node in Europe's battery production map.

The joint venture is also the product of intensive high-level diplomacy. Spanish Prime Minister Pedro Sánchez has invested substantial political capital in strengthening economic and innovation ties with China — meeting President Xi Jinping three times in two and a half years. During Sánchez's most recent visit to Beijing in April 2025, in the wake of Trump's "Liberation Day" tariffs, Spain and China signed seven agreements covering trade, cultural cooperation, scientific and educational exchange, and a Joint Action Plan on Strengthening Comprehensive Strategic Partnership (2025-2028).

[53] Central European Times, EU probes Hungarian subsidies to BYD under foreign subsidies rules, 24 March 2025.
[54] Hungary Today, Stricter Environmental Controls Imposed on Debrecen Battery Plant, 4 December 2025.

September 2025 saw Slovak battery cell startup InoBat backed by Gotion High Tech secure a grant of €54m and a loan of €456,000 to build a battery gigafactory in Valladolid, northern Spain. InoBat plans a total investment of €712m for the gigafactory.

France, Slovakia and Portugal

France

April 2025 saw China's DAS Solar announce two supply and technology agreements in France: the first with French-based utility company Suez, for the reprocessing of end-of-life photovoltaic panels, and the second with the Île-de-France Photovoltaic Institute, for technological development. This strategy aims to structure a regional industrial hub around the solar industry.

DAS Solar is also building its first overseas PV panel assembly plant in Mandeure, eastern France. The 3GW solar module assembly factory has an initial investment of €109m, with commissioning expected by the end of 2025. At the same time, the group is planning to build a 5GW solar PV cell manufacturing plant. This project represents an investment of €650m and the creation of 2,500 jobs.

December 2024 saw French nuclear group Orano announce two joint ventures with Chinese group XTC New Energy Materials to produce EV battery components in Dunkirk, France.

June 2025 saw China's AESC, the battery subsidiary of Shanghai-based Envision Group, inaugurate the start of production at its EV battery gigafactory in Douai, northern France. This will complement Renault's ElectriCity mobility industry cluster combining EV production at Douai, Maubeuge and Ruitz plants to meet a target of 400,000 vehicles per year from 2025.

President Macron's attendance at the launch ceremony underscored the facility's role in advancing France's reindustrialization and its shift toward sustainable mobility. In a speech, Macron declared: "Technology transfer must happen because it's China that has the best technology".[55]

July 2025 saw the **Franco-Chinese Carbon Neutrality Centre** (CNC) hold its first scientific conference at the INRAE (French National Research Institute for Agriculture, Food and Environment) in Paris, bringing together French and Chinese researchers and institutional representatives to take stock of the CNC's progress.

October 2025 saw Imerys (a French mineral specialist) and Shanghai Shanshan (a Chinese battery materials leader) establish a strategic partnership to produce high-performance synthetic graphite anode materials in Europe for high-voltage batteries for electric cars and stationary battery storage systems (BESS).

Portugal

February 2025 saw China Aviation Lithium Battery (CALB) inaugurate its **US$2.1bn** lithium battery factory in Portugal providing high-performance energy storage batteries for the European EV industry industry, which is expected to create 1,800 direct jobs. The project has been granted "National Interest Project" status by the Portuguese Government and has successfully obtained special grid access rights to meet its enormous energy needs due to its scale and strategic significance.

Slovakia

March 2025 saw progress made on the joint-venture between China's Gotion High-Tech and the Slovak technology startup InoBat. The Slovak government designated the Gotion Inobat Batteries project as a strategic investment, expediting permitting procedures. This came after the Slovak Government signed an Investment Agreement in June 2024 with a total investment of **€1.23bn**, making it the second largest investment in Slovakia's history. The factory will have an initial annual production capacity of 20GWh. Pilot production is scheduled to begin before the beginning of 2026, with a full-scale launch planned for January 2027.

[55] France 24, "Merci et bravo" : Macron défend son bilan industriel et écologique à Douai, 3 June 2025.

Gotion, one of the three largest players in the LFP battery sector, is also connected to Volkswagen, which gave InoBat access to both know-how and capital.

Unlike large Asian producers who cover a standardized market, Inobat focusses on segments where extreme customization is required - batteries for luxury sports cars, drones, heavy equipment, and specific defense applications. In a reported interview with Inobat's CEO and co-founder, Marián Boček said that **the key to survival in a competitive world is cooperation**, adding that:

"The traditional model of building national champions, as Northvolt did, has its limits. We went the way of partnerships - with Gotion High-Tech, Rio Tinto, Amara Raja and others."[56]

The Slovak Government also supported a **€8.4m** investment by Xinquan Slovakia Automotive Trim s.r.o., a unit of China's Xinquan Group, to expand the production capacity of components for the EV industry in a new plant, planned for export. The project is expected to create up to 300 jobs.[57]

2.4. Brazil's State-led Green Reindustrialisation and China's Role

Brazil's green industrial transformation is accelerating under President Luiz Inácio Lula da Silva's renewed state-led development agenda. Under its flagship New Industry Brazil (NIB) plan, Brazil is positioning itself as a global leader in renewable energy, EV manufacturing, green hydrogen and sustainable industrial value chains[58] Within this shift, China has become an indispensable partner, emerging as one of Brazil's largest sources of productive capital and a core driver of its green reindustrialisation.

China's Rising Investment Footprint in Brazil's Green Economy

China ranks as Brazil's 9th-largest foreign investor, but has an important role in strategic sectors — energy, infrastructure, EVs and batteries. Between 2015 and 2025, Brazil recorded 163 greenfield projects with Chinese capital worth US$12.9bn, generating 35,700+ potential jobs, according to the Brazilian Trade and Investment Promotion Agency.[59]

China's investment surge has accelerated markedly since 2021. In 2024, Brazil became:

- the leading emerging-economy destination for Chinese investment, and
- the world's third-largest recipient of Chinese productive capital (after the UK and Hungary).

A historic 39 Chinese projects were announced in 2024 alone — totalling US$4.18bn, up 113% year-on-year. Clean energy dominated: the electricity sector accounted for 34% of Chinese FDI, with US$1.43bn directed to solar and wind generation.

At the same time, China's manufacturing footprint expanded rapidly. Brazil recorded eight new Chinese manufacturing projects in 2024, worth US$637m — the highest annual total on record. These investments are tightly aligned with Brazil's NIB strategy to build sovereign capacity in EVs, batteries, renewable energy equipment and green fuels.

As one Brazilian official put it, "Brazil's attraction lies in the scale and variety of sectors open to Chinese money… Brazil combines industry, mining, energy and infrastructure in one market."

Diplomatic alignment: NIB + BRI cooperation without formal BRI membership

The investment boom is underpinned by intensifying high-level engagement. Presidents Lula and Xi met twice in 2024, elevating "green development" as the centrepiece of bilateral cooperation. In

[56] Startitup, Baterkáreň z Voderadov vstupuje na trh s bezpilotnými lietadlami. Hovorí sa aj o odstavenej linke a meškajúcich výplatách, 28 July 2025.
[57] Slovak Ministry of Economy, The Government of the Slovak Republic approved investment aid for two major investments that will bring more than 800 jobs to the east of Slovakia, 29 January 2025.
[58] Vision 2030, National Industrial Strategy, 22 July 2025.
[59] CEBC, Chinese Investment in Brazil 2024, 4 September 2025.

November 2024, Brazil and China agreed to align China's BRI with Brazil's Nova Indústria Brasil and Ecological Transformation programmes — despite Brazil not having formally joined the BRI.

Lula's state visit to Beijing in May 2025 deepened this alignment further, yielding major agreements:

- Windey Energy + SENAI CIMATEC (Bahia): assembly plant for wind turbines; R&D centre for green hydrogen and storage
- Envision Energy: US$1bn sustainable aviation fuel (SAF) industrial complex
- GAC Motor: new EV factory scheduled for construction from 2026
- Engagements with BYD on grid stabilisation, EV expansion and battery storage
- A Brazilian ministerial mission in April 2025 to attract investment into EVs, batteries and data centres

Officials emphasised that Chinese green-tech investment is "essential" for Brazil to realise its leadership in the global energy transition.

Flagship Project: BYD's Camaçari Complex — Latin America's Largest EV Hub

The most striking symbol of Brazil–China industrial cooperation is BYD's conversion of the former Ford plant in Camaçari (Bahia) into its largest facility outside Asia, giving BYD a leading domestic position in the sixth largest auto market in the world.

- Investment: US$1bn
- Footprint: 4.6 million m² (equivalent to 645 football fields)
- Initial capacity: 150,000 EVs per year
- Projected capacity: 300,000 EVs per year
- Opening: first EV rolled off the line on 2 July 2025
- Role: Latin American export hub.

Since entering Brazil in 2014, BYD has expanded to three factories, positioning the company as a central actor in Brazil's green mobility transition. Brazil offers scale, market depth, renewable energy abundance, and strategic base for export to Latin America — making it a foundational pillar of Chinese OEMs' global supply-chain diversification.

