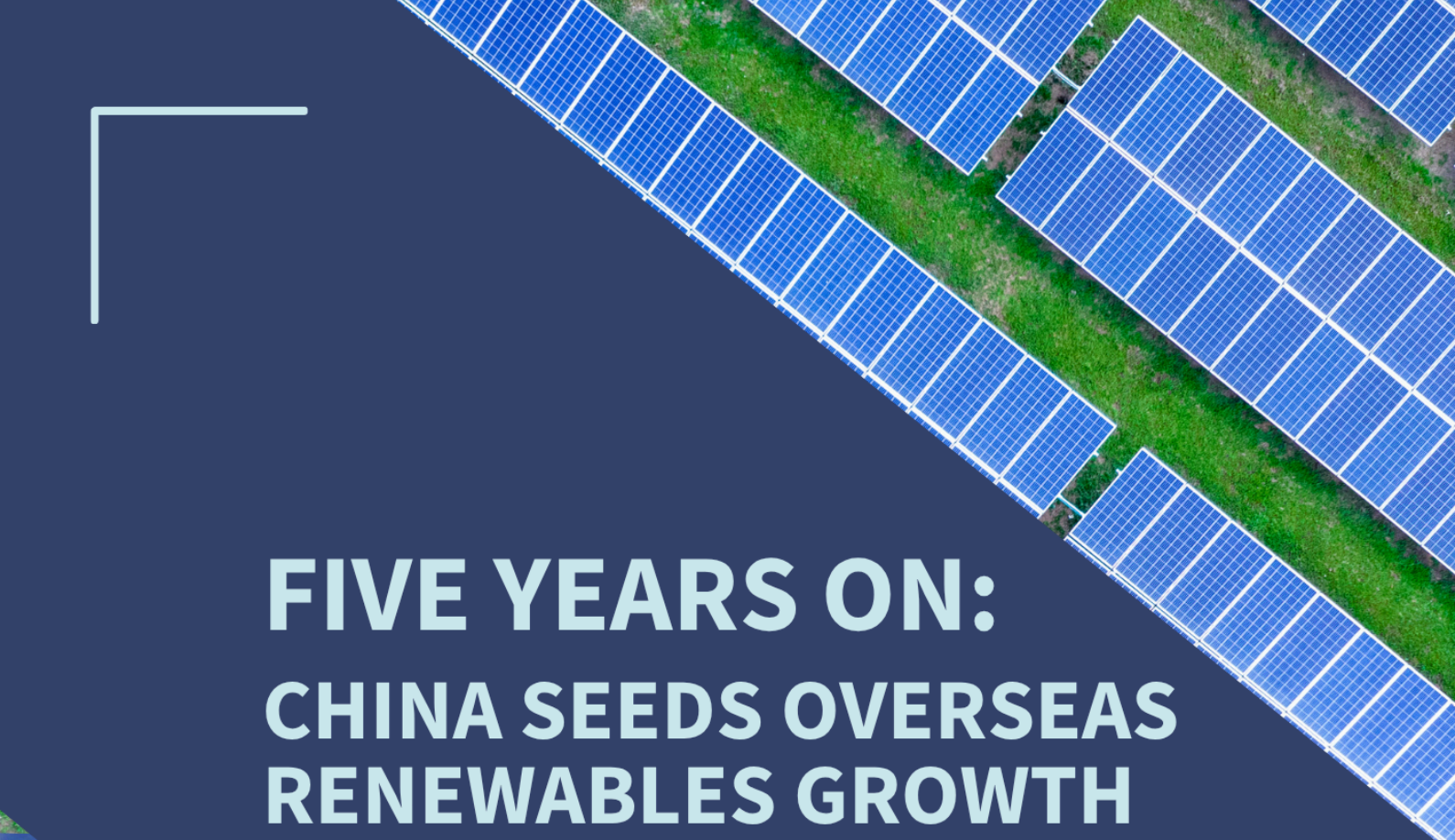


FIVE YEARS ON:

CHINA SEEDS OVERSEAS RENEWABLES GROWTH BUT COAL BAN GAPS PERSIST



SEPTEMBER 2026

CREA
Centre for Research on Energy and Clean Air

PEOPLE OF ASIA FOR CLIMATE SOLUTIONS

Five years on: China seeds overseas renewables growth but coal ban gaps persist

24 September 2026

Authors
Lizzie Frost, CREA
Katherine Hasan, CREA
Syahdiva Moezbar, CREA

Data scientist
Miao Chien, CREA

Editor
Jonathan Seidman, CREA

Contributors
Xiaojun Wang, PACS
Lauri Myllyvirta, CREA
Daniel Nesan, CREA
Belinda Schaepe, CREA

Cover images
Upper: Pedro Truffi; solar panels in Brazil.
Lower: IMAGO/Zhang Baoping; Hwange Thermal Power Station in Hwange, Zimbabwe.

Acknowledgements

CREA gratefully acknowledges the support, feedback, and insight received from the following organisations and individuals: Global Energy Monitor, Earthwise Institute, Lucy Hummer.

The views expressed in this report are those of the authors and should not be attributed to any of the aforementioned.

About CREA

The Centre for Research on Energy and Clean Air (CREA) is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions to air pollution. CREA uses scientific data, research, and evidence to support the efforts of governments, companies, and campaigning organisations worldwide in their efforts to move towards clean energy and clean air, believing that effective research and communication are the keys to successful policies, investment decisions, and advocacy efforts. CREA was founded in Helsinki and has staff in several Asian and European countries.

About PACS

People of Asia for Climate Solutions (PACS) is dedicated to promoting people-centered climate solutions. We create narratives, build new networks, and establish innovative platforms where different puzzle pieces come together into the vision. Our organization operates through both a China-based team and a Philippines-based team, working to build bridges and strengthen communication between China and climate-vulnerable countries on climate change mitigation and adaptation.

Five years on: China seeds overseas renewables growth but coal ban gaps persist

Key findings

Five years have passed since Chinese President Xi Jinping's 2021 pledge that China would stop building new coal-fired power projects abroad and step up support for developing countries in developing green and low-carbon energy. This briefing tracks the implementation of these pledges.

- In the five years since China's 2021 overseas coal pledge, 67% of the coal power capacity planned at that time has been cancelled, with **61.5 gigawatts (GW) cancelled** in total — **avoiding an estimated 6.4 billion tonnes of lifetime CO_2 emissions**.
- Despite progress, the ban has yet to reach full implementation — **7.1 GW of China-linked coal power capacity was cancelled in the past year** (H1 2026 and H2 2025), but **3.3 GW entered construction** while **20.5 GW remains in planning** without official cancellation, together representing roughly **2.8 billion tonnes of potential lifetime CO_2 emissions**.
- **Indonesia leads on operational China-linked coal projects** (17.1 GW), followed by Vietnam (3.8 GW) and Pakistan (3.4 GW). **Most under-construction capacity is in Indonesia**, followed by India and Zimbabwe.
- The continued expansion of coal plants involving **private Chinese companies** risks breaching the 2021 pledge. Since 2021, 5.9 GW of China-linked coal power projects that were not under construction when the pledge was made have come into operation, and 7.3 GW entered construction after the pledge.
- **Off-grid captive coal power plants** represent a significant share of active or planned units, with 60% entering operation and 42% under construction since 2021, remaining a **major loophole** that risks undermining the pledge. Most captive projects are funded by private Chinese companies and are linked to mineral-processing and industrial parks in Indonesia.

- Yet, estimated operational **China-linked renewable energy (RE) generation** has already topped the potential generation of cancelled coal projects in **Brazil, Tanzania, and the UAE**. This signals that coal cancellation makes space for RE transitions and presents new economic opportunities for China and Global South partners.

If the 20.5 GW of currently planned coal power projects go ahead, they represent a **growing reputational risk to China**, especially as it seeks to take on a leadership role in global climate governance. To demonstrate its position as a **responsible power** and major contributor to global climate action, China should work with partner countries to:

- **Immediately cancel or repurpose all coal projects overseas that have not yet started construction** while developing retirement and renewables replacement pathways for operational projects.
- **Address the captive coal power loophole** by implementing the pledge on captive coal projects, alongside integrating renewables into existing overseas industrial parks, and developing new zero-carbon industrial parks.
- **Strengthen governance of the pledge** by designating a specific governance body that will oversee compliance with the pledge alongside strengthening transparency and accountability.
- **Maximise the opportunities presented by renewable energy**: replacing coal with renewables will support climate goals, electrification, energy security, and the global transition.

Contents

Key findings **3**
Contents **5**
Introduction **6**
China-linked overseas coal power: A five year review **8**
China-linked overseas green and low-carbon energy **15**
Changes in plant statuses over the past year **21**
Indonesia: Demand-driven expansion of captive coal and grid renewables **24**
Methodology **30**
Scope and sources 30
Coal project classification and emissions 30
Renewable energy project classification 31
Renewables generation and avoided emissions 31
Appendix **33**
List of plants by status 33

Introduction

September 2026 marks five years since Chinese President Xi Jinping pledged that "China will step up support for other developing countries in developing green and low-carbon energy, and will not build new coal-fired power projects abroad." (Xi, 2021). Since then, the Chinese government has formalised the pledge through the 14th Five-Year Plan for a Modern Energy System, while developing a strong green overseas investment policy framework (NDRC, 2022). This framework includes guidelines on Ecological Environmental Protection of Foreign Investment Cooperation and Construction Projects, and Opinions on Promoting Green Development in Jointly Building the Belt and Road. These documents call for giving clean energy projects priority in overseas investments, supporting outbound investment in clean energy, and deepening green energy cooperation across the Belt and Road (MEE & MOFCOM, 2022; NDRC, MFA, MEE & MOFCOM, 2022).

More recently, the 15th Five-Year Plan, published in March 2026, outlines China's ambition to demonstrate global climate governance leadership, through deepening South–South cooperation and by providing affordable clean-energy technologies as "global public goods" (NPC, 2026). The subsequent sectoral level plan for the Development of Renewable Energy lays out China's renewed ambition to promote international cooperation on renewable energy to support the global transition and facilitate the free flow of Chinese green technologies in the global market (NDRC, NEA, 2026).

For China to showcase itself as a responsible major power on climate change, it is vital that the country demonstrates its actions to achieve both domestic and global commitments over the next five years. The remaining China-linked overseas coal pipeline must be converted or cancelled before construction begins, while China should work closely with host countries with existing coal projects to manage a stable transition away from fossil fuels.

CREA has tracked the implementation of China's 2021 pledge through a series of annual reports analysing the evolution of China-linked coal power projects overseas. Given that the pledge was made on behalf of China as a whole rather than the Chinese government specifically, and uses the active verb "build," implying involvement beyond financing, our analysis classifies a coal power project as China-linked where there is evidence of involvement of Chinese companies, whether state-owned or private. This includes participation as project owners, financiers, equity holders, EPC (engineering, procurement,

and construction) contractors, equipment suppliers, industrial park developers, or users of captive coal.

This edition of the report, which marks half a decade since the pledge was announced, reviews China's achievements in shrinking its overseas coal footprint and growing its overseas green and low-carbon energy projects. It also highlights the remaining loopholes that prevent the full implementation of the pledge — in particular, captive coal projects in Indonesia.

