

Energy Supply Ratios for Investment and Financing in Asia

Assessing banks in Japan, South Korea, Taiwan,
Singapore, Indonesia, Malaysia, Thailand and the
Philippines

May 14, 2026



BloombergNEF

Executive summary – 1/2

Asia Pacific markets outside of China represent the fastest-growing region for energy transition investment. However, capital flows to low-carbon energy supply have not outpaced investment in local fossil-fuel supply, let alone imports. Banks from the region have also struggled to scale low-carbon transactions relative to fossil-fuel deals, reflecting inertia in the real economy and established financing strategies. Institutions in eight markets across the region facilitated 83 cents of low-carbon energy supply for every dollar of fossil-fuel activity in 2024, compared with a global energy supply banking ratio of 0.89:1.

- Energy transition investment grew 23% in 2025 in Asia Pacific (APAC) markets excluding mainland China, well above the global growth rate of 8%. Yet the investment ratio remained at just \$1.30 of low-carbon energy supply for every dollar invested in fossil-fuel supply in 2025, still lagging behind Europe's 3.5:1. This comparison excludes spending on fossil-fuel imports. South Korea, for example, invested only 11 cents in local clean energy supply for every dollar spent on fossil-fuel imports.
- Globally, a 4:1 investment ratio between low-carbon and fossil-fuel energy supply is required on average across this decade to align with 1.5-degree warming scenarios relative to pre-industrial levels. APAC needs a higher ratio to offset structurally lower investment in fossil fuel-producing markets.
- Applying the same principle, a banking ratio comparing low-carbon and fossil-fuel transactions can approximate the extent to which banks' financing activity is aligned to investment in the real economy and, by extension, with climate scenario requirements. Financing ratio calculations and disclosure, already adopted by institutions including JPMorgan Chase, Citigroup and Scotiabank, can provide visibility to investors and serve as a valuable internal benchmarking and strategic tool.

23%

Growth in energy transition investment in 2025 for Asia Pacific markets excluding China

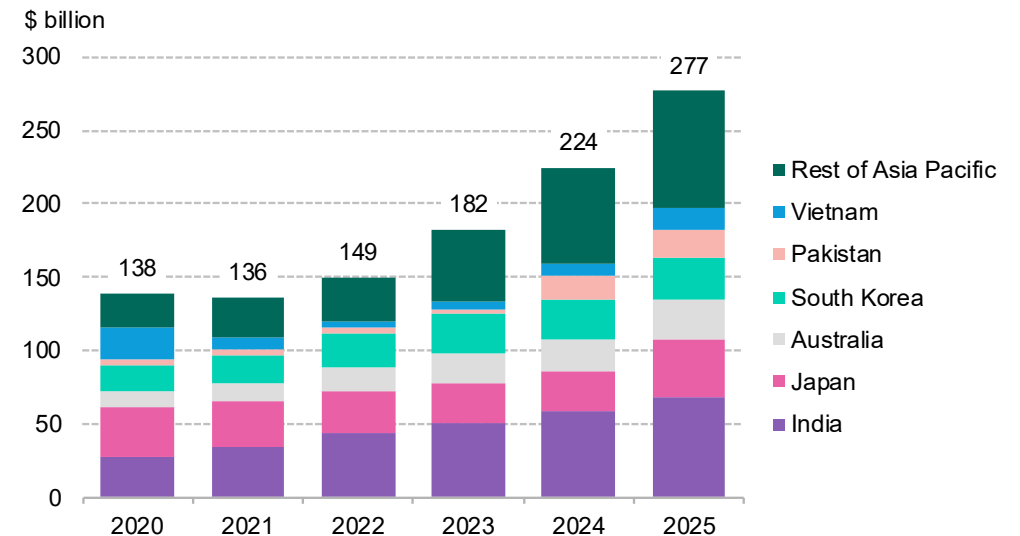
0.83:1

Energy supply ratio in 2024 for banks headquartered in eight Asia Pacific markets

\$240 billion

Energy supply financing volume facilitated by banks headquartered in eight Asia Pacific markets in 2024

Energy transition investment in Asia Pacific, excluding China

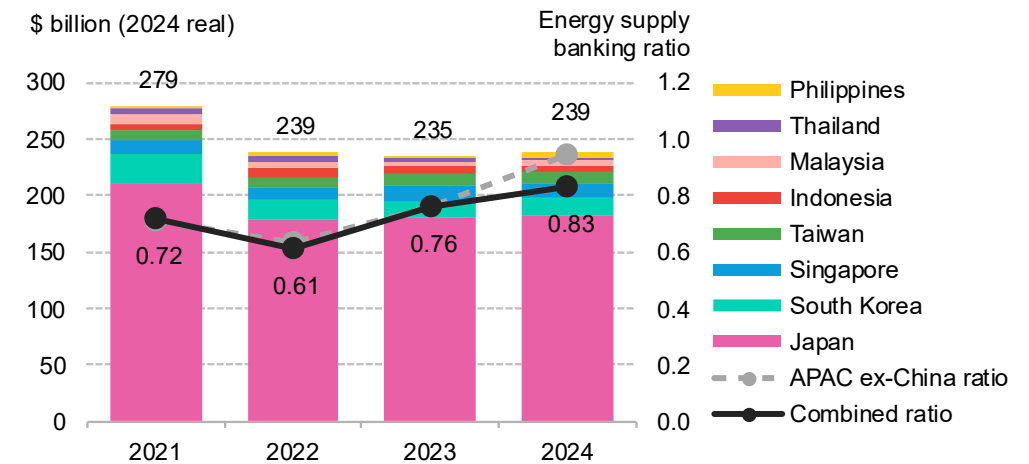


Source: BloombergNEF

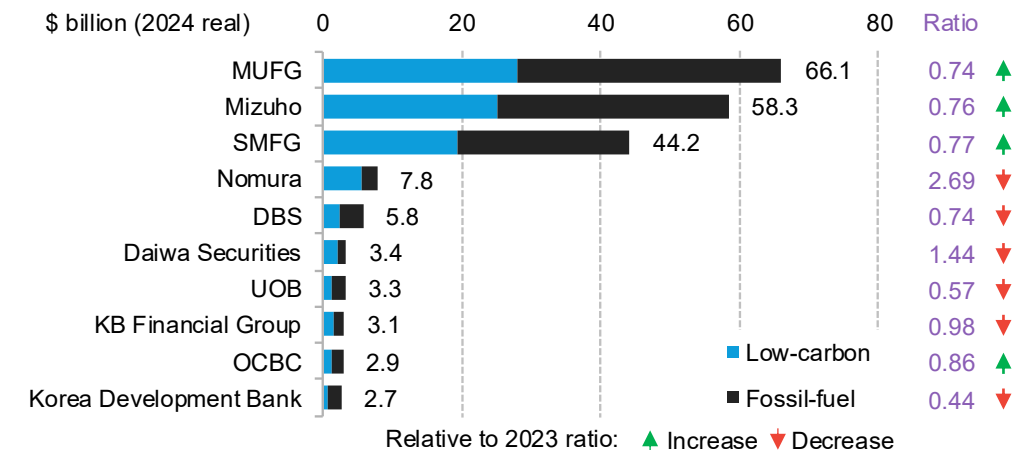
Executive summary – 2/2

- Banks headquartered in Japan, South Korea, Taiwan, Singapore, Malaysia, Thailand, Indonesia and the Philippines facilitated around \$240 billion in energy supply financing annually between 2022 and 2024. Fossil-fuel financing volumes declined gradually across these banks, while low-carbon volumes rose only marginally. Total low-carbon transactions in 2024 remained below 2021 levels and fossil-fuel energy supply volumes.
- Banks across these markets facilitated only 83 cents into clean energy supply for every dollar of fossil-fuel financing in 2024. Despite rising to the highest level since 2021, it remained below the global ratio of 0.89:1. Ratios improved in 2023 and 2024 for banks from Japan, Taiwan, Malaysia, Thailand and the Philippines when aggregated by market.
- Japanese banks are the largest facilitators of energy supply finance, though they have significant overseas exposure, particularly in the US. MUFG and Mizuho are the biggest banks in Japan's energy supply financing market.
- Across low-carbon sectors, bank financing to wind and solar remained broadly flat between 2023 and 2024. Power grid and energy storage drove financing growth in 2024 for banks in most markets.
- Institutions that increased their ratios in 2023 and 2024 include Japan's MUFG and Mizuho, Taiwan's Mega Financial Holding, Indonesia's Bank Mandiri, Malaysia's Maybank, and Thailand's Krung Thai Bank and Kasikornbank. Standard Chartered, BNP Paribas, Groupe BPCE and Deutsche Bank are leading banks from outside APAC that facilitated energy supply financing to the Southeast Asian markets covered in this report.
- Large deals or issuers can swing results. Financing of the largest solar and battery project in Southeast Asia drove low-carbon volumes for banks in the Philippines. Banks in both Thailand and Indonesia saw their fossil-fuel transactions decline, as PTT and Pertamina had limited refinancing needs.
- Domestic transactions tilted toward low-carbon activity for banks in five of the eight markets in 2023-2024, highlighting growing transition opportunities. Banks from Japan, for example, achieved a ratio of 1.27:1 domestically, but this was offset by fossil-fuel deals in North America and Southeast Asia.

Bank financing and Energy Supply Banking Ratio by market



Top banks by energy supply financing volume in 2024, headquartered in markets covered in this report



Contents

Energy transition investment	<u>5</u>
Energy supply bank financing	<u>12</u>
Energy supply banking ratio results by market	<u>20</u>
Appendix	<u>38</u>

Introduction

Major energy shocks in 2026 have again highlighted the risks that fossil fuel dependency poses to global economies. Governments are also assessing vulnerabilities in clean energy supply chains and the implications for domestic industrial competitiveness. These priorities have fragmented policy ambition on the energy transition, even as the window to meet the Paris Agreement goal narrows rapidly.

Energy transition investment must grow quickly to mitigate the worst impacts of climate change and provide reliable energy to both developed and developing markets. Financial institutions play a critical role in scaling this investment. However, this depends on supportive policy environments and viable project economics.

This report leverages BloombergNEF's energy supply ratio framework to examine how investment and financing have evolved in selected APAC economies, reflecting diverse economic, geographic, technologic and socio-political challenges to emissions reduction.

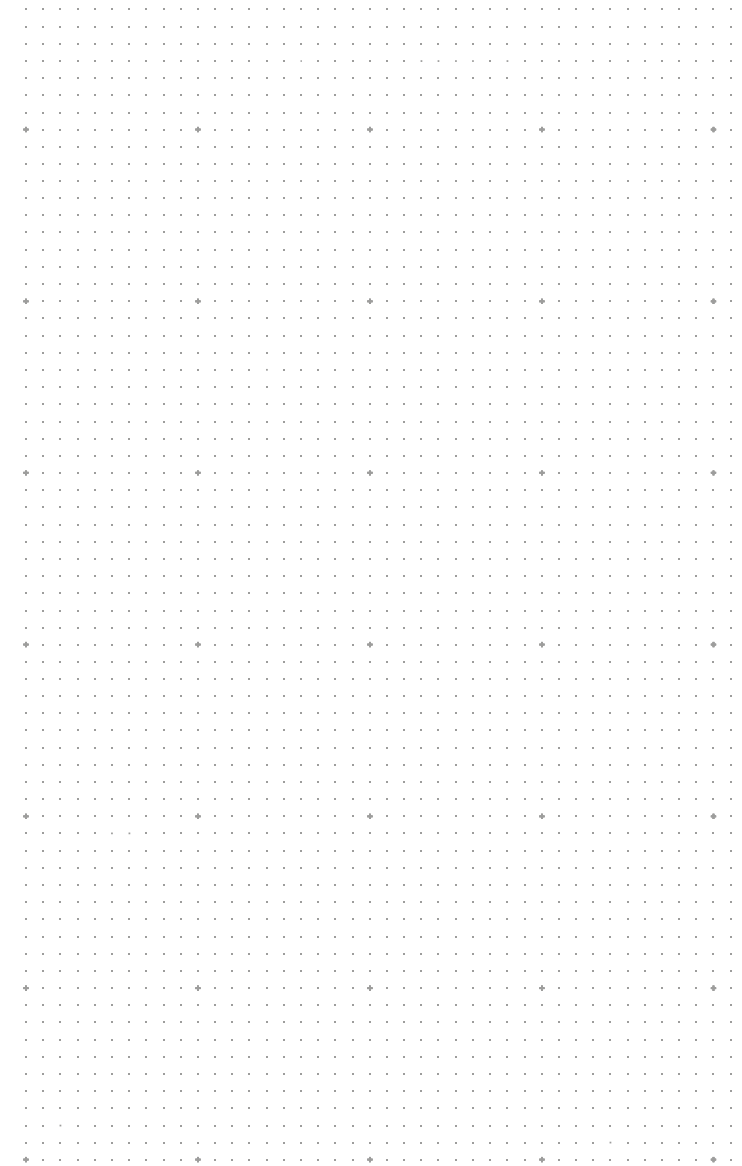
Energy transition investment refers to capital spent on the deployment of low-carbon technologies, including project development as well as end-use purchases such as residential solar systems or electric vehicles. **Bank financing** refers to debt and equity capital facilitated by financial institutions through direct lending and underwriting to companies and projects.

The first section outlines the APAC **energy transition investment** context. Subsequent sections on **energy supply banking ratios** present results for institutions headquartered in eight markets: Japan, South Korea, Singapore, Taiwan, Indonesia, Malaysia, Thailand and the Philippines. Detailed **market-level investment** analysis for five APAC economies follows, ahead of the **methodology** section.

The banking ratio analysis shows the 2024 results published by BNEF in September 2025. Global 2025 results will be published this fall. Institutions interested in participating in the data collection process, or in discussing methodology and implementation, can contact bnefclimate@bloomberg.net.

The report seeks to highlight the challenges and opportunities financial institutions face in facilitating the energy transition in the region, and underscores the need to accelerate and innovate financing solutions in a changing energy landscape.

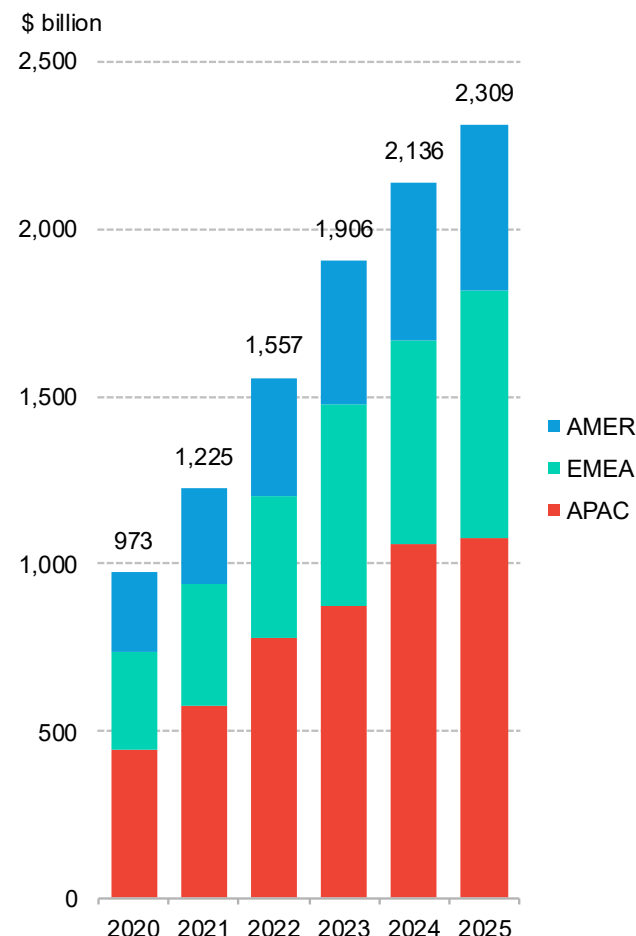
Energy transition investment



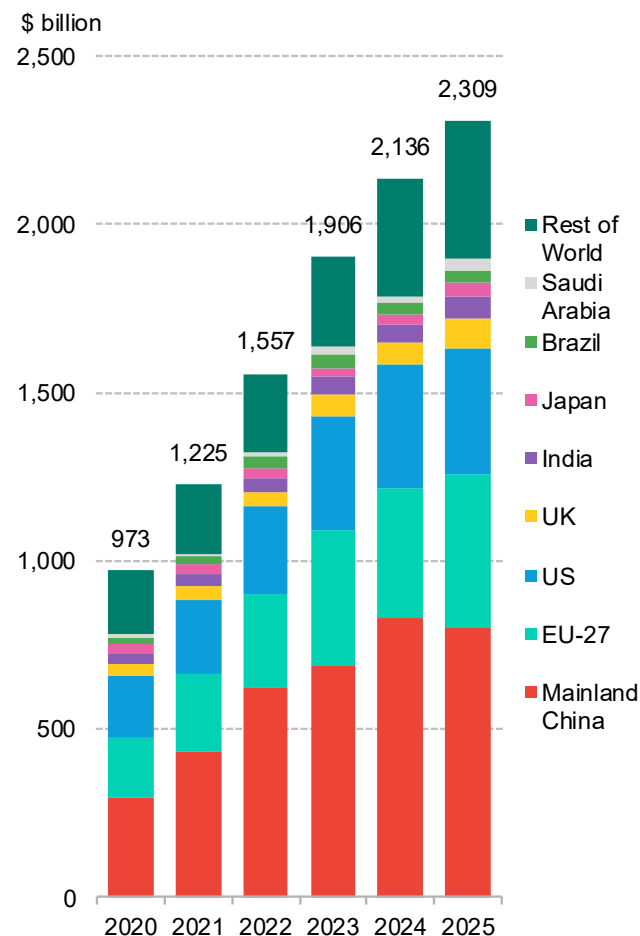
Global energy transition investment is led by Asia Pacific

Global energy transition investment

By region



By market



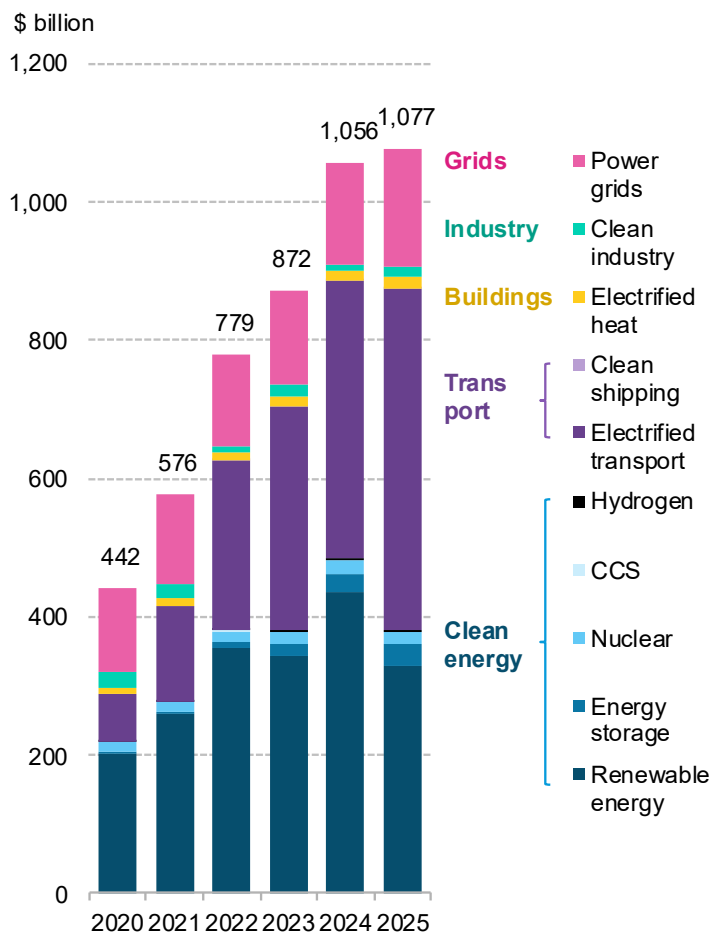
Source: BloombergNEF. Note: "Rest of" categories can sometimes include small amounts of investment from other markets in the chart. AMER refers to the Americas; EMEA is Europe, Middle East and Africa; and APAC is Asia Pacific.

- Global energy transition investment rose 8% in 2025 to hit a record \$2.3 trillion. Rising electric vehicle sales and surging grid investment were among the key growth drivers.
- APAC remained the largest region for investment, accounting for \$1.1 trillion, or 47% of the global total, in 2025. APAC has been the leading region for global energy transition investment since 2013. However, the region's share dipped from 49% in 2024 to 47% in 2025. APAC saw a mere 2% year-on-year increase, the slowest rate this decade.
- China is the largest single market, despite investment contracting 4% to \$800 billion last year. Investment in India climbed 15% to \$68 billion, and other economies also contributed to overall growth in APAC.
- Energy transition investment in China declined for the first time since 2013 as a significant update to power trading rules introduced new market-based risks for renewable project developers. However, strong EV growth partially offset the decrease, limiting it to a 4% year-on-year drop.

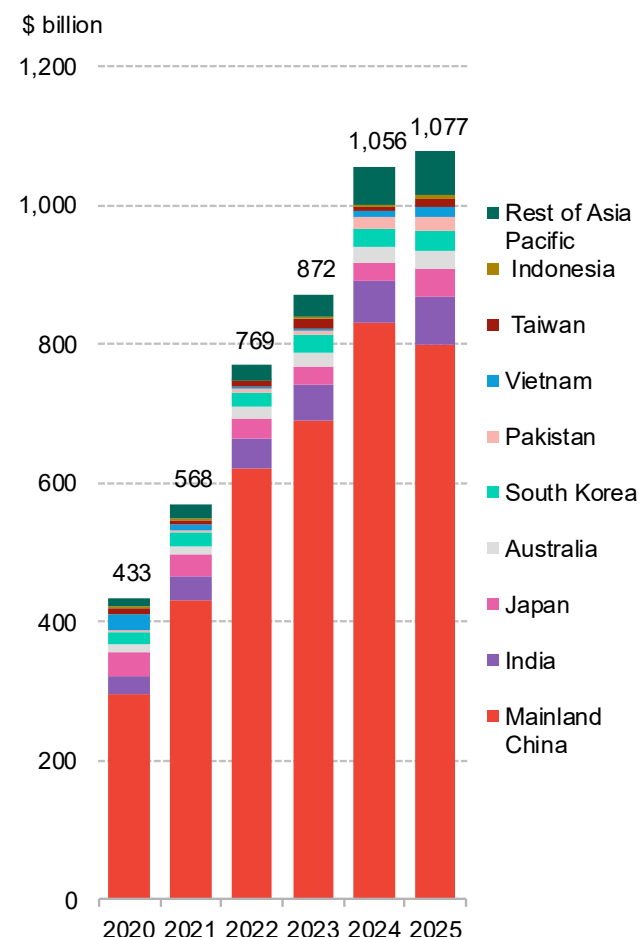
Investment in 2025 grew 23% in Asia Pacific excluding mainland China

Asia Pacific energy transition investment

By sector



By market



Source: BloombergNEF. Note: "Rest of" categories can sometimes include small amounts of investment from other markets in the chart.