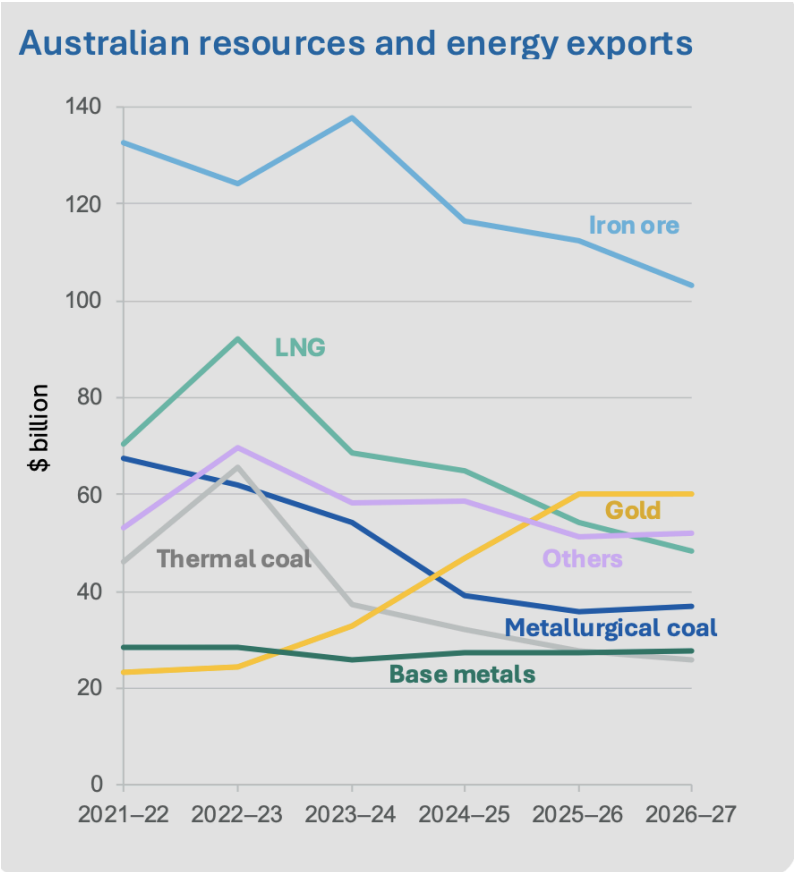
Section 3. “Future Made in Australia”: A political risk-driven approach

The numerous examples of green transition partnerships should inform Australia’s thinking as it seeks to achieve its net zero and economic resilience goals. The global net zero transition has exposed the structural vulnerabilities of Australia’s resource-based economy. Following the US’ Inflation Reduction Act and the EU’s Green Deal Industrial Plan, the Australian Government introduced the A$22.7bn Future Made in Australia (FMIA) program in 2024.

This flagship program spanning renewable hydrogen, critical-minerals processing, green metals, low-carbon fuels, and cleantech manufacturing, is intended to diversify the nation’s resource-based economy and position Australia as a renewable energy and green industry export hub by capturing higher value-add segments in the emerging net zero global economy.

This new diversification agenda comes as the mining industry – including fossil fuels, of which Australia is a top 3 global exporter – once Australia’s economic growth engine, has been in recession for five years and is facing serious challenges as the global decarbonisation trend continues.[60] Australia’s resource and energy export earnings are forecast to decline by 5% to $A369bn in 2025–26, down from $A385bn in 2024–25. A further fall to $354 billion is forecast in 2026–27, with every commodity but gold set on a decline trajectory (see Figures 3.1 and 3.2 below).[61]

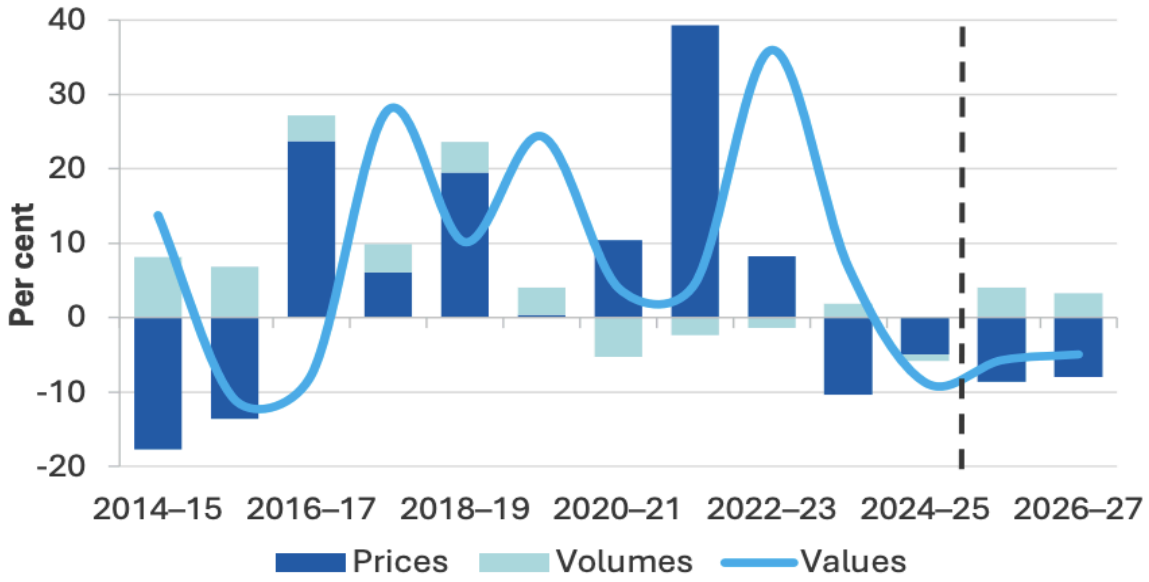
Figure 3.1: Earnings from Australian resources and energy exports ($AU), 2021-2027



Source: Australian Department of Industry, Science and Resources

[60] AFR, Dig deeper and BHP’s China stand-off shows mining is in trouble, 1 October 2025.
[61] Australian Department of Industry, Science and Resources, Resources and Energy Quarterly: September 2025.

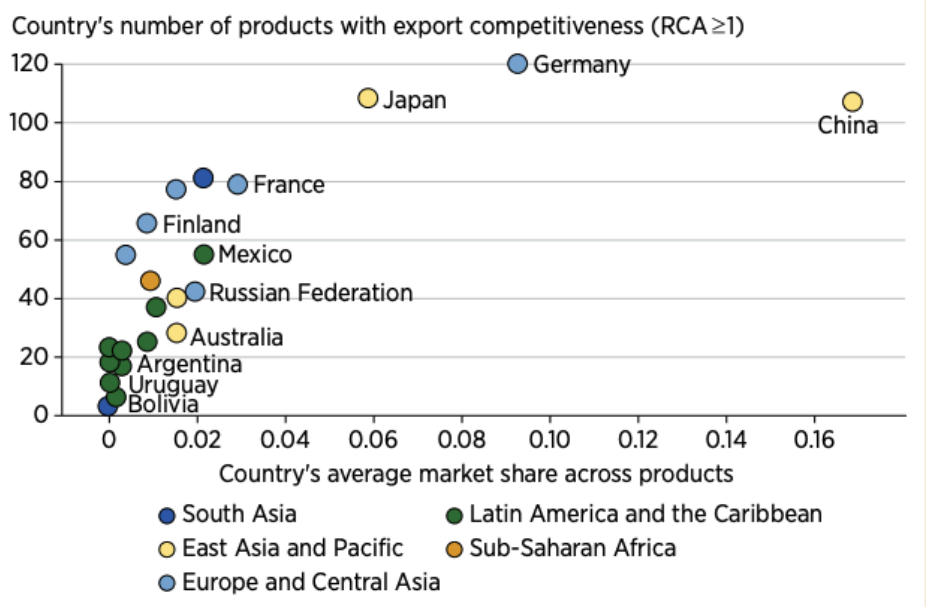
Figure 3.2: Annual growth in Australia's resources and energy export values, contributions from prices and volumes



Source: ABS (2025); Department of Industry, Science and Resources (2025)

A reliance on mining and export of unprocessed resources has resulted in falling economic complexity. Australia's economic complexity ranking — one of the lowest among developed nations (105 of 145 countries) — has been plummeting over the last decade, due to a lack of diversification of exports (See Figure 3.3 below). [62] The decline is due in part to low investment in R&D, which has declined over 15 years to 1.66% of GDP – now only 60% of the OECD's R&D intensity of 2.73%.[63]

Figure 3.3: Australia's global competitiveness in Green Value Chains



Source: World Bank Group, From Resource Rich to Resource Smart Opportunities for Latin America and the Caribbean in the Energy Transition

[62] Harvard Atlas of Economic Complexity, 2025.
[63] Australian Government, Strategic Examination of R&D discussion paper, 12 February 2025.

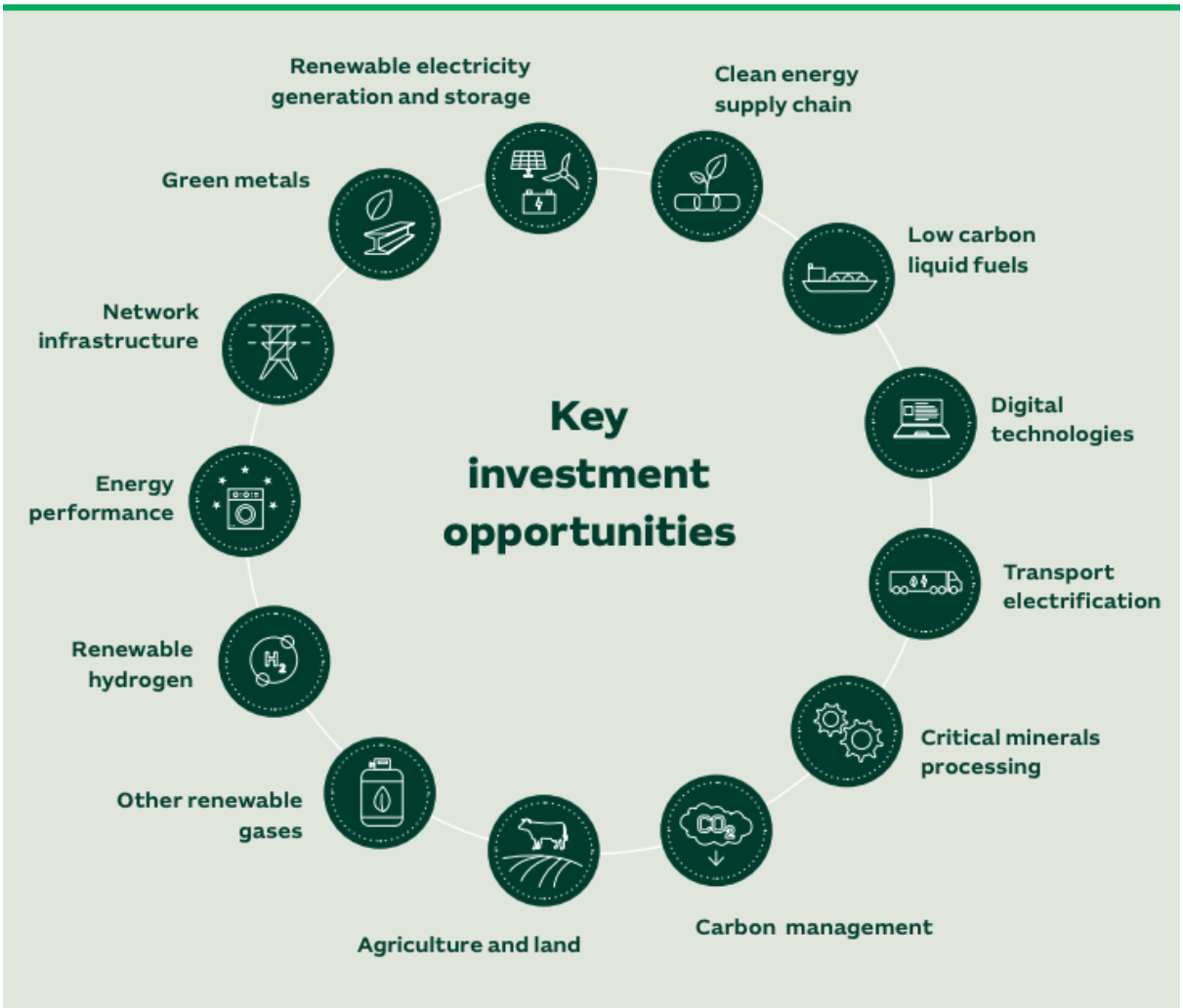
"Australia, although a developed country, needs to go through another development spurt (the "transition") or risks falling behind. This means we need to dig into the developing country toolkit going forward."