China-linked overseas coal power: A five year review

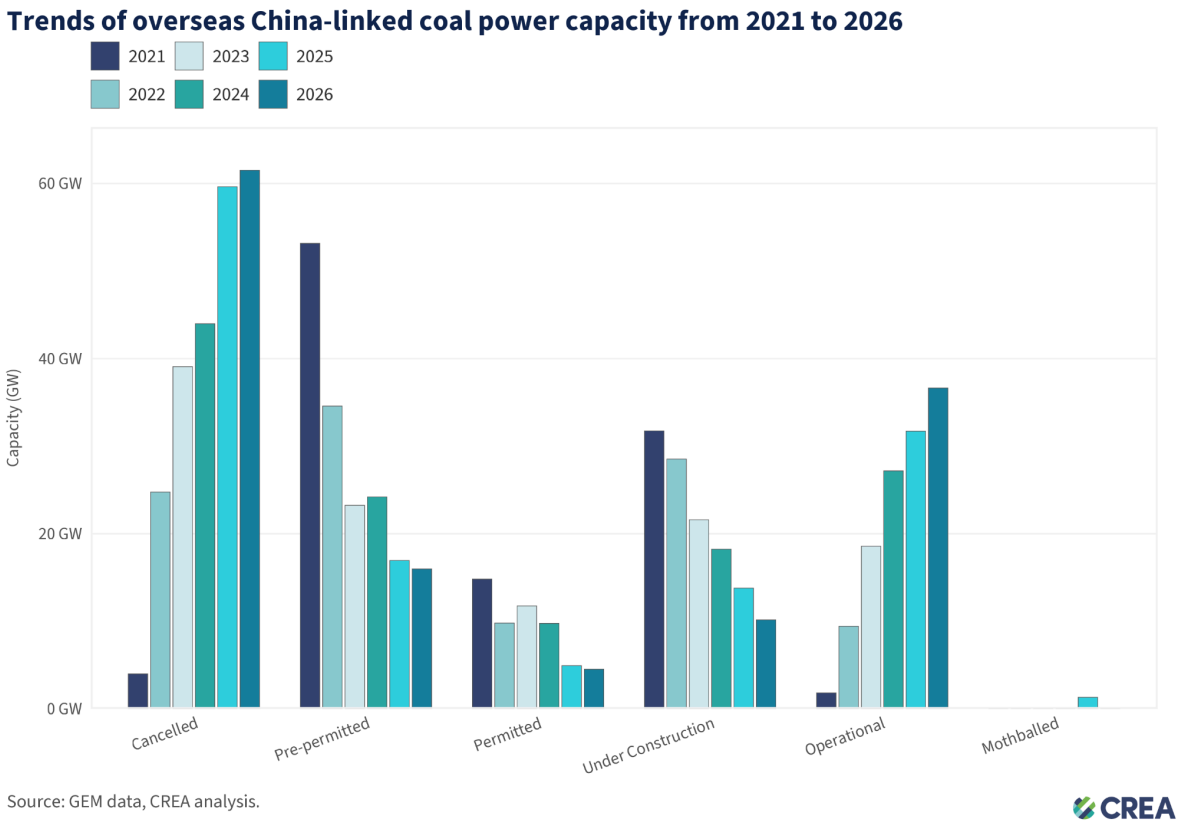


Figure 1 — Trend of overseas China-linked coal power capacity from 2021 to 2026

Overall, Chinese state-owned enterprises and state-owned banks have made significant progress on the government's commitments, almost immediately stopping their involvement in the majority of coal projects and related financing following the announcement of the pledge.

In total, 61.5 GW of coal projects across 129 units have been cancelled in the five years since the pledge.[1] These cancellations represent 6.4 billion tonnes of avoided lifetime

[1] Cancelled projects include those where formal termination announcements have been made, and those presumed to be cancelled after several years without updates on project progress.

carbon dioxide (CO_2) emissions. Over the five year period since the pledge, Indonesia has led in cancellations (11.1 GW), followed by Vietnam (9.9 GW) and Bangladesh (5.7 GW).

When the pledge was made in 2021, China's planned overseas coal projects — including permitted and pre-permitted projects — stood at 68 GW. Of that original planned capacity, 67% has since been cancelled, while 7% has become operational. Of the original planned capacity, 3% is now under construction, and 22% is stuck in development.

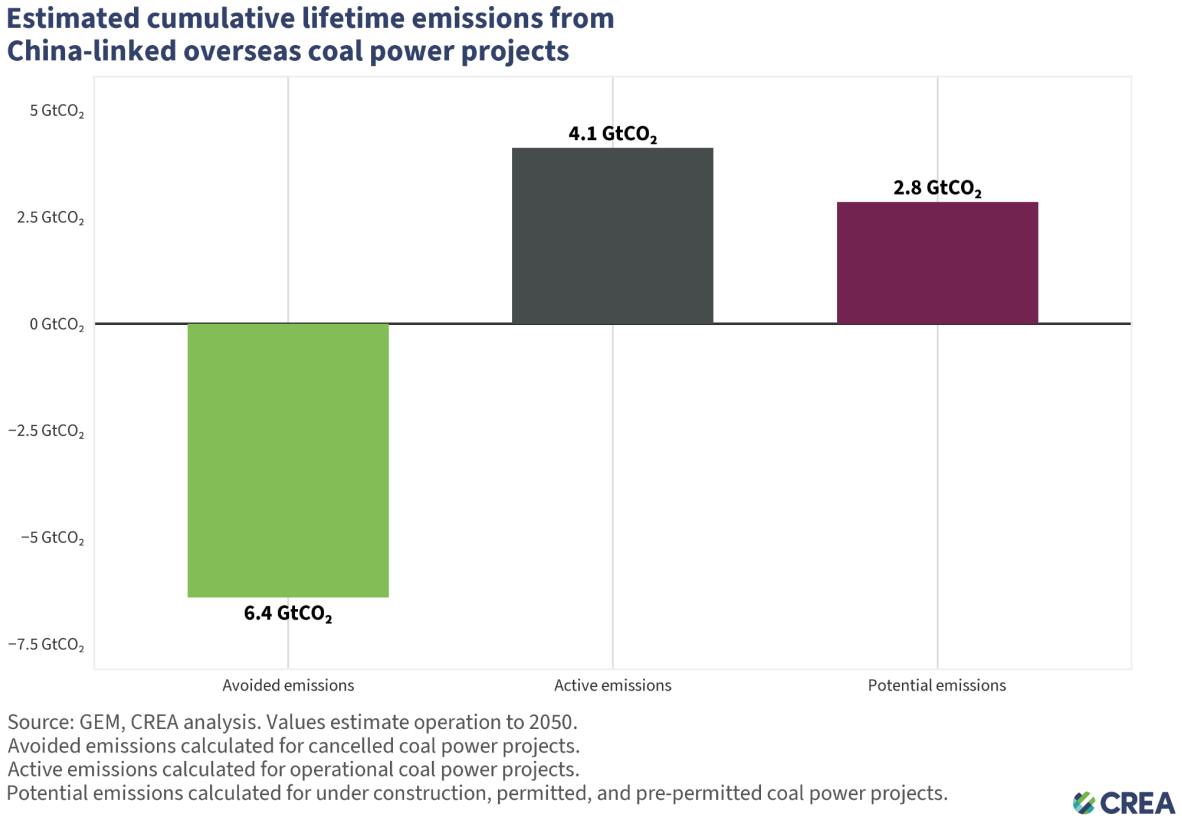


Figure 2 — Estimated cumulative lifetime emissions from overseas China-linked coal power projects

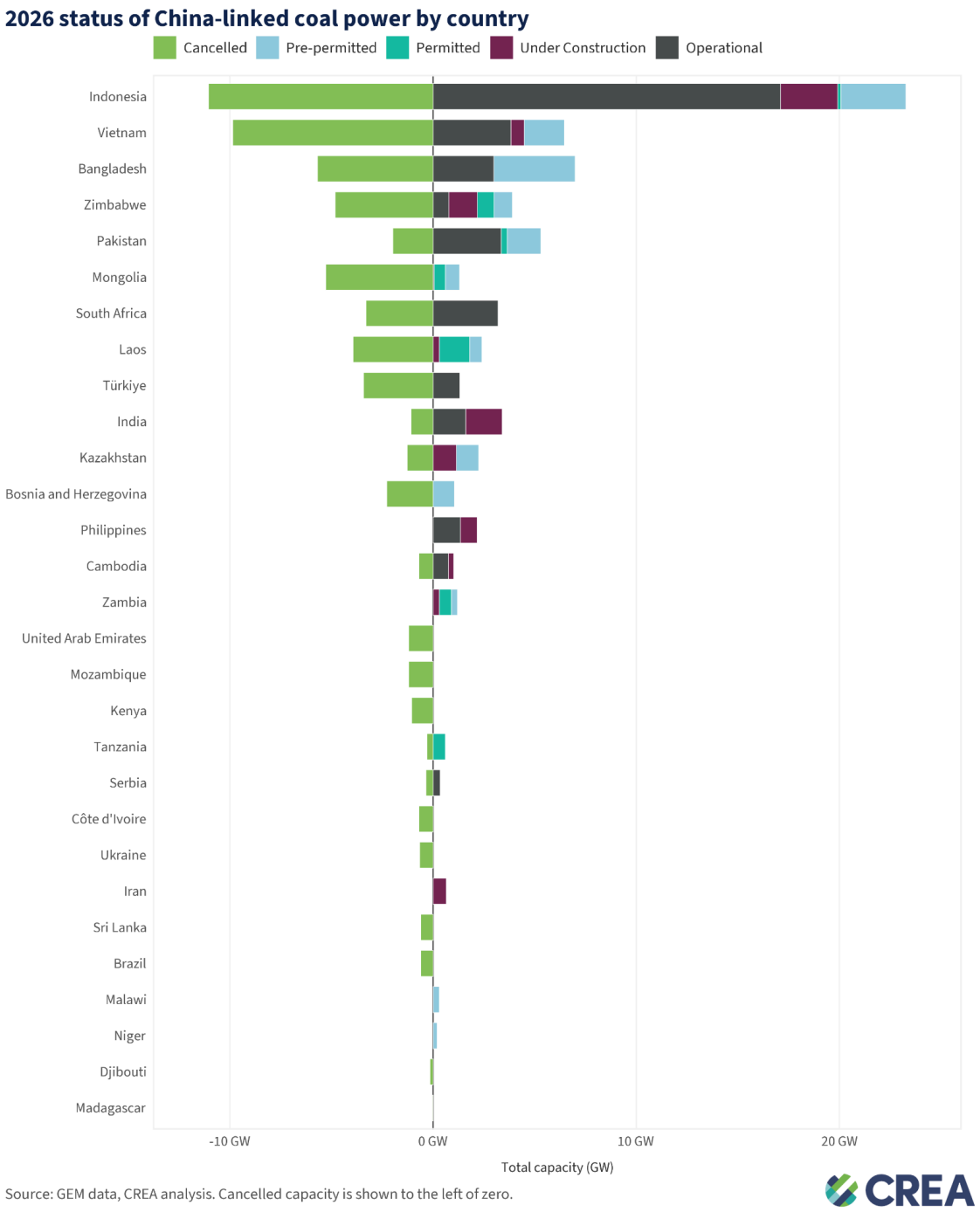


Figure 3 — Status of China-linked coal capacity by country

Despite this significant progress, China's pledge has not yet been fully implemented.

As of July 2026, 36.6 GW of China-linked coal capacity had come into operation since the pledge was made, with much of the growth in operating coal projects linked to private companies. These plants are expected to emit 4.1 billion tonnes of lifetime CO_2 emissions if they continue to operate at current typical capacity utilisation. Indonesia leads on China-linked projects that started operating after the 2021 pledge (17.1 GW), followed by Vietnam (3.8 GW) and Pakistan (3.4 GW).

The majority of these projects were already firmly contracted or under construction when the pledge was made, so cancelling them would have meant breaching existing contracts and diplomatic agreements. These operational plants present an opportunity for China to support host countries in developing pathways for an accelerated coal phase-out, including through early retirement or replacement with green energy, especially as coal's economic profitability is undercut by renewable energy development.

Of the post-2021 operational coal power capacity, 3.2 GW comes from projects that were planned at the time of the pledge, but on which construction was yet to start. These plants, which are all captive coal located in Indonesia and Pakistan, should have been cancelled as a result of the pledge. Eleven operational units with a total combined capacity of 2.7 GW were not even in planning at the time of the pledge, and were only announced after the pledge was made. Under the pledge, these projects should never have progressed.

Ten of these units are captive coal projects[2] in Indonesia with links to Chinese private companies. Although captive coal has sometimes been regarded as outside the scope of President Xi's 2021 pledge, the commitment was broadly framed and no official definition has excluded captive projects. The continued growth of China-linked captive coal therefore represents a major loophole undermining the full implementation of the pledge. Of all post-2021 operational units, 60% are captive coal, with a total capacity of 13.2 GW. Concerningly, the development of new China-linked captive coal projects still continues, as 27% of all planned coal units are captive coal, with a total capacity of 4.8 GW.

[2] Captive coal plants serve individual electricity users rather than generating power to the grid. In Indonesia, captive plants are linked to mineral-processing and industrial parks.