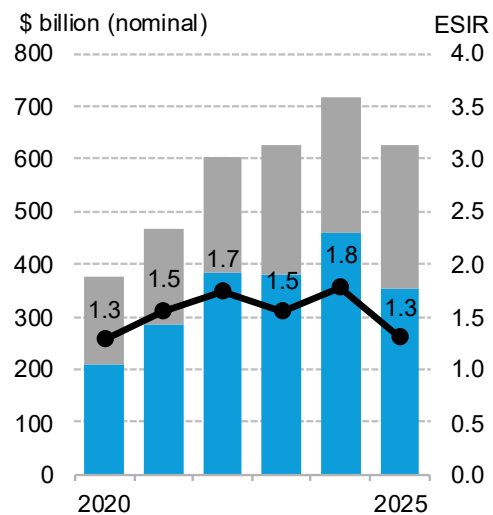
- The slow growth in energy transition investment in APAC was driven primarily by the decline in mainland China's renewable energy investment. While its energy transition investment posted a 4% year-on-year decrease, investment in the rest of the region grew 23%.
- Vietnam and Indonesia recorded the highest annual investment growth rates, with investment doubling in 2025. Japan and Australia also reached their highest annual growth rates this decade. Pakistan remained among the top 10 APAC markets, supported by a rapidly expanding solar sector.
- By sector, clean shipping and clean industry (particularly clean steel) saw the highest year-on-year growth, albeit from a very low base. Investment in electrified transport overtook renewable energy in 2025 to become the largest sector, as EV sales continued to grow in most APAC markets, with the notable exception of Japan. Investment in energy storage also rose 20%.
- For detailed results for Japan, South Korea, Taiwan, Vietnam and Indonesia, see section: [Energy transition investment by market](#)

Net fossil-fuel exporters have lower energy supply investment ratios

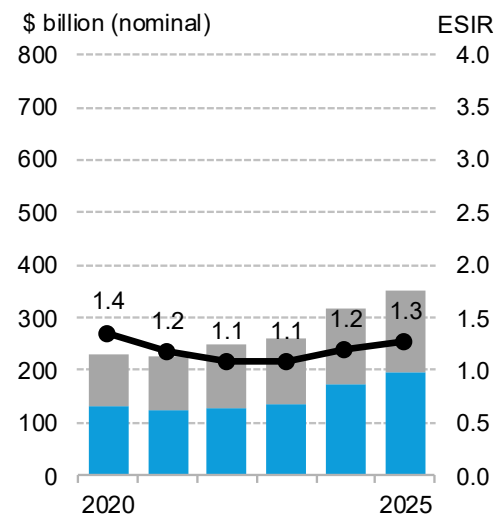
- Global clean energy supply investment reached near parity with flows into fossil-fuel supply in 2023. Since then, clean energy supply investment has grown faster rate than fossil-fuel supply. The gap widened to \$102 billion in 2025, up from \$85 billion the previous year.
- The global ratio of clean energy to fossil-fuel supply investment has risen each year since 2020, moving above parity in 2024. The ratio reached 1.1:1 in 2025, up from 0.9:1 in 2020. Regional energy supply investment ratios (ESIRs) are influenced by the availability of domestic fossil fuel resources.
- Regions with abundant fossil-fuel resources, such as North America, tend to have lower ESIRs, due to continued investment in local production. Conversely, regions with fewer local fossil fuel resources tend to have higher ESIRs, due to more limited opportunities for investment in the sector.
- Even within these groups, differences can remain. For example, Europe has a significantly higher ESIR than APAC, due to policies that favor renewable investment. However, APAC markets with relatively high ESIRs still allocate substantial capital to fossil-fuel investment.

Clean energy supply versus fossil-fuel supply investment

Mainland China

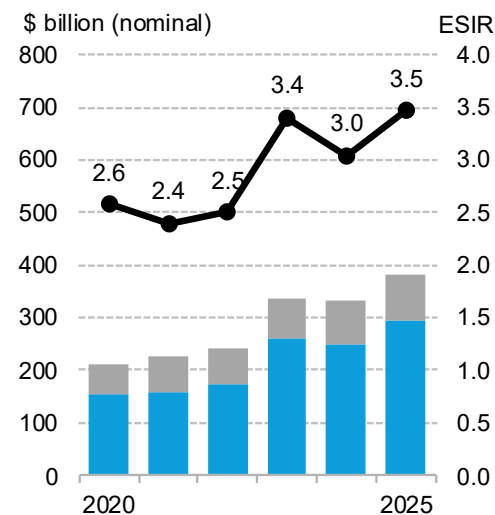


APAC excluding Mainland China



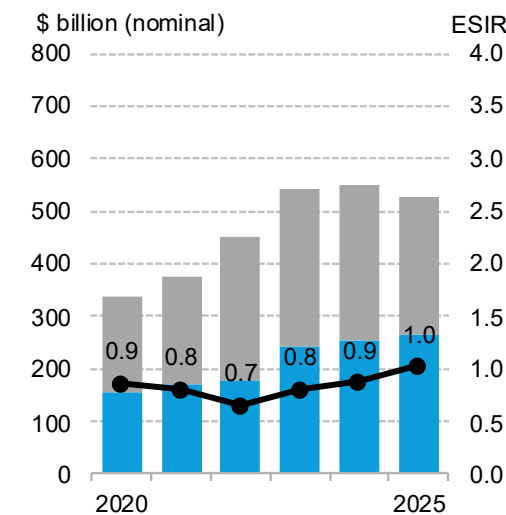
Clean energy supply

Europe



Fossil-fuel supply

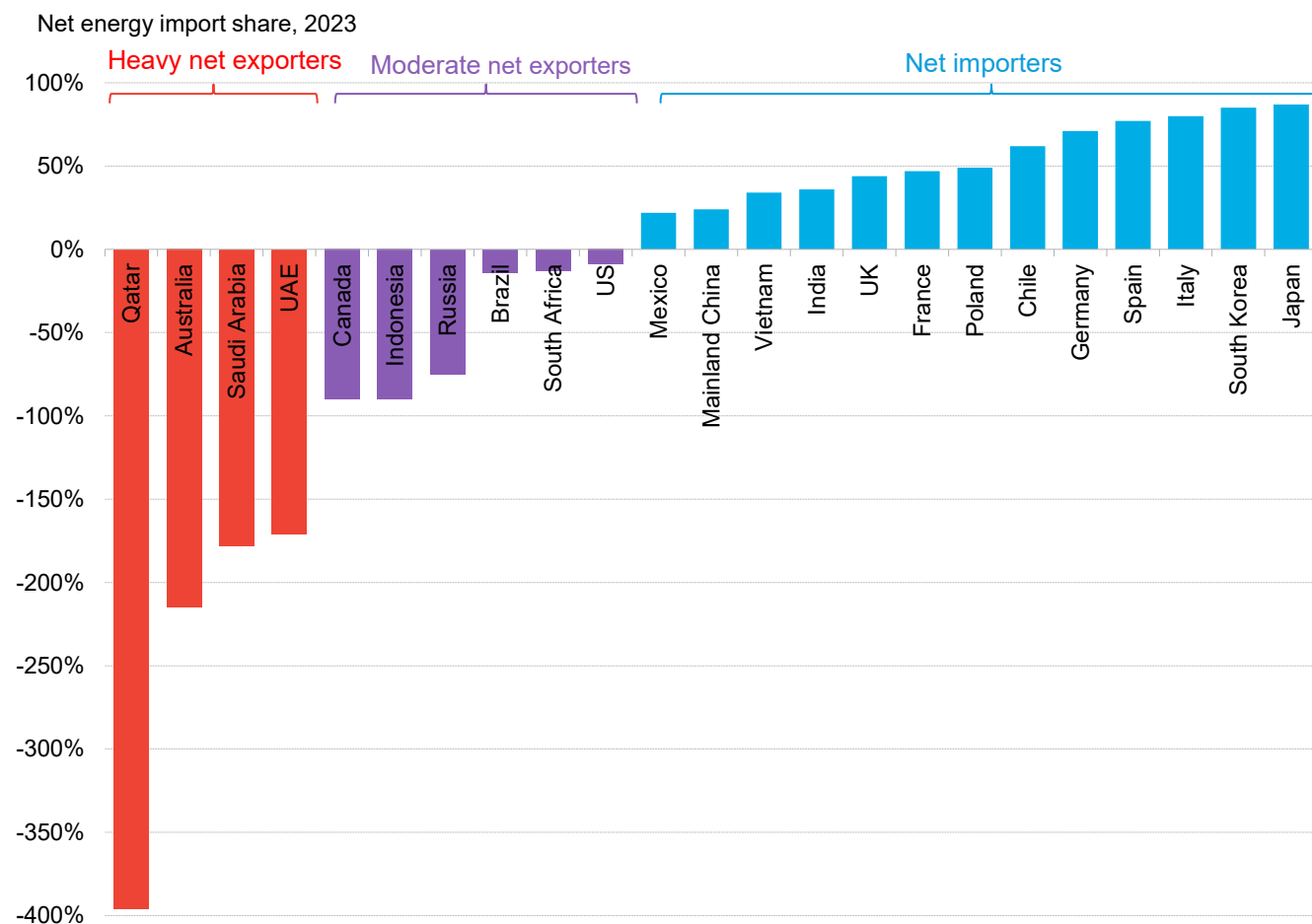
North America



Source: BloombergNEF, International Energy Agency (IEA). Note: Historical volumes for fossil-fuel supply investment were aggregated from the IEA's World Energy Investment 2025 ([web](#)). Investment includes upstream, midstream and downstream sectors, and unabated fossil generation. Dollar values have been adjusted to nominal terms. Europe excludes Andorra, the Faroe Islands, Greenland and Russia. North America includes Canada, Mexico and the US. These regional aggregations align with IEA classifications.

Markets without domestic fossil fuels are highly dependent on energy imports

Net energy imports of selected markets as a share of domestic energy consumption

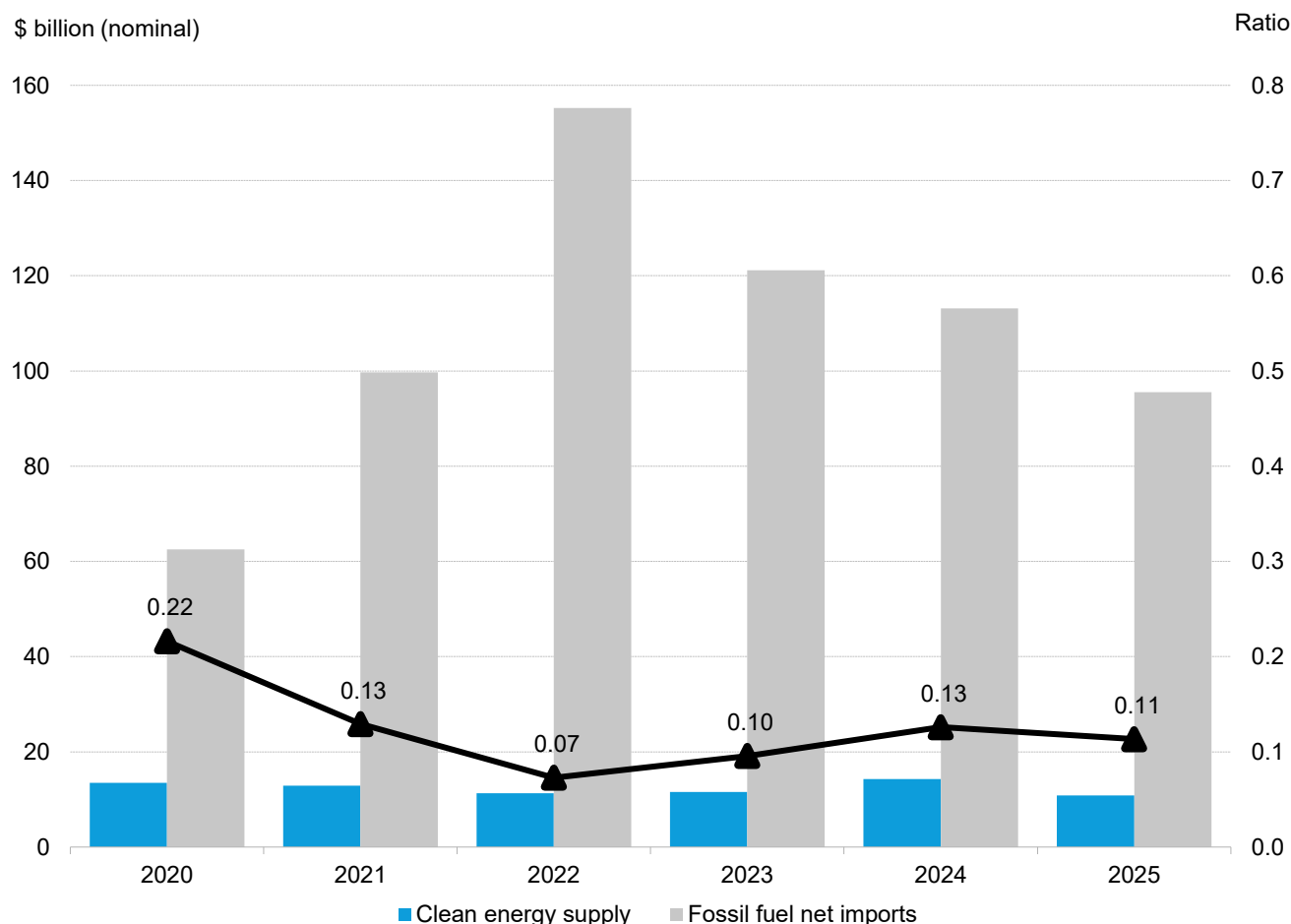


- The world's energy system remains primarily reliant on fossil fuels. As a result, markets without domestic fossil-fuel resources depend heavily on energy imports.
- Japan, South Korea and Taiwan are almost completely dependent on imports of coal, crude oil and liquefied natural gas (LNG) due to a lack of domestic reserves.
- For Southeast Asian economies, this dependence is more complex. Historically, the region as a whole has been largely self-sufficient, although fossil-fuel endowments vary widely by market.
- Indonesia remains the primary net energy exporter in the region due to its abundant coal supplies. While the economy is also a net exporter of natural gas, it is reliant on crude oil and product imports. Malaysia is also still a net exporter of natural gas, but depends on imports of coal, as well as crude oil and refined products.
- Across the region, as oil and gas reserves decline, Southeast Asia is becoming increasingly dependent on imports from outside of the region.

Source: International Energy Agency via World Bank, BloombergNEF.

Fossil-fuel import dependent markets spend more on fossil fuels than energy transition

South Korea annual fossil-fuel net import spending and clean energy supply investment



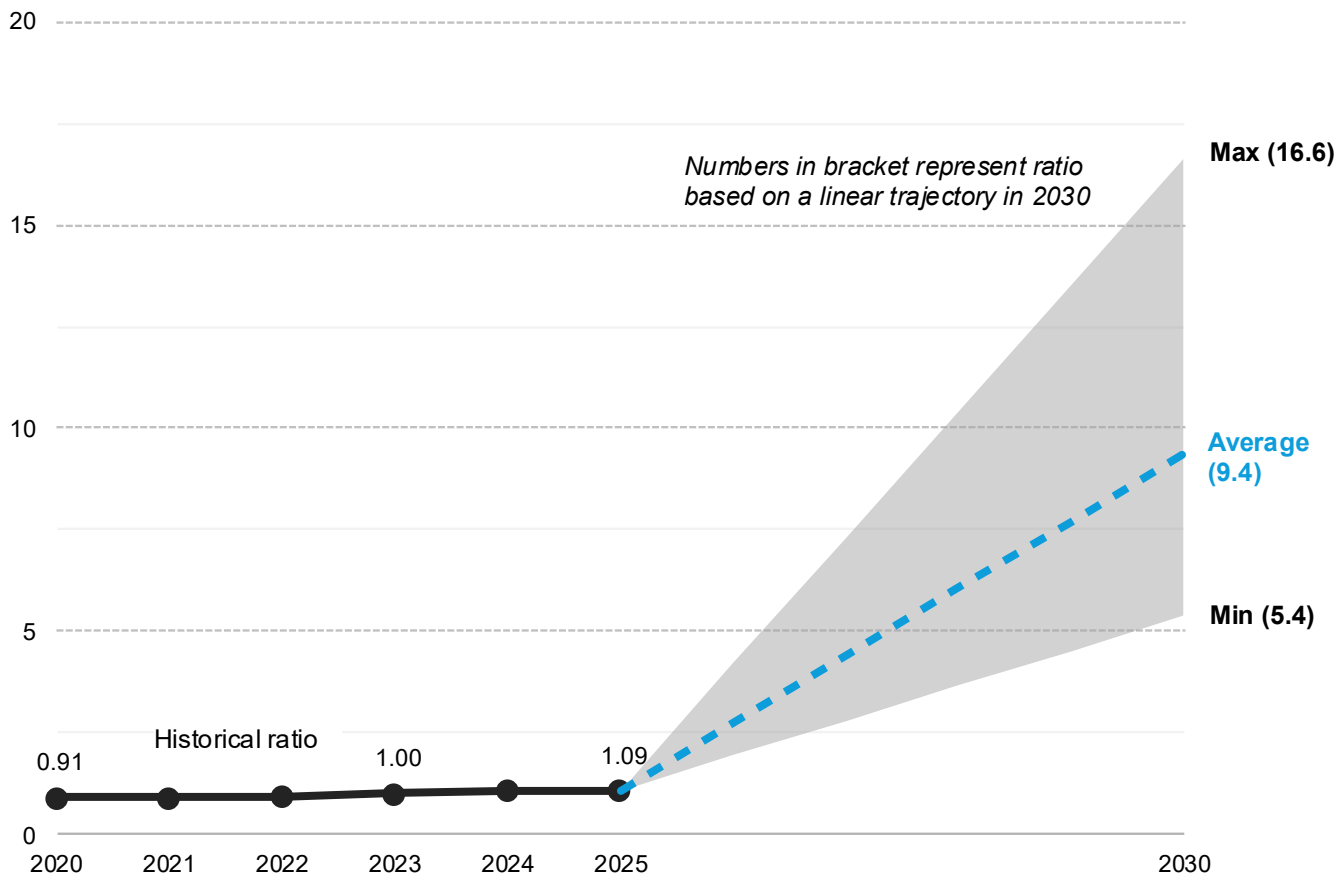
- Regions with limited local fossil fuel resources can have high ESIRs. However, total spending on fossil fuels can remain elevated if their energy system relies heavily on fossil fuel imports. South Korea is a clear example.
- Between 2020 and 2025, South Korea's spending on fossil-fuel net imports reached \$647 billion, while cumulative energy transition investment over the same period was only \$141 billion. The average ratio of clean energy supply investment relative to fossil-fuel net import spending during the same period was only 0.13. In other words, for every dollar spent on fossil-fuel imports, only 13 cents was invested in local clean energy supply.
- High dependence on fossil-fuel imports leaves markets such as South Korea exposed to fossil-fuel price volatility and supply disruptions. For example, the record level of net fossil-fuel import spending in 2022 was due to higher fossil-fuel prices following Russia's invasion of Ukraine.

Source: BloombergNEF, Korea Energy Economics Institute.

Aligning the world to net zero requires a 4:1 investment ratio this decade

Range of energy supply investment ratios to 2030 implied by commonly referenced climate scenarios consistent with 1.5C warming

Energy supply investment ratio



Source: BloombergNEF, International Energy Agency, UN Intergovernmental Panel on Climate Change, Network for Greening the Financial System, Bloomberg, Urgewald. Note: Ratios from 2015 to 2023 are based on historical investment levels from the IEA World Energy Investment reports.

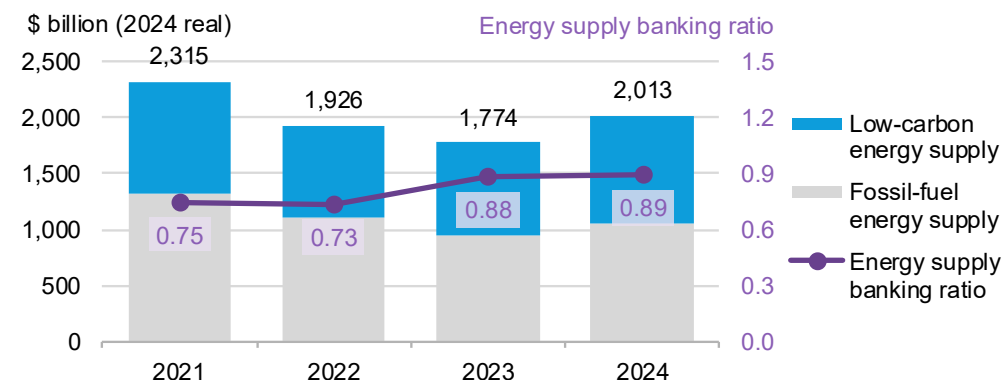
- The pace at which low-carbon energy supply scales up will determine the rate at which fossil fuels are phased down. The most frequently referenced climate scenarios indicate that, *on average across this decade*, limiting global temperature rise to no more than 1.5C, requires \$4 to be invested in low-carbon energy supply for every dollar invested in fossil-fuel energy supply globally.
- Given this ratio stood at 1.09:1 in 2025 and only exceeded parity in 2023, it must ramp up well beyond 4:1 by the end of the decade to remain on track. A simple linear increase would require the ratio to reach 9.4:1 by 2030 to meet the average level suggested by scenarios from the International Energy Agency, the United Nations Intergovernmental Panel on Climate Change (IPCC) and the Network for Greening the Financial System (NGFS). The lower end of this range, which assumes a significant near-term fall in energy demand, calls for a 2030 ratio of 5.4:1.
- Importing regions often need higher ratios as their net-zero trajectories demand more low-carbon energy to substitute fossil fuels and meet rising demand. BNEF's previous analysis suggests that the APAC region excluding China requires an average ratio of more than 6:1 this decade.

Energy supply bank financing

Why Energy Supply Banking Ratios

- **BloombergNEF's Energy Supply Banking Ratios (ESBRs) assess banks' energy sector financing activity and its allocation between low-carbon supply and fossil fuels, using public and commercially available data.** By generating a ratio that captures both sides of the energy transition, the framework approximates the extent to which banks' financing activity is aligned to investment in the real economy and, by extension, with the requirements implied by climate scenarios.
- Since BNEF's first publication of this ratio in February 2023, investors have pushed banks to disclose their own energy supply financing ratios, beginning with resolutions filed by the New York City Comptroller in 2024 and more recently through proposals filed by the Canadian Shareholder Association for Research and Education (SHARE) in 2025.
- As a result, Citigroup Inc., JPMorgan Chase & Co. and Scotiabank have published their own financing ratios. Other banks, including Royal Bank of Canada and National Bank of Canada, have committed to doing so. BNP Paribas, Credit Agricole and Groupe BPCE have disclosed shares of *credit exposure* to low-carbon and fossil-fuel activities, without detailed methodology. BNP Paribas and Credit Agricole have also set 2028 targets for these credit exposure shares.
- Bank ratio disclosure can provide investors with greater visibility into how institutions' businesses are tracking the broader energy transition, capitalizing on low-carbon opportunities, and continuing to support conventional fossil fuels. Calculating a ratio can equally be an important internal benchmarking exercise and strategic tool, as the framework aligns with banks' incentive to capture growth.
- This report recaps BNEF's 2024 ESBR findings, published in September 2025, with a focus on Northeast and Southeast Asia. BNEF will continue to produce annual updates of global results. **Institutions interested in participating can contact bnefclimate@bloomberg.net for data and methodology clarifications, or to discuss implementation of the framework.**

Global energy supply bank-facilitated financing



Source: BloombergNEF, IJGlobal, RAN, Urgewald. Note: All 2021-2023 numbers adjusted for inflation and reported in 2024 US dollars.