Dean Travers, Board Member of Australian Renewable Energy Agency

Net Zero and Future Made in Australia agenda: Opportunities and challenges

Recently, the Australian Government has published a document outlining opportunities for net zero aligned investment in Australia in 13 priority sectors (see Figure 3.4 below).[64]

Figure 3.4 - Investment opportunities published by the Australian Government



Source: Australian Government NDC Investment Blueprint

Cleantech Manufacturing

Launched in 2024 prior to FMIA, Australia's $A1bn Solar Sunshot Program (SSP) and A$523.2 Battery Breakthrough Initiative seek to localise production to "improve supply chain resilience".

[64] Australian Government, Australia's NDC Investment Blueprint.

In solar PV, although Australia has strong innovation credentials, with UNSW having invented the PERC and TOPCon technology that is found in most solar panels, it lacks domestic expertise in cleantech manufacturing. This could be addressed by global partnerships, including with leading Chinese manufacturers, as demonstrated in the recently announced 500MW Hunter Valley Solar Foundry project with Sunman Group founded by solar pioneer and UNSW alumnus Dr Zhengrong Shi.

As for batteries, the collapse of Europe's homegrown battery company, Northvolt, in 2025 illustrates the difficulty of building competitive, homegrown cleantech manufacturing capacity in the absence of partnerships with Asian technology leaders. This has revealed the limitations to the model of building national champions from scratch without the tech, scale, and supply chain efficiency present in East Asia.

By contrast, the joint-venture between Slovak battery start-up InoBat and Chinese battery giant Gotion High-Tech demonstrates a diversified partnership model: combining Chinese manufacturing know-how with European innovation and backed by the Slovak Government and a range of investors including Australian-British mining giant Rio Tinto.

The €1.23bn, 20GWh gigafactory was fast-tracked through approvals and is set to launch production in 2026, showing that cooperation, not isolation, is the key to competitiveness in global battery manufacturing.

Green Metals

Iron ore is Australia's single largest commodity export, of which it exports 85% of its value to China, however this is set to decline in a new landscape of global steel overcapacity and competition for high-grade ore sources that are more suitable to the production of green steel, with the recent opening of the majority Chinese SOC-owned Simandou mine in West Africa as part of China's strategy to de-risk from Australian supply.[65] This downward trend in China's iron ore imports is a significant threat to Australia's economy and could see "$3bn wiped from the annual federal budget due to reduced tax receipts".[66]

As the world #1 producer of iron ore, the Australian Government has recognised the potential for Australia to become a value-adding producer of green iron in a net zero economy. CEF modelling indicates that, with sufficient renewable buildout and cost-competitive hydrogen, Australia has the potential to double the current value of its iron exports to >$A250bn pa.[67]

However, significant challenges exist to achieving this potential. The Superpower Institute identified three main obstacles to green iron production in Australia: 1) underdeveloped infrastructure, 2) an absence of a global carbon price, making green production less competitive and, critically, 3) lack of financial support for early investors.[68]

IEEFA's Green Iron Tracker found that development of low-emissions ironmaking projects in Australia is progressing slowly, well below the pace needed for a nation aiming to lead the emerging global green iron market. Despite a growing pipeline of projects, none of the large-scale initiatives across the ironmaking value chain have reached final investment decision. Most remain in the early stages of scoping or pre-feasibility studies, with timelines for advancement still uncertain.[69]

Supply-side policies must be complemented by measures to secure demand that require deep collaboration with Australia's trade partners, including with the largest importer of iron ore, China.

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[65] SCMP, Why first Simandou iron ore shipment to China marks a global milestone, 15 November 2025.
[66] ABC, Plummeting iron ore prices on back of China's property crisis could wipe $3b from federal budget, 18 August 2024.
[67] Climate Energy Finance, Green Metal Statecraft: Forging Australia's Green Iron Industry, 15 November 2024.
[68] The Superpower Institute, A Green Iron Plan for Australia: Securing prosperity in a decarbonising world, 26 May 2025.
[69] IEEFA, Australian Green Iron Tracker.

The establishment of a China-Australia Steel Decarbonisation Dialogue during Prime Minister Albanese's July 2025 trip to China was initiated by Fortescue, one of Australia's top 5 mining companies, to seek to secure Chinese steel industry offtake in future green iron production. However, this appears unlikely to generate tangible outcomes so long as the foundation of mutual trust remains fragile and Australia maintains its US-aligned political and policy settings.

Critical Minerals

Australia is the world's largest exporter of spodumene (lithium ore). Lithium ore or brine are used to manufacture lithium hydroxide and lithium carbonate, which are essential in producing battery cathodes.

Yet Australia has little mineral processing capacity, and lacks the specialised skillsets required in downstream processing operations.[70] Although the government has committed to supporting this capacity, the country faces significant challenges in a competitive global industry. Australia's relatively high input costs make it less internationally competitive in developing this capacity.

Another decisive factor militating against the bankability of lithium processing is the prolonged drop in lithium prices. The price slump has already led BYD to withdraw plans to invest in Chile in May 2025, the world's second-largest lithium producer.[71]

IEA projections for refined production, which are based on current projects, suggest that Australia's processing and refinery capabilities will grow modestly until 2040, and most of the refinery of lithium, rare earths, and cobalt is expected to continue to take place in China, Indonesia and Malaysia.[72]

The collapse of Australia's nickel refining industry in 2024–25 illustrates the challenge starkly. As Indonesia scaled rapidly — supported by large-scale Chinese investment, integrated industrial parks and low-cost renewable power — Australian refineries operating with high labour and energy costs became uncompetitive, leading to closures and suspended operations.[73] The episode underscores the difficulty of competing with countries that have already integrated deeply with Chinese-led industrial ecosystems.

Australia's biggest aluminium smelter is now being threatened with closure due to high electricity prices eroding competitiveness.[74] Already this year, the Australian Government has offered taxpayer bailouts in the billions to prop up a steel plant, as well as copper, lead and zinc smelters.[75] Addressing the essential competitiveness factor of electricity cost will require urgently speeding up renewables generation and transmission deployment.

[70] Reserve Bank of Australia, The Global Energy Transition and Critical Minerals, 23 October 2025.
[71] CNEVPost, BYD withdraws plans to build lithium plant in Chile as lithium prices plunge, 8 May 2025.
[72] IEA, Global Critical Minerals Outlook 2025.
[73] Mining.com, Indonesian onslaught wipes out Australia's nickel industry.
[74] AFR, Tomago alarm exposes our energy realities, 29 October 2025.
[75] ABC, Labor is frustrated with Rio Tinto as 'all options' on table for Tomago smelter, 30 October 2025.