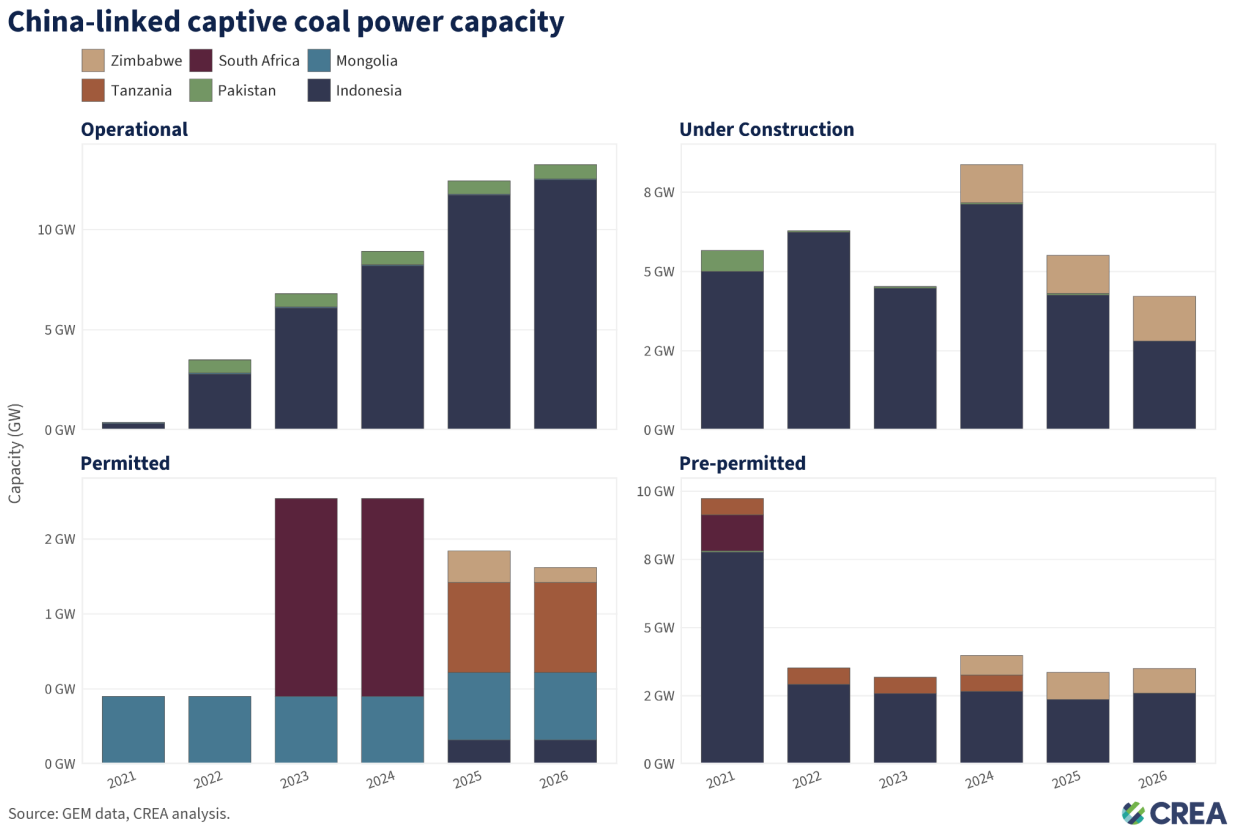


Figure 4 — Trend of overseas China-linked captive coal power capacity from 2021 to 2026

The number of planned and under-construction China-linked coal power projects has significantly contracted over the post-pledge period. The total pipeline of pre-permitted, permitted, and under construction projects was 30.7 GW as of July 2026, representing a fall of more than two-thirds compared to 2021. As of July 2026, a total of 10.2 GW coal power plants are under construction, out of which 41% are captive coal plants.

The plants under construction reveal significant gaps in the implementation of the pledge. 2.3 GW of coal power capacity currently under construction was planned when the pledge was made, but had not yet started construction at that time. These plants could have been cancelled but moved ahead. This category includes Units 1 and 2 of Phase II of the Nanshan Industrial Park power station in Indonesia, which is captive coal for the aluminum industry. Grid-connected China-linked projects in this category include:

- Units 1 and 2 of the Kokshetau power station in Kazakhstan. As of October 2025, contracts had been signed with: Shandong Yangguang Engineering Design Institute Co. for project development; PowerChina SEPCO1 Electric Construction Co. for equipment and materials supply; and Henan Province Installation Group Co. LLP for construction, installation, and commissioning works (Global Energy Monitor, 2026f).
- Unit 7 of the Karaganda-3 power station in Kazakhstan. In June 2024, China Machinery Engineering Corporation signed an agreement to develop project documentation for the project, with equipment said to be planned to be delivered from China (Global Energy Monitor, 2026e).
- Phase I of the Phonesack Xekong power station in Laos. In March 2025, China's Western Power Industrial signed a contract for the design, procurement, and supply of equipment and raw materials for the project (Global Energy Monitor, 2026i).
- Units 4 and 5 of the Masinloc power station in the Philippines. Chinese company Potent Mechanical & Industrial (Xiamen) installed critical generation equipment for the units (Potent, 2024).

Another 5 GW of capacity across 20 units was not even planned in 2021, but have since emerged and are now under construction. Of these units, 14 are captive coal projects in Indonesia and Zimbabwe. Grid-connected China-linked projects in this category include:

- Units 1, 2, and 3 of the Semey-3 power station and Unit 1 of the Ust-Kamenogorsk-2 power station in Kazakhstan. Equipment for both projects is planned to be supplied by Chinese companies. (Global Energy Monitor, 2026k, 2026m; Mamyshev, 2026).

The 20.5 GW remaining in the pre-permitted and permitted pools present a strong opportunity to lock in conversion towards renewables, or secure project cancellations, before construction begins. More than one quarter of these projects — 5.4 GW across 13 units — have been announced after the 2021 pledge. Five of these units are captive coal projects in Indonesia and Zimbabwe. Planned grid-connected China-linked projects include:

- The Zambia Development Agency hybrid power station in Zambia, which will combine three separate 300 MW projects across solar, wind, and coal-fired thermal power. China Machinery Engineering Corporation will finance and implement the project (Adeyemi, 2026).

- Unit 1 of the Mulungwa power station in Zambia. Jiangsu Etern Company Limited is a part-owner of the project (Global Energy Monitor, 2026g).
- Unit 1 of the Titan power station in Zimbabwe. Huaxi Energy Group, Kason Group, Jin'an Group and other Chinese private companies are investors in the project (Global Energy Monitor, 2026l).
- Units 1 and 2 of the Mandakh power station in Mongolia. China's Zhongrui Engineering Design Institute signed an EPC contract for the project (Tumen Ail Coal, 2026).
- Unit 4 of the Ekibastuz-2 power station in Kazakhstan. Harbin Electric International supplied equipment for the project (Global Energy Monitor, 2026c).

Projects that were not yet under construction in 2021 and in which Chinese state-owned firms are involved in the construction or financing of a coal-fired power plant are a direct breach of China's 2021 pledge and should be called off. Projects in which Chinese firms are currently supplying key equipment represent a gap in the interpretation and implementation of the pledge, and it should be made clear that equipment supply is included in the scope of China's commitment.

As China increasingly aims to position itself as a leader in global climate governance, the full implementation of the 2021 pledge and the end of Chinese involvement in coal power projects overseas — which will have significant environmental, health, and economic benefits for local communities — will demonstrate China's commitment to deepening South–South cooperation on climate change as part of building "a community with a shared future for mankind" (Xi, 2021).

China-linked overseas green and low-carbon energy

China's progress towards fulfilling the "no new coal" component of its pledge comes alongside a rapidly expanding portfolio of international green and low-carbon projects, including renewables, biomass, waste-to-energy, nuclear, energy storage, and other non-fossil projects, which demonstrates concrete action towards its commitment to support the global development of green and low-carbon energy.

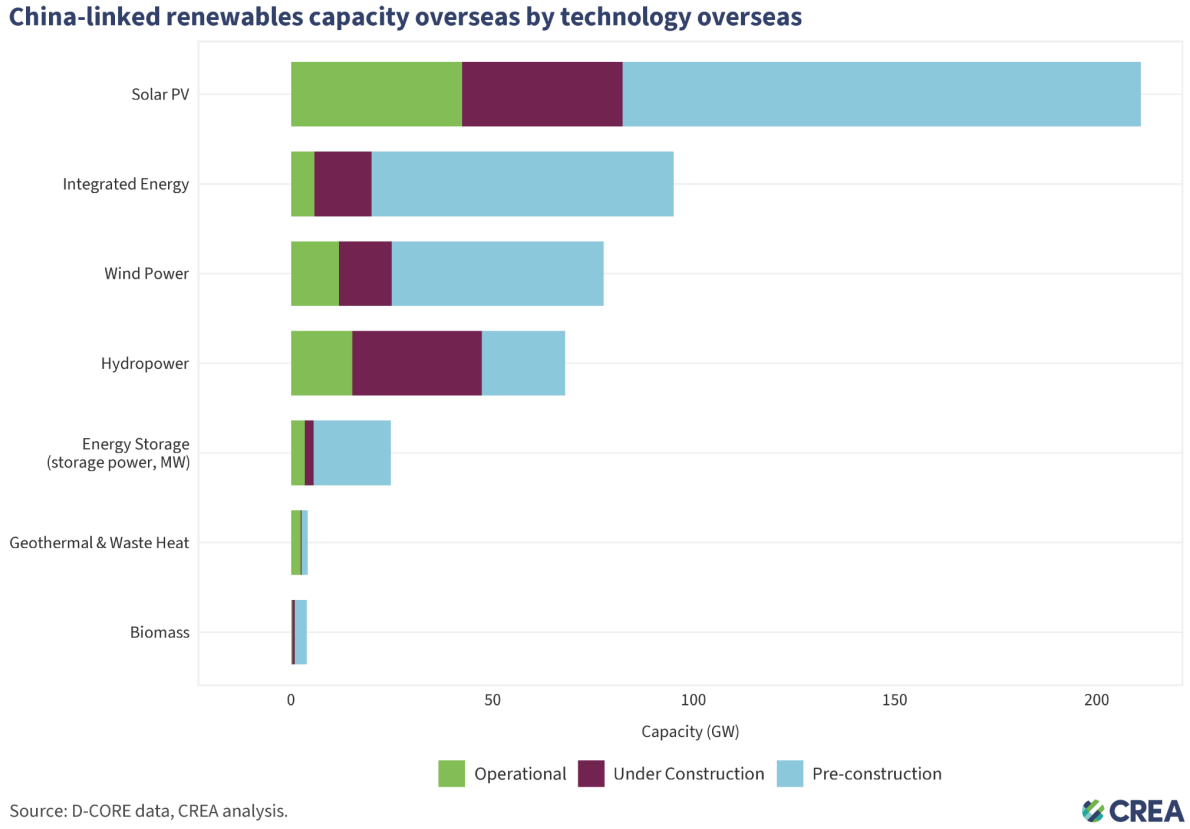


Figure 5 — Overseas China-linked renewables capacity in 2026

As of July 2026, 69.4 GW of China-linked renewables projects are operational overseas (D-CORE, 2026). An additional 100.5 GW are under construction, with 280.8 GW in the pre-construction phase (including projects which have been planned, signed, and

awarded). This brings the total renewables pipeline to 381.3 GW,[3] although in most cases pre-construction projects still need to secure permits, financing, or investment decisions before moving ahead. This renewable energy capacity is supported by 3.5 GW of China-linked operational energy storage, with a further 21.4 GW of storage in the pipeline (D-CORE, 2026).

As of July 2026, six operational nuclear power reactors with a total capacity of 3.3 GW have been financed and built by China. These units are all located in Pakistan, and in 2023 had a total generation of 26.2 TWh. Construction began on the 1.2 GW Chashma-5 unit in 2024, and the plant is expected to be operational around 2030 (World Nuclear Association, 2026).

While not directly comparable to coal-power capacity, the growth in green and low-carbon energy signals a positive shift in the composition of China's overseas energy engagement. However, no official definition specifies which energy technologies qualify as "green and low-carbon," creating a risk.

[3] This figure includes 89.2 GW of projects classified by D-CORE as "Integrated Energy," for which the underlying generation technologies could not be fully identified.