Banking ratio adoption key developments

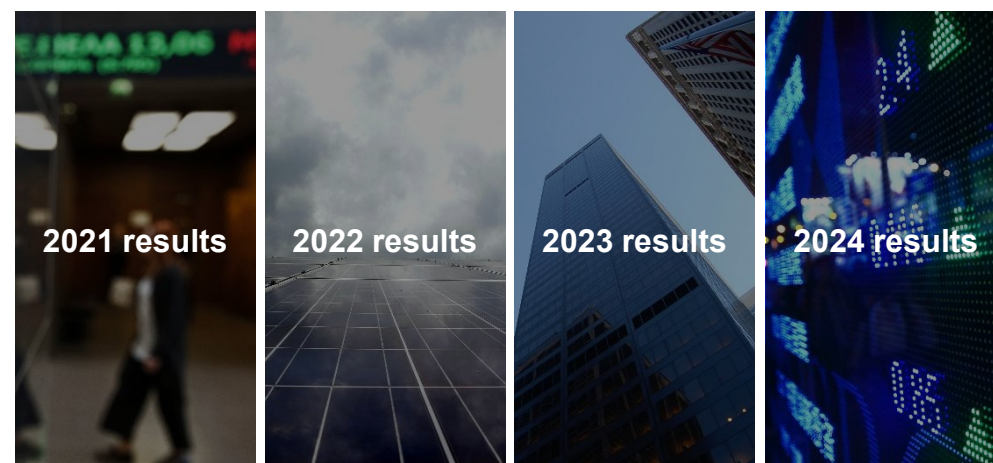
Bank	Activity
JPMorganChase	Published ratio and methodology since November 2024
 Royal Bank	Published methodology in April 2025
	Published ratio and methodology in August 2025
	Published methodology in March 2026
	Published ratio and methodology in April 2026
	Committed to publish a methodology in 2027

Source: BloombergNEF, bank disclosures.

Key methodology points

- **Dollar value comparison:** The Energy Supply Banking Ratio quantifies the volume of bank-facilitated financing for low-carbon energy supply relative to fossil-fuel energy supply. The ratio is calculated as the total dollar value facilitated by an institution for low-carbon energy supply, divided by that for fossil-fuel energy supply.
- **Deal adjustment:** Each transaction – across corporate bonds and loans, public equity, project finance and tax equity – is “adjusted” to estimate the volume that goes toward low-carbon and fossil-fuel energy supply. Most adjustments are based on company revenue segments, with capital expenditures used for 40 oil and gas majors. Due to this revenue-based adjustment, results may show financing flows attributed to certain sectors even when companies are shifting capital toward new activities.
- **Sustainable debt:** For labeled debt, the adjustment uses an instrument’s use-of-proceeds information, and assumes that proceeds are distributed equally among listed potential project types. Only energy supply-relevant types are included in the ratio. Use-of-proceeds data is more widely available but may diverge from actual allocation.
- **Compare with investment:** These two factors contribute to differences between bank financing and investment volumes. Additional drivers include limited data coverage on some asset classes, such as bilateral loans, and the timing mismatch between capital raised and deployment, as proceeds may be allocated across many years. Additional funding sources contribute to energy transition investment but are not explicitly included in financing data, including internal company cash flows, public funding, private debt and consumer expenditure.
- **Data source:** The analysis includes only deals captured by Bloomberg and BNEF, through public channels and direct submissions, and project finance data from IJGlobal. No estimates are included. Deal types with less publicly available information, such as bilateral loans, means results may be incomplete.
- **Methodology:** Detailed sector coverage and data sources are provided in the [methodology](#) section. BNEF clients can read full global reports on [bnef.com](#).

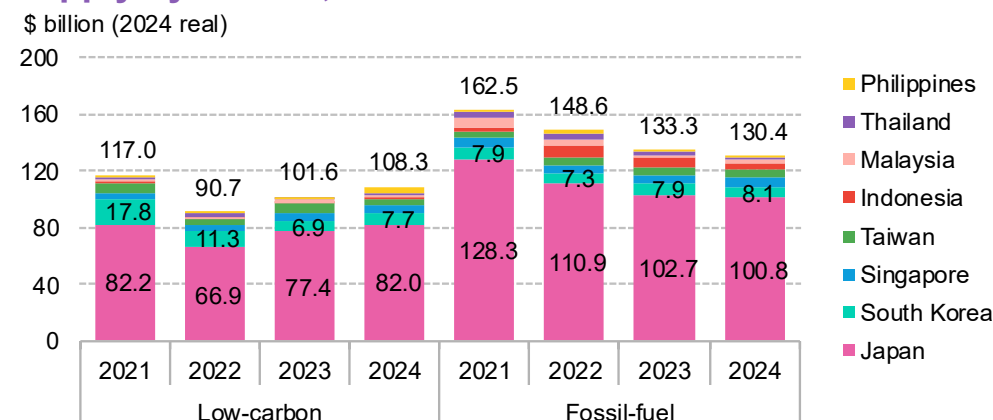
Access public summaries of past ESBR reports on the BNEF website:



Banks facilitate 83 cents of low-carbon financing for every dollar to fossil fuels

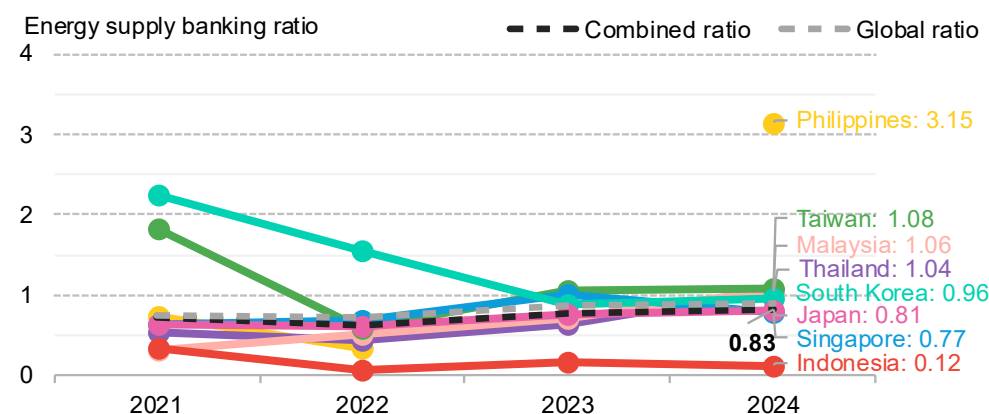
- Banks headquartered in the eight markets covered in this report facilitated over \$990 billion of energy supply financing between 2021 and 2024, with annual volumes stable at around \$240 billion (2024 real) over the past three years. These figures include \$358 billion of transactions conducted domestically. The remainder comprises deals for issuers in the rest of the world. See the [methodology \(page 14\)](#) for details on the difference between investment and financing figures.
 - Fossil-fuel financing volumes declined gradually over the past four years among these banks, while low-carbon volumes rose only marginally. Total low-carbon transactions in 2024 remained below 2021 levels and fossil-fuel energy supply volumes.
 - Banks across these markets had a combined ESR of 0.83:1 in 2024. In other words, for every dollar of fossil fuel financing, they facilitated 83 cents into clean energy supply. Although this ratio reached its highest level since 2021, it remained below that of the banks in the wider APAC region outside of China (0.94:1) and the global ratio of 0.89:1. European banks led globally in 2024, with an aggregated ratio of 2.1:1.
- Japanese** banks are the largest facilitators of energy supply financing among institutions headquartered in these regions. They slowly improved their ratios to 0.81:1 in 2024 from 0.64:1 in 2021.
 - South Korean** banks facilitated the second-highest total of financing volumes and recorded the highest average ratios over 2021-2024, despite dropping to 0.96 in 2024.
 - Aggregated ratios for banks from **Taiwan, Singapore, Malaysia** and **Thailand** are close to 1:1.
 - Indonesian** banks' ratios remained consistently lower, ending 2024 at 0.12:1, reflecting the coal-heavy structure of the economy.
 - Banks in the **Philippines** saw their ratio jump to 3.15:1 in 2024, driven by a large solar and storage project that increased low-carbon deal volumes.

Bank financing in low-carbon and fossil-fuel energy supply by market, Northeast and Southeast Asia



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

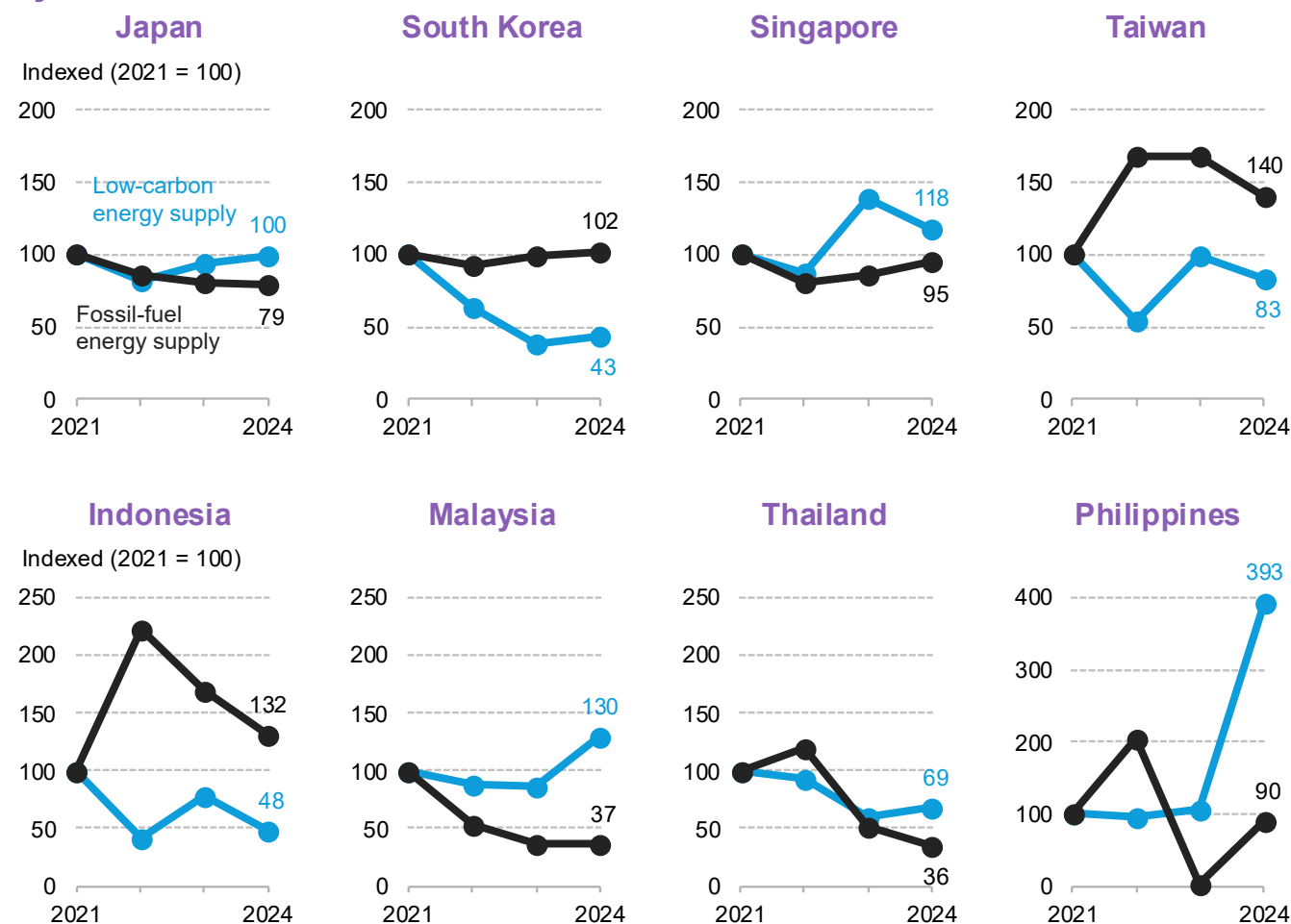
Energy supply banking ratio by market



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal. Note: Results are excluded when a market's annual energy supply financing totals less than \$1 billion.

Mixed progress in energy transition financing

Relative change in low-carbon and fossil-fuel energy supply bank financing, by market

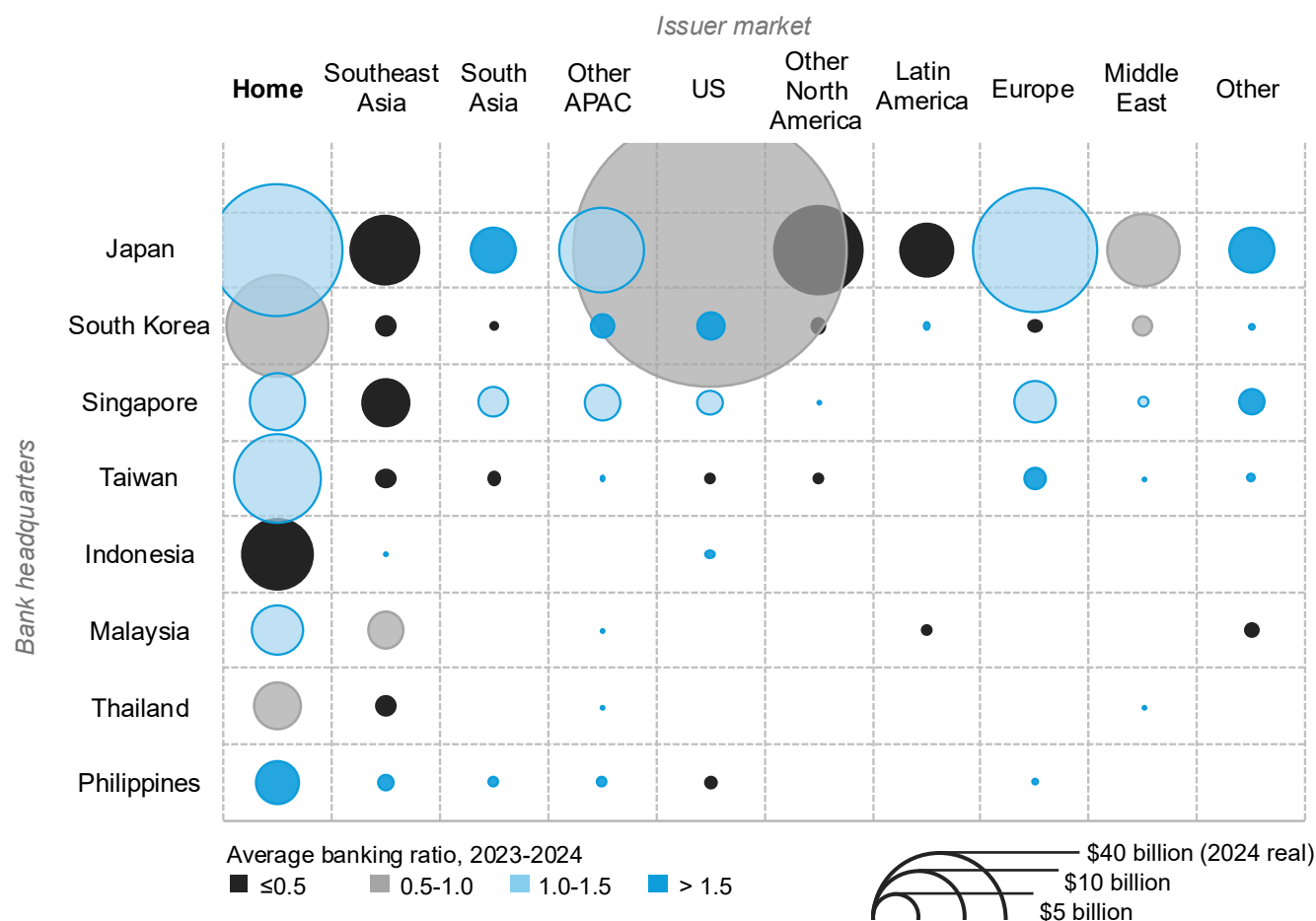


Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

- Only banks in Malaysia, Philippines and Singapore of the eight markets covered in this report, ended 2024 with a higher low-carbon financing volume than that in 2021. After a decline across the region in 2022, only some markets have seen a recovery in low-carbon financing activity.
- Financing for the largest solar and battery project in Southeast Asia drove a jump in low-carbon deal volumes for banks in the Philippines, to \$3.4 billion in 2024, up from below \$1 billion in previous years.
- A major green bond issuance drove **Malaysian** banks' low-carbon volume to \$2.6 billion in 2024. Fossil-fuel energy supply financing exceeded low-carbon levels in absolute terms.
- A rebound in solar installations slightly boosted low-carbon financing for **South Korean** banks. However, levels remained well below the 2021 high, as the market continued to grapple with grid access and strict land use regulations.
- Banks in both Thailand and Indonesia saw fossil-fuel transactions decline, as their oil majors PTT and Pertamina saw limited debt maturing and refinancing needs.
- As a result of these relative changes, aggregated ratios of banks from Japan, Taiwan, Malaysia, Thailand and the Philippines rose in 2023 and 2024.

Banks in five markets finance more low-carbon than fossil-fuel energy at home

Combined banking ratios by bank headquarters and issuer market, 2023-2024



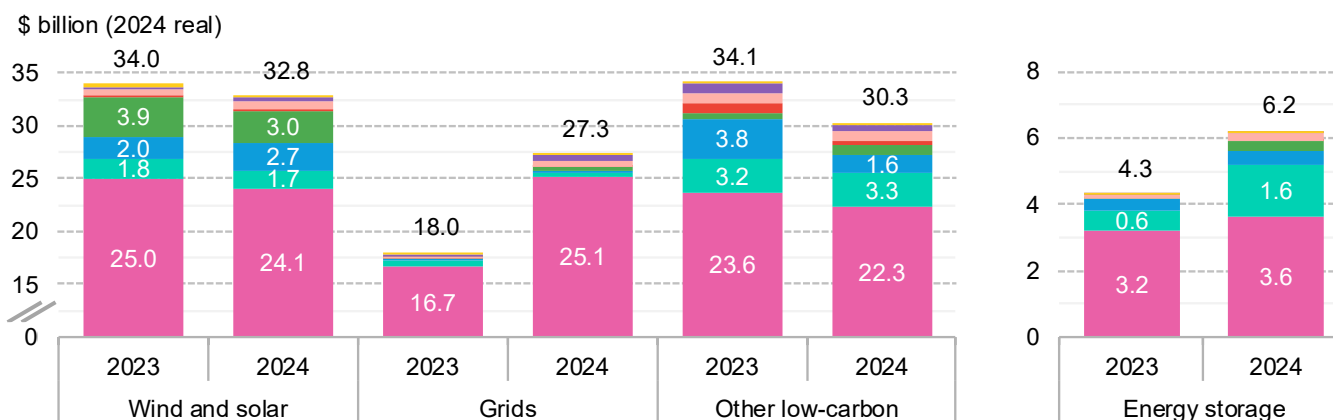
- Banks headquartered in five of the eight markets analyzed in this report achieved aggregated ratios above 1:1 at home over 2023-2024. In other words, their **domestic business** tilted toward low-carbon financing. The exceptions are Indonesian banks' domestic ratio of 0.14:1, while banks in Japan and Thailand recorded ratios around 0.9:1, close to parity.
- Most banks' **Southeast Asian** footprints remained fossil-fuel heavy, leading to a ratio below 0.5. This is largely due to their Indonesian and Philippines transactions. On the flip side, banks in these two markets mostly facilitated low-carbon deals overseas.
- In the **US**, banks from Japan, Taiwan and the Philippines leaned into fossil-fuel deals, while those from South Korea, Singapore and Indonesia facilitated smaller but more low-carbon deals.
- Europe and other APAC markets** provided more low-carbon deals for these banks. In the rest of APAC, Australia and Hong Kong provided major low-carbon transactions. The Asia Development Bank, based in the Philippines, also provided loans to projects in Azerbaijan and Uzbekistan. In Europe, banks from North Asia were able to source deals in France, Germany and Portugal, among other markets.

Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: "Other" includes Africa, mainland China and supranational.

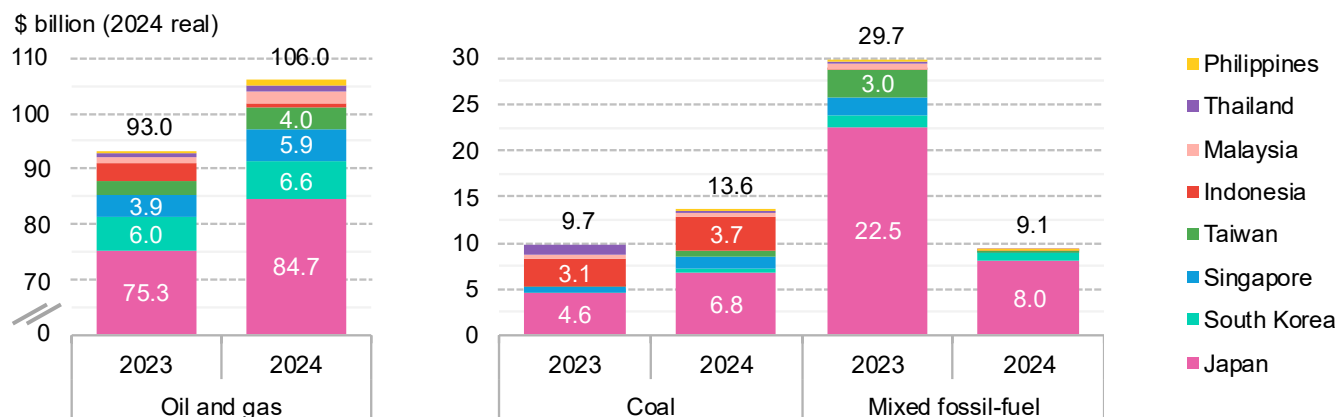
Power grid financing lifts low-carbon flows as wind and solar stagnate

Bank financing volume, by issuer sector segmentation, 2023 versus 2024

Low-carbon sectors



Fossil-fuel sectors



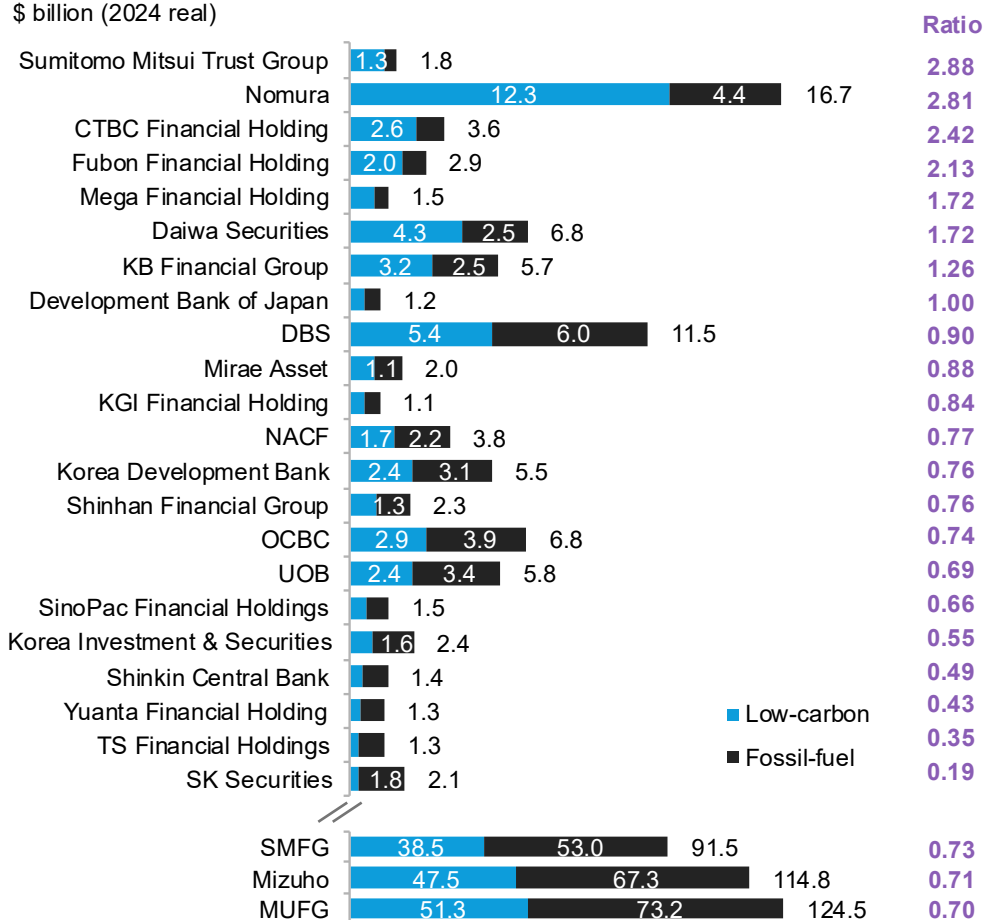
Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: "Other low-carbon" includes nuclear power, hydro, geothermal and biomass, as well as deals with insufficient information for sub-sector attribution. "Mixed fossil-fuel" also includes deals with insufficient sub-sector information.