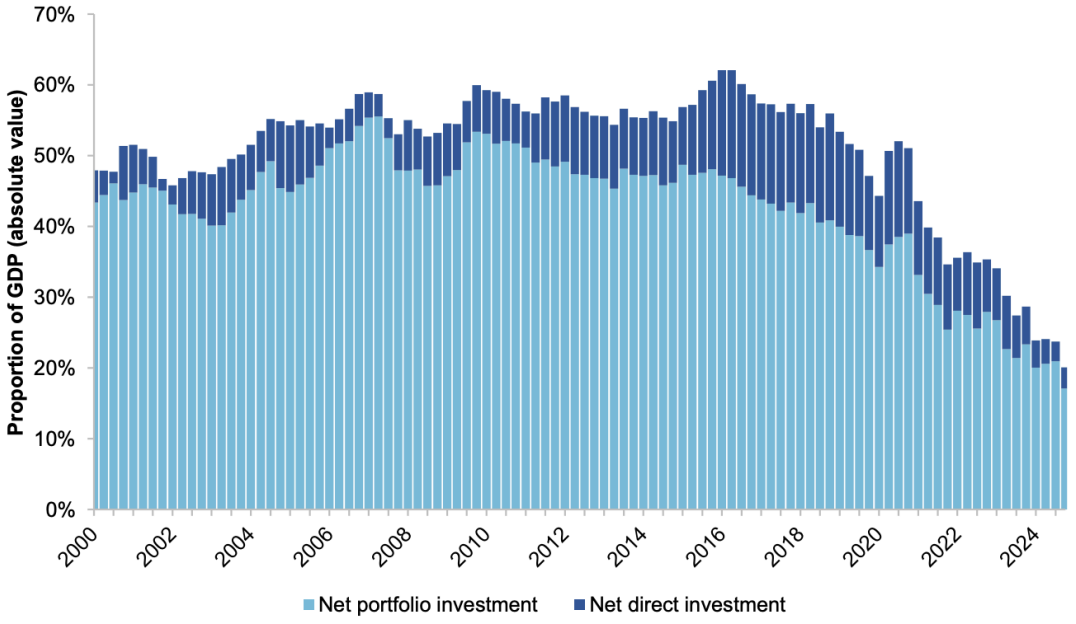
Foreign direct investment as proportion of GDP has fallen to record low levels

> ***"Australia must rethink everything about its economy, particularly its narrow resources-heavy trade and industrial structure. The net zero transition provides us with a once-and-for-all chance to diversify our industrial structure and capitalise not only on our comparative advantages in critical minerals and renewable sources of energy but also potential areas of competitive advantage in the high value industries and technologies of the future. Much of this can be achieved through a more coordinated and better funded research and innovation system, but it will also depend on attracting targeted foreign direct investment in knowledge-driven businesses, collaborative research programs and supporting infrastructure."***
>
> *Professor (Emeritus) Roy Green AM, Special Innovation Advisor, University of Technology Sydney*

Policy and regulatory uncertainty, notably environmental approvals of renewable energy projects, has led to Australia becoming an increasingly less attractive environment for investment.[76] In July 2025, Professor Ross Garnaut AC called out chronic underinvestment in grid-scale solar and wind as slowing the country's renewable energy transition. Recent modelling has shown that at the current rate of renewables buildout, Australia will miss its 82% renewable electricity target by 7 years.[77]

This is part of an overall trend of falling investment as a proportion of GDP (see Figure 3.4 below). Worryingly, net direct investment has fallen to 3% by end 2024, down from 5.3% a year ago.

Figure 3.4: Net investment by type as a proportion of GDP (absolute value), to 31 December 2024



Source: PC estimates based on ABS (2025c).

Source: Productivity Commission, Trade and Assistance Review 2023-24

[76] CEIG, Response to Commonwealth Government's consultation paper on Future Made in Australia Front Door, 4 October 2024.

[77] AFR, Renewables rollout running seven years late, PM told, 29 August 2025.

Beyond the general determinants of FDI (such as market size, growth potential, regulatory restrictions to market access), climate policies can play a critical role in the attraction of FDI in renewable energy.[78] Since the launch of the IGCC State of Net Zero survey in 2017, investors have consistently highlighted policy and regulatory uncertainty as a major barrier to climate investment in Australia. While climate policy progress made under the Albanese Government has boosted market sentiment, investors continue to cite uncertainty.[79] Bipartisan policy cooperation would support the long-term confidence that helps investors deploy capital into Australian projects.

Chinese Investment in Australia at historic lows

Achieving Australia's ambition to transform its economy to prosper in the new world order will require unprecedented levels of capital investment. Around 70% of capital invested in Australian renewable energy development projects comes from foreign investors[80] Yet, very free Chinese multinationals, which demonstrably leads the world on green ODI, is notably absent.

Following the crisis in Australia-China bilateral relations in 2018, Chinese investment in Australia has collapsed to a historic low, falling by 85% since 2018. Despite a 41% year-on-year increase, 2024 recorded the third-lowest value and number of transactions since 2006, at just US$882m—a fraction of the peaks above US$16bn in 2008 and US$11bn in 2016 (see Figure 3.5).[81]

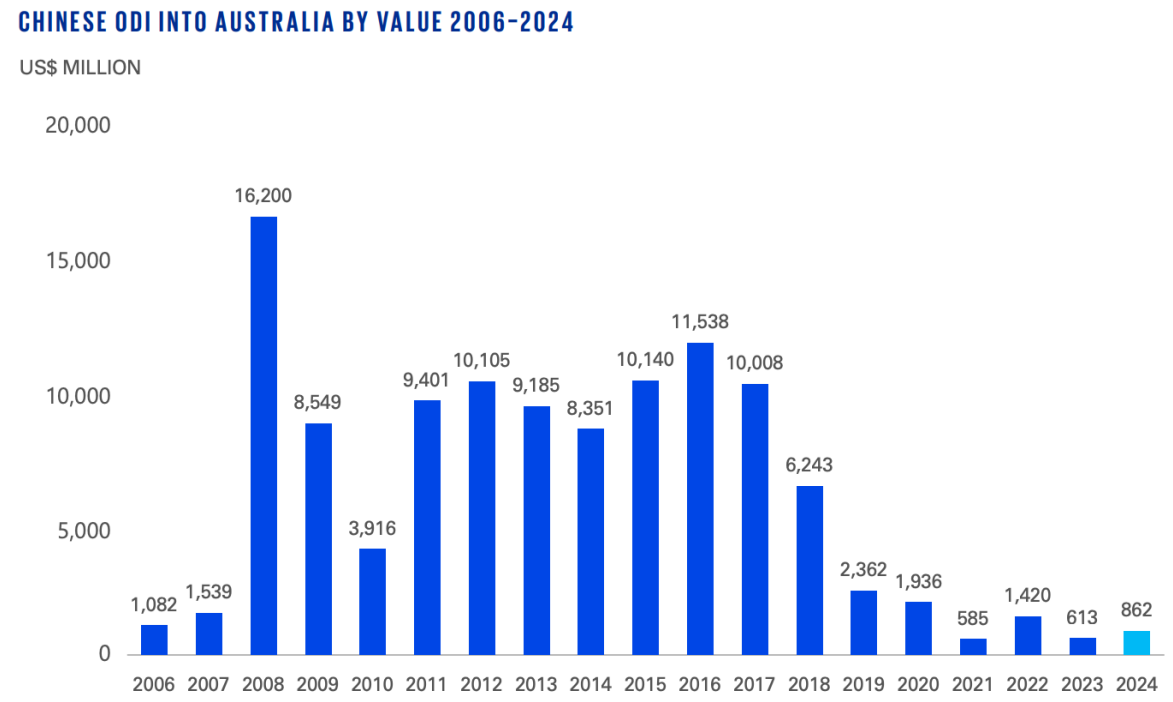
Chinese ODI now makes up only 1.5% of total ODI into Australia, compared to over 10% in 2018, and down from the already extremely low 1.87% in 2023 (see Figure 3.6).[82] China is the third largest outbound investor globally – but only ranks 13th in Australia, having slipped from 5th in 2020.

No new Chinese state-owned company has been approved to invest in Australia since 2016. In 2024, private firms led most projects, but capital contributions from state-owned companies still represented 71% of the total amount invested, primarily in mining.[83] Much of the recent investment, although formally linked to Australian mining companies, involves mining assets located outside the country.

As in the United States, political dynamics and uncertainty from Foreign Investment Review Board (FIRB) delays have influenced the behaviour of Chinese investors in Australia, limiting their appetite for new investments.

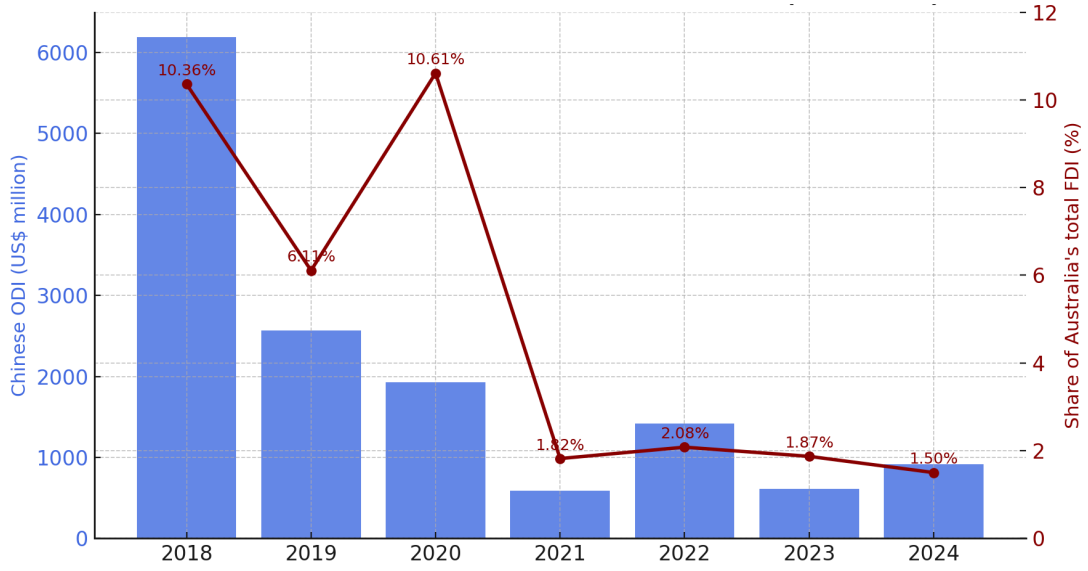
[78] OECD Working Papers, Trends, investor types and drivers of renewable energy FDI, 2024.
[79] IGCC, The State of Net Zero Investment 2025, April 2025.
[80] Clean Energy Investor Group (CEIG), Submission to Productivity Commission Inquiry, 6 June 2025.
[81] KPMG, Chinese investment in Australia shifts from acquisitions to greenfield, 31 March 2025.
[82] DFAT, Statistics on who invests in Australia, July 2025.
[83] Ibid.