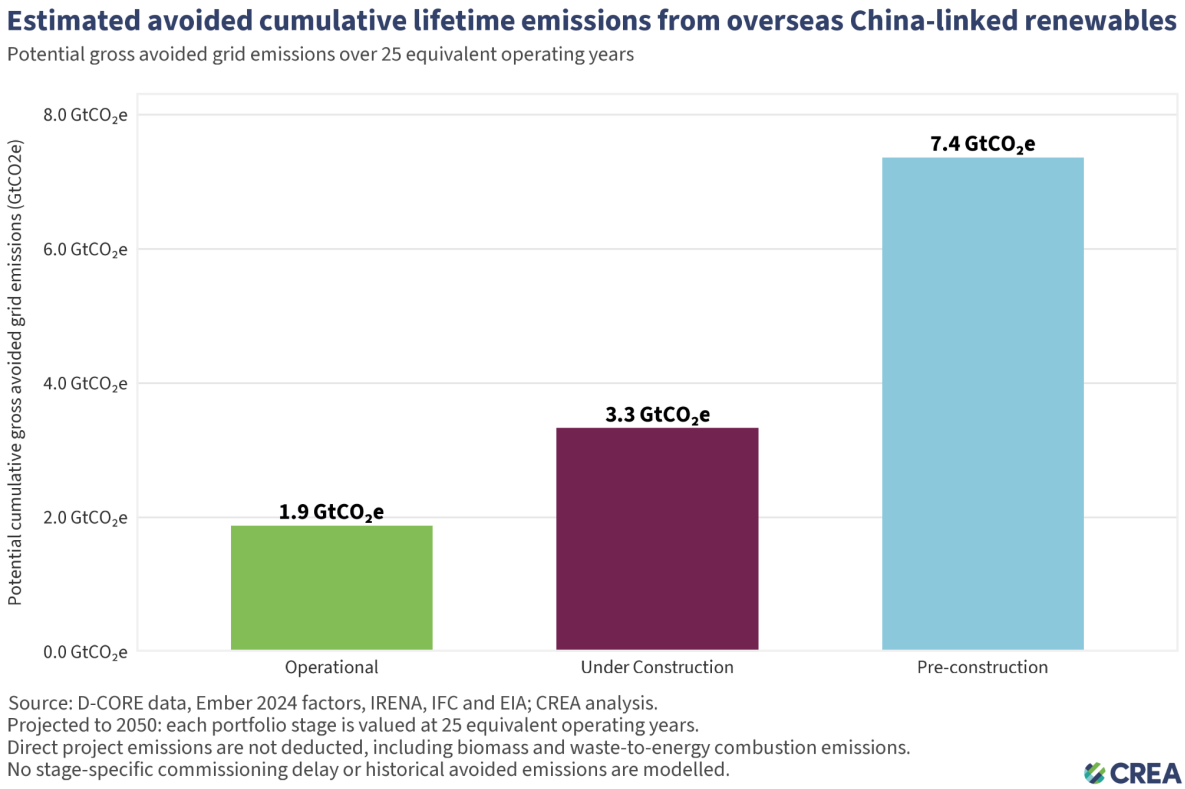


Figure 6 — Estimated avoided cumulative lifetime emissions from overseas China-linked renewables[4]

The currently operational China-linked renewable energy projects are projected to avoid lifetime emissions of approximately 1.9 billion tonnes of CO_2. Projects currently under construction represent an additional 3.3 $GtCO_2$ of potential gross avoided grid emissions over their lifetimes.

[4] Our calculations cover 69.4 GW of operational solar PV, wind, hydropower, CSP, biomass, geothermal, waste-heat recovery, and waste-to-energy projects. Integrated-energy projects without sufficient technology detail and energy-storage projects remain excluded from generation and avoided-emissions estimates.

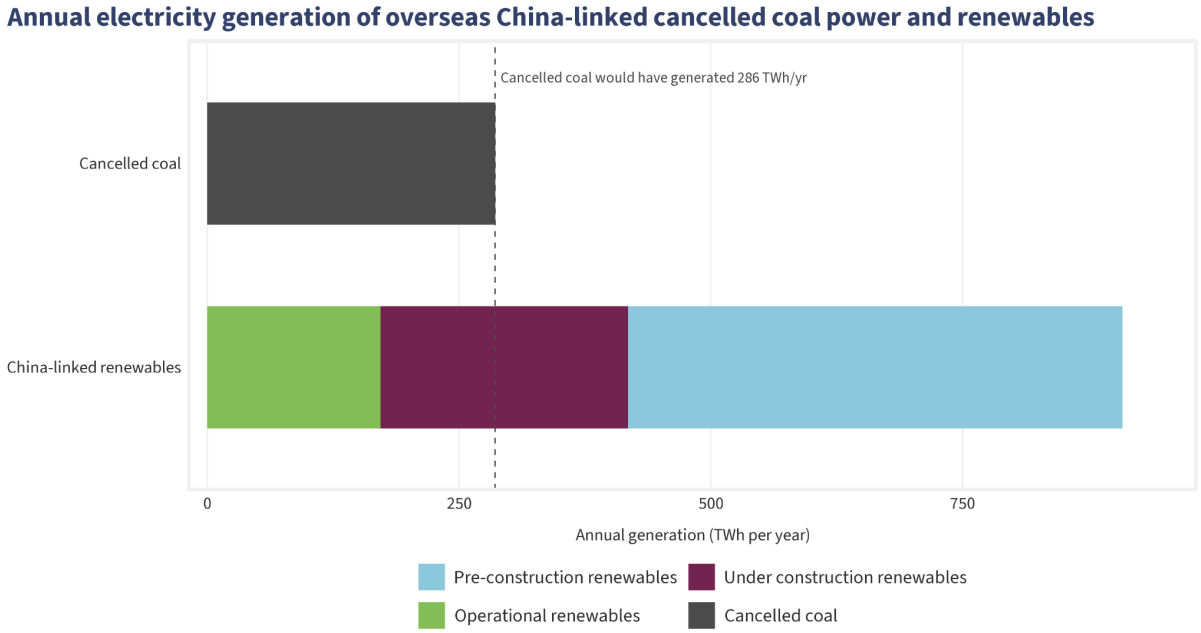


Figure 7 — Annual electricity generation of overseas China-linked cancelled coal compared to renewables[5]

As of July 2026, operational China-linked renewables globally generate 172 TWh annually — 60% of what the cancelled coal plants would have produced. If all renewables projects currently under construction come online, they will generate an additional 246 TWh annually. Combined with operational generation, this would be significantly more electricity than what the cancelled coal power projects would have generated.

[5] Our calculations cover 69.4 GW of operational solar PV, wind, hydropower, CSP, biomass, geothermal, waste-heat recovery, and waste-to-energy projects. Integrated-energy projects without sufficient technology detail and energy-storage projects remain excluded from generation and avoided-emissions estimates.

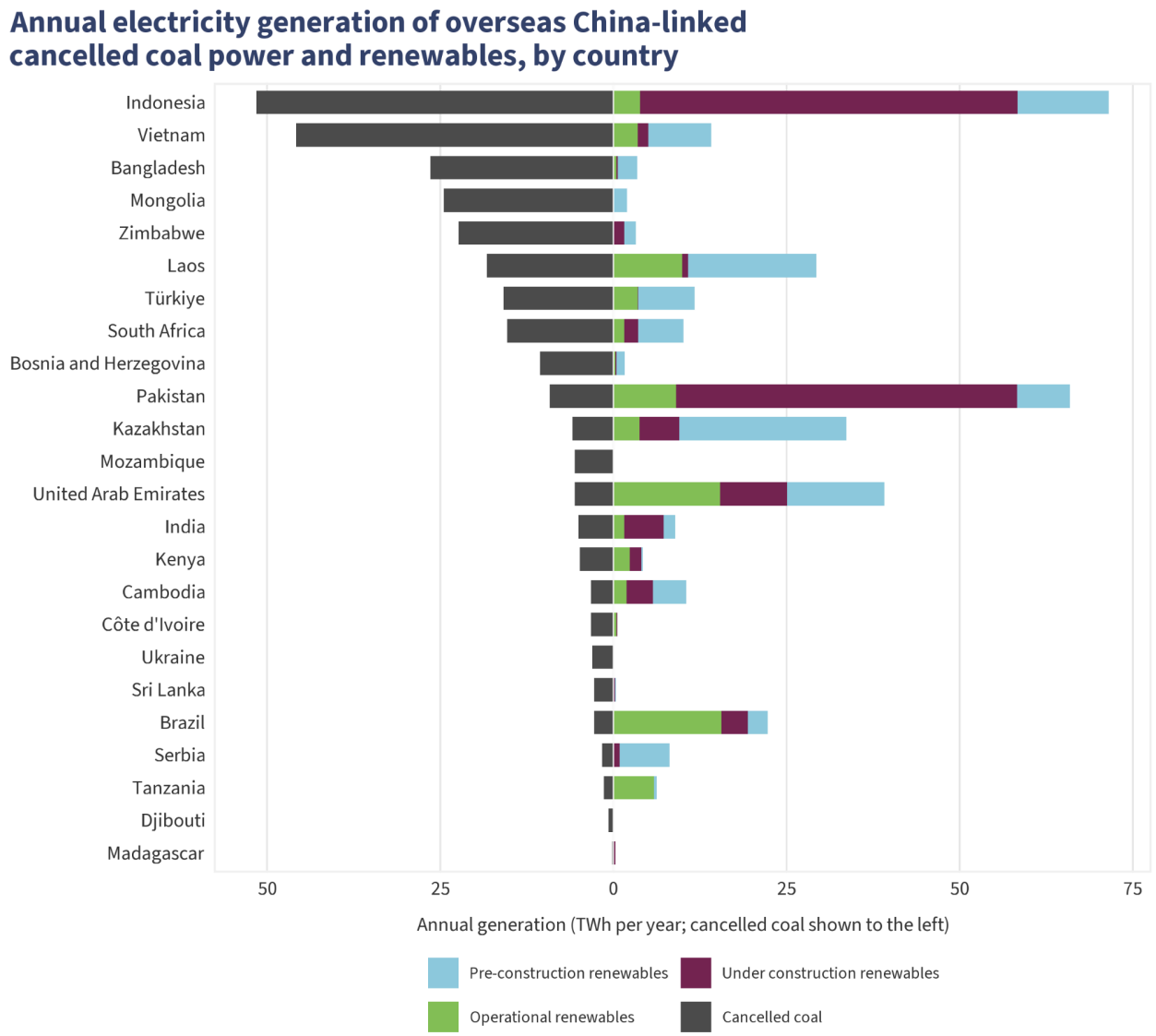


Figure 8 - Annual generation of overseas China-linked cancelled coal power and renewables[6]

[6] Our calculations cover 69.4 GW of operational solar PV, wind, hydropower, CSP, biomass, geothermal, waste-heat recovery, and waste-to-energy projects. Integrated-energy projects without sufficient technology detail and energy-storage projects remain excluded from generation and avoided-emissions estimates.

In Brazil, Tanzania, and the UAE, annual electricity generation from operational China-linked renewables projects already exceeds the potential generation from cancelled coal projects. If all under-construction renewables projects come online, this will extend to Indonesia, Pakistan, Kazakhstan, India, Cambodia, and Madagascar. These developments indicate that China's commitment to support developing countries to develop green and low-carbon energy is already starting to bear fruit.

Cancelling proposed coal projects not only supports countries in avoiding coal lock-in but can also create space for the energy transition, presenting opportunities for both host countries and Chinese companies to invest in green and low-carbon energy development.