- Among low-carbon sectors, bank financing to **wind and solar** companies and projects stayed almost flat between 2023 and 2024. Banks from Singapore, Malaysia and Thailand grew wind and solar deal volumes, albeit from small bases. Land constraints and cost pressures limited growth in key markets such as Japan, South Korea and Taiwan.
- Power grid** and **energy storage** financing rose in 2024 for banks in most markets. Japanese banks saw most of their grid financing growth in the US, Australia and Mexico. Meanwhile, banks from Singapore, Taiwan, Indonesia, Malaysia and Thailand all saw meaningful growth for grid-related companies at home. Only banks in Thailand as a group did not see growth in energy storage deals in 2024.
- On the fossil-fuel side, both **oil and gas** and **coal** companies saw an increase in financing flows in 2024. This was partly due to better disclosure, enabling attribution to specific fossil-fuel sectors rather than BNEF's "mixed" category. This effect is particularly evident for TEPCO Power Grid and Vitol. Banks from Japan and Indonesia increased domestic coal financing. Indonesian banks were the only group to reduce oil and gas financing in 2024. Singapore banks doubled coal financing abroad.

Energy supply financing results

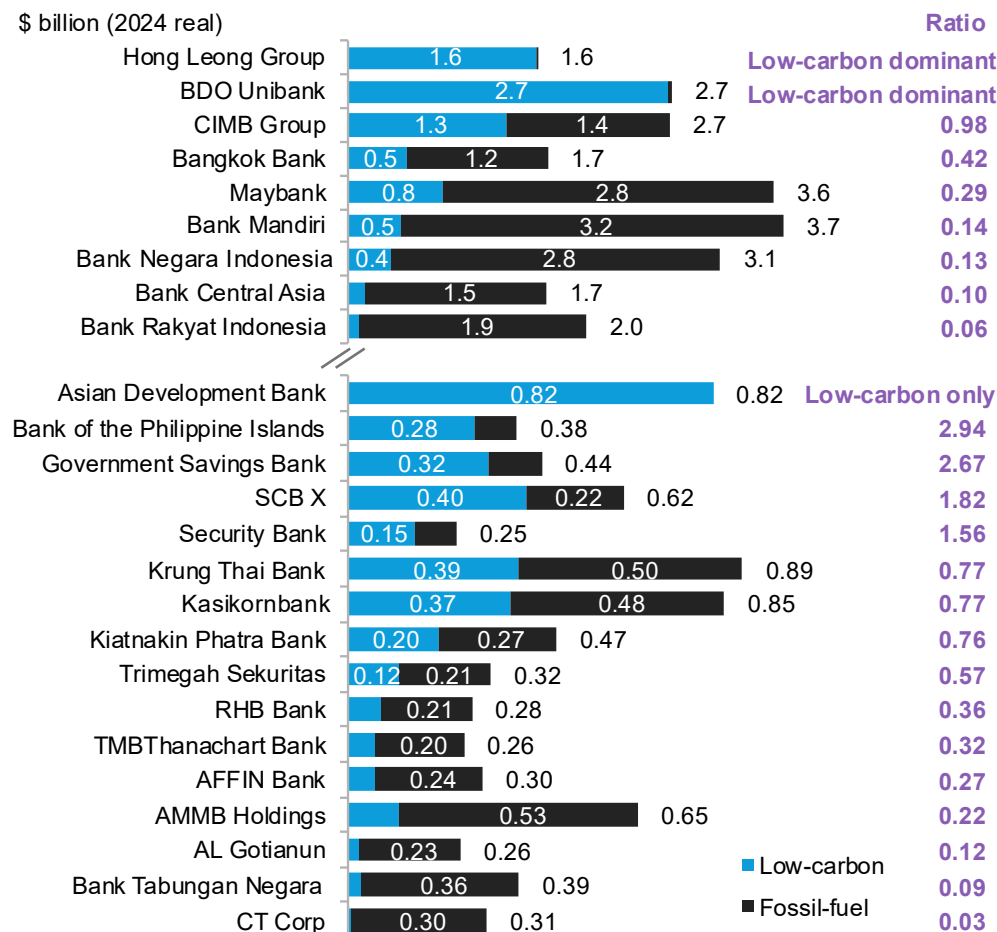
Energy supply financing by largest banks in Japan, South Korea, Singapore and Taiwan, ranked by energy supply banking ratio, 2023-2024

\$ billion (2024 real)



Energy supply financing by largest banks in Indonesia, Malaysia, Thailand and the Philippines, ranked by energy supply banking ratio, 2023-2024

\$ billion (2024 real)



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: NACF = National Agricultural Cooperative Federation.

Energy supply banking ratio results by market

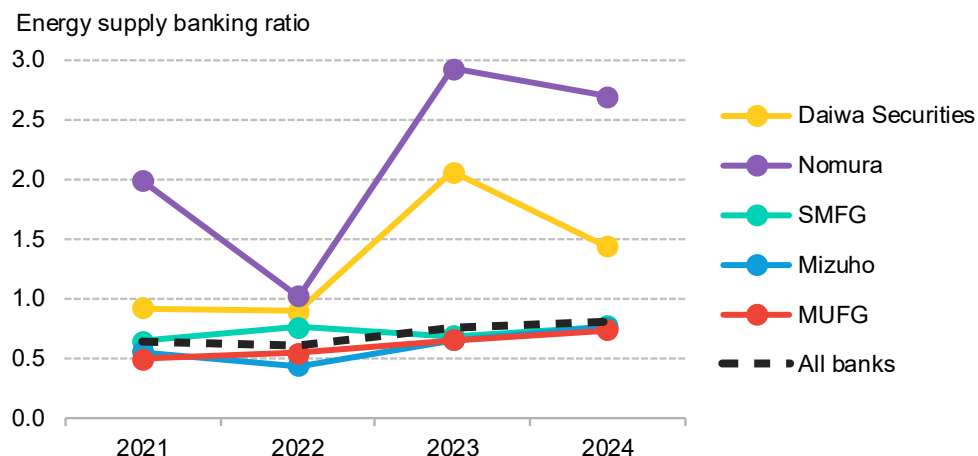
Japan: Three financial majors dictate ratio

- **Top banks:** Japan's three largest banking groups, Mitsubishi UFJ Financial Group (MUFG), Mizuho Financial Group and Sumitomo Mitsui Financial Group (SMFG) accounted for 88% of all low-carbon volume in the market, and 95% of all fossil-fuel deals in 2024.
- **Volume:** MUFG recorded the largest increase in low-carbon deal activity in 2024, rising 21% to more than \$28 billion. Mizuho also increased low-carbon deal volume by 13%. Meanwhile, Nomura and Daiwa Securities saw declines in low-carbon financing activity. Overall, low-carbon deal volume across Japan-based banks still rose to \$82 billion in 2024.
- The fossil-fuel side experienced the opposite. Total deal volume has been declining since 2022. MUFG, the biggest fossil-fuel energy supply

financier in the market, was the only major bank to record growth in 2024, supported by large domestic transactions, including a \$1.3 billion revolving credit facility to Idemitsu Kosan, a major refiner.

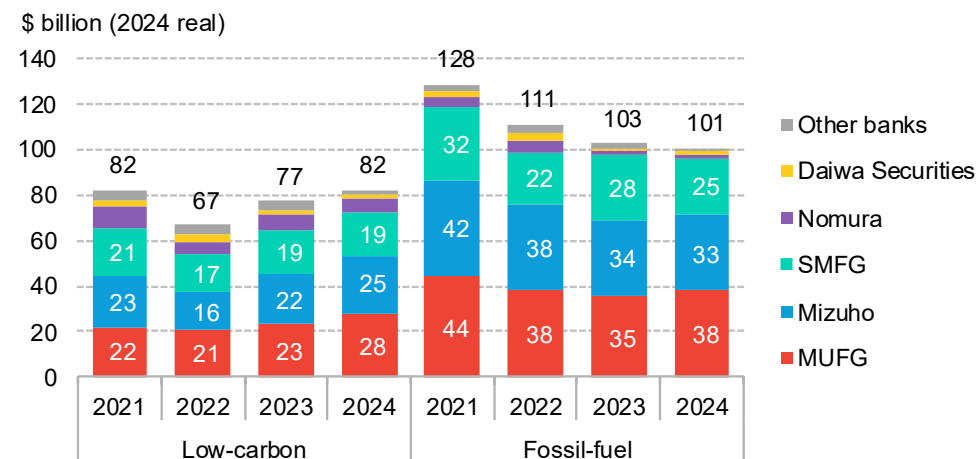
- **Ratio:** The combined ratio of Japanese financial institutions rose to 0.81:1 in 2024, the highest in the four-year period. Ratios for the top three banks improved gradually to around 0.75:1 in 2024. More focused business models around security brokerage have enabled smaller institutions such as Nomura and Daiwa Securities to improve their ratios. Nomura led the top five Japanese banks in 2024, with a ratio of 2.7:1, followed by Daiwa Securities with 1.4:1.

Top Japanese banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Low-carbon and fossil-fuel bank financing volume by top Japanese banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Japan: Overseas activity drives banking ratio outcomes

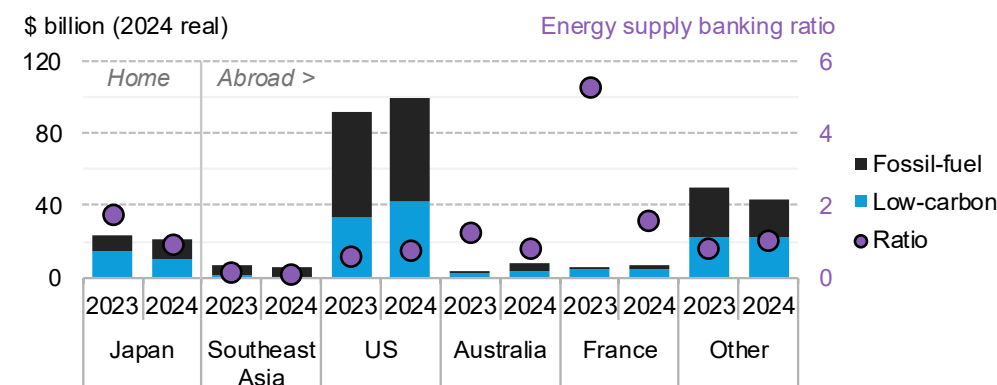
Geographical footprint

- Major Japanese financial institutions have a significant presence in the US. Half of the tracked energy supply financing in 2024 facilitated by Japanese banks was for US-based issuers. Better data transparency in the world's biggest capital market may have amplified this tilt. Other major overseas markets include Australia, France and the UK.
- High volumes of fossil-fuel financing in the US weighed on Japanese banks' ratios. Their ratio in the US was 0.74:1 in 2024, an improvement from 2023 but still below other major markets. For domestic deals, Japanese banks' ratio was 0.91:1 in 2024.

Sector drivers for top banks

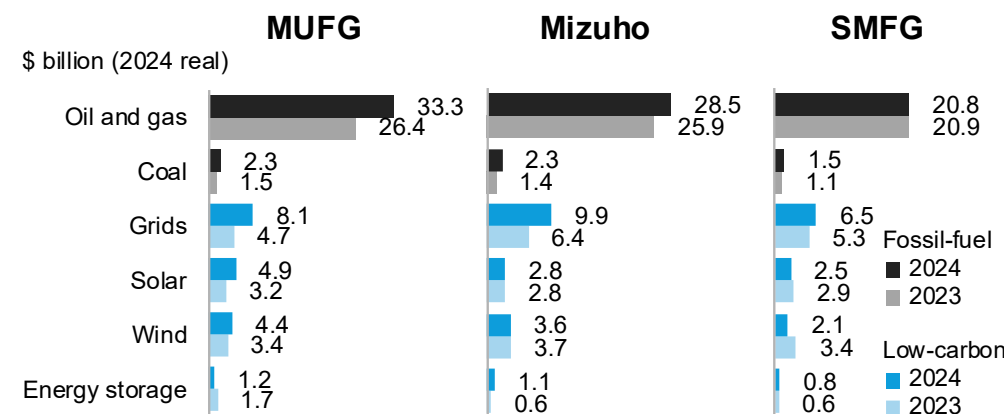
- Grid companies drove the largest increase in deal volumes in 2024 for Japanese banks. The 50% jump was largely supported by growth in the US, Mexico and Australia. Notable issuers in 2024 included the National Rural Utilities Cooperative Finance Corp. and Southern California Edison in the US, and Mexico's Comision Federal de Electricidad.
- Financing for the wind sector contracted by 14% across Japanese banks in 2024, mainly due to fewer labeled deals specifying wind as a use of proceeds than in 2023. Some of these deals were from offshore wind developers in Taiwan and the UK. Excluding labeled deals, Japanese banks' wind transaction volumes increased in 2024, driven largely by loans to NextEra Energy from MUFG and Mizuho.
- On the fossil-fuel side, Japanese banks increased financing for the oil and gas sector in 2024, mostly in the US, Saudi Arabia and Australia. The largest issuers in the sector included Phillips 66 and TotalEnergies. SMFG was the only one in the top three that did not increase its oil and gas financing, based on BNEF data. Coal financing rose by almost 50% in 2024 for Japanese banks and major issuers included Mitsubishi Corp., American Electric Power Co. and NRG Energy.

Japanese banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top Japanese banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

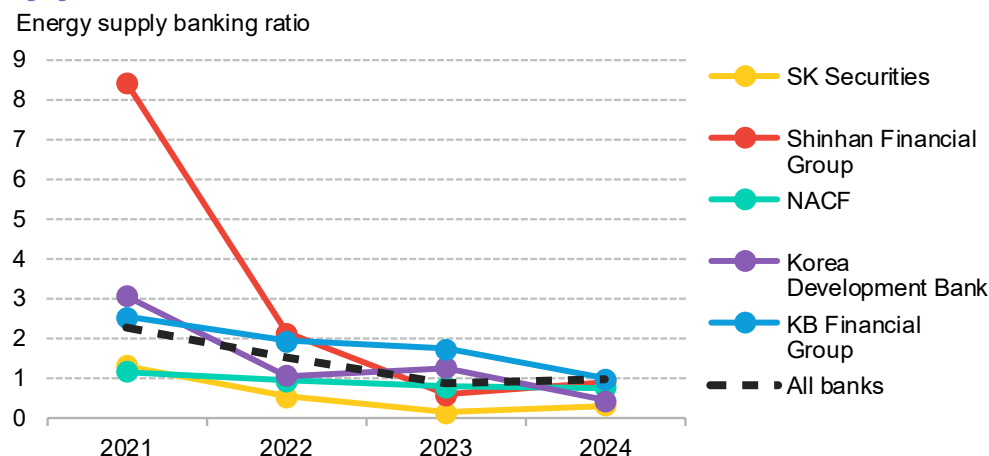
South Korea: Ratios trend down as low-carbon market contracts

- **Top banks:** South Korea's energy supply financing market is less concentrated than Japan's. The top five financial institutions accounted for 64% of total deal volume over 2021-2024. Other household names, including Mirae Asset Securities and Korea Investment Holdings, rank among the top 10.
- **Ratio:** South Korean banks' energy supply ratios declined sharply over 2021-2024, down to 0.96:1 from 2.25:1. This trend is reflected across the leading institutions. KB Financial Group, South Korea's biggest bank in energy supply financing, had a ratio of 0.98:1 in 2024, compared with 2.53:1 in 2021.
- **Volume:** The ESBR decline reflects a significant drop in low-carbon deal volumes in South Korea, while fossil-fuel activity remained broadly

stable. Changes in solar incentives and increasing difficulties in accessing land slowed solar development over this period. In addition, several large renewable projects were refinanced in 2021 following commissioning to take advantage of relatively low interest rates. The elevated volume in 2021 was also boosted by the \$2 billion initial public offering of SK IE Technology.

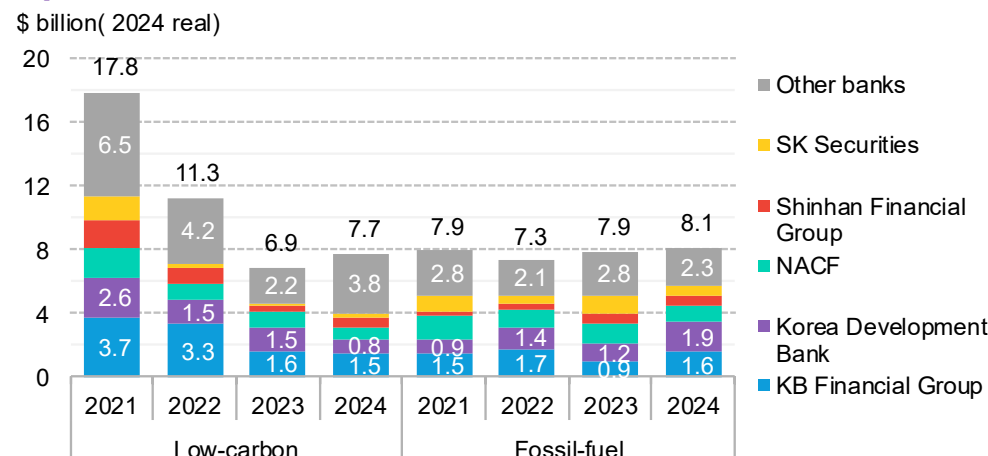
- Low-carbon financing volume recovered in 2024, largely on the back of battery issuers such as W-Scope Corp. This recovery was concentrated among smaller institutions, such as Hanyang Securities, Export-Import Bank of Korea and Industrial Bank of Korea. Meanwhile, leading banks, including KB Financial Group and Korea Development Bank, increased fossil-fuel financing activity.

Top South Korean banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal. Note: NACF refers to the National Agricultural Cooperative Federation.

Low-carbon and fossil-fuel bank financing volume by top South Korean banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal. Note: NACF refers to the National Agricultural Cooperative Federation.

South Korea: Domestic battery and nuclear financing supports growth

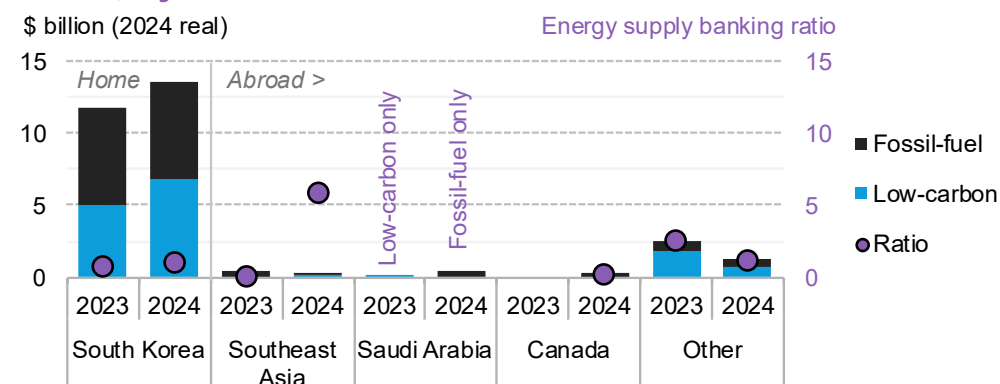
Geographical footprint

- As of 2024, 85% of South Korean banks' energy financing was domestic. The local banking ratio was slightly higher at 0.99:1, compared with these banks' global portfolios. Low-carbon deals increased 35% in 2024, while fossil-fuel volumes stagnated.
- Overseas, Korea Development Bank is the main institution active in markets such as Saudi Arabia and Canada. In 2024, its major involvement included participation in loans to Greensaif Pipelines and Cedar Floating LNG Terminal, both linked to fossil-fuel energy supply. In Thailand, Export-Import Bank of Korea and Daol Investment & Securities were also active, particularly on low-carbon instruments, including financing the Gulf Energy Development Thailand PV Portfolio.

Sector drivers for top banks

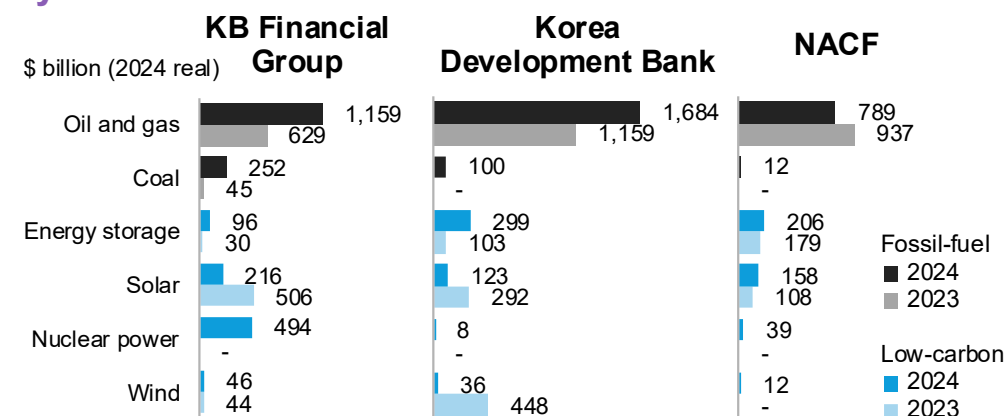
- The top three South Korean banks increased fossil-fuel dealmaking to \$4.4 billion in 2024, from \$3.2 billion in 2023. For KB Financial Group, most of this activity was for domestic issuers, including eight bonds for SK Inc.'s subsidiaries. In contrast, Korea Development Bank's fossil-fuel deals were largely overseas, with a notable exception being a \$1 billion loan to HD Hyundai Chemical.
- On the low-carbon side, battery and energy storage sectors saw strong growth, with financing activity nearly tripling from 2023 to \$1.6 billion in 2024. Korea Development Bank was the largest financier, lending to South Korea's Innox Lithium Co. as well as Canada's Hagersville Battery Storage Inc.
- Nuclear-related financing also recovered in 2024 as the previous administration anchored its energy roadmap on nuclear power. Utilities such as Korea Hydro & Nuclear Power Co. and Korea Western Power issued bonds, many underwritten by KB Financial Group. Hanwha Energy also issued green bonds that included potential support for hydrogen.

South Korean banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top South Korean banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure to sectors. Top banks based on total energy supply financing in 2023-2024. NACF refer to the National Agricultural Cooperative Federation.