Figure 3.5: Collapse of Chinese ODI into Australia since 2018 underscores lost opportunity under security-driven screening



Source: KPMG & University of Sydney, Demystifying Chinese Investment in Australia 2025

Figure 3.6: Chinese ODI in Australia v Share of Total FDI (2018-24)



Sources: DFAT; KPMG and University of Sydney

Australia's Foreign Investment Policy states that "the Government reviews foreign investment proposals on a risk-based, case-by-case basis to ensure they are not contrary to the national interest".[84] The policy also states that investments in "critical infrastructure, critical minerals, critical

[84] Australian Treasury, Australia's Foreign Investment Policy, March 2025.

technology, and those in proximity to sensitive Australian Government facilities or involving sensitive data will face greater scrutiny to protect the national interest."[85]

Renewable energy generation and transmission are seen as critical infrastructure, with the risks (perceived or actual) framed as involving intersection with the electricity grid. This approach has resulted in a pattern of extensive delays in FIRB review of investment applications, leading to the collapse of an $A800m sale of five solar farms to Beijing Energy International Holding in April,[86] and recently, reports of delays of over 18 months in review of a proposal by Beijing Energy to buy an $A100m solar project, putting the deal in jeopardy.[87]

Chinese investment and the technology and expertise that accompany it are going to countries with favourable investment environments. Greater decision-making transparency and rule clarity, enabling a fast no or a considered yes, are urgently required if Australia is serious about attracting investment.

As to risk, there is little specific investigation of the nature and magnitude of potential risks and vulnerabilities, and there is no history of such risks materialising in existing energy and transmission assets with Chinese company stakes (see Figure 3.7 below).

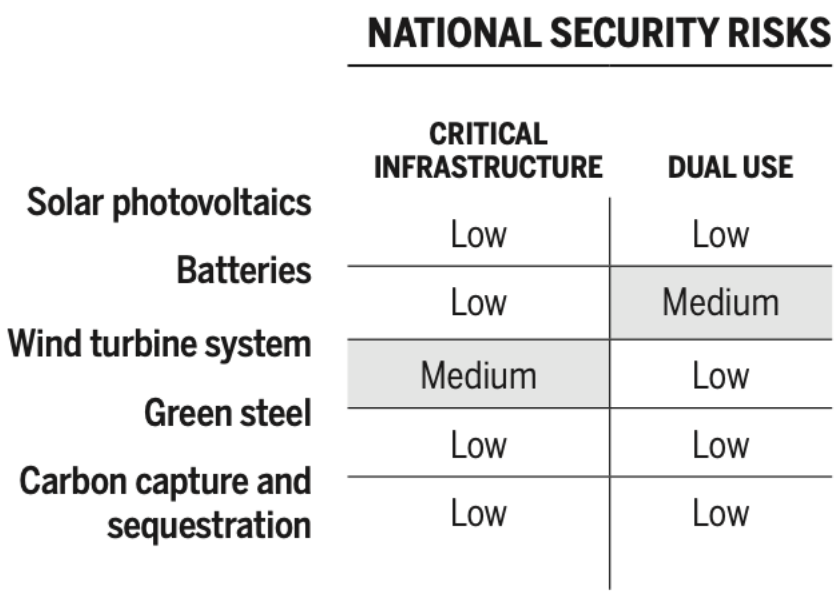
Figure 3.7: Existing and announced renewable energy and transmission projects in Australia with involvement by Chinese firms (non-exhaustive)

Project / Asset	*Investment (AU$)*	*Chinese renewables company*	*Status / Additional Info*
Kiewa Valley 500MW/1,000MWh battery energy storage system (BESS)	453 million	Trina Solar	Approved September 2025 after fast-track via Victorian Government's Development Facilitation Program
Killawarra 400MW solar and 400MW BESS hybrid project	700 million	Trina Solar	Would be the largest solar farm in Western Australia; development application under review
1,440MWh Garoo solar-plus-storage project	?	Jinko Solar	Construction on the site is expected to commence in late 2026.
Bashan 200-400MWh wind-plus-storage project	?	Goldwind	Application submitted Feb 2025 for environmental and planning approval
Musselroe 168MW Wind Farm (Tasmania)	Wind power	Shenhua Clean Energy owns 75 %	Commissioned 2013; operated via joint ownership with Hydro Tasmania (25 %)
Pacific Blue (formerly Pacific Hydro) ~ 660MW	Renewables portfolio (wind, solar, hydro)	State Power Investment Corporation (China)	Chinese-owned generation & retail firm operating multiple renewable sites in Australia
Jemena (Energy infrastructure / transmission & distribution)	Electricity networks / infrastructure	State Grid Corporation of China owns 60 %	Jemena owns and operates transmission / distribution networks in NSW, Victoria, Queensland & other eastern states.

[85] Australian Treasury, Australia's Foreign Investment Policy, March 2025.
[86] AFR, Chinese $800m-plus solar deal collapses after FIRB delays, 2 April 2025.
[87] AFR, FIRB delays puts $100m energy retailer buyout on brink of collapse, 1 December 2025.

While some risk concerns are legitimate, they may be overstated in cleantech sectors due to interdependence and commercial constraints.[88] A 2022 study published in Science, for example, assessed national security risks across five key low-carbon technologies and found that the risks associated with integration with China were mostly low to medium (see Figure 4.1.4 below).[89]

Figure 4.2.2 National Security Risk Matrix for major clean technologies



Source: Risks of decoupling from China on low-carbon technologies, September 2022

A 2024 study of Chinese companies in the Swedish wind energy sector, which control 10.4% of Sweden's installed wind power capacity, found that the risk of ownership being used to cause electricity supply cuts and price manipulation was deemed low due to the limited market impact and high costs such actions would incur for Chinese interests."[90]

Is FMIA's alignment with Australia's security alliance with the US in national interest?

The Albanese Government's flagship Future Made in Australia (FMIA) agenda, designed to position Australia as a competitive renewable energy and green industry powerhouse, derives its political rationale from the 2023 Climate, Critical Minerals and Clean Energy Transformation Compact established under the Biden Administration. It formalised climate and energy as a "pillar of the Alliance," thereby aligning Australia's net zero transition with US defence priorities.[91]

Following the election of Donald Trump, the US Administration has progressively pulled back from its climate and clean energy commitments, doubling down on fossil fuels. It has suspended or cut most clean-energy production tax credits under the IRA. New renewable energy investment in the US plunged by 36% in H12025.[92] Several global firms, including Enphase and First Solar, have frozen or relocated projects to the EU and Southeast Asia.

[88] The Diplomat, Why China Won't Weaponize Clean Energy Tech, 22 September 2025.
[89] Science, Risks of decoupling from China on low-carbon technologies, 15 September 2022.
[90] Swedish National China Centre, Chinese presence in the Swedish wind energy sector: Vulnerabilities and risks, 2024.
[91] Prime Minister of Australia, Australia-United States Climate, Critical Minerals and Clean Energy Transformation Compact, 20 May 2023.
[92] Bloomberg, US Renewable Investments Fell 36% on Trump's Policies, BNEF Says, 26 August 2025.

Still, during Australia's participation at the UN General Assembly meeting in September 2025, Australian Prime Minister Albanese attended an event before American investors announcing that FMIA was a "ready-made opportunity for investment from America".[93] Yet mention of FMIA during Albanese's visit to China in July 2025 was notably absent. By contrast, other global leaders have been using high-level diplomatic visits to attract major strategic investments into their countries.

In October 2025, Albanese and Trump signed a US$8.5bn US-Australia Framework for Securing Supply in the Mining and Processing of Critical Minerals and Rare Earths intended to "counter China's export dominance and ensure Western supply-chain resilience".[94] The deal means approval of Australian rare earths and critical minerals projects is tied to the condition they do not sell into China. As Associate Professor Marina Zhang has argued, the global defence-related demand for these minerals outside of China is very small, meaning Australia will not benefit from scale.[95]

"The US-Australia pact addresses a strategic problem for Washington, but for Canberra, it constitutes a massive subsidy for a market that doesn't yet exist. The fundamental question remains: who bears the loss if this politically driven supply chain cannot compete with China's on cost or speed?"

New supply chain reconfigurations could also end up cutting off Western companies from Chinese suppliers. As Michal Meidan of the Oxford Institute for Energy Studies observes, "even though, over time, fragmentation could spur new innovation and new market responses, it will be a lengthy and costly process. Meanwhile, meeting the Paris targets requires rapid transformation".[96]

The US, on the other hand, has pursued a hedging strategy, having since signed critical minerals supply MoUs with Japan, Saudi Arabia, Cambodia, Malaysia and Thailand. As are other countries, to hedge against American unpredictability. Two days after these South-East Asian nations signed the MoUs with the US, ASEAN and China upgraded their free trade agreement, expanding cooperation into nine areas, including digital economy, green economy, supply chain connectivity, and standards and technical regulations.

[93] Prime Minister of Australia, Invest in a Future Made in Australia, 23 September 2025.
[94] EXIM, EXIM Powers America First with $2.2 Billion in Critical Minerals Commitments to Secure U.S. Supply Chains with Australia, 20 October 2025.
[95] Marina Zhang, AFR, The missing piece in Australia's critical mineral deal lies East, 28 October 2025.
[96] OIES, The Geopolitical and Commercial Implications of Green Industrial Policy, February 2025.

Section 4. Conclusion: The World Enters a New Era of Global Cleantech Commerce

A new world order is taking shape. China's rise as the global centre of cleantech manufacturing — combined with the decisive industrial strategies of economies across Southeast Asia, the Middle East, North Africa, Europe, and Latin America — is rapidly reconfiguring global trade, production networks, and investment flows. What this report shows is that China's outbound cleantech capital is not merely expanding — it is structurally reshaping the geography of global industrialisation.

Over the past three years, Chinese firms have committed over US$180bn to overseas clean-energy manufacturing and infrastructure. These investments underpin a new set of industrial corridors spanning batteries, EVs, solar, grid infrastructure, green hydrogen, and energy storage, extending from Southeast Asia to Europe, the Middle East, North Africa, and Latin America.

Crucially, countries are not passive recipients. They are designing domestic industrial strategies that harness Chinese technology, supply chains, capital, and expertise towards achieving national or regional development goals.