Changes in plant statuses over the past year

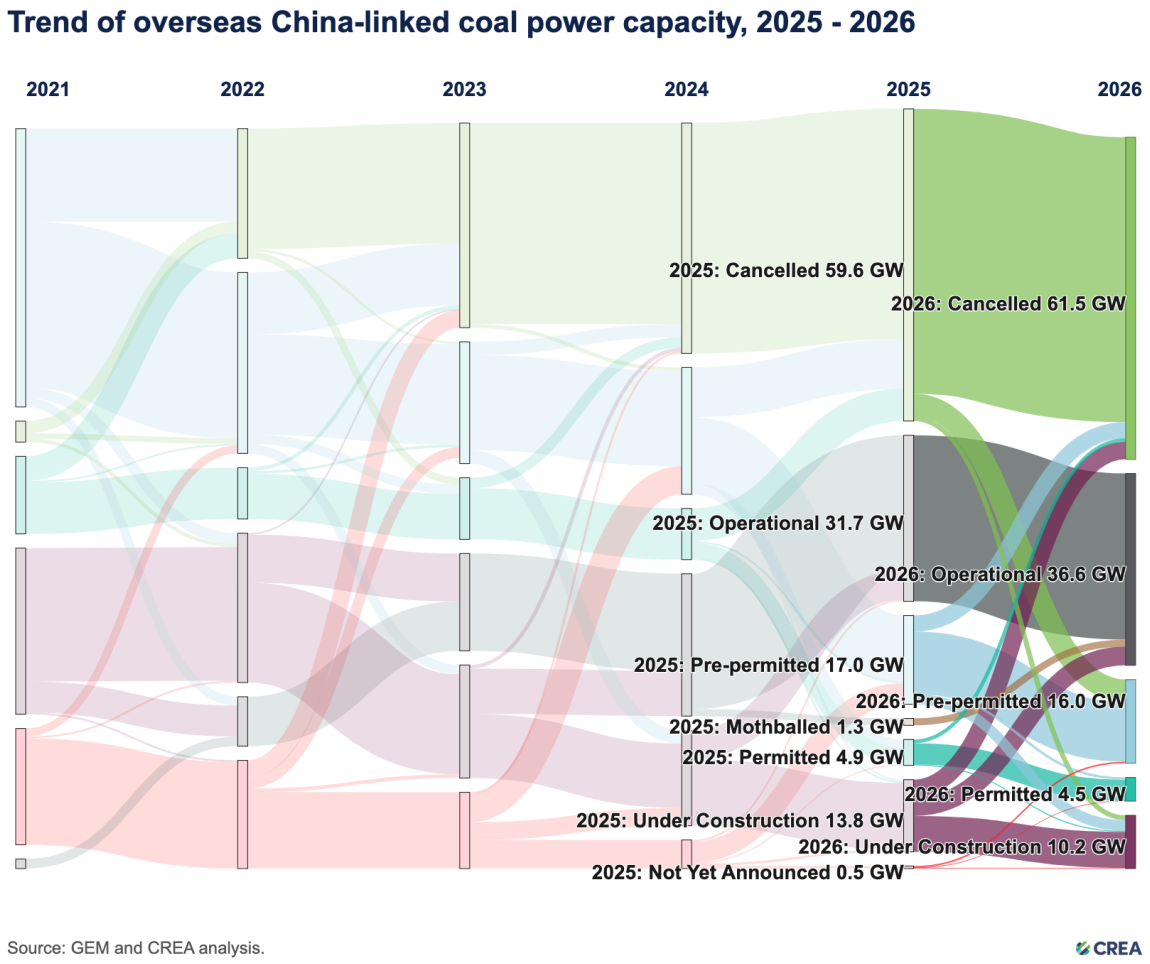


Figure 9 — Trend of overseas China-linked coal power capacity from 2025 to 2026

Since the previous edition of this report, which analysed plants according to their statuses as of July 2025, there has been a slowdown in cancelled China-linked coal power projects alongside an increase in operational projects. Several projects that had been cancelled or appeared inactive for years are now being actively pursued, while a previously mothballed project has come back online in response to the Strait of Hormuz energy crisis (Nesan et. al., 2025).

Between July 2025 and July 2026, 7.1 GW of China-linked coal capacity was announced as or presumed to be cancelled, with 3.4 GW cancelled in Zimbabwe, 1.7 GW in Bangladesh, and 1.4 GW in Indonesia. In terms of captive coal, Units 8–12 of the Delong Nickel Phase III

captive coal power station in Indonesia were reported to be cancelled in 2026. This represents a sharp slowdown in cancellations: capacity cancelled fell by 54% year-on-year compared to the 15.6 GW cancelled between July 2024 and July 2025.

In addition, 15 units with a combined capacity of 5.2 GW across Indonesia, Kazakhstan, and Vietnam, which were presumed to be cancelled, are now active, moving from cancelled to the pre-permitted and under-construction categories. This is why, although 7.1 GW of capacity was newly cancelled in 2026, the total cancellations only show a slight increase from the previous year, at 61.5 GW in 2026 compared to 59.6 GW in 2025.

These revived projects include the privately-owned Nanshan Industrial Park captive coal power station, and projects where Chinese companies were involved prior to the previous cancellations: Units 1 and 2 of the Jambi-2 Power Station in Indonesia, Units 3 and 4 of the Ekibastuz-2 power station in Kazakhstan, and in Vietnam Units 1 and 2 of the An Khanh - Bac Giang power station and Units 1, 2 and 3 of Phase 3 of the Vinh Tan power station (Global Energy Monitor, 2026d, 2026c, 2026b, 2026n). It is unclear if the original Chinese companies will be involved in building these revived projects. The revival of these projects shows that cancellation of projects is not irreversible, and emphasises the importance of clear closure announcements that commit to a no-revival principle for cancelled coal projects by both China and host countries to prevent projects from backsliding.

Between July 2025 and July 2026, 4.9 GW of additional China-linked coal power capacity came online, bringing the total operational capacity of post-pledge projects to 36.6 GW, a 16% year-on-year increase. Of the capacity which came online over the past year, 0.9 GW is from projects which were not planned until after the 2021 pledge. Of the total newly operational capacity, 3.5 GW came online in Indonesia, and 1.3 GW in Bangladesh.

The 1.3 GW that became operational in Bangladesh comes from the Banshkhali power station, representing the materialisation of a risk identified in last year's report. The 2025 report flagged the risk that mothballed plants — plants which are idle but not retired — could be reactivated without new approvals (Nesan et. al., 2025). Following disruptions to global oil and gas markets triggered by the Strait of Hormuz crisis, the Bangladesh Power Development Board signalled that coal-fired generation could play a greater role in meeting peak summer electricity demand (Bonik Barta, 2026). By April 2026, the previously mothballed plant was reportedly back online, operating at half capacity (Mohiuddin, 2026). This demonstrates that without formal retirement or decommissioning, idle plants can be brought back online during periods when energy supply tightens or policy shifts.

Over the past year, construction has started on projects with a combined capacity of 3.3 GW, bringing the total capacity under construction to 10.2 GW, representing a 26% year-on-year decrease. This decrease is due to 3.6 GW of previously under-construction capacity becoming operational in Indonesia, Pakistan, and Zimbabwe, while 3.3 GW was cancelled in Bangladesh, Indonesia, and Laos.

Permitted and pre-permitted projects stand at 4.5 GW and 16 GW respectively. Zambia led newly permitted plants. Over the past year, 3.8 GW of permitted and pre-permitted projects were cancelled, while construction began on another 2.2 GW. While planned projects declined slightly compared to the previous year, these projects represent potential future coal capacity that must be urgently cancelled or converted to green power projects.

This edition of the report includes 39 more units than the 2025 edition. The vast majority are not genuinely new projects, but are plants where new data has revealed a previously unknown link to Chinese companies. This retrospective update underlines the challenges of tracking the implementation of China's 2021 pledge due to a lack of transparent reporting and data, demonstrating the need for stronger disclosure.

Indonesia: Demand-driven expansion of captive coal and grid renewables

While off-grid captive coal generation has sometimes been regarded as outside the scope of President Xi's 2021 pledge, the commitment was broadly framed and an official explanation has never been provided to narrow down the definition of "coal-fired power projects." As such, there is no basis for the exclusion of captive coal power projects from the pledge, and the growth in China-linked captive coal represents a significant loophole undermining the full implementation of the pledge.

Indonesia, where 94% of the 13.2 GW of overseas China-linked operational captive coal power capacity post-pledge is located, illustrates a typical case of China's demand-driven energy expansion. Chinese stakeholders align directly with host-country policy signals: ambitious industrial growth targets create immediate demand for power, while efforts to advance renewables are set aside mainly for the national grid. Meanwhile, Indonesia restricts new coal-fired power on the grid even as its industrial policy is driving up electricity demand. The result is a split system: cleaner generation is being added to the national grid, while large industrial projects still develop captive fossil power.

Presidential Regulation No. 112/2022 (Government of the Republic of Indonesia, 2022), restricts new coal plants but exempts national strategic projects and value-added industries, creating a regulatory loophole that enables rapid captive coal power expansion (Hasan & Hummer, 2026). The regulation is now under review, with proposed changes that could allow new coal power generation for energy security (Tenggara Strategics, 2025).

National planning is beginning to address the rapid expansion of captive coal power, but a clear retirement pathway remains absent. The Just Energy Transition Partnership (JETP) Secretariat examined captive power through its 2025 thematic study (JETP Indonesia, 2025), while the National Electricity General Plan projects a power-sector emissions peak in 2037 (Setiawan, 2025). On the other hand, Indonesia's 2025-2034 grid electricity supply plan for 2025 to 2034 (MEMR, 2025) provides for 53 GW of renewables and energy storage, yet ignores captive coal power-reliant industrial parks and offers no pathway for their grid integration or decarbonisation.

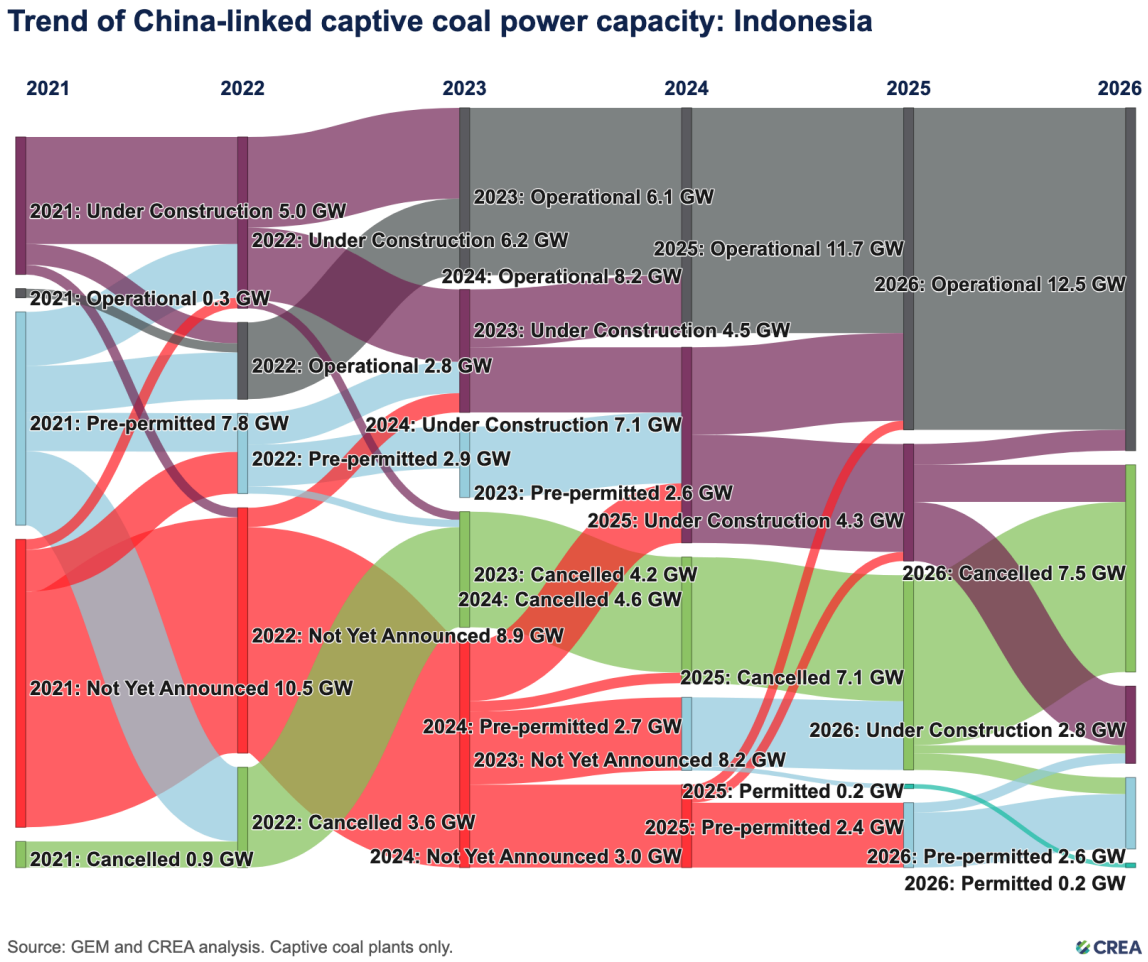


Figure 10 — Development of China-linked captive coal power capacity in Indonesia between 2021 and 2026

12.5 GW of China-linked captive coal power capacity has become operational since the 2021 pledge. While 7.5 GW of capacity has been cancelled, 2.8 GW is under construction, with a further 2.8 GW of captive coal power generation capacity planned.

Beyond coal power, Chinese companies are also increasingly involved in the growing pipeline of renewables projects, particularly hydropower (13.6 GW) and solar PV (8.2 GW). Across 48 identifiable China-linked renewable energy projects in Indonesia, involvement is overwhelmingly centered on EPC contracting (35 projects) rather than direct equity investment (seven projects, including three where Chinese companies are involved in both investment and EPC).