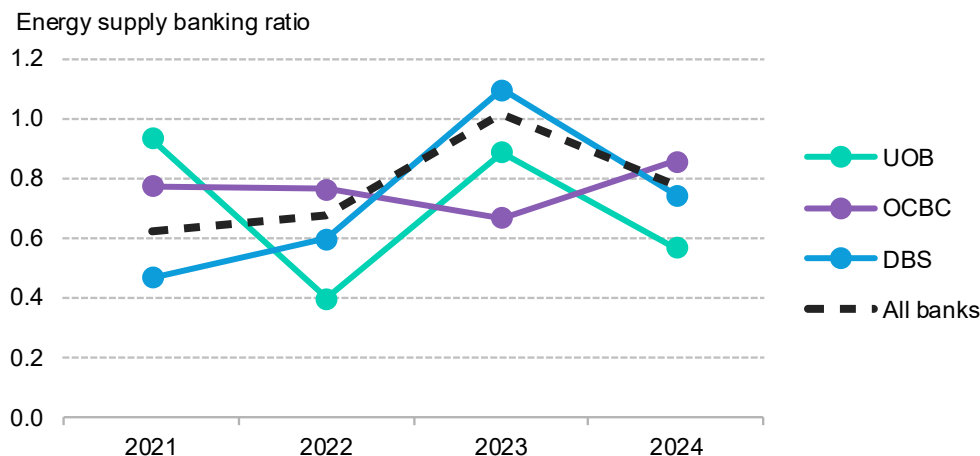
Singapore: Three majors dominate

- **Volume:** Domestic and international financial institutions are both active in Singapore, extending their reach across Asia. This report focuses on banks headquartered in Asian markets, whose financing volumes remained stable over 2021-2024 in both low-carbon and fossil-fuel activities.
- **Top banks and ratio:** Three major institutions accounted for almost all energy supply financing in Singapore, and determine the market's banking ratio, which remained below 1:1 over the four-year period. DBS Group is the largest bank in the sector, financing more than \$24.5 billion across low-carbon and fossil-fuel deals. Its ratio rose since 2021 but declined sharply in 2024 as fossil fuel activity increased while low-carbon volumes fell. Oversea-Chinese Banking Corp. and United Overseas Bank each facilitated more than \$10 billion in energy financing over

2021-2024. OCBC's ratio edged up to 0.86:1 in 2024 on lower fossil-fuel activity, while UOB's ratio declined in a similar pattern to DBS.

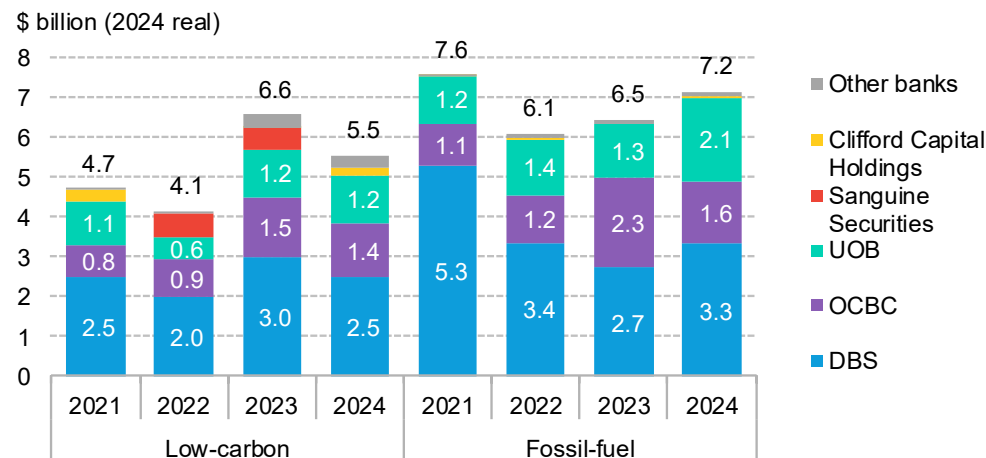
- Two smaller institutions complete the top five. Clifford Capital Holdings, an infrastructure credit platform backed by Temasek and other major banks and insurers, facilitated sizable low-carbon deals, as well as smaller fossil-fuel transactions. Sanguine Securities underwrote two green bonds for its parent Sanguine Impact Investment, an emerging market infrastructure investor, which were enough to place it ahead of Clifford Capital in cumulative deal volume.
- Including international banks' activity for issuers based in Singapore, SMFG, Standard Chartered, Bank of China, MUFG and First Abu Dhabi Bank also played a substantial role, each facilitating more than \$1 billion in energy supply transactions over 2023-2024.

Top Singaporean banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Low-carbon and fossil-fuel bank financing volume by top Singaporean banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Singapore: Banks active in many markets

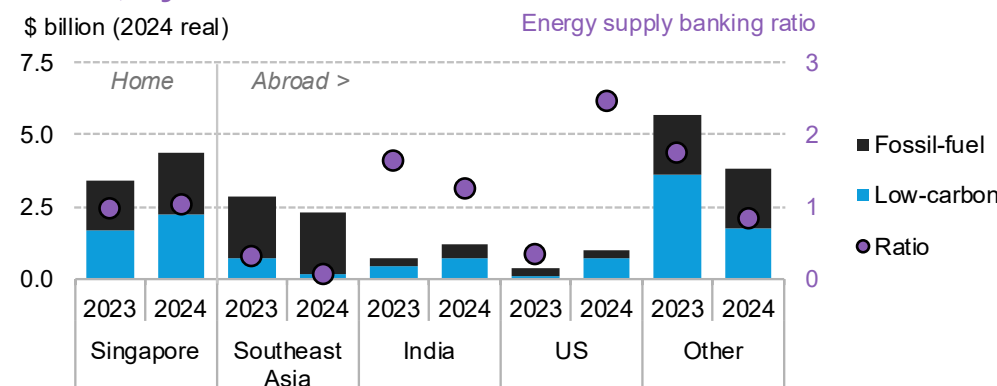
Geographical footprint

- Singaporean banks are active in many markets, including Thailand, India, the US, mainland China, Indonesia, Australia and the Netherlands. No single market has dominated their energy financing activity.
- Domestically, these banks' overall ratios improved in 2024 to 1.05:1 from just below 1:1 in 2023 driven by several smaller deals, including a green bond issued by the government's Housing and Development Board for solar and green buildings.
- In Thailand, Singaporean banks facilitated more fossil-fuel transactions in 2023 and 2024, leading to ratios below 0.2:1 each year. In India the opposite is true, especially with DBS's \$200 million project finance to the Fortum Koppal Solar Wind Co-located Plant in 2024. In the US, OCBC arranged new green loans to Stonepeak's infrastructure fund and Equinor's offshore wind project, leading to an increase in low-carbon volume and its ESR in 2024.

Sector drivers for top banks

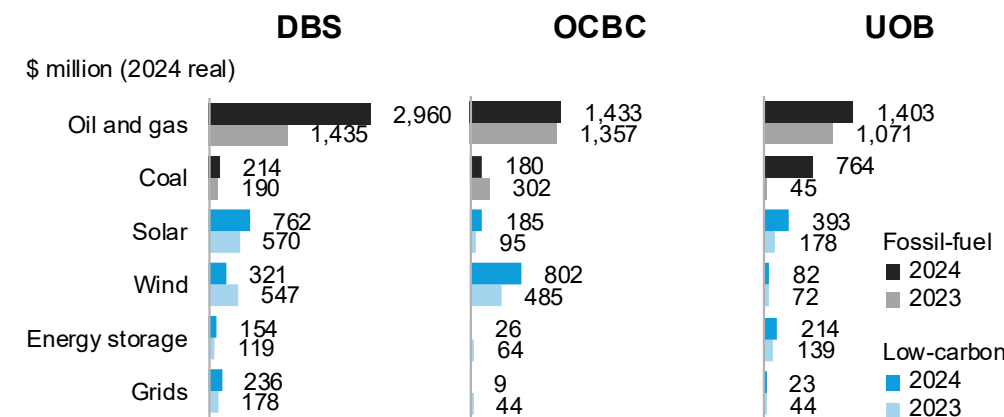
- DBS doubled its oil and gas financing in 2024 with major loans to Thailand's Gulf Energy Development, Vitol in the Netherlands and ONGC Videsh in India. UOB expanded its coal activity noticeably with loans to Indonesia's Tanito Harum.
- On the clean energy side, steady growth in the solar sector benefited all major banks. OCBC and UOB both doubled solar transactions in 2024 from a low base. Labeled debt accounted for 85% of the growth, with issuers including government entities such as the Public Utilities Board, but also corporations including Tongwei's Hong Kong subsidiary, Portugal's EDP and India's Adani Green Energy.
- The largest energy storage deal was SK Battery America's green loan, in which UOB participated. DBS facilitated the biggest transaction in the grid sector, a \$700 million bond issued by Singapore Power.

Singaporean banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top Singaporean banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

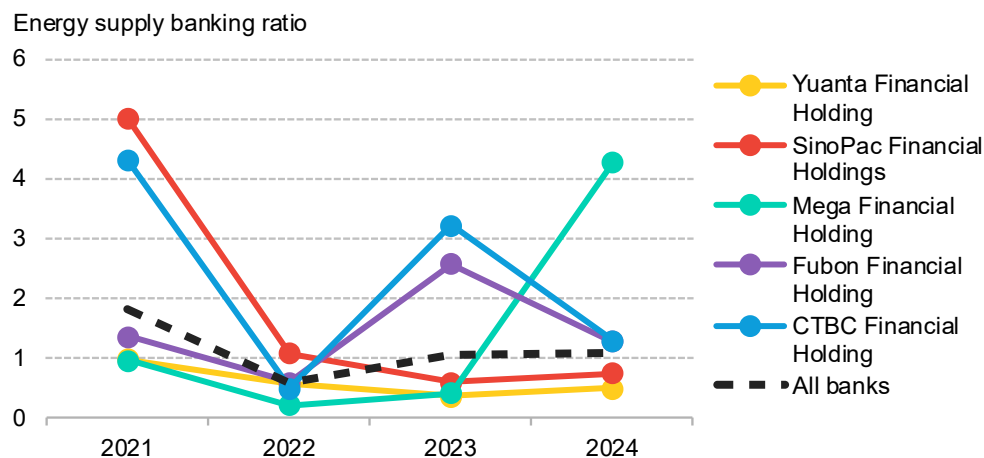
Taiwan: Many institutions active in a static market

- **Top banks:** A large number of financial institutions in Taiwan have been active in energy supply financing. Some 15 financiers each achieved more than \$1 billion in deal volume across low-carbon and fossil-fuel activities between 2021 and 2024.
- **Ratio:** CTBC Financial Holding and Fubon Financial Holding were the top banks in terms of cumulative volume, driven by strong low-carbon dealmaking in 2023. As a result, their ratios jumped to above 2.5:1 that year before returning to 1.28:1 in 2024. Mega Financial Holding, the third-largest by energy supply deal volume over the four-year period, saw its ratio surge to 4.27:1 in 2024, due to a fivefold increase in low-carbon deals alongside limited fossil-fuel activity.
- Relatively smaller players, such as SinoPac Financial Holdings and

Yuanta Financial Holding, had lower ratios of 0.74:1 and 0.49:1, respectively, in 2024. Institutions outside of the top five – including TS Financial Holding, KGI Financial Holding and Taiwan Cooperative Financial Holding – accounted for 60% of the fossil-fuel deal volume in 2024, the largest share over the four-year period. Overall, Taiwanese banks' energy supply ratios have remained at around 1:1 since 2023.

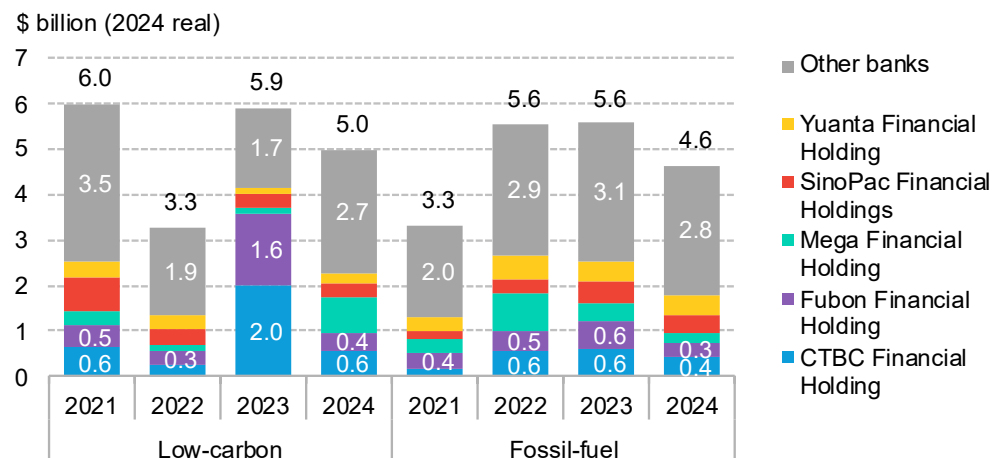
- **Volume:** Total energy supply financing remained stable between 2021 and 2024 at around \$10 billion annually. The balance between low-carbon and fossil-fuel activity shifted in 2021 and 2022, but remained broadly unchanged over 2023-2024. This largely reflects slow progress in the energy transition under the current administration, particularly in navigating local opposition to solar development and securing reliable offtakers for offshore wind projects.

Top Taiwanese banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Low-carbon and fossil-fuel bank financing volume by top Taiwanese banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Taiwan: Domestic market remains near low-carbon and fossil-fuel parity

Geographical footprint

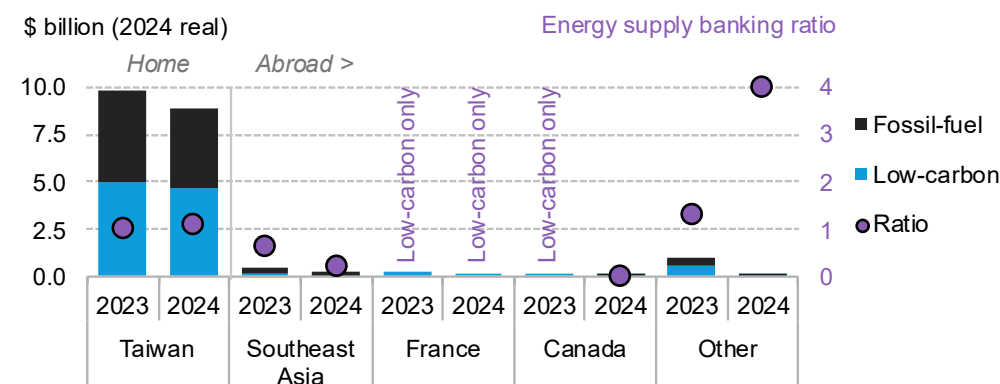
- Taiwanese banks conduct the majority of their business domestically. In 2024, CTBC was active in the Philippines, while several banks, including Fubon and SinoPac, underwrote labeled bonds issued by French banks such as Natixis and Credit Agricole. However, deal volumes in each of these markets remain limited based on data tracked by BNEF.
- Low-carbon and fossil-fuel deal volumes in Taiwan were relatively steady in 2023 and 2024, leading to ratios around 1:1. Fossil-fuel deal volumes dipped 8% in 2024, a trend that was reflected in the activities of the top three banks. CTBC, Fubon and Mega. CPC Corp., the state-owned oil and gas major, increased bond issuance in 2024, but was insufficient to offset the drop in Taipower's issuance that year.

Sector drivers for top banks

- Wind is the most active low-carbon financing sector in Taiwan, with most activity supported by labeled loans issued by offshore wind projects. In 2023, the financing close of Northland Power's Hailong 3 project and the refinancing of Wpd's Yunlin project lifted volumes. In 2024, Cathay Life Insurance's partial acquisition of Changhua project drove momentum.
- For Mega Financial Holding, participation in two large labeled loan transactions drove growth in 2024. A green loan to Xin Sheng Energy Develop Co. financed a 120MW fishery-and-solar project, and another green loan to Yun Yung Co. financed a 200MW energy storage project.

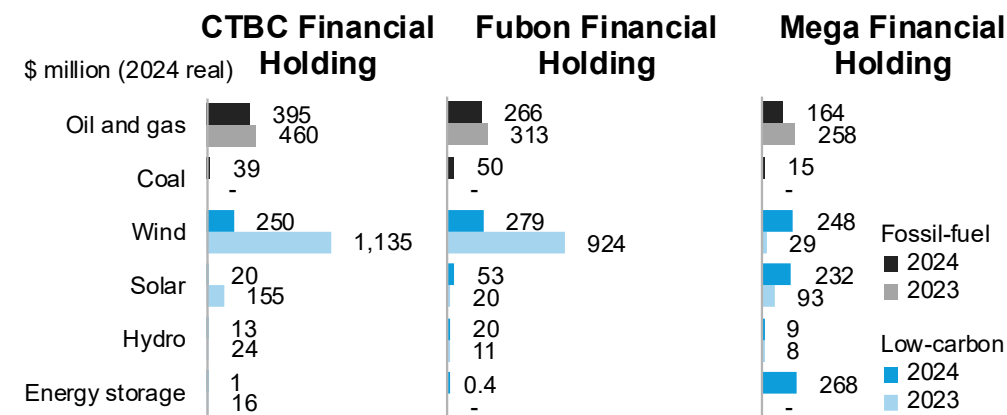
Outlook: Taiwan's wind and solar capacity installations are expected to crater in 2025-2026, with about 2.9GW(DC) of new solar and 2.1GW of new wind capacity added over the period, according to BNEF forecasts. Banks may face limited low-carbon growth opportunities in the near term, particularly until structural issues for offshore development – most notably subsidized utility tariffs and weak demand for corporate power purchase agreements – are alleviated.

Taiwanese banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top Taiwanese banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

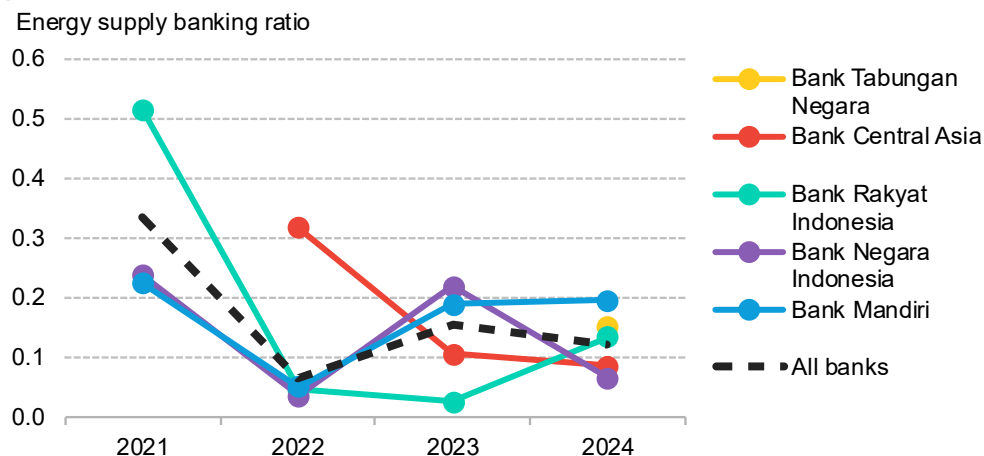
Indonesia: Low bank ratios set to rise

- **Ratio:** Indonesian banks' energy supply ratios are low, reflecting the fossil-fuel-dominated structure of the economy. Their combined ratio fell to 0.12:1 in 2024 from 0.16:1 in 2023.
- **Top banks:** Bank Mandiri, the state-owned giant, is the most active provider of energy supply financing in the market, facilitating \$9.5 billion of deals between 2021 and 2024. Among the top five banks, it recorded the highest ratio in 2024, at 0.2:1. Bank Negara Indonesia (BNI) ranks second in deal volume but had the lowest ratio among the top banks in 2024 due to increased fossil-fuel activity, particularly linked to Bukit Makmur Mandiri Utama, a large coal miner also known as Buma.
- **Volume:** Fossil-fuel energy supply financing declined in 2023 and 2024,

affecting most banks. This was mainly due to subdued debt issuance by Pertamina, as an absence of maturing debt and a significant cash balance likely reduced its reliance on capital markets. Low-carbon financing remained limited, due to a relatively stable pace of clean energy deployment.

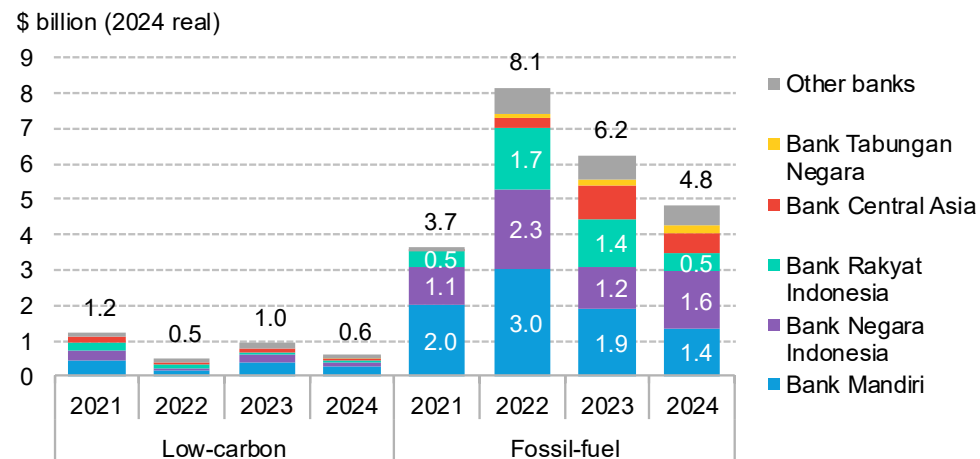
- **Outlook:** Low-carbon investment growth is gaining momentum. BNEF estimates that investment in renewable energy deployment in Indonesia reached more than \$2.5 billion in 2025, up from \$0.8 billion in 2024 (see [page 43](#)), on the back of strong geothermal capacity additions. Utility-scale solar are also expected to accelerate, driven by new floating projects and captive plants used to power Indonesia's nickel industry.

Top Indonesian banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal. Note: Results are excluded when a market's annual energy supply financing totals less than \$200 million.

Low-carbon and fossil-fuel bank financing volume by top Indonesian banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Indonesia: Pertamina drives decline in fossil-fuel financing

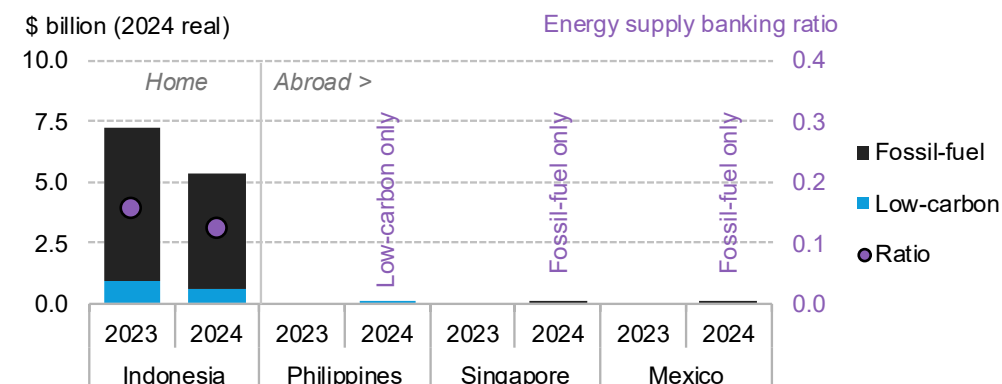
Geographical footprint

- Indonesian banks' activities are almost entirely domestic. Bank Mega, Bank Central Asia and BNI each facilitated just one or two deals overseas in 2024, according to energy supply financing data tracked by BNEF.
- Aggregated domestic banking ratios for Indonesian banks fell to 0.12:1 in 2024, from 0.16:1 in 2023, as low-carbon deal activity declined further from an already small base.