Deepening partnerships in countries like Indonesia, Saudi Arabia, Morocco, Egypt, Oman, Hungary, Spain, and Brazil, this report documents the emergence of locally embedded, long-term, multi-phase green industrial ecosystems — a far more advanced form of economic integration than commodity trade alone.

These real-world projects reveal a profound global reordering defined by four mutually reinforcing forces.

1. China is now the gravitational core of global cleantech industrialisation

China's unmatched scale in batteries, solar, EVs, grid equipment and critical minerals processing — combined with complete supply-chain integration and cost competitiveness — means that decarbonisation anywhere now depends on Chinese technology somewhere.

Countries as diverse as Hungary, Spain, France, Indonesia, Morocco, and Brazil are embedding Chinese technology and knowhow into their industrial transformations. Whether it is CATL in Spain, AESC in France, Gotion in Slovakia, Trina and LONGi in Indonesia, or BYD's US$1bn Camaçari EV hub in Brazil, China's firms have become the industrial backbone of the global energy transition.

These trends reflect a durable structural reality: China holds the world's most complete cleantech production system — and the rest of the world is integrating into it in order to transition.

2. The Global South—especially BRI-linked economies—has become the main frontier of green industrial expansion

The majority of new green-industry build-outs are taking place in the Global South. Countries across Southeast Asia, the Middle East, North Africa, Sub-Saharan Africa and Latin America are leveraging:

- abundant renewable energy resources
- proactive industrial policies
- sovereign funds and development banks
- industrial parks and SEZs
- tariff-reduction pacts and local-content rules

to capture a larger share of the global green-technology value chain.

Examples from this report illustrate this clearly:

- Indonesia is becoming a world-class battery and EV hub with 71 Chinese projects worth nearly US$68bn.
- Saudi Arabia, Morocco, Oman and Egypt are converting energy wealth and strategic location into solar, hydrogen and battery ecosystems.
- Brazil is using Nova Indústria Brasil and deepening China ties to rebuild domestic manufacturing and position itself as Latin America's green-industry leader.
- Hungary, Slovakia and Spain are transforming themselves into Europe's battery corridor, powered by Chinese technology and capital.

3. Soft power and technology integration are becoming core features of China's cleantech dominance

China's industrial leadership is now reinforced by **deep institutional, educational and technological integration**, expanding its influence far beyond investment flows.

Examples include:

- **Thailand's Thai–Chinese Dual Degree in New Energy Automotive Technology**, embedding Chinese EV standards, skills and curricula into national training pipelines.
- **Renault's Advanced China Development Centre (ACDC) in Shanghai**, created to learn from China's EV and software ecosystem — a direct inversion of traditional West-to-East technology flow.
- **Brazil's SENAI–Envision R&D collaboration** on hydrogen, storage and advanced manufacturing, linking Brazil's reindustrialisation vision to China's technological frontier.
- **Morocco–China Joint Laboratory for Green Energy and Advanced Materials**, shaping the country's emerging battery and solar industries.
- **ACWA Power's first overseas Innovation Centre in Shanghai**, including an R&D Centre and Green Energy Laboratory
- Dozens of joint **training centres, R&D hubs, innovation labs and technical universities** established across ASEAN, MENA and Latin America.

This is a major global shift: China's cleantech expansion is increasingly accompanied by the diffusion of technical standards, workforce development, research partnerships, and educational pathways — forming a long-term soft-power ecosystem around green technology.

4. Green industrial partnership is the new competitive logic

Countries that engage China selectively and strategically — balancing openness with clear national-interest guardrails — are gaining first-mover advantage in the net-zero economy.

This report highlights three contrasting national strategies:

Indonesia: Uses statecraft and industrial policy to plug into Chinese value chains, accelerating its rise from resource exporter to integrated battery and EV powerhouse.

Hungary and Spain: Deploy industrial incentives, diplomacy and strategic openness to anchor multi-billion-euro gigafactories that underpin Europe's energy transition.

Brazil: Aligns NIB with China's green-industrial ecosystems to reindustrialise and build sovereign clean-energy capacity across EVs, batteries, SAF, wind, hydrogen and grid expansion.

Australia: In contrast, has largely excluded itself from this industrial geography. US-aligned security settings, risk-driven and opaque investment screening have left Australia isolated from the world's dominant cleantech supply chains — despite requiring unprecedented capital inflows to meet FMIA and net-zero goals. As other nations embed into fast-growing China–Global South industrial corridors, Australia risks being left behind with:

- higher energy costs
- falling economic complexity
- stagnating productivity
- collapsing processing sectors (nickel, aluminium, rare earths)
- and an inability to scale green industries at pace or cost.

Australia's constraints are not technological, financial, or industrial capacity deficits. They are *strategic and political.* The FMIA is an industrial policy operating within unusually tight national-security boundaries, where cooperation with China is often assessed through a political-risk lens rather than an economic-opportunity lens.

As other countries demonstrate — whether EU member states like Hungary and Spain, or major emerging economies like Brazil and Indonesia — effective green-industrial strategy increasingly requires **strategic pragmatism**: engaging with all major partners where interests align, while managing risks through smart regulation rather than blanket exclusion.

For Australia, the shift required is from a narrow focus on "national security" or "political risk" (avoiding China partnerships to mitigate domestic criticism) to a posture of **pragmatic statecraft** — one that recognises that citizens ultimately care about affordable energy, secure jobs, and national competitiveness. A credible green-industrial strategy must fundamentally question current national security risk definitions in light of increasing geopolitical and economic risk from isolation: does Australia want to be the lone country in Asia excluding Chinese technology while it becomes mainstream in our region and the world?

The choice for Australia is not between ideology and security — it is between **stagnation** and **a competitive, future-ready industrial economy**.

The emerging global order

The world entering the 2030s will be defined by:

- multipolarity, not hegemony
- green-technology competition, not fossil-fuel geopolitics
- supply-chain integration, not isolation
- industrial policy, not laissez-faire
- South–South cooperation, not Western dominance

Countries able to adapt to this order — by engaging selectively with China's cleantech system while safeguarding national interests — will build new engines of industrial growth. More broadly, the rise of China gives new pathways for South-South development cooperation that upend existing imperial

arrangements often characterised by North-South relations.[97] Countries that choose not to engage will face declining competitiveness and shrinking relevance in the new world order.

[97] Jostein Hauge, Bruno Houtzager, Alessandro Julian Hörmann, The new economic nationalism: industrial policy and national security in the United States, China, and the European Union, 2 September 2025.

Appendix A. China's Foreign Direct Investment

Figure A1: Major cleantech manufacturing projects announced Oct 2024 - Nov 2025 (non-exhaustive) with investment disclosed

Country	Project Type, Size & Description	Investment (US$)	Partners	Green industrial policy
ASEAN				
Malaysia	Solar equipment and energy storage manufacturing base	150 million	Ningbo Deye	New Industrial Master Plan 2030
	Founder Group signs MoU to explore, identify, assess and undertake renewable energy projects across Malaysia and ASEAN; Announced June 2025	220 million	Founder Group + GCL Technology	
	Energy storage battery facility	1.2 billion	EVE Energy	
	MoU to develop 2GW renewable energy, battery storage and supporting grid infrastructure	1.35 billion	Invest Sarawak + CEEIC	
Indonesia	CATL Indonesia Battery Integration project; Integrated battery chain (mining → cells → recycling); iinitial 6.9GWh capacity; 8,000 direct + 35,000 indirect jobs	6 billion	CATL (+ local partners)	National Industry Development Master Plan (RIPIN) 2015-2035
	Integrated 1GW solar panel factory; 640 local jobs created	90.5 million	Trina Mas Agra Indonesia	
	1.4GW solar cell and module factory (Deltamas)	?	LONGi Green Energy (China) + Pertamina New & Renewable Energy (Indonesia) JV launched June 2025, following US imposition of up to 3,500% tariffs on Chinese solar components made in Vietnam,	

Country	Project Type, Size & Description	Investment (US$)	Partners	Green industrial policy
			Thailand, Cambodia, and Malaysia	
	Tianying Waste-to-Energy plant	158.6 million	PT Maharaksa Blue Energy and China Tianying	
	Makassar Waste-to-Energy Project	200 million	SUS Environment	
	Nickel processing plant	1.42 billion	PT Vale (30%), GEM Co (25%) + third party (remaining share)	
	Batang battery plant + R&D centre	90 million	LBM Energi Baru Indonesia Batang	
Europe				
France	Solar modules (3GW) assembly plant (Mandeure) + cells (5GW) plant; R&D and recycling partnership; assembly by end-2025; cells by 2026	784 million	DAS Solar + SUEZ + IPVF	France 2030
	Battery components for EVs (CAM/PCAM) (Dunkirk) Dec 2024 – JVs announced	N/A	Orano + XTC New Energy joint venture	
	EV gigafactory (10GWh) (Douai) to supply Renault; Jun 2025 – production start launch	N/A	Envision AESC	
	Synthetic graphite anode materials to supply battery cell manufacturers in Europe	N/A	Imerys + Shanshan New Material	
Hungary	Battery electrolyte plant to supply CATL/EVE; announced Mar 2025	108 million	KunlunChem	EU ICE ban from 2035 Hungarian National Battery Industry Strategy 2030
	E-bus & e-truck manufacturing expansion (Komárom) + European HQ & new R&D in Budapest; announced June 2025	86.7 million	BYD	