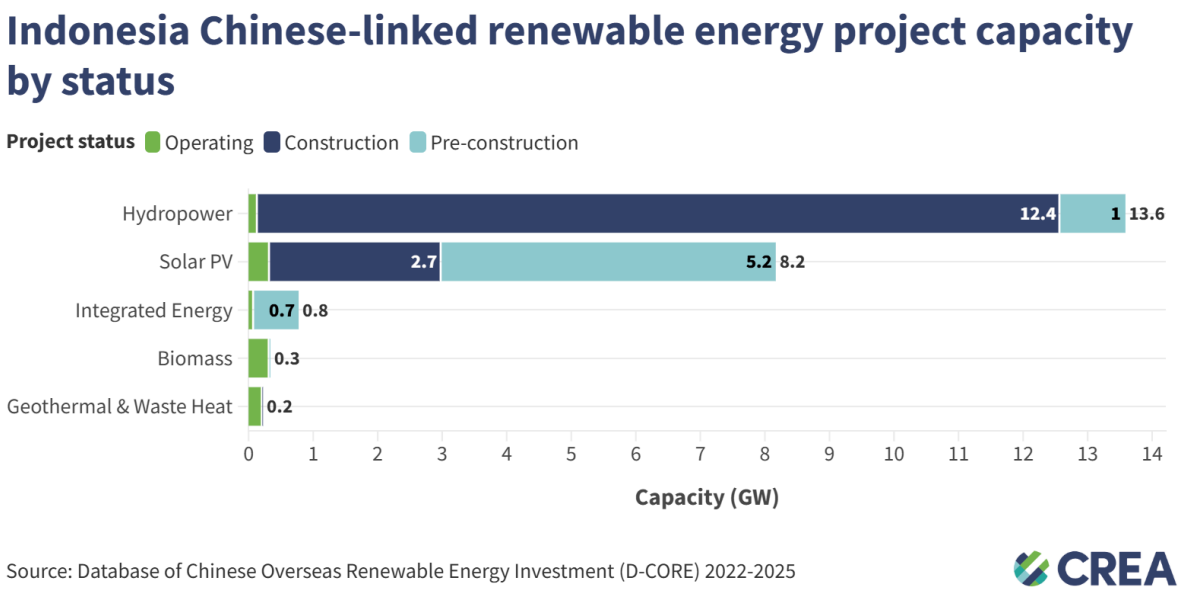


Figure 11 — China-linked renewables capacity in Indonesia by project status

This growing involvement in grid-connected renewables is happening alongside Chinese engagement in Indonesia's industrial sector. Indonesia's push to increase domestic processing of raw materials, known as downstreaming, began when the nickel ore export ban took full effect in 2020 (IEA, 2024), followed by the ban on bauxite exports in June 2023 (CMEA, 2022). Since then, Chinese investment has spread across nickel smelting and stainless steel, alumina refining and primary aluminium. Much of these developments are concentrated in industrial parks that combine processing facilities with dedicated infrastructure and power supply.

The concentration of China-linked captive coal power capacity is particularly pronounced in nickel, aluminium, and industrial parks.[7] Nickel projects account for more than 9 GW, with a further 6 GW linked to aluminium and projects producing both aluminium and nickel. Industrial parks account for about 2.7 GW.

[7] Industrial parks categorisation refers to captive coal plants that supply power to a designated industrial area, rather than a specific industrial facility or production process.

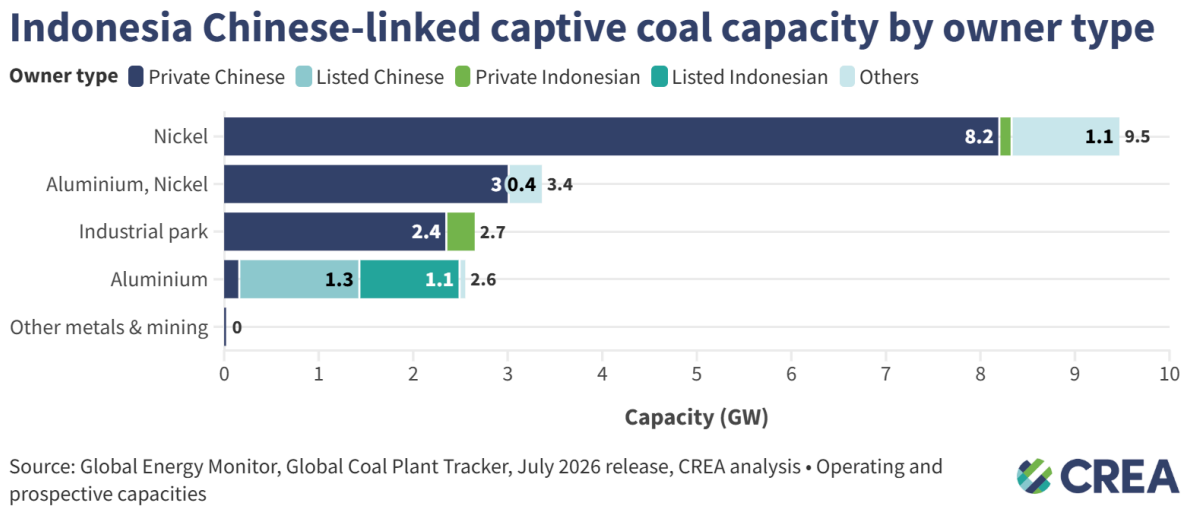


Figure 12 — China-linked captive coal capacity by industry and ownership

Private Chinese firms are particularly prominent in nickel, while listed Chinese companies have a significant presence in aluminium. Notable owners with the largest operational capacity include the Tsingshan–Huayou consortium (1.9 GW at Weda Bay), the Jiangsu Delong–Xiamen Xiangyu joint venture (1.8 GW at Delong Nickel Phase II), and Dingxin Group (1.5 GW at Sulawesi Labota).

Post-pledge involvement of state-owned companies is primarily linked to project delivery. State-owned firms such as China Chemical Engineering Second Construction (China.com, 2022), China Metallurgical Industry Group (World Metal Bulletin, 2023), and China Energy Engineering Corp. (China Energy Engineering Corporation, 2025) have worked as EPC contractors on captive coal power projects in Indonesia.

While Chinese stakeholders play a major role in Indonesia's industrial expansion and its efforts to reduce emissions, they ultimately face a trilemma, the need to: balance industrial development objectives, address grid infrastructure gaps, and access reliable and cost-effective green energy resources for captive power (Zhu et al., 2023).

Recommendations

Immediately cancel or repurpose all overseas coal projects on which construction is yet to start. Cancellations or conversions to green energy should be locked in for all coal power projects currently in pre-construction stages. Accelerated coal phase-out should be prioritised for operational units, working with host countries to develop early retirement plans and enhance efforts to replace coal generation with green energy.

Address the captive coal power loophole. Captive coal power plants in industrial parks make up a major share of new and ongoing projects and continue to undermine the full implementation of President Xi's 2021 pledge. The pledge should be applied to captive coal. Following China's "using green to make green" (以绿制绿) paradigm, which aims to manufacture clean-tech products with green energy, prospective transition mineral projects, especially aluminium and nickel in Indonesia, should prioritise low-carbon power options instead of coal from the earliest stages of project development. For existing projects, renewable integration such as solar plus storage can be piloted in selected industrial parks, to reduce reliance on captive coal generation and demonstrate viable pathways for industrial decarbonisation. China's domestic plans to accelerate the construction of zero-carbon industrial parks, as outlined in the 15th Five-Year Plan on Carbon Peaking, should also be applied to China-invested projects overseas as part of efforts to support Global South partners to strengthen industrial development without deepening their dependence on volatile fossil fuels.

Strengthen governance of the pledge. To ensure full compliance with the pledge, China should designate a specific high-level government body for the pledge's implementation. This dedicated coordinating agency should prioritise ensuring Chinese EPC companies and equipment suppliers cease their involvement in any overseas coal projects, to ensure China meets its pledge to stop "building" overseas coal power projects. The agency should also work to strengthen transparency and accountability by requiring plant-level disclosure on status changes for all overseas power engagements, including captive projects. The aforementioned dedicated agency should proactively engage with stakeholders in host countries, to ensure China and host countries work together to reach agreement on cancelling or converting coal power projects.

The recently established Overseas State-owned Assets Management Bureau (境外国资工作局), which operates under the State-owned Assets Supervision and Administration

Commission of the State Council, is a potential candidate for a coordinating body that could ensure that state-owned enterprises adhere fully to the pledge. The China Securities Regulatory Commission (CSRC) could provide greater oversight into listed companies' adherence to the pledge. Currently, ensuring private companies comply with the pledge presents a significant gap in implementation. China can address this by no longer giving coal a "free pass" and declaring coal power — including captive coal and industrial projects that rely on captive coal — a sensitive industry. This would mean any future outbound direct investment would require government approval, which could then be denied under the conditions of the pledge.

Maximise the renewable energy opportunity. China can play a catalytic role in replacing coal generation with renewables. Ending participation in overseas coal power projects would be an important step towards evolving China's international green energy partnerships beyond technology supply towards a more holistic model of cooperation. By working with partner countries across the Global South, China can support them in meeting their climate and coal phase-out targets,[8] expanding electrification and electricity access, strengthening energy security and accelerating the global transition.

[8] For the NDCs and coal phase-out targets of countries included in this report, see GEM's "Planning the end of coal-fired power: Phase-out targets and NDCs" wiki (Global Energy Monitor, 2026j).

Methodology

Scope and sources

This report examines China-linked coal power and renewable energy projects outside of China. Coal projects are classified as China-linked when Chinese companies or Chinese-funded companies are involved through ownership, financing, equity investment, EPC contracts, core equipment supply, industrial park development or captive coal use. Both state-owned and private Chinese companies are included, including overseas subsidiaries of Chinese parent companies. For renewable energy projects, the analysis follows D-CORE's approach to identifying Chinese involvement (Liu et al., 2026).

We assessed Chinese involvement and project status using public information and data from Global Energy Monitor, Earthwise Institute, IIGF and IDS, Boston University Global Development Policy Center, and AidData.

Coal project classification and emissions

Coal plant data were compiled primarily from the July 2026 release of Global Energy Monitor's Global Coal Plant Tracker (GCPT) along with planning documents, company disclosures and other public sources (Global Energy Monitor, July 2026).

The GCPT data assigns each coal-fired power unit a status category, which we then verified using public information: *cancelled, mothballed, pre-permitted, permitted, under construction* or *operational*. In this report, the *pre-permitted* category includes projects which are categorised as *announced* in the GCPT. Planned projects refer to *pre-permitted* and *permitted* projects. *Cancelled* projects include those officially stopped and those assumed cancelled after years with no progress. In the Sankey diagrams, "Not Yet Announced" means projects that were not yet included in the GCPT data, not even as announced, at the time of the 2021 pledge.

The emissions analysis covers Scope 1 CO_2 emissions from coal combustion. We used annual and lifetime emissions from the GCPT dataset where available. If lifetime emissions were missing, we multiplied annual emissions by the remaining years to 2050. We assumed a 2025 start when no start year was reported.

We estimated annual power generation by multiplying the plant's capacity by its capacity factor from the dataset and by 8,760 hours. For the four cancelled units totaling 0.9 GW

with missing inputs, we applied the 53% capacity factor and the median values from the included GEM units, with annual CO_2 emissions of 4.44 $MtCO_2$ per GW.

Renewable energy project classification

Renewable energy data come from the D-CORE dataset downloaded on 25 August 2026, covering project events from January 2022 to July 2026 (Liu et al., 2026). We first consolidated multiple company-role records referring to the same project event, then selected the latest event for each project. Potential duplicates, acquired projects, integrated-energy projects and unclear capacity values were reviewed separately.

Planned, signed and *awarded* projects were grouped as *pre-construction*; *construction started* and *under construction* as *under construction*; and *operational*, *completed* and reviewed *acquired* projects as *operational*. "Operational" here means this grouping, not just projects originally called Operational in D-CORE.

Operational renewables capacity includes projects with reported capacity across the renewables generation technologies covered by D-CORE. Projects with missing capacity data are counted in the total number of projects but not included in capacity calculations. Integrated energy projects are included in the overall portfolio capacity when capacity data are available. However, integrated energy projects for which we were unable to identify the underlying generation technologies used are excluded from technology specific generation and emissions estimates. Standalone energy storage is reported separately. Its power capacity is not included in renewables generation capacity totals, and it is not included in generation or emissions estimates.

Renewables generation and avoided emissions

Annual generation was estimated for solar PV, wind, hydropower, concentrated solar, biomass, geothermal, waste-heat recovery, and waste-to-energy power projects with positive reported capacity, using project capacity, technology-specific utilisation factors and considering a year to be 8,760 hours. Utilisation factors and grid CO_2 intensities came from a fixed factor set based on Ember's 2024 electricity data; where country data were unavailable, global default factors for technology-specific utilisation and grid-emissions intensity were used (Ember, 2025). A 55% capacity factor was used for concentrated solar power and a 85% capacity factor was used for geothermal, both based on a global average for newly commissioned plants reported by IRENA (International Renewable Energy Agency, 2024). Capacity factors for waste-heat recovery and waste-to-energy were set at

80% and 78% respectively, based on estimates from the IFC and EIA (International Finance Corporation, 2014; Morey, 2023).