Sector drivers for top banks

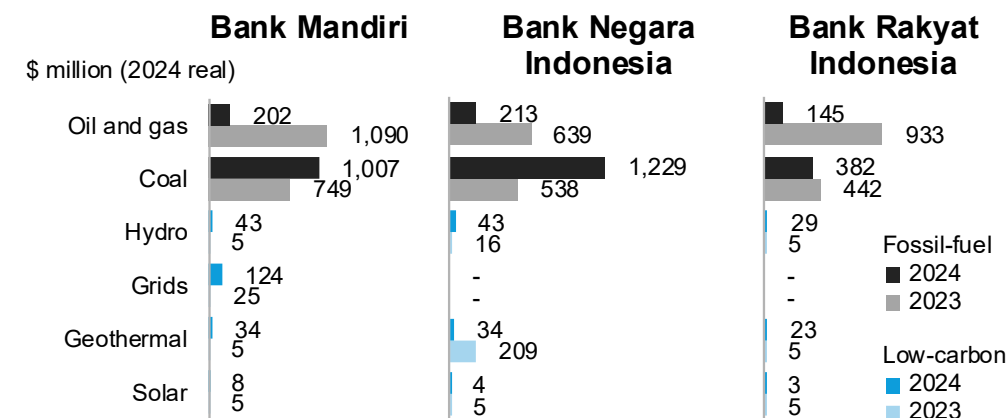
- While oil and gas financing flows declined due to Pertamina, coal financing grew by 22% in 2024, as two major loans to PLN Persero totaling more than \$2 billion drove financing volumes across the top three banks. BNEF attributes deals to coal, oil and gas, as well as low-carbon sectors such as hydropower and geothermal, based on Indonesia's power generation mix. Smaller transactions involving Buma and Alamtri Resources also supported growth.
- In the grid sector, Gallant Venture, an investment company that owns and operates utilities for industrial parks in Batam and Bintan islands, arranged five loans with Bank Mandiri and Malaysia's Maybank.
- Geothermal was a key source of financing activity in 2023, as Pertamina Geothermal Energy, a subsidiary listed that year, borrowed \$1.4 billion through bonds and loans.
- Another upstream oil and gas subsidiary, Pertamina Hulu Energi, is likely to put downward pressure on Indonesian banks' ratio in 2025, having returned to capital markets after a pause in 2024 and raising more than \$2 billion in debt.

Indonesian banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top Indonesian banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

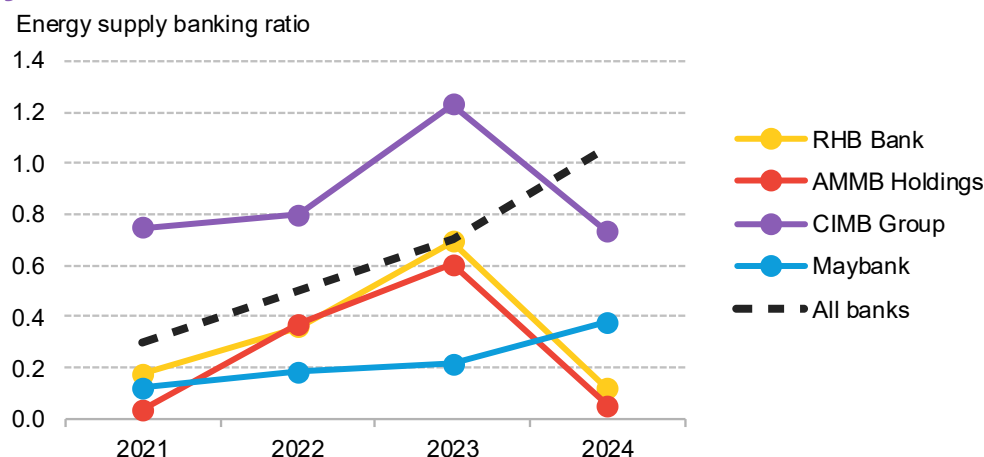
Malaysia: CIMB and Maybank compete on volume

- **Ratio:** Malaysian banks' combined energy supply ratios rose since 2022 as fossil-fuel financing transactions declined while low-carbon volumes jumped in 2024. The ratio in 2024 was 1.06:1.
- **Top banks:** Maybank and CIMB Group are the largest energy supply financing banks and remain in close competition. Each facilitated more than \$8 billion between 2021 and 2024. Maybank was more active in fossil-fuel financing, while CIMB pulled ahead in low-carbon deals, resulting in higher ratios. CIMB's deal volumes have been declining steadily year on year across both sides of the energy supply mix. Hong Leong Group is a distant third. A \$2.3 billion green bond it underwrote for the Samaden Group lifted its low-carbon volumes in 2024. AMMB

Holdings follows closely, facilitating \$1.8 billion across low-carbon and fossil-fuel activities over the four-year period. RHB Bank rounds out the top five. It facilitated about \$800 million of fossil-fuel deals in 2021, including major bond issuances by Malaysia's offshore driller Sapura TMC, owned by Vantris Energy.

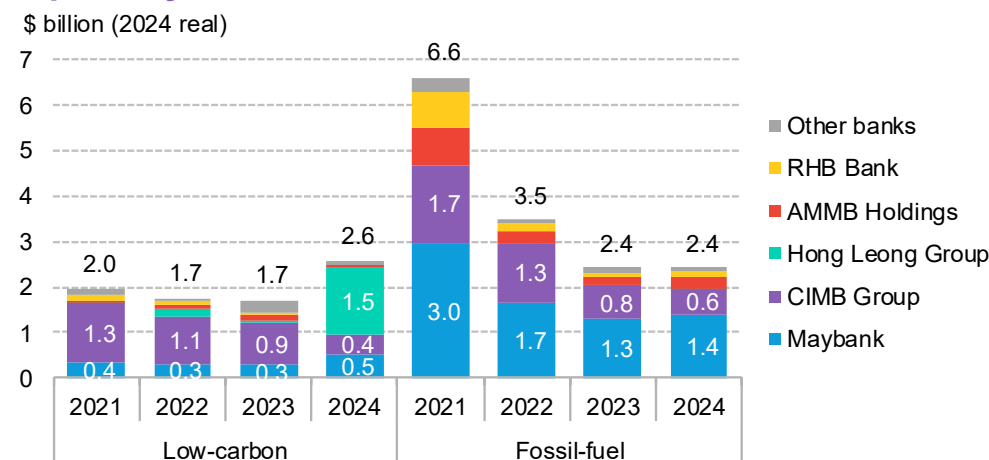
- **Volume:** Across all Malaysian banks, fossil-fuel dealmaking jumped in 2021 but subsequently stabilized to around \$3 billion a year. The increase to \$6.6 billion in 2021 was driven by more than \$2.5 billion in bonds and loans issued by Vantris Energy. Gas-fired power capacity additions also slowed after 2022.

Top Malaysian banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Low-carbon and fossil-fuel bank financing volume by top Malaysian banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Malaysia: Higher banking ratios at home

Geographical footprint

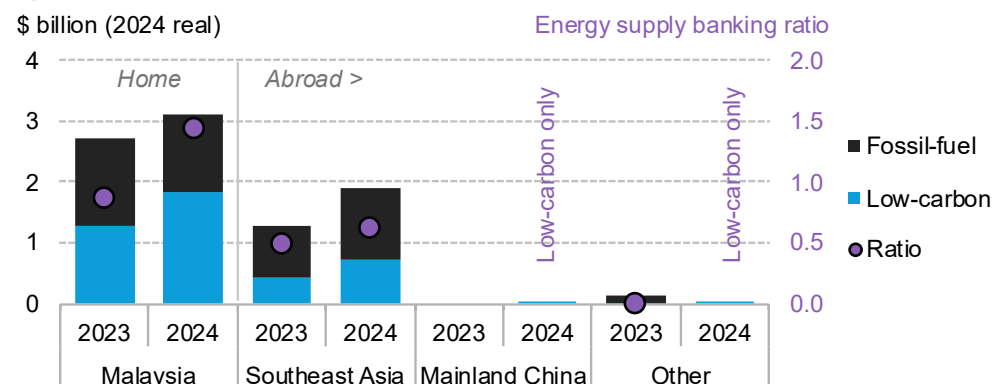
- Malaysian banks have a relatively broad presence in Southeast Asia. CIMB and Maybank are active in Thailand and Indonesia, while RHB Bank and AFFIN Bank are also active in Singapore.
- These overseas activities have weighed on Malaysian bank's ratios. Domestically, their combined ratio rose to 1.44:1 in 2024, from 0.88:1 in 2023, driven by a 45% jump in low-carbon activity, alongside a smaller decline in fossil-fuel volumes.

Sector drivers for top banks

- Maybank and AMMB increased their oil and gas financing in 2024 compared with 2023. For Maybank, a loan to Thailand's Gulf Energy Development contributed to around \$550 million of the attributed deal volume. AMMB facilitated smaller transactions, including a loan to Bumi Armada and an equity offering by Yinson Holdings.
- On the low-carbon side, financing for grid-related companies recorded the strongest growth in 2024. CIMB was the sole manager of a \$55 million bond issued by Thailand's Provincial Electricity Authority, while Maybank benefited from the Gallant Venture loans alongside Bank Mandiri. Solar remained the largest low-carbon sector, with the biggest contribution from Samaden Group's green bond, which supports a range of renewable energy technologies, including solar, wind, hydrogen, bioenergy, energy storage, smart grids and hydropower.

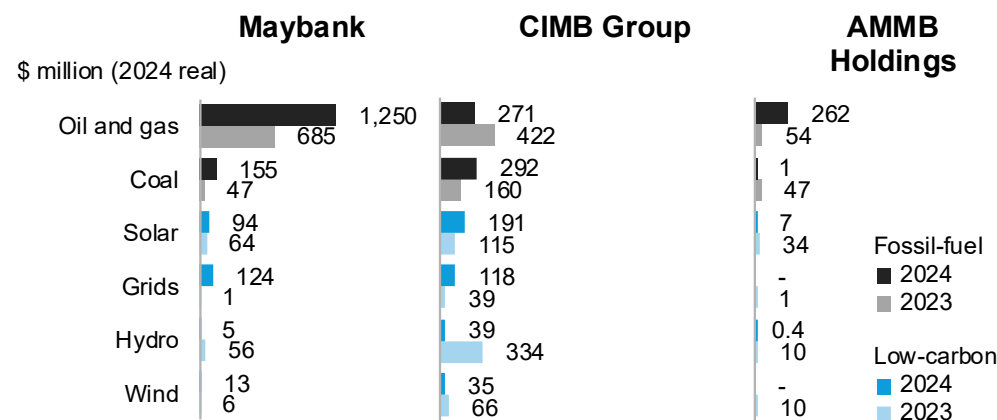
Outlook: Malaysia's 2023 energy roadmap targets renewables to account for 70% of installed capacity by 2050, with solar needing to undergo a 17-fold expansion. Meanwhile, gas-fired power capacity is also planned to increase to 30GW by 2045, from 18GW in 2024. This transformation is likely to create significant financing opportunities for Malaysian banks, with the low-carbon financing growth potentially outpacing that for gas.

Malaysian banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top Malaysian banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

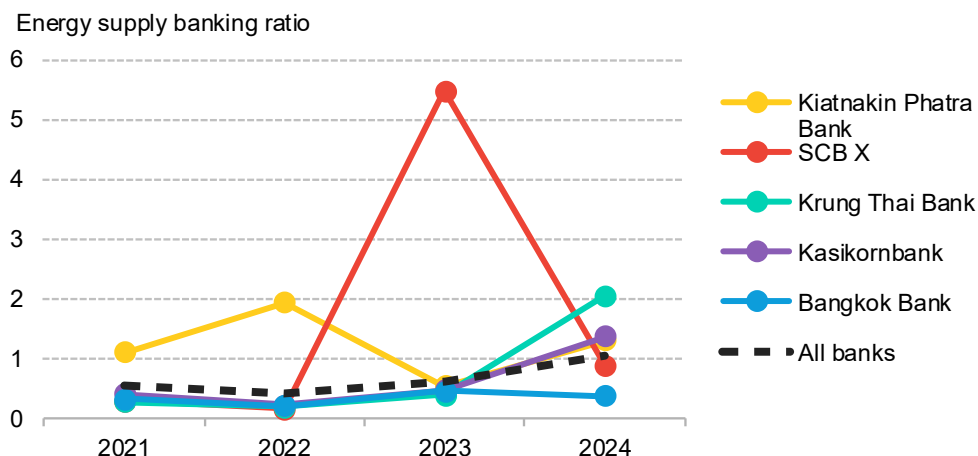
Thailand: Declining fossil-fuel financing raises ratios

- **Ratio:** Thai banks' aggregated ratios have risen, reaching 1.04:1 in 2024. Among the top five banks by deal volume, Krung Thai Bank recorded the highest ratio of 2.05:1 in 2024. SCB X's ratio declined after rising to 5.5:1 in 2023, as the bank facilitated only \$45 million in fossil-fuel deals that year. Bangkok Bank has consistently ranked among the lowest within the top group, with a ratio of 0.38:1 in 2024.
- **Volume:** The increase in ratios was largely the result of declining fossil-fuel deal levels after 2022, particularly as PTT group companies had limited refinancing needs with little debt maturing. Low-carbon deal volumes stayed relatively modest over the four-year period, at or below \$2 billion annually.
- **Top banks:** Bangkok Bank is the largest energy supply financing institution, facilitating more than \$5 billion in deals between 2021 and

2024, compared with just over \$2.8 billion from the second-most active bank, Kasikornbank. Bangkok Bank's activity was concentrated on the fossil-fuel side, particularly in 2022. By contrast, the market's low-carbon energy financing landscape is considerably more diverse, with the top three banks accounting for 44% of total volume in 2024.

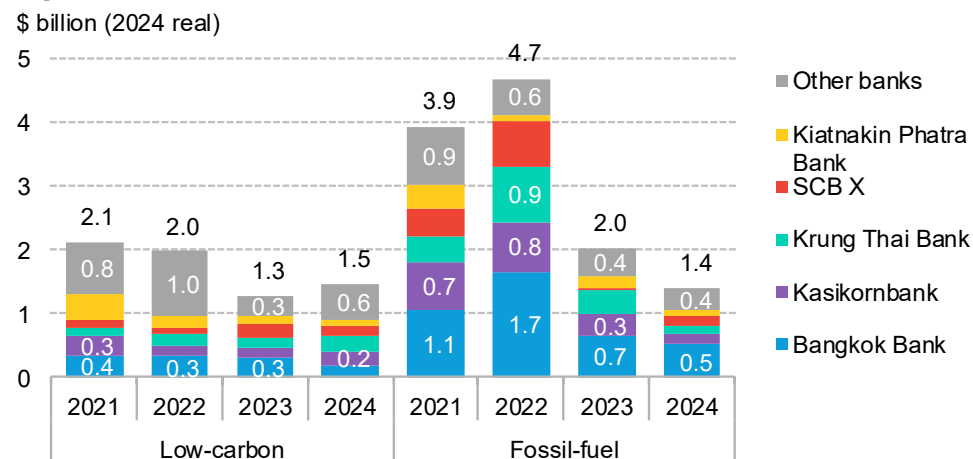
- **Outlook:** Much like Malaysia, Thailand needs to significantly scale up renewable energy to meet its 2050 net-zero goal, updated at the end of 2025. BNEF estimates that renewable electricity generation could need to increase 58-fold compared with 2024 levels. The target means Thailand must build dispatchable sources of clean electricity such as geothermal, hydro, bioenergy and nuclear, but will also need to pursue a managed retirement of its gas-fired power capacity.

Top Thai banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Low-carbon and fossil-fuel bank financing volume by top Thai banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Thailand: Domestic ratio trending up

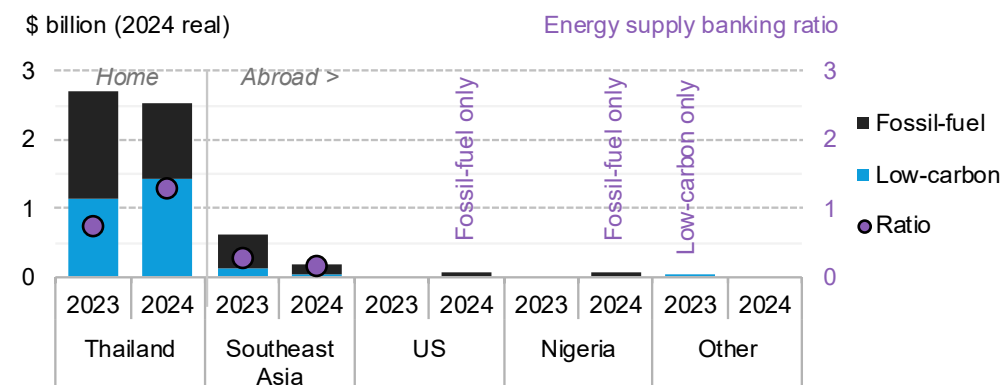
Geographical footprint

- Thai banks' energy supply financing activity is largely domestic. The decline in fossil-fuel financing lifted domestic ratios to 1.3:1 in 2024 on an aggregated basis.
- Indonesia has been the primary overseas market, with more than 20 Thai banks active there in 2023-2024. Almost all deals were from fossil-fuel issuers, the most noticeable ones being Kalimantan Aluminium Industry and Kaltara Power Indonesia. Bangkok Bank participated in a syndicated loan in 2024 for Banpu in the US. A separate Bangkok Bank deal in Nigeria made it the third-largest foreign market.

Sector drivers for top banks

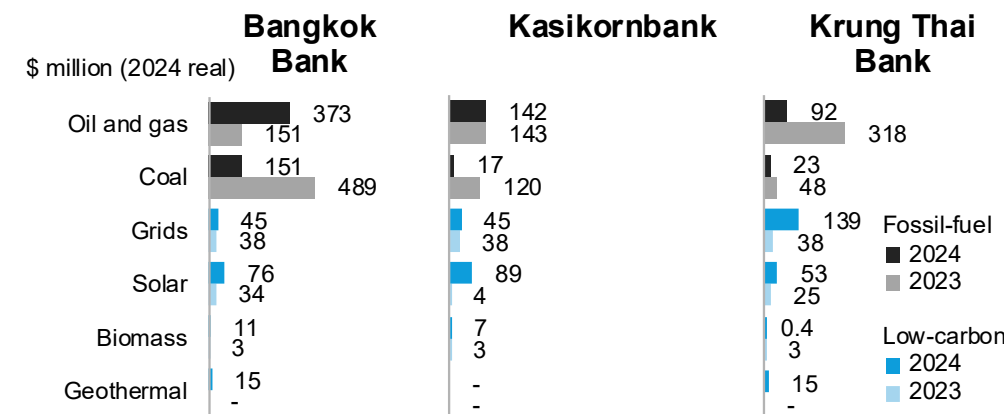
- Overseas oil and gas deals boosted Bangkok Bank's fossil-fuel volume in 2024, although domestic bond underwriting, for example for the Electricity Generating Authority of Thailand and Bangchak Corp., also contributed. Banpu's bond issuances dropped to around \$200 million annually over 2023-2024, from more than \$600 million in 2022, reducing many Thai banks' coal financing volume.
- On the low-carbon side, power grids were the largest financing sector in 2024. State-owned utility Provincial Electricity Authority issued five bonds in 2024 and Krung Thai Bank was the sole manager of two. The remaining three bolstered Government Savings Bank's deals, making it the sixth-largest Thai bank by energy supply financing that year.
- Solar financing also tripled between 2023 and 2024, albeit from a low base. This was mainly bolstered by Sunflower Solar's \$169 million green loan involving six banks, including the top three banks, as well as UOB's Thai branch. Two bonds from CK Power added to geothermal financing in 2024.

Thai banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, IJGlobal.

Top Thai banks' energy transition financing, by selected issuer sector



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

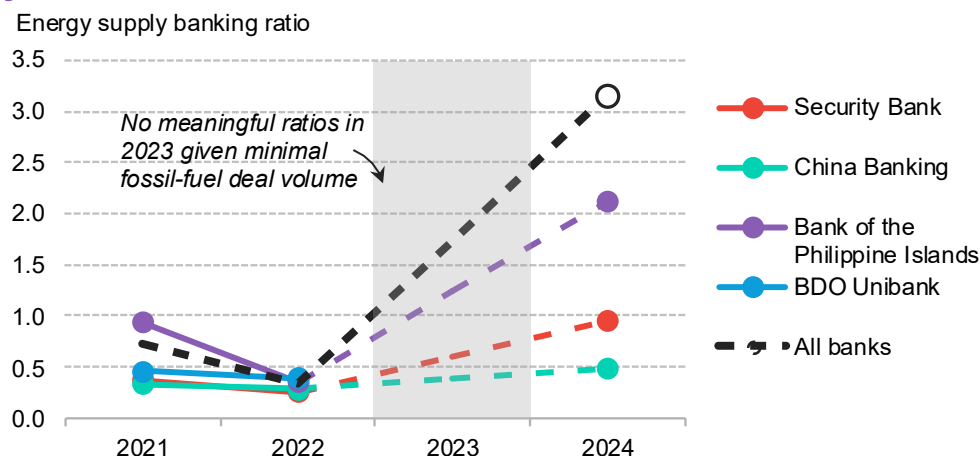
Philippines: Low-carbon financing jumps on landmark project

- **Volume:** Energy supply financing in the Philippines showed significant volatility between 2023 and 2024. Fossil-fuel deal volumes fell to near zero in 2023, coinciding with a pause in fossil-fuel power capacity additions. Low-carbon volumes rose to \$3 billion in 2024, driven by a \$2.5 billion project finance transaction for the SP New Energy Terra co-located plant, the largest solar and battery project in Southeast Asia.
- **Ratio:** These swings rendered banking ratios in 2023 not meaningful, before rising sharply in 2024. The average ratio among Philippine banks reached 3.15:1 in 2024.
- **Top banks:** BDO Unibank is by far the largest energy supply financing bank in the Philippines and was the lead debt provider for the SP New

Energy Terra project. This transaction, combined with minimal fossil-fuel activity, resulted in a 2024 ratio that far exceeded previous years. Fossil-fuel financing activity has been more evenly distributed across banks, with each of the top five facilitating around \$600 million over the four-year period.

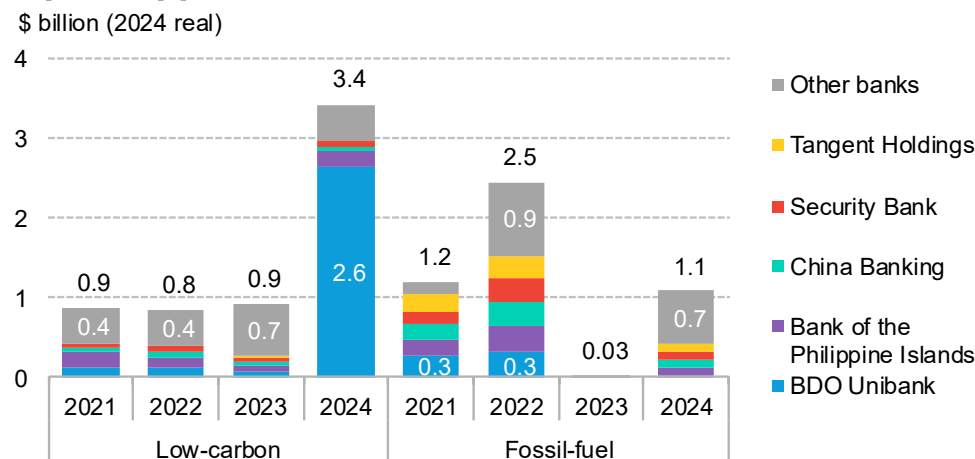
- These figures exclude the Asian Development Bank, the multilateral development finance institution headquartered in Manila. ADB financed more than \$1.6 billion in deals between 2021 and 2024, all in low-carbon energy supply. None of the deals tracked by BNEF were for issuers in the Philippines; instead, ADB financed project loans for solar projects in India, Uzbekistan, Vietnam, Azerbaijan, Bangladesh and Thailand.