Country	Project Type, Size & Description	Investment (US$)	Partners	Green industrial policy
Portugal	CALB gigafactory (Sines); Energy-storage batteries (15GWh); 1,800 jobs; announced Feb 2025; full operation by 2028	2.1 billion	CALB	EU ICE ban from 2035 Portugal 2030
Spain	EV battery gigafactory (Zaragoza); 50GWh, announced Dec 2024; construction started Nov 2025	4.43 billion, including 324 million state grant	CATL + Stellantis (50:50 joint venture)	EU ICE ban from 2035 National Integrated Energy and Climate Plan 2023-2030 Strategic Projects for Economic Recovery and Transformation (PERTES)
	Battery gigafactory (Valladolid)	829 million	InoBat	
Slovakia	Xinquan Slovakia Automotive Trim production expansion approved by Slovak Government	8.4 million	Xinquan Group	
United Kingdom	Sunderland gigafactory; expected to create 1,000 jobs	1.34 billion	AESC	Clean Energy Industries Sector Plan; UK Battery Strategy
Türkiye	Solar cell factory + R&D centre; first wholly foreign-owned facility	500 million	CHINT / Astronergy	2030 Industry and Technology Strategy; HIT-30 High-Tech Investment Program
	5GW N-type solar cell facility	?	Drinda (China) + Schmid Pekintas Energy (Türkiye)	
Middle East and North Africa				
Morocco	Battery gigafactory (100GWh + 200kt cathode)	5.6 billion	Gotion High-Tech; CDG Invest	Nov 2024 – MoU; project designated strategic
	Battery materials production plant (150,000 tonnes/year)	280 million	Tianci Materials + Government of Morocco	
Egypt	Solar glass manufacturing plant in Suez Canal Economic Zone	700 million	Xinyi Glass	Egypt Vision 2030

Country	Project Type, Size & Description	Investment (US$)	Partners	Green industrial policy
	Mar 2025 – announced			
	Integrated solar manufacturing facility – 2GW cells + 2GW modules (Phase 1); Phase 2 to localise ingots/wafers; completion expected H1 2026	200 million	Sunrev Solar	
	Integrated manufacturing campus – 'Atom Solar Project': 2GW cells + 2GW modules + 1GWh BESS (New Alamein / SCZone) with Bahraini, Chinese, Egyptian & Emirati partners; Aug 2025 land contract signed	220 million	JA Solar (+ Infinity Capital, AH Industrial Mgmt, GSU)	
	Renewable energy, seawater desalination, energy storage	1 billion	China Energy Engineering Corporation	
Saudi Arabia	PV modules (6GW HJT) – SoleFiori agreement with Saudi Ministry to build HJT module base with R&D + production; Sep 2025 agreement signed	N/A	SoleFiori (Hongjun New Energy) + Saudi Ministry of Industry & Mineral Resources	Saudi Vision 2030
Oman	Solar manufacturing - 6GW cells + 3GW modules (Sohar Freezone Phase II); agreement signed Apr 2025	564 million	JA Solar	Oman Vision 2040
	Wind turbine manufacturing facility; production to begin 2026	200 million	Shanghai Electric Group (China) + Mawarid Turbine (Oman)	
Sub-Saharan Africa				
Ethiopia	Solar-cell manufacturing, energy storage, and mineral exploration and processing	1.75 billion	multiple; Hainan Drinda New Energy	
Nigeria	1GW solar panel factory	?	LONGi + Energy Commission of Nigeria	
	Green hydrogen project	8.27 billion	LONGi + APPL Hydrogen +	

Country	Project Type, Size & Description	Investment (US$)	Partners	Green industrial policy
			Nigerian Government	
Latin America				
Brazil	**Net Zero Industrial Park** focussing on sustainable aviation fuel, green hydrogen, and ammonia; First in Latin America	?	Envision Energy	New Industry Brazil Announced during President Lula's state visit to China in May 2025
	Sustainable aviation fuels production plant project	1 billion	Envision Energy	Announced during President Lula's state visit to China in May 2025
Central Asia				
Kazakhstan	Manufacturing facility for 2GW of wind turbines and 1GWh of energy storage system; 3,000 jobs; operation by Q3 2026	40 million	Envision Energy + Kazakhstan Utility Systems	Construction began Jan 2025

Figure A2: Clean energy infrastructure projects - new and completed (Oct 2024 - Nov 2025) (non-exhaustive)

Country	Project Type & Description	Investment (US$)	Chinese Partner(s)	Date / Status
Indonesia	Floating solar project, 60MW	?	CEEG	Commenced construction Sep 2025
	200MW solar power plant + 80MW/80MWh BESS	140 million	Yongfu	Announced Dec 2024
Malaysia	Renewable energy, battery storage & grid infrastructure — 2GW project under MoU between InvestSarawak and CEEIC	1.35 billion	China Energy Engineering Investment Corporation (CEEIC)	April 2025 – MoU signed during President Xi's state visit
Cambodia	Pumped storage power station	996 million	Sinomach Heavy Equipment	Announced Feb 2025

Country	Project Type & Description	Investment (US$)	Chinese Partner(s)	Date / Status
Laos	Cross-border transmission (500 kV) — 183.5 km Lao-China interconnection and substations enabling 1.5GW two-way trade	?	China Southern Power Grid Corporation	February 2025 – construction launched; completion 2026
Laos / Vietnam	Wind power — 600MW Mengsong project; largest in Southeast Asia; cross-border supply to Vietnam grid.	N/A	China Power International (China Power)	August 2025 – full-capacity generation achieved
France	Floating solar project, 74.3MW	N/A	DAS Solar	Expected commissioning end 2025
Spain	495MW solar farm in Murcia province, one of Europe's largest solar farms	446 million	China Three Gorges	Dec 2024 – purchased from Northleaf and Q-Energy
	Arreaz Photovoltaic Power Station Project - 44MW	EPC contract	POWERCHINA (China) + Viroque Energy Co (Spain)	May 2025 signed
Bosnia and Herzegovina	Ulog Hydropower Plant - 35MW	EPC contract	POWERCHINA	Completed Jan 2025
Serbia	300MW wind power project	561 million	PowerChina	Under construction
Romania	Solar PV — two solar plants totalling 129MW developed under a Turkish-Chinese JV	71 million	Shanghai Electric Power (75%); YEO Group / Defic Globe SRL (25%)	November 2024 – JV agreement signed
Brazil	Wind farm — 648MW Serra da Palmeira project (Paraíba); ~3,000 jobs	196 million loan	China Three Gorges Brasil Energia (CTG Brasil), financed by New Development Bank loan (RMB 1.4 b).	September 2025 – construction underway
	Mauriti Solar complex, 425MW -	EPC contract	PowerChina	Commenced operation Sep 2025
	Graça Aranha–Silvânia 1,500km Transmission Project	3 billion	State Grid Corporation of China	Construction of converter substation began June 2025;

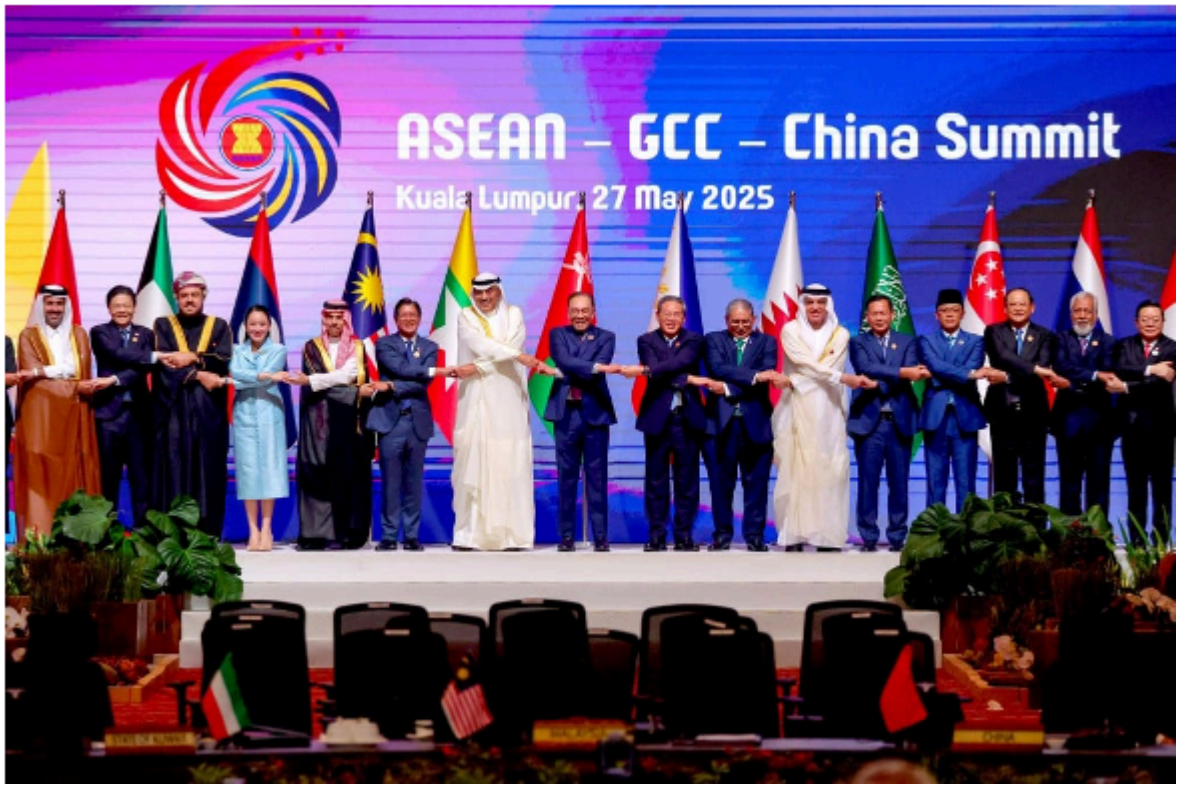
Country	Project Type & Description	Investment (US$)	Chinese Partner(s)	Date / Status
Oman	500MW Manah I solar project	?	Built by Shanghai Electric Group, owned by EDF & KEPCO	Completed August 2025
Saudi Arabia	2GW Al Sadawi solar project	1.1 billion	Consortium of UAE-based Masdar, China's GD Power and Kepco, with financing from eight regional and international banks	Financial close reached August 2025
Egypt	Amunent Wind farm - 500MW	EPC contract	PowerChina	
	Suez Wind Farm 1.1GW	EPC contract	PowerChina + Suez Wind Energy	Contract signed Jan 2025
Kazakhstan	Wind & solar — two wind farms (200MW + 100MW) and later 300MW solar project.	219 million	Sungrow Renewables Development; Universal Energy	May 2025 – wind MoUs; Sept 2025 – solar deal during SCO Summit
Uzbekistan	Wind power — two wind farm projects, each up to US$500m, totalling ~1GW	1 billion	Sany Heavy Energy	April 2025 – investment agreement announced
	Datang Buka solar farm - 263MW	150 million	China Datang Corporation	Completed June 2025, connected to grid Sep 2025 (project took 11 months)
Azerbaijan	Renewable energy projects — 100MW solar power plant + 100MW floating solar plant + 30MW BESS + 2GW offshore wind + 2GW onshore wind	?	Universal Solar Energy Group + Azerbaijani Ministry of Energy + China Datang	April 2025 – agreement signed; commissioning 2026
Zambia	Solar project — 100MW Chisamba solar project; largest in Zambia	100 million	PowerChina (EPC)	Launched June 2025; second phase in progress

Appendix B. China's cleantech soft power amplifier

In March-May 2025, 45+ countries across ASEAN, Middle East, Africa, Europe, and Latin America moved to strengthen green economy cooperation with China.