Potential gross avoided CO_2 grid emissions were estimated by multiplying estimated renewables generation by the destination country's average grid CO_2 intensity, and do not deduct direct project emissions. These estimates conservatively assume displacement of the average electricity mix, not coal generation specifically.

Cumulative estimates assume 25 equivalent operating years from 2026 to 2050 and do not account for project-specific commissioning or retirement dates. Estimates for projects under construction apply only if commissioned and represent future avoided-emissions potential, not emissions already avoided.

Appendix

List of plants by status

Cancelled

Country	Plant	Capacity (MW)	Annual emissions (million tonnes CO_2)	Lifetime emissions (million tonnes CO_2)	Captive coal
Bangladesh	Barisal power station Unit 2	350	1.5	37.5	
	Orion power station	700	2.7	64.8	
	Patuakhali power station (RPCL/NORINCO) Phase II Units 1 and 2	1,320	5.4	102.6	
	Payra power station (BCPCL) Phase II Units 1 and 2	1,320	5.2	127.4	
	Phulbari power station (China Gezhouba) Phase II Units 1 and 2	2,000	7.8	195.0	
Bosnia and Herzegovina	Banovici power station	350	1.6	40.0	
	Kakanj Thermal Power Plant Units 8 and 9	600	2.8	64.4	
	Kamengrad Thermal Power Plant Units 1 and 2	430	2.2	55.0	
	Tuzla Thermal Power Plant Units 7 and 8	900	3.8	102.6	
Brazil	Pedras Altas power station Units 1 and 2	600	2.6	62.4	
Cambodia	Botum Sakor power station Units 1 and 2	700	3.2	80.0	
Côte d'Ivoire	San Pedro Port power station Units 1 and 2	700	3.0	78.0	
Djibouti	Djibouti power station Units 1-3	150	0.6	15.0	
India	JSW Barmer Jalipa Kapurdi power station Units 9 and 10	1,080	4.4	110.0	
Indonesia	Banyuasin power station Units 1 and 2	240	1.2	34.8	
	Batu Hijau power station Units 5 and 6	300			Yes; other metals & mining
	Delong Nickel Phase II power station Unit 11	380	1.7	42.5	Yes; nickel
	Delong Nickel Phase III power station Units 8-12	1,350	6.3	157.7	Yes; nickel

Indonesia	Jawa-5 power station Unit 1	1,000	4.0	108.0	
	Kuala Tanjung Inalum captive power station Units 1-3	950	4.2	108.9	Yes; aluminium
	Nanshan Industrial Park power station Phase III Units 1-4 and Phase IV Units 1-8	1,800	8.4	243.6	Yes; aluminium
	Qingdao Zhongsheng captive power station Units 3-6	260	1.2	30.0	Yes; nickel
	Riau-1 power station Units 1 and 2	600	2.8	61.6	
	Sumsel-5 power station Unit 3	350	1.6	43.2	
	Tanjung Jati A power station Units 1 and 2	1,320	5.4	132.3	
	Xinyi Group captive power station	2,500	10.1	253.2	Yes; industrial park
Kazakhstan	Ekibastuz-2 power station Units 5 and 6	1,272	5.0	102.5	
Kenya	Lamu Power Project Units 1-3	1,050	4.5	112.5	
Laos	Boualapha power station Units 1 and 2	2,000	7.8	202.8	
	Hongsa power station Unit 4	626	2.7	67.5	
	Houaphanh power station Units 1 and 2	650	2.9	70.9	
	Nam Phan power station Units 1 and 2	660	2.8	70.0	
Madagascar	Imaloto Coal power station	30	0.1	2.5	
Mongolia	Shivee Ovoo power station Proposal 1	5,280	21.4	535.0	
Mozambique	Nacala power station	200	1.0	28.0	
	Ncondezi power station Units 1 and 2	300	1.4	35.0	
	Tete power station Units 1 and 2	700	3.2	80.0	
Pakistan	Jamshoro power station Unit 6	660	2.7	56.7	
	Keti Bandar power station Units 1 and 2	1,320	5.6	140.0	
Serbia	Kolubara B power station Unit 1	350	1.6	41.6	
South Africa	Musina-Makhado power station	3,300	13.2	330.0	Yes; iron & steel
Sri Lanka	Lakvijaya Power Plant Units 4 and 5	600	2.8	68.6	
Tanzania	Mbeya Coal to Power Project	300	1.4	35.0	
Turkiye	HEMA Amasra power station Units 1 and 2	1,320	5.2	130.0	
	Ilgın power station Units 1 and 2	500	2.6	65.0	
	Kirazlıdere power complex Units 1 and 2	1,600	6.2	179.8	
Ukraine	Slavyansk power station Units 6a and 6b	660	2.8	68.6	

United Arab Emirates	Hassyan Clean-Coal Power Project Units 3 and 4	1,200	4.6	126.5	
Vietnam	Cong Thanh power station Units 1 and 2	660	2.8	70.0	
	Hai Phong Thermal Power Station Phase III Units 1 and 2	1,200	5.0	107.5	
	Nam Dinh power station Phase 1 Units 1 and 2	1,200	5.0	120.0	
	Quang Trach Power Center Units 2-1 and 2-2	1,200	4.6	115.0	
	Quang Tri power station Phase 2 Units 1 and 2	1,200	4.6	101.2	
	Quynh Lap power station Phase 1 Units 1 and 2; Phase 2 Units 1 and 2	2,400	9.2	230.0	
	Song Hau Thermal Power Plant Units 2-1 and 2-2	2,000	7.8	195.0	
Zimbabwe	Binga power station Units 1A and 1B	700	3.0	79.5	
	Gweru power station Unit 1	720	2.9	75.8	Yes; other metals & mining
	Hwange power station Units 9 (old) and 10 (old)	600			
	Sengwa power station Units 1-8	2,800	12.8	320.0	

Operational

Country	Plant	Capacity (MW)	Annual emissions (million tonnes CO_2)	Lifetime emissions (million tonnes CO_2)	Captive coal
Bangladesh	Banshkhali power station (S Alam) Units 1 and 2	1,320	5.2	140.4	
	Barisal power station Unit 1	350	1.5	42.0	
	Patuakhali power station (RPCL/NORINCO) Phase I Units 1 and 2	1,320	5.4	140.4	
Cambodia	Sihanoukville CIIDG power station 2 Units 1 and 2	700	3.0	84.0	
	Sihanoukville SEZ power station Unit 2	50	0.2	5.8	

India	Adani Godda power station Units 1 and 2	1,600	6.2	167.4	
Indonesia	Bangko Tengah power station Units 1 and 2	1,320	4.8	129.6	
	Banten Suralaya power station Units 9 and 10	2,000	7.8	191.1	
	Delong Nickel Phase II power station Units 1-10	1,840	9.0	261.4	Yes; nickel
	Delong Nickel Phase III power station Units 1-7	830	4.9	137.9	Yes; nickel
	Delong Nickel Phase IV power station Unit 3	330	1.5	51.9	Yes; nickel
	Ketapang Smelter power station Phase II Units 1-3	190	0.9	26.1	Yes; aluminium
	Nagan Raya power station Units 3 and 4	450	2.0	54.0	
	Nanshan Industrial Park power station Phase I Units 1-6	180	0.6	17.2	Yes; aluminium
	PT Halmahera Persada Lygend Nickel Smelter power station Phase I Units 2 and 3; Phase II Units 1-5; Phase III Units 1 and 2	1,600			Yes;nickel
	PT IHIP power station Units 1-3	350			Yes; industrial park
	Qingdao Zhongsheng captive power station Units 1 and 2	130	0.6	16.8	Yes; nickel
	Sulawesi Labota power station Units 1-9	3,360	15.1	380.9	Yes; aluminium & nickel
	Sulbagut-1 power station Units 1 and 2	100	0.4	11.2	
	Sulut-3 power station Unit 2	50	0.2	5.8	
	Sumsel-1 power station Units 1 and 2	700	2.8	75.6	
	Wanxiang Nickel Indonesia power station Phase I Units 1 and 2	130	0.6	16.8	Yes; nickel
	Weda Bay power station Units 5-14	3,540	16.0	420.6	Yes; nickel
Mongolia	Erdenet power station	50	0.2	5.8	Yes; other metals & mining
Pakistan	Faisalabad Sitara Chemical power plant Unit 2	50	0.2	4.8	Yes; chemicals
	Jamshoro power station Unit 5	660	2.7	72.9	
	Port Qasim Lucky power station	660	2.7	75.6	Yes; cement & building

Pakistan	ThalNova power station	330	1.6	44.8	
	Thar Block I power station Units 1 and 2	1,320	5.4	145.8	
	Thar Energy Limited power station	330	1.6	44.8	
Philippines	Dinginin power station Units 1 and 2	1,336	5.2	145.6	
Serbia	Kostolac power station Phase B Unit 3	350	1.6	43.2	
South Africa	Kusile power station Units 4-6	2,400	9.3	248.0	
	Medupi power station Unit 1	795	3.1	89.9	
Turkiye	EMBA Hunutlu power station Units 1 and 2	1,320	5.2	145.6	
Vietnam	Duyen Hai Power Generation Complex Units 2-1 and 2-2	1,200	4.8	139.2	
	Thai Binh Power Center Units 2-1 and 2-2	1,200	4.8	129.6	
	Van Phong power station Phase 1 Units 1 and 2	1,432	5.6	151.2	
Zimbabwe	Hwange power station Units 7 and 8	670	3.0	81.0	
	Zhongjin Heli Energy power station Unit 1	100			

Under Construction

Country	Plant	Capacity (MW)	Annual emissions (million tonnes CO_2)	Lifetime emissions (million tonnes CO_2)	Captive coal
Cambodia	Han Seng power station Units 1 and 2	265	1.4	37.8	
India	KSK Mahanadi Power Project Units 4-6	1,800	7.2	180.0	
Indonesia	AlamTri Aluminum Smelter power station Phase I Units 1-4	1,060			Yes; aluminium
	Delong Nickel Phase IV power station Unit 2	330	1.5	38.1	Yes; nickel
	Nanshan Industrial Park power station Phase II Units 1 and 2	300	1.4	40.6	Yes; aluminium
	PT Halmahera Persada Lygend Nickel Smelter power station Phase III Units 3 and 4	760	3.4	85.0	Yes; nickel
	PT Kalimantan Alumina Nusantara power station Units 1 and 2	60			Yes; aluminium
	Tanjung Sauh power station Units 1 and 2	300			Yes; industrial park

Iran	Tabas power station Units 1 and 2	650	2.8	72.8	
Kazakhstan	Karaganda-3 power station Unit 7	140			
	Kokshetau power station Units 1 and 2	240	1.2	25.8	
	Semey-3 power station Units 1-3	405			
	Ust-Kamenogorsk-2 power station Unit 1	360			
Laos	Phonesack Xekong power station Phase I	300	1.3	32.5	
Philippines	Concepcion power station Unit 2	135	0.7	17.5	
	Masinloc power station Units 4 and 5	700	3.0	70.5	
Vietnam	An Khanh - Bac Giang power station Units 1 and 2	650	3.0	81.0	
Zambia	Ever Great Energy Zambia power station Units 1 and 2	300			
Zimbabwe	Prestige power station Units 1 and 2	1,200	4.9	121.6	Yes
	Sunny Yi Feng thermal power station Unit 1	210			Yes

Permitted

Country	Plant	Capacity (MW)	Annual emissions (million tonnes CO_2)	Lifetime emissions (million tonnes CO_2)	Captive coal
Indonesia	PT Tianshan Alumina power station	160	0.8	19.4	Yes; aluminium
Laos	Phonesack Xekong power station Phase II and Phase III	1,500	6.0	142.8	
Mongolia	Mandakh power station Units 1 and 2	100			
	Tavan Tolgoi power station (Rio Tinto) Units 1 (Phase I), 2 (Phase I) and 3 (Phase II)	450	2.1	50.4	Yes; other metals & mining
Pakistan	Gwadar power station Units 1 and 2	300	1.4	35.0	
Tanzania	Mchuchuma power station Units 1-4	600	2.8	70.0	Yes; other metals & mining
Zambia	Ever Great Energy Zambia power station Units 3 and 4	300			
	Mulungwa power station Unit 1	300	1.2	30.4	

Zimbabwe	Changshi Gweru power station Unit 1	100			Yes; other metals & mining
	Titan power station Unit 1	720	1.4	34.7	