Top Philippine banks' energy supply banking ratios, by year



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Low-carbon and fossil-fuel bank financing volume by top Philippine banks



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Philippines: Oil and gas financing set to continue after 2024 jump

Geographical footprint

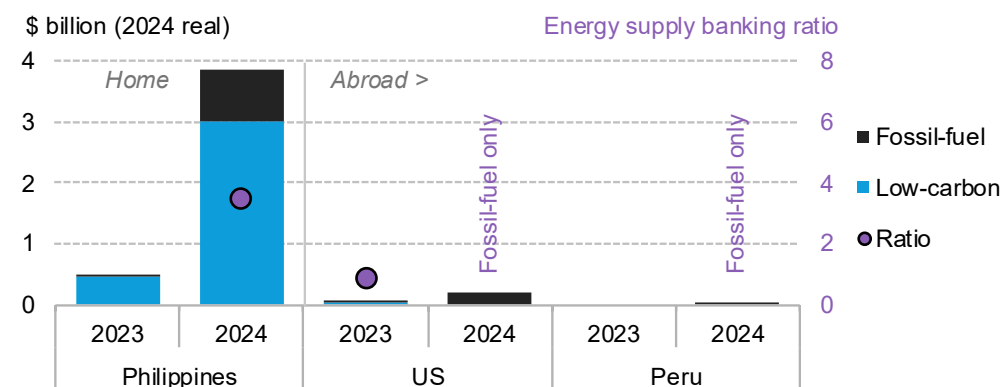
- BNEF only tracked two Philippine banks with overseas activity in 2024. East West Banking Corp, part of the Gotianun family's A.L. Gotianun Inc., facilitated fossil-fuel project finance in the US, as well as a tax equity refinancing for a PV portfolio. Metropolitan Bank & Trust Co. supported financing for a fossil-fuel asset in Peru.
- Domestically, depressed fossil-fuel financing volumes lifted banks' aggregated ratios, which reached 3.5:1 in 2024.

Sector drivers for top banks

- The largest oil and gas issuer in 2024 was the conglomerate San Miguel Corp. The company and its subsidiaries issued five bonds with a combined volume of more than \$900 million. Many top banks were involved, in particular Bank of the Philippine Islands and China Banking.
- Geothermal had the strongest growth among low-carbon sectors for financing. This was mainly driven by three green bonds issued by Energy Development Corp. The issue signaled a broad range of potential uses of proceeds, including solar, wind, bioenergy, geothermal and hydro.
- Bank of the Philippine Islands issued a \$579 million sustainability bond in 2024, with proceeds allocated to solar, wind, hydro and geothermal. In 2023, Aboitiz Equity Ventures issued three bonds totaling more than \$300 million, with a small amount attributed to the power grid sector. The absence of a large issuer in 2024 led to a decline in grid sector deal volumes.

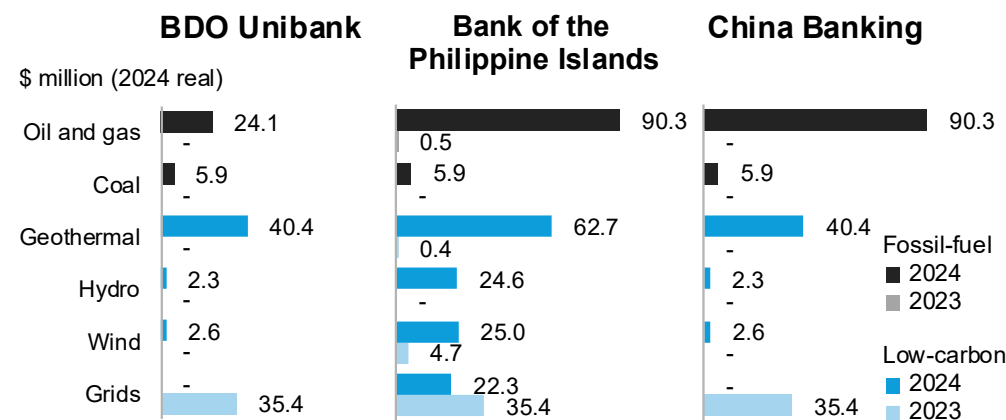
Outlook: The Philippines has set ambitious energy development targets to expand lower-carbon technologies. Near-term capacity growth will come from solar, wind and gas power. Despite solar already being the cheapest source of bulk electricity generation, the government plans to increase gas generation and imports, which may limit near-term improvements in banks' low-carbon financing ratios following the large solar and storage transaction in 2024.

Philippine banks' energy transition financing and ratios, by issuer market of risk



Source: Bloomberg LP, BloombergNEF, Urgewald, IJGlobal.

Top Philippine banks' energy transition financing, by selected issuer sector

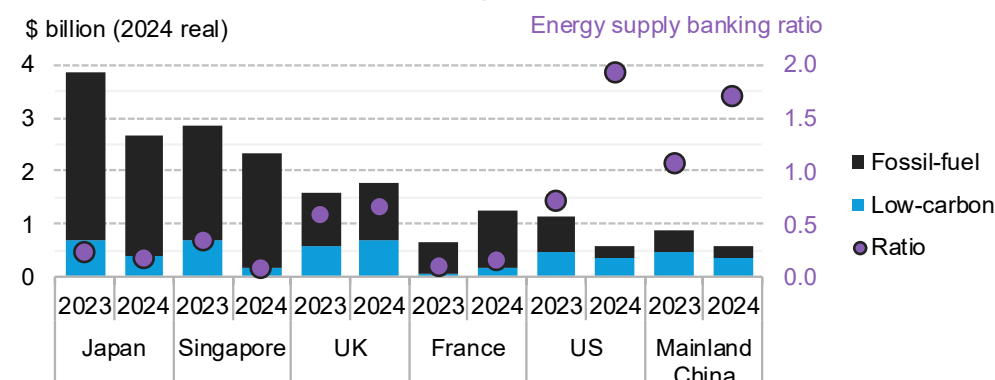


Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: Sector attribution based on issuers' revenue exposure. Top banks based on total energy supply financing in 2023-2024.

Japan and Singapore banks lead external financing to Southeast Asia markets

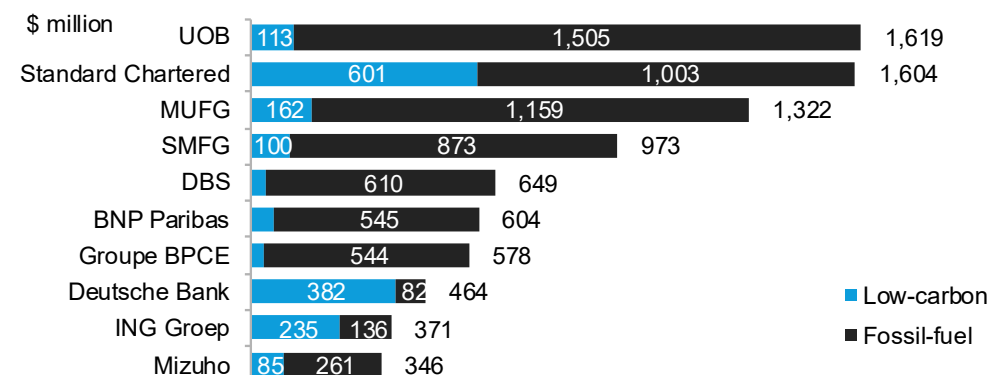
- Banks headquartered outside the Southeast Asian markets covered in this report – Indonesia, Malaysia, the Philippines and Thailand – contributed nearly half of total energy supply financing in these markets. Most are headquartered in Japan, Singapore, the UK, France, US and mainland China. Banks from these six markets facilitated more than \$20 billion in financing between 2023 and 2024, compared with almost \$28 billion provided by domestic banks within or across these markets.
- Among these external sources of financing, only banks from mainland China and the US facilitated more low-carbon than fossil-fuel financing. Their ratios for the four Southeast Asian markets improved in 2024, while banks from other markets maintained aggregated ratios below 1:1.
- External low-carbon financing volume remained at \$3.8 billion in both 2023 and 2024, based on deals tracked by BNEF. Banks from the UK and France increased their low-carbon dealmaking in the region in 2024 from a low base. French banks were also the only group to record a significant increase in fossil-fuel financing into the region in 2024, channeling \$1.1 billion compared with \$600 million in 2023. Loans arranged by BNP Paribas and Natixis to Thailand's Gulf Energy Development drove this increase. Fossil-fuel financing from banks in the UK and Singapore remained broadly flat, while flows from other major banking markets declined in 2024.
- Singapore's UOB and UK-headquartered Standard Chartered were the leading energy supply financiers to these markets in 2024. Standard Chartered facilitated far more low-carbon transactions than UOB.
- Beyond the top 10 banks, other active financiers in the region include Bank of China, Taiwan's CTBC Holding, Citigroup from the US, Australia's ANZ Group and UBS Group from Switzerland. Multiple development banks, including Germany's KfW, China's Asian Infrastructure Investment Bank and the Export-Import Bank of China, also facilitated green loans from Thailand's Gulf Renewable Energy Co., each receiving around \$145 million in deal credit.

Energy supply financing from foreign banks to four Southeast Asia markets, by bank headquarters



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: The four Southeast Asia markets are defined as Indonesia, Malaysia, the Philippines and Thailand.

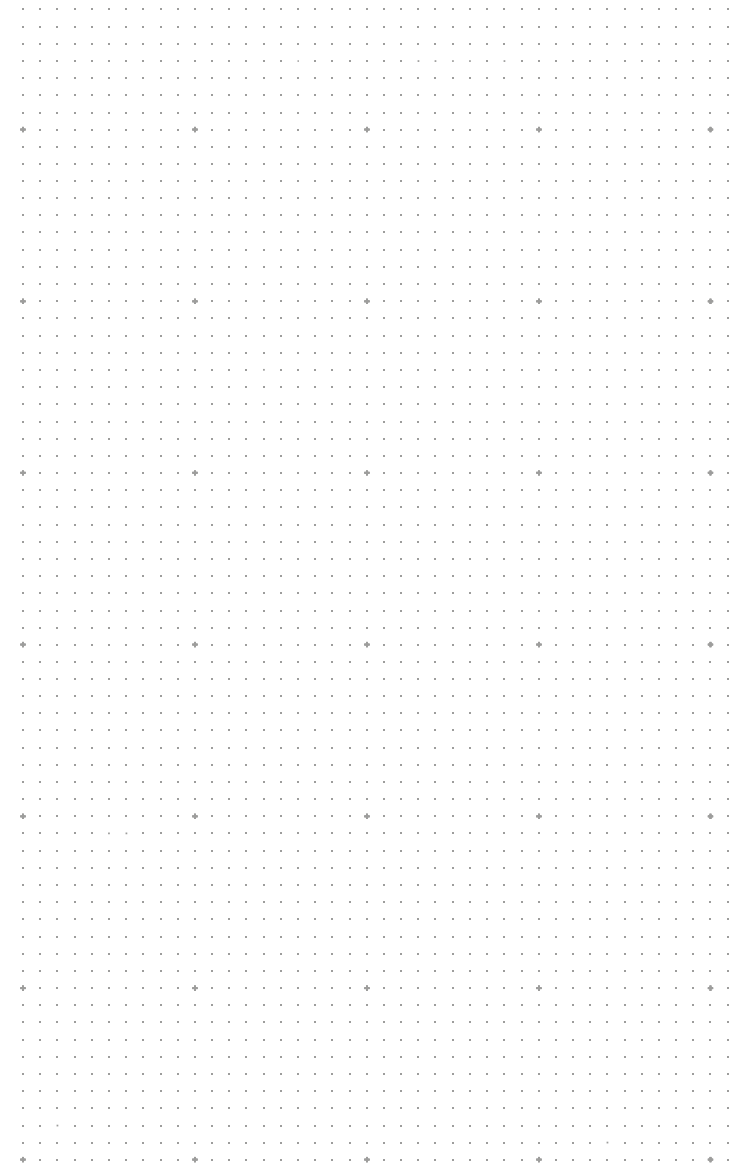
Top foreign banks' 2024 energy supply financing to four Southeast Asia markets



Source: Bloomberg LP, BloombergNEF, IJGlobal. Note: The four Southeast Asia markets are defined as Indonesia, Malaysia, the Philippines and Thailand.

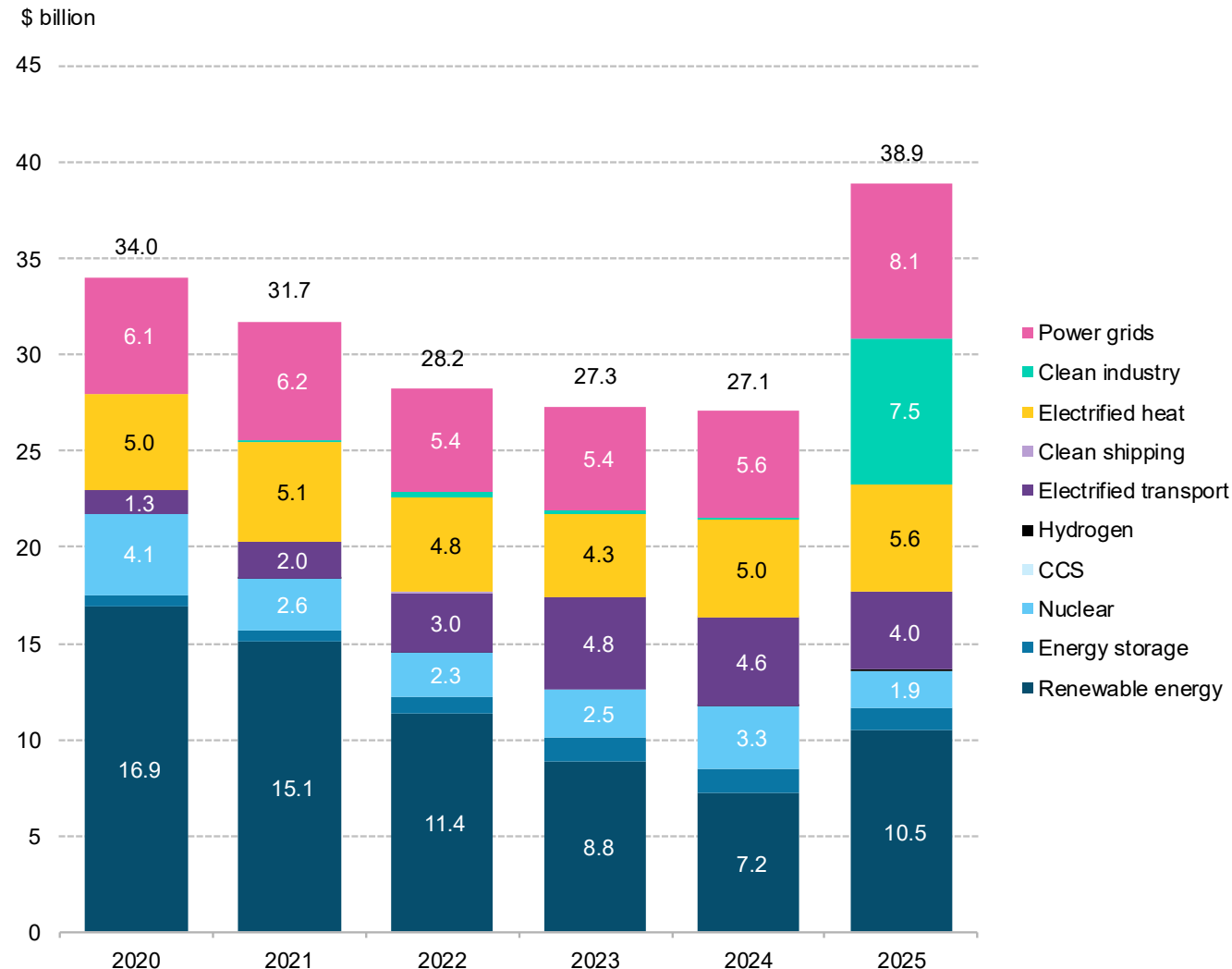
Appendix 1

Energy transition investment by market



Japan: Investment reaches decade high

Japan energy transition investment, by sector

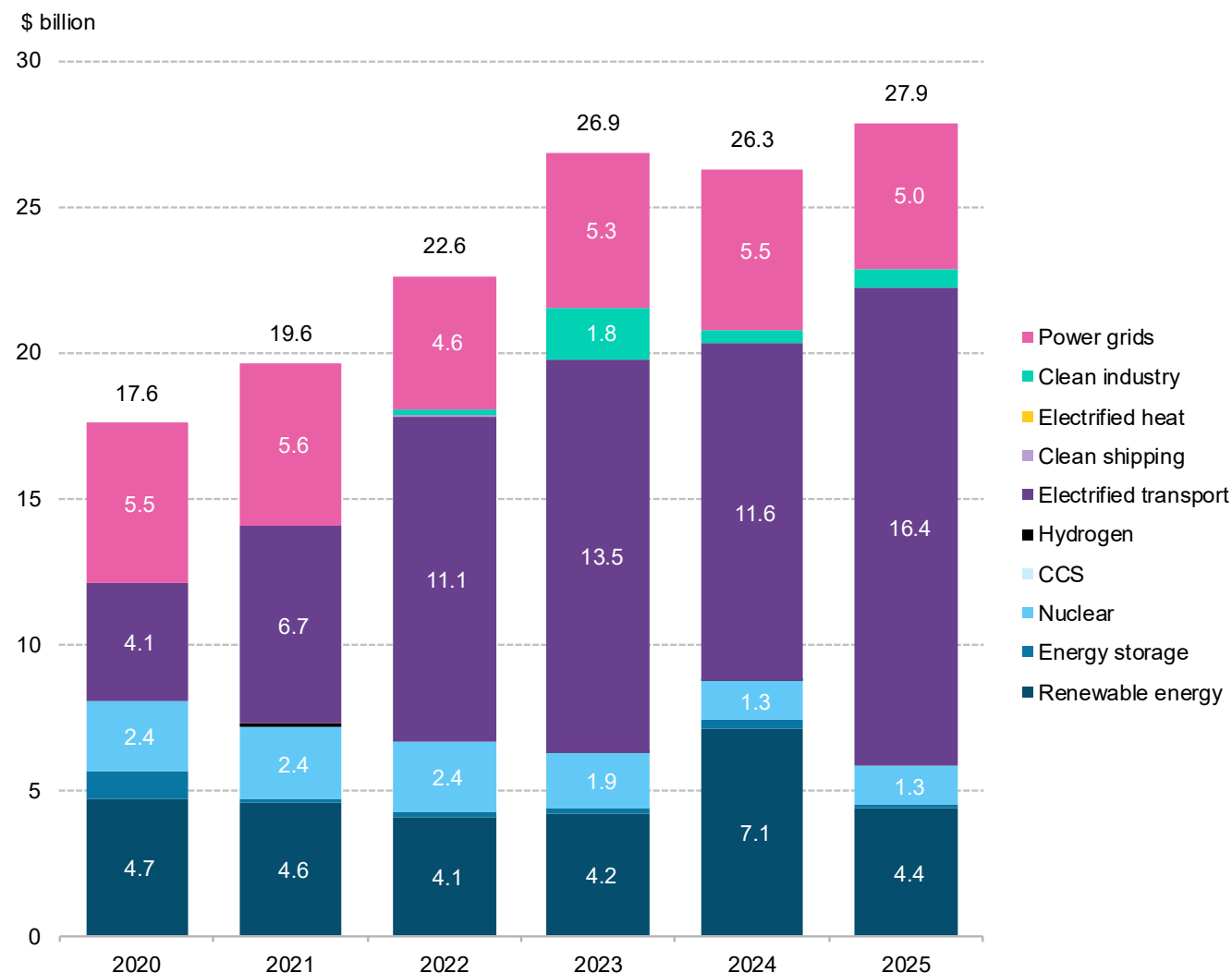


- Japan's energy transition investment reached \$38.9 billion in 2025, the highest level this decade. The 44% year-on-year increase in 2025 is the fastest growth rate since 2014.
- Renewable energy investment grew by 45% in 2025, the first double-digit increase in the last 10 years. However, the \$10.5 billion renewable energy investment in 2025 remained below annual levels seen between 2012 and 2022. Growth was achieved despite policy challenges and was driven by improving cost competitiveness of renewables and rising corporate demand for clean power procurement.
- Based on disclosed plans from Japanese utilities, BNEF estimates investment in power grids grew 44% from 2024 to exceed \$8 billion in 2025. However, investment in energy storage declined for a second consecutive year, albeit by less than 4% year on year. This decline is due to the rapid fall in energy storage system prices, even as energy storage deployment continues to grow.
- Electrified transport investment fell for a second consecutive year. Japan's passenger EV market fell further behind the rest of APAC as Japanese automakers lag Chinese and Korean counterparts in launching new EV models.
- Investment in nuclear, hydrogen and clean shipping also declined. Clean industry, by contrast, saw record investment, driven by policy support for the steel sector, which promoted investment in electric arc furnace expansion.

Source: BloombergNEF. Note: CCS refers to carbon capture and storage.

South Korea: EV surge offset renewable decline

South Korea energy transition investment, by sector



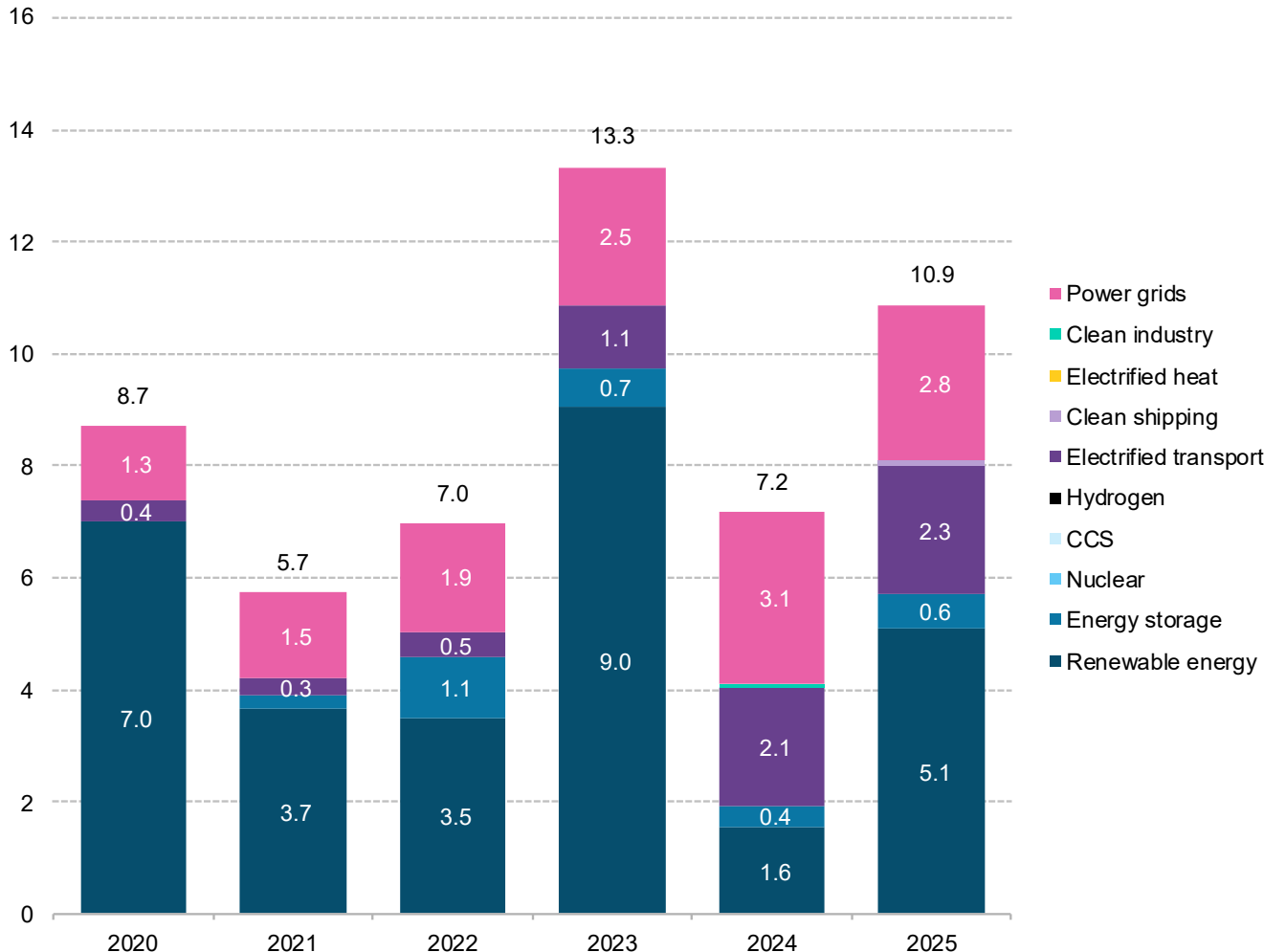
Source: BloombergNEF. Note: CCS refers to carbon capture and storage. No electrified heat data collected for South Korea.