Green energy and geopolitics convergence: China and Global South countries continue to strengthen ties

In the months following Trump's "Liberation Day" tariffs, countries worldwide have been forging and deepening green energy and climate partnerships with China. These diplomatic efforts underscore a global recognition of China's pivotal role in advancing green energy and climate goals, including the inaugural ASEAN-GCC-China Summit emphasising stronger economic integration and energy cooperation.



Source: SCMP

Strategic cooperation among China and Global South countries is intensifying, as seen for example in the recent China-CELAC Summit, Colombia joining the BRI, and the augural China-ASEAN-Gulf States Summit. The Colombian Government's decision to join the BRI is a historic step representing efforts to reduce its trade dependency on the US, which came after the Trump Administration threatened 25% tariffs against Colombia if it did not accept deportees. This is significant, given Colombia's status as a major NATO ally as well as the US being its largest trading partner.

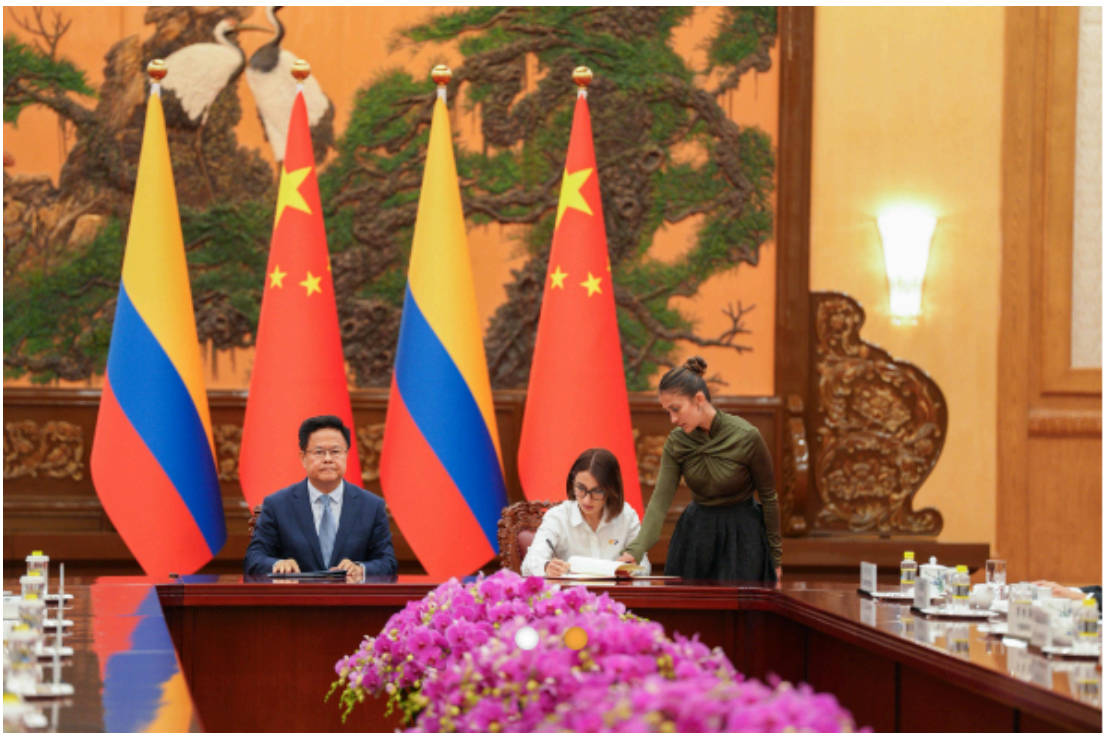


Image: Colombia and China sign BRI cooperation plan, Beijing, May 2025

Source: Government of Colombia

New bilateral agreements signed

Colombia joins the Belt and Road Initiative

- On 14 May, Colombia signed a Belt and Road cooperation plan with China in Beijing, its Foreign Minister Laura Sarabia calling it the country's "boldest step in decades".
- This came after the US threatened Colombia with tariffs and sanctions if it continued to refuse to accept deportees.
- Colombia sees this new Strategic Partnership with China as helping it to de-risk from the US, which is Colombia's largest trading partner, in the face of unilateral tariffs. The Partnership is expected to enable "market access, promotion of projects such as rail corridors and renewable energy, and increased opportunities for domestic producers." 📄 Colombian MFA | Chinese NDRC.
- As at May 2025, 146 to 150 countries are members of the BRI, according to the Green Finance and Development Centre.

China-CELAC strengthen political and economic ties, encompassing energy cooperation

- Around 30 Member States of the Community of Latin American and Caribbean States (CELAC) met with China at the 4th Ministerial China-CELAC Forum in Beijing.
- Significant as it was attended for the first time by President Xi and some heads of State, namely Brazil, Chile and Colombia.
- A 2025–2027 China-CELAC Joint Action Plan was adopted with major China commitments, notably US$9bn in credit funds, 3,500 Chinese government scholarships and 10,000 training opportunities, 300 development projects, and expanded cultural/media programs.

China-Brazil Deepen Strategic Ties

- Brazil's President Luiz Inácio Lula da Silva met with President Xi Jinping in Beijing and signed 3 major cooperation agreements, focussed on alignment of the development strategies of the two countries, cooperation in sustainable mining and AI: 📄 China's NDRC. |
- Released a Joint Statement of the People's Republic of China and the Federative Republic of Brazil on Strengthening the China-Brazil Community with a Shared Future for a More Just World and a More Sustainable Planet and Jointly Upholding Multilateralism.
- President Lula also met with Chinese corporates, including Envision Energy, which announced it would build Latin America's first zero-carbon industrial park in Brazil.

China-ASEAN Strengthen Ties

- President Xi visited Vietnam, Malaysia, and Cambodia amid global tariff tensions, signing major economic and green tech cooperation deals.
- In Malaysia: 31 agreements on AI, digital trade, green industry, and IP: 📄 SCMP
- In Cambodia: focus on BRI, industrial zones, and AI collaboration: China's NDRC

Chile signs an Energy Transformation MoU with China, prioritizing storage, transmission, and investment from Chinese firms like CATL and BYD.

- Chile is home to world-leading solar and lithium resources, with China helping develop a 2GW + 11GWh storage facility. 📄 Chilean Ministry of Energy

Spain–China Expand Trade and Green Tech Cooperation

- On 11 April, Spain's Prime Minister met with President Xi and Premier Li in Beijing, being his third visit to China in 2 years
- Spain and China signed 7 agreements to promote trade, culture, science and education collaboration, and a Joint Action Plan on Strengthening Comprehensive Strategic Partnership (2025-2028)
- Spain's PM also met with a dozen major Chinese companies in the automotive, battery, and renewable energy sectors
- Spain is emerging as an EU hub for Chinese EV and battery firms like CATL, Chery, and Envision. 📄 Spanish Ministry of Economy

Chile-China sign Energy Transformation MoU

- On 31 March, Chilean Energy Minister and a cross-party group of parliamentarians visited China to strengthen energy cooperation
- "Chile aims to learn from China's experience in energy security and clean energy, in order to develop more effective national policies and attract greater investment from Chinese energy companies," stated the Minister Pardow
- Chile is one of the world's largest suppliers of copper and lithium—both critical minerals for the energy transition. China's CATL and BYD have been engaged to supply BESS for Chile's 2GW Solar + 11GWh BESS facility.

UK-China signed a Clean Energy Partnership MoU

- On 15-17 March, UK Energy Minister Ed Miliband met with China's NEA and signed a new MoU covering offshore wind, hydrogen, power markets, and CCUS.
- Minister Ed Miliband: "It is simply an act of negligence to today's and future generations not to engage China on how it can play its part in taking action on climate." 📄 UK Gov Release

China-Republic of Korea-Japan Trilateral Talks Resume (22 Mar)

- China, Japan, and South Korea agreed to “promote a future-oriented cooperation” in the context of Trump’s tariffs and advance a trilateral leaders' summit and economic cooperation in green transition and population policy.
- 6th China-Japan Economic Dialogue focused on green economy and mutual benefit. Japan MFA

Other bilateral engagements included:

- Mongolia’s Energy Minister visits China China’s NEA
- Honduras’ Energy Minister visits China China’s NEA
- South African Energy Minister visits China The Post
- China–Kenya Climate Dialogue China’s NDRC
- China-France hold 4th Energy Dialogue China’s NEA
- Kuwait-China signed renewable energy cooperation agreements NEA China
- China-France joint declaration on climate change cooperation French MFA
- Germany-China hold 10th Energy Efficiency Working Group Meeting China’s NDRC
- China-Japan hold Carbon Emission Reduction Policy Dialogue China’s NDRC