- In 2025, South Korea's energy transition investment reached a record \$27.9 billion, a 6.2% increase from 2024. Growth would have been stronger without investment declines in renewable energy, grids and energy storage.
- Renewable energy investment fell 38.5% year on year to \$4.4 billion, primarily due to a slowdown in the offshore wind sector. Despite the decline, renewable energy investment in 2025 was still higher than in 2023.
- Investment in energy storage decreased 61%, partly due to record investment in 2024, as well as continued declines in energy storage system prices. Increased policy support for energy storage through an auction program and distributed renewable energy are expected to accelerate investment from 2026 onward.
- Investment in electrified transport – South Korea's largest energy transition investment segment since 2021 – increased by 42.3% to a record \$16.4 billion. The growth was led by the passenger EV market. Between January and October 2025, passenger EV sales rose nearly 70% compared with the same period in 2024.
- Investment in clean industry also grew 33% from a year earlier, although the \$614 million invested in 2025 was significantly lower than the \$1.78 billion in 2023. Investment in hydrogen was negligible in 2025 as South Korea's clean hydrogen power auction continues to struggle with high costs. The latest auction was canceled.

Taiwan: Investment recovers to second-highest level this decade

Taiwan energy transition investment, by sector

\$ billion



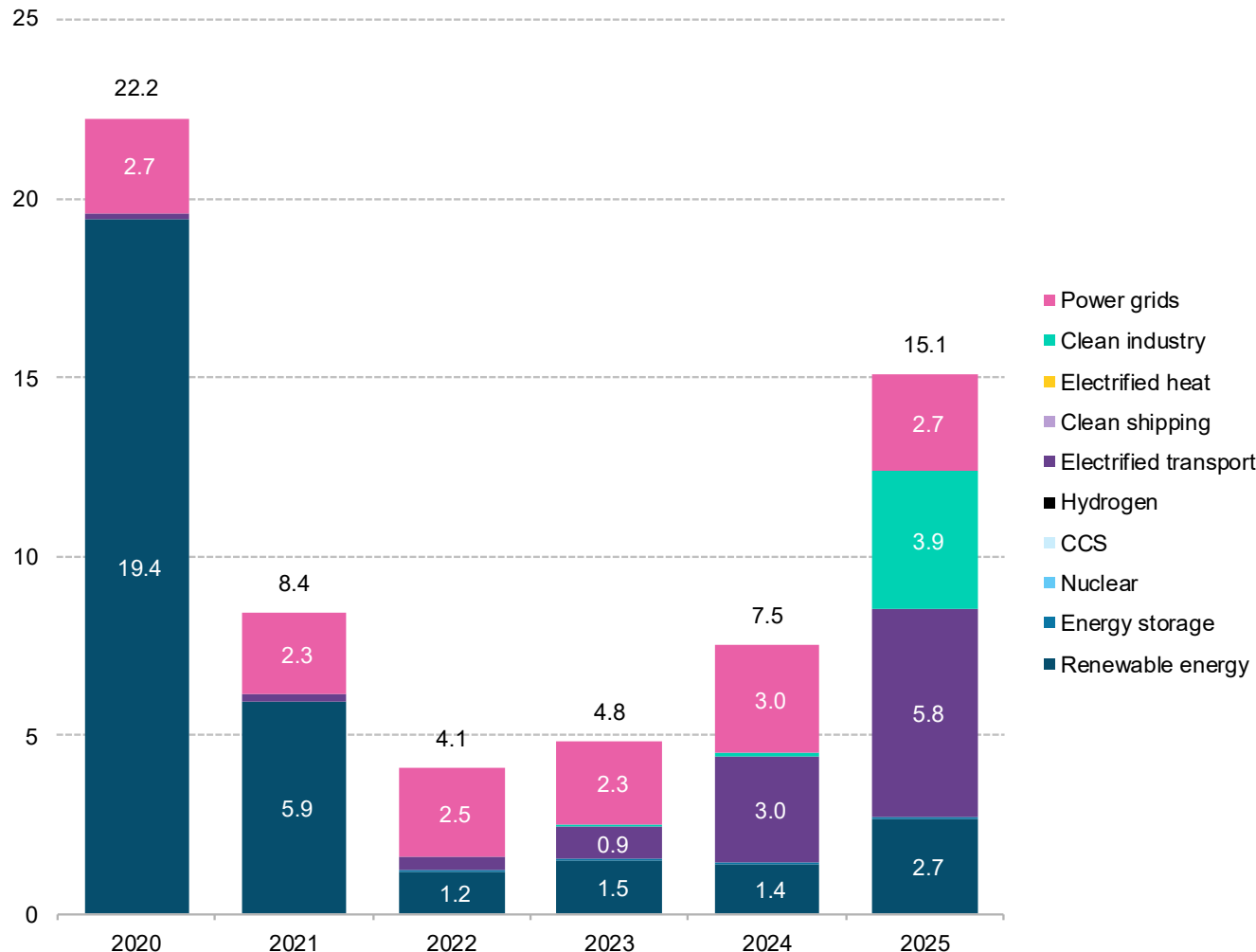
Source: BloombergNEF. Note: CCS refers to carbon capture and storage. No electrified heat data collected for Taiwan.

- In 2025, Taiwan's energy transition investment reached \$10.9 billion, 51% higher than in 2024, but below 2023 levels. Growth was driven by a recovery in offshore wind investment. Renewable energy investment in 2025 was more than three times that in 2024. Investment in energy storage also increased, albeit at a more modest rate of 63% year on year.
- Investment in electrified transport increased only 9%. Growth was driven by a fourfold rise in electric municipal bus sales, supported by stronger policy incentives. Taiwan's overall sales of new two- and four-wheelers contracted in 2025, and the same trend was observed for electric models.

Vietnam: Investment doubles, clean industry plays a leading role

Vietnam energy transition investment, by sector

\$ billion

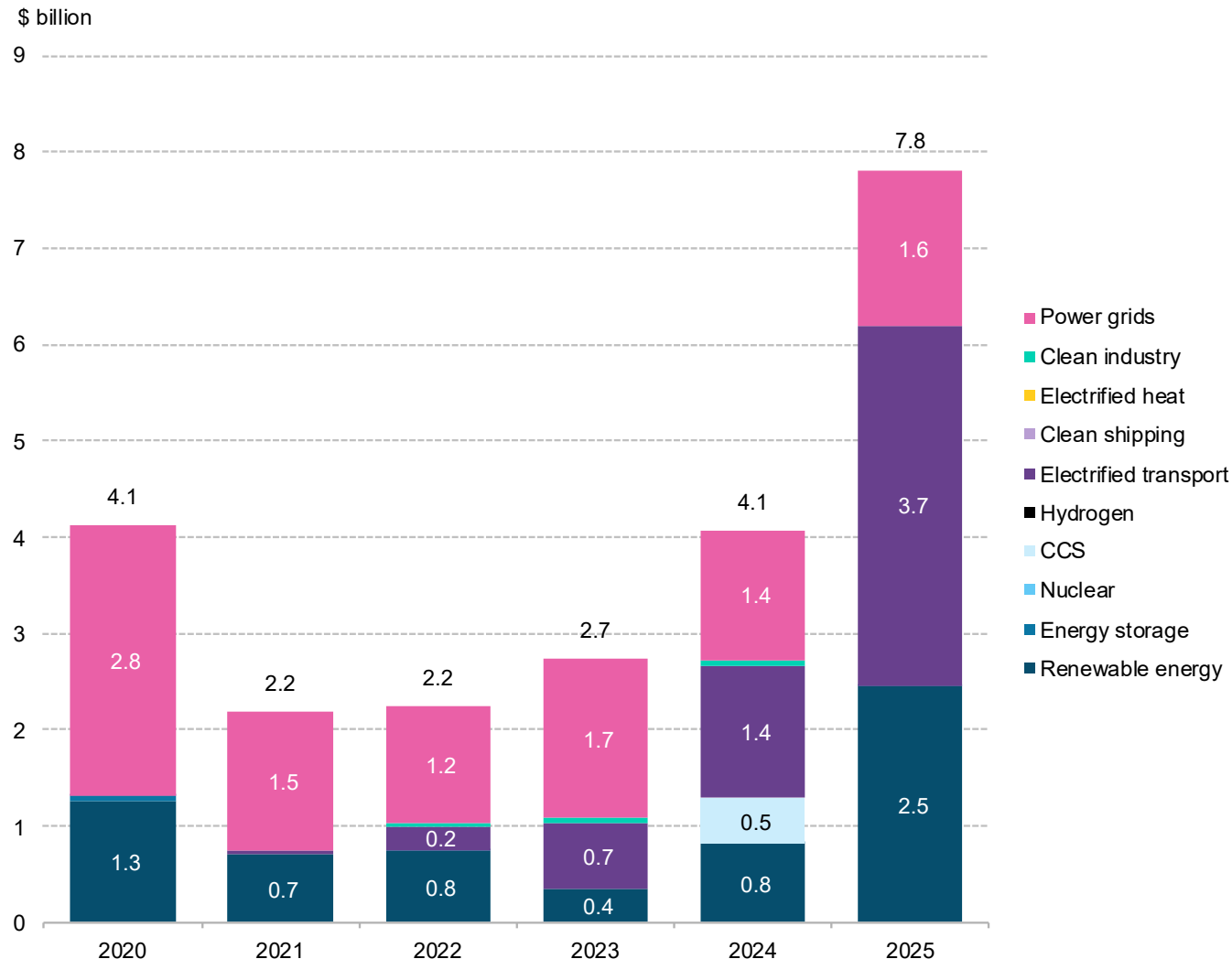


Source: BloombergNEF. Note: CCS refers to carbon capture and storage. No electrified heat data collected for Vietnam.

- Vietnam's energy transition investment reached a record \$15.1 billion in 2025, doubling from 2024 to reach the highest level since 2020.
- Electrified transport led the market with \$16.4 billion, representing 39% of total investment. Spending on EVs has doubled every year since 2021. VinFast makes almost all electric passenger vehicles sold in Vietnam.
- Clean industry emerged as a major investment driver in 2025, attracting \$3.9 billion, largely to support decarbonization of steel production. The investment indicates early preparation for Vietnam's planned carbon market for heavy industry and efforts to mitigate international trade risks, such as the European Union's Carbon Border Adjustment Mechanism.
- Renewables investment regained momentum after plunging in 2021 following the expiry of the feed-in tariff program. Financing for renewables nearly doubled to \$2.7 billion in 2025, with \$1.4 billion and \$1.2 billion going to solar and wind, respectively.
- Investment in Vietnam's renewables sector will continue to rise in 2026, supported by the government's rollout of competitive renewable energy tenders, more favorable regulations for corporate clean power purchases and policies supporting small-scale solar projects.

Indonesia: Renewables and EVs drive record investment

Indonesia energy transition investment, by sector



Source: BloombergNEF. Note: CCS refers to carbon capture and storage. No electrified heat data collected for Indonesia.

- BNEF tracked \$7.8 billion of energy transition investment in Indonesia, Asia Pacific's sixth-largest economy and the world's seventh-biggest emitter of greenhouse gases. Investment jumped 92% to a new all-time high, but Indonesia still lags other APAC markets.
- Spending on EVs increased 172% to \$3.7 billion, accounting for nearly half of Indonesia's energy transition investment. The share of battery and plug-in hybrid EVs in passenger vehicle sales nearly tripled to 18% in 2025 as Chinese automakers offered a wide range of affordable models.
- Renewable energy investment tripled to \$2.5 billion, nearly matching the previous four years combined. Solar led with \$961 million across utility-scale and small-scale projects – 143% higher than in 2024.
- Investment in geothermal power grew 167% to \$823 million, driven by greenfield and brownfield projects being developed by Supreme Energy, Barito Renewables and Medco Energi.
- State utility Perusahaan Listrik Negara (PLN) spent \$1.6 billion on power grids. PLN's grid build-out has consistently fallen far below its own targets. Greater grid investment could speed up Indonesia's renewables deployment, especially as its major islands are not yet interconnected by transmission lines.

Appendix 2

Methodology

Energy transition investment methodology

The investment figures in this report represent capital spent on the deployment of low-carbon technology. This excludes capital raised by companies (covered in the financing section), investment in manufacturing facilities, and spending on research and development.

For large infrastructure projects such as renewables, stationary energy storage, hydrogen production, public EV charging, CCS, nuclear and clean industry, BNEF's figures are based on bottom-up intelligence of individual projects and financial commitments. In general, the analysis includes capital that has been committed to specific projects through final investment decisions, government grant allocations, or progression to construction and commissioning. It excludes funding that has not been explicitly committed to identified projects, such as unallocated government grants, or projects that have not yet reached final investment decision. BNEF applies cost estimates where project values are not disclosed.

For consumer durable goods, or those where end users are households, such as small-scale solar, heat pumps, EVs and residential EV charging, investment (the amount spent) is estimated based on BNEF cost benchmarks for these products, including installation costs.

Estimates are applied where necessary, for example where project values are not disclosed or for markets where data availability is limited.

Further details on global results and methodology are available in the [global report summary](#). BNEF clients can access the findings in full on [bnef.com](#), including an [interactive data tool](#).

Sectors covered

- **Renewable energy:** Wind (on- and offshore), solar (large- and small-scale), co-located power projects, biofuels, biomass and waste, marine, geothermal and small hydro.
- **Power grids:** Transmission and distribution lines, substation equipment and digitalization (such as advanced distribution management systems, equipment monitoring and grid automation).
- **Nuclear:** Reactors under construction and major refurbishments.
- **Energy storage:** Stationary storage projects (large- and small-scale) using lithium-ion batteries, compressed air, flow batteries and other emerging energy storage technologies. Excludes pumped hydro.
- **Carbon capture and storage (CCS):** Large- and small-scale commercial CCS projects, dedicated transport and storage.
- **Hydrogen:** Hydrogen electrolyzer projects, thermochemical hydrogen production, pipelines and underground storage.
- **Electrified transport:** Sales of electric cars, commercial vehicles, two- and three-wheelers and buses, as well as home and public charging investments. Hydrogen fuel-cell vehicles are included. Hydrogen refueling stations were included until 2024 but are no longer tracked.
- **Electrified heat:** Residential heat pump investments.
- **Clean industry:** Production of clean steel and ammonia, circular economy (recycling) and bioplastics.
- **Clean shipping:** Vessels capable of using low- and zero-net-carbon fuels.

Energy supply banking ratio methodology (1/2)

Process to calculate: ESBR is built on bank transactions for the energy sector and relevant issuers

① Select company universe

Issuers
~110,000 companies with energy sector revenue

Sectors	Low-carbon energy supply	Fossil-fuel energy supply
Sources	BNEF Clean Energy Revenue and Capex Exposures	BNEF Fossil-Fuel Revenue and Capex Exposure, Urgewald GCEL/GOGEL (historical 2021-2022 only)

② Pull financing activity

Gather transaction data
issued by relevant companies

Asset classes	Loans	Bonds	Project finance and tax equity
	Equity		
Sources	Bloomberg LP	BNEF, IJGlobal	

③ Adjust transactions

Adjust transaction data
for general corporate financing, by multiplying by percentage exposure to fossil fuels or clean energy

	2023-2024 data	2021-2022 historical
Source: Fossil fuels	BNEF Fossil-Fuel Exposure Ratings (FFERs)	Urgewald GCEL/GOGEL, Bloomberg Industry Classifications (BICS)
Source: Low-carbon	BNEF Clean Energy Exposure Ratings (CEERs)	BNEF CEERs, BICS
Source: Oil and gas majors	BNEF bottom-up green capex estimates	
Source: Green debt	ESG use of proceeds categories	
	Add full value of transactions for project finance and renewables tax equity/credit transfers	

Source: BloombergNEF

Energy supply banking ratio methodology (2/2)

Sector coverage: ESBR analysis spans the energy value chain

Focus of this report	Energy supply		Energy demand	Not included: Adjacent sectors
	Production and supply	Manufacturing	Consumption	
Low-carbon	Company revenue driven by low-carbon sources of energy production. This includes renewables, storage, biofuels and nuclear. Grid technology upgrades often tend to accompany cleaner capacity and also allow the smoother integration of renewables, so transmission and distribution is considered green. - Solar - Wind - Geothermal - Hydropower - Storage - Marine power - Biofuels and biomass - Nuclear - Electricity grid - Electricity marketing/ trading - CO₂ transmission/ storage - Landfill gas capture	Company revenue driven by the development of plants/facilities manufacturing low-carbon energy equipment. This includes equipment and services, such as modules, turbines and components. Smart grid equipment is included due to the direct enablement of clean power on the grid. - Plant development - Solar, biomass, wind - Smart grid equipment - Clean energy equipment - Solar cells/modules, inverters - Wind turbines - Geothermal equipment - Hydro equipment - Fuel cells - Nuclear equipment - Hydrogen electrolyzer and fuel cell	Company revenue driven by the manufacturing of clean transportation technologies, primarily electric vehicles (passenger vehicles and trucks) and energy efficiency/buildings. Also includes financing and leasing for transportation. - Electric passenger vehicles - Electric trucks - Leasing electric vehicles - Electric-vehicle financing - Heat pumps and boilers - Clean steel (EAF)	Metals and mining relevant to batteries/EVs, but tracked too broadly in Bloomberg Industry Classification System (BICS). - Recycling and waste management - Sustainable materials - Pollution control equipment - Metals and mining Use of fossil-fuel vehicles excluded to avoid double counting; focus is on manufacturing instead.
	Company revenue driven by fossil-fuel-based sources of energy production. This includes coal, oil and gas, and utilities' fossil-fuel power generation for electricity and heating/cooling. This also includes transportation and refining businesses. - Utilities - Fossil-fuel power generation - Coal - Mining - Rail/freight - Oil and gas - Exploration and production - Transport - Refining - Marketing/trading - Petroleum filling stations	Company revenue driven by the equipment used to support power generation from fossil-fuel-based sources. This includes equipment, parts and services, such as generators and boilers. - Equipment and infrastructure - Generators - Power generation equipment, parts and services - Power boilers and heat exchangers - Oilfield chemicals	Company revenue driven by the manufacturing of traditional internal combustion engine transportation technologies (passenger vehicles and trucks) and other fossil-fuel-based forms of transportation, such as ships and aircraft. Also includes financing, leasing and rental services. - Passenger/ commercial vehicles - Manufacturing and leasing - Engines and parts - Trucks - Shipbuilding - Aircraft engines and parts - Vehicle financing (passenger, commercial, railcar) - Vehicle rental - Heavy industry (excluding steel BF-BOF)	

Source: BloombergNEF

Copyright and disclaimer

Copyright

© Bloomberg Finance L.P. 2026. This publication is the copyright of Bloomberg Finance L.P. in connection with BloombergNEF. No portion of this document may be photocopied, reproduced, scanned into an electronic system or transmitted, forwarded or distributed in any way without prior consent of BloombergNEF.

Disclaimer

The BloombergNEF ("BNEF"), service/information is derived from selected public sources. Bloomberg Finance L.P. and its affiliates, in providing the service/information, believe that the information it uses comes from reliable sources, but do not guarantee the accuracy or completeness of this information, which is subject to change without notice, and nothing in this document shall be construed as such a guarantee. The statements in this service/document reflect the current judgement of the authors of the relevant articles or features, and do not necessarily reflect the opinion of Bloomberg Finance L.P., Bloomberg L.P. or any of their affiliates ("Bloomberg"). Bloomberg disclaims any liability arising from use of this document, its contents and/or this service. Nothing herein shall constitute or be construed as an offering of financial instruments or as investment advice or recommendations by Bloomberg of an investment or other strategy (e.g., whether or not to "buy", "sell", or "hold" an investment). The information available through this service is not based on consideration of a subscriber's individual circumstances and should not be considered as information sufficient upon which to base an investment decision. You should determine on your own whether you agree with the content. This service should not be construed as tax or accounting advice or as a service designed to facilitate any subscriber's compliance with its tax, accounting or other legal obligations. Employees involved in this service may hold positions in the companies mentioned in the services/information.

The data included in these materials are for illustrative purposes only. The BLOOMBERG TERMINAL service and Bloomberg data products (the "Services") are owned and distributed by Bloomberg Finance L.P. ("BFLP") except (i) in Argentina, Australia and certain jurisdictions in the Pacific islands, Bermuda, China, India, Japan, Korea and New Zealand, where Bloomberg L.P. and its subsidiaries ("BLP") distribute these products, and (ii) in Singapore and the jurisdictions serviced by Bloomberg's Singapore office, where a subsidiary of BFLP distributes these products. BLP provides BFLP and its subsidiaries with global marketing and operational support and service. Certain features, functions, products and services are available only to sophisticated investors and only where permitted. BFLP, BLP and their affiliates do not guarantee the accuracy of prices or other information in the Services. Nothing in the Services shall constitute or be construed as an offering of financial instruments by BFLP, BLP or their affiliates, or as investment advice or recommendations by BFLP, BLP or their affiliates of an investment strategy or whether or not to "buy", "sell" or "hold" an investment. Information available via the Services should not be considered as research analysis or research recommendation or an opinion concerning any financial products or securities or entity or as information sufficient upon which to base an investment decision. Bloomberg makes no claims or representations, or provides any assurances, about the sustainability characteristics, profile or data points of any underlying issuers, products or services, and users should make their own determination on such issues. The following are trademarks and service marks of BFLP, a Delaware limited partnership, or its subsidiaries: BLOOMBERG, BLOOMBERG ANYWHERE, BLOOMBERG MARKETS, BLOOMBERG NEWS, BLOOMBERG PROFESSIONAL, BLOOMBERG TERMINAL and BLOOMBERG.COM. Absence of any trademark or service mark from this list does not waive Bloomberg's intellectual property rights in that name, mark or logo. All rights reserved. © 2026 Bloomberg.

BloombergNEF (BNEF) is a strategic research provider covering global commodity markets and the disruptive technologies driving the transition to a low-carbon economy.

Our expert coverage assesses pathways for the power, transport, industry, buildings and agriculture sectors to adapt to the energy transition.

We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities.

BloombergNEF

Ali Izadi, aizadinajafa@bloomberg.net

Jonathan Luan, dluan4@bloomberg.net

Emma Champion, echampion3@bloomberg.net

Hongyan Li (editor)

Client enquiries:

Bloomberg Terminal: press <Help> key twice

Email: support.bnef@bloomberg.net

Learn more:

about.bnef.com | [@BloombergNEF](https://twitter.com/BloombergNEF)