Pre-permitted

Country	Plant	Capacity (MW)	Annual emissions (million tonnes CO_2)	Lifetime emissions (million tonnes CO_2)	Captive coal
Bangladesh	Phulbari power station (Sinohydro) Units 1-4	4,000	15.6	390.0	
Bosnia and Herzegovina	Gacko Thermal Power Plant Unit 2	350	1.6	40.0	
	Ugljevik power station Expansion Unit 1 and Expansion Unit 2	700	3.2	80.0	
Indonesia	Hongshi Silikon power station	2,000	8.4	210.25	Yes; industrial park
	Jambi-2 power station Units 1 and 2	600	3.2	76.8	
	Nanshan Industrial Park power station Phase II Units 3-6	600	2.8	81.2	Yes; aluminum
Kazakhstan	Ekibastuz-2 power station Units 3 and 4	1,100	5.0	120.0	
Laos	TSBP Sekong power station Units 1 and 2	600	2.6	65.0	
Malawi	Kamwamba power station Units 1-6	300	1.2	30.0	
Mongolia	Baganuur power station Units 1 and 2	400	2.0	48.0	
	Shivee Ovoo power station Proposal 2	300	1.0	25.0	
Niger	Salkadamna power station Phase I Units 1-4	200	1.2	30.0	
Pakistan	Siddiqsons power station	330	1.5	36.0	
	Thar Block VI power station Units 1 and 2	1,320	5.8	139.2	
Vietnam	Vinh Tan power station Phase 3 Units 1-3	1,980	7.8	192.4	
Zambia	Zambia Development Agency hybrid power station	300			
Zimbabwe	Kalungwizi power station Unit 1	600	2.5	63.0	Yes
	Kwekwe power station Unit 1	300	1.4	34.75	Yes

References

Adeyemi, S. (2026, April 23). *Zambia secures $1.5bn China-backed energy deal to add 900MW and boost power stability amid climate pressure. Business Insider Africa.* https://africa.businessinsider.com/local/markets/zambia-secures-dollar15bn-china-backed-energy-deal-to-add-900mw-and-boost-power/q20gj8q

Bonik Barta Staff Correspondent. (2026, March 3). Coal-based plants at full capacity could limit load-shedding in summer, officials say. Bonik Barta. https://en.bonikbarta.com/bangladesh/RybJKGDXgow96qfC

Boston University Global Development Policy Center. (2022, October). *China's Global Power Database*. https://www.bu.edu/cgp

China.com. (2022, November 21). G20: Focusing on development, jointly drawing a blueprint, and writing a new chapter in the construction of China Chemical Engineering Second Construction Group's Indonesian projects. https://m.tech.china.com/redian/2022/1121/112022_1181958.html

China Banking and Insurance Regulatory Commission. (2022, June 1). 银行业保险业绿色金融指引 [Green finance guidelines for the banking and insurance industry] (银保监发〔2022〕15号). https://www.gov.cn/zhengce/zhengceku/2022-06/03/content_5693849.htm

China Energy Engineering Corporation. (2025, June 13). China Energy Engineering Zhejiang Thermal Power constructs Indonesian Kalimantan aluminium smelter power plant Unit 3. https://www.ceec.net.cn/art/2025/6/13/art_11019_2535686.html

Coordinating Ministry for Economic Affairs of the Republic of Indonesia. (2022). *Increasing domestic bauxite processing and refining industry, government bans exports of bauxite ores starting June 2023*. https://www.ekon.go.id/publikasi/detail/5028/increasing-domestic-bauxite-processing-and-refining-industry-government-bans-exports-of-bauxite-ores-starting-june-2023

Earthwise Institute. (2026) *Indonesian Power Summary Database.* https://earthwise.institute/earthwise-project-indonesia-power-summary-captive-coal-renewables-and-energy-transition/

Ember. (2026). *Data Methodology*. https://storage.googleapis.com/emb-prod-bkt-publicdata/public-downloads/ember_electricity_data_methodology.pdf

Global Energy Monitor. (2026, July). *Global Coal Plant Tracker, July 2026 release.* https://globalenergymonitor.org/projects/global-coal-plant-tracker

Global Energy Monitor. (2026, June). *Planning the end of coal-fired power: Phaseout targets and NDCs.* https://www.gem.wiki/Planning_the_end_of_coal-fired_power:_Phaseout_targets_and_NDCs

Global Energy Monitor. (2026a, July). *Global Coal Plant Tracker, July 2026 release.* https://globalenergymonitor.org/projects/global-coal-plant-tracker/

Global Energy Monitor. (2026b). *An Khanh - Bac Giang power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/An_Khanh_-_Bac_Giang_power_station

Global Energy Monitor. (2026c). *Ekibastuz-2 power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Ekibastuz-2_power_station

Global Energy Monitor. (2026d). *Jambi-2 power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Jambi-2_power_station

Global Energy Monitor. (2026e). *Karaganda-3 power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Karaganda-3_power_station

Global Energy Monitor. (2026f). *Kokshetau power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Kokshetau_power_station

Global Energy Monitor. (2026g). *Mulungwa power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Mulungwa_power_station

Global Energy Monitor. (2026h). *Nanshan Industrial Park power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Nanshan_Industrial_Park_power_station

Global Energy Monitor. (2026i). *Phonesack Xekong power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Phonesack_Xekong_power_station

Global Energy Monitor. (2026j). *Planning the end of coal-fired power: Phaseout targets and NDCs*. In Global Energy Monitor Wiki. https://www.gem.wiki/Planning_the_end_of_coal-fired_power:_Phaseout_targets_and_NDCs

Global Energy Monitor. (2026k). *Semey-3 power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Semey-3_power_station

Global Energy Monitor. (2026l). *Titan power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Titan_power_station

Global Energy Monitor. (2026m). *Ust-Kamenogorsk-2 power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Ust-Kamenogorsk-2_power_station

Global Energy Monitor. (2026n). *Vinh Tan power station*. In Global Energy Monitor Wiki. https://www.gem.wiki/Vinh_Tan_power_station

Goodman, S., Zhang, S., Malik, A. A., Parks, B.C., & Hall, J. (2024). *AidData's Geospatial Global Chinese Development Finance Dataset*. Scientific Data, 11(1), 529. https://doi.org/10.1038/s41597-024-03341-w

Government of the Republic of Indonesia. (2022). Presidential Regulation No. 112 of 2022 on the acceleration of renewable energy development for electricity supply. https://peraturan.bpk.go.id/Details/225308/perpres-no-112-tahun-2022

Hasan, K., & Hummer, L. (2026, January). *Out of sight, out of control: 31 GW of captive coal is jeopardizing Indonesia's economic and emissions goals.* Centre for Research on Energy and Clean Air. https://energyandcleanair.org/publication/31-gw-of-captive-coal-is-jeopardizing-indonesias-economic-and-emissions-goals/

International Energy Agency. (2024). *Prohibition of the export of nickel ore*. https://www.iea.org/policies/16084-prohibition-of-the-export-of-nickel-ore

International Finance Corporation. (2014, June). *Waste Heat Recovery for the Cement Sector: Market and Supplier Analysis.* https://www.ifc.org/content/dam/ifc/doclink/2014/ifc-waste-heat-recovery-report-ifc-2023.pdf

International Institute of Green Finance. (2025). *Methodology Note: Database of Chinese Overseas Renewable Energy Investment (D-CORE).* https://iigf-china.com/wp-content/uploads/2026/02/Methodology-Note_Chinese-Overseas-Renewable-Energy-Investment-Database.pdf

International Renewable Energy Agency. (2024). *Renewable power generation costs in 2023*. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2024/Sep/IRENA_Renewable_power_generation_costs_in_2023.pdf

Just Energy Transition Partnership Indonesia. (2025). *Captive Power Study Deep Dive into Indonesia's Industrial Power Landscape and Green Energy Transition Opportunities*. https://jetp.id/news/captive-power-study

Liu, B., Zhou, Z., Shen, W., & Yu, Z. (2026). *Chinese Overseas Renewable Energy Project Activities (D-CORE)*. Harvard Dataverse. https://doi.org/10.7910/DVN/ALB67B

Mamyshev, Z. (2026, July 2). Казахстанским заводам пообещали, что Китай отдаст им миллиардные контракты по ТЭЦ. *[Kazakhstani power stations have been promised that China will award them contracts worth billions for thermal power stations]*. Kursiv Media. https://kz.kursiv.media/2026-07-02/zhnb-kazahstanskim-tovaroproizvoditelyam-opredelili-dolyu-v-postavkah-na-tecz-v-kokshetau-i-semee/

Ministry of Ecology and Environment, & Ministry of Commerce of the People's Republic of China. (2022, January). 关于印发《对外投资合作建设项目生态环境保护指南》的通知 [Notice on issuing the Guidelines for ecological and environmental protection of overseas investment and cooperation projects] (环办环评〔2022〕2号). https://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202201/t20220110_966571.html

Ministry of Energy and Mineral Resources of the Republic of Indonesia. (2025). Decree of the Minister of Energy and Mineral Resources No. 188.K/TL.03/MEM.L/2025 on the approval of the Electricity Supply Business Plan of PT Perusahaan Listrik Negara (Persero) for 2025–2034. https://jdih.esdm.go.id/dokumen/view?id=2584

Mohiuddin. (2026, April 23). *Load-shedding rises alongside summer heat, rural areas suffer more.* Prothom Alo. https://en.prothomalo.com/bangladesh/local-news/a3d6xdgk01

Morey, Mark. (2023, March 21). *Waste-to-energy plants are a small but stable source of electricity in the United States*. US Energy Information Administration. https://www.eia.gov/todayinEnergy/detail.php?id=55900

National Development and Reform Commission of the People's Republic of China. (2022, March 22). "十四五"现代能源体系规划 [14th Five-Year Plan for a modern energy system]. https://www.ndrc.gov.cn/xxgk/zcfb/ghwb/202203/t20220322_1320016.html

National Development and Reform Commission, Ministry of Foreign Affairs, Ministry of Ecology and Environment, & Ministry of Commerce of the People's Republic of China. (2022, March 16). 国家发展改革委等部门关于推进共建"一带一路"绿色发展的意见 [Opinions of the National Development and Reform Commission and other departments on promoting green development in jointly building the Belt and Road] (发改开放〔2022〕408号). https://www.mee.gov.cn/xxgk2018/xxgk/xxgk10/202203/t20220329_972898.html

National Development and Reform Commission of the People's Republic of China. (2026, July 23). 可再生能源发展"十五五"规划 [15th Five-Year Plan for renewable energy development]. https://www.ndrc.gov.cn/xxgk/zcfb/tz/202607/t20260723_1406641.html

National People's Congress of the People's Republic of China. (2026, March 16). 中华人民共和国国民经济和社会发展第十五个五年规划纲要 [Outline of the 15th Five-Year Plan for national economic and social development of the People's Republic of China]. http://www.npc.gov.cn/npc/c2/c30834/202603/t20260316_453274.html

Nesan, D., Qiu, C., & Wang, T. (2025, November 3). *Four years on: Assessing China's overseas coal power ban*. Centre for Research on Energy and Clean Air. https://energyandcleanair.org/wp/wp-content/uploads/2025/10/CREA_China_Overseas-Coal_4-Years_11.2025.pdf

Potent. (2024, September 14). *Success of the Hydrostatic Test for the Supercritical Boiler of Unit 4 at the Masinloc Power Plant of San Miguel Global Power, Philippines*. https://potent.com.cn/en/info/11.html

Setiawan, D. (2025, February 20). *Captive coal expansion plan could undermine Indonesia's climate goals*. Ember.

https://ember-energy.org/latest-insights/captive-coal-expansion-plan-could-undermine-indonesias-climate-goals/

State Council of the People's Republic of China. (2026, July 3). 美丽中国建设"十五五"规划 [15th Five-Year Plan for building a beautiful China]. https://www.mee.gov.cn/zcwj/gwywj/202607/t20260703_1160943.shtml

Tenggara Strategics. (2025, December 13). *Analysis: Proposed renewable rule change spark concerns of coal expansion.* The Jakarta Post. https://www.thejakartapost.com/opinion/2025/12/13/analysis-proposed-renewable-rule-change-spark-concerns-of-coal-expansion

Tumen Ail Coal. (2025, December). "Мандах 100 МВт цахилгаан станц"-ын зураг төслийн гэрээ байгуулагдлаа *[A design contract has been signed for the "Mandah 100 MW Power Plant"]* https://www.tumenailcoal.mn/a/17

World Metal Bulletin. (2023, November 7). China Metallurgical Southern: These 10 overseas "super projects" are worth checking out. https://www.sohu.com/a/734492698_313737

World Nuclear Association. (2026, July 6). *Nuclear power in Pakistan*. https://world-nuclear.org/information-library/country-profiles/countries-o-s/pakistan

Xi, Jinping. (2021, September 21). *Statement by President Xi Jinping at the General Debate of the 76th Session of the United Nations General Assembly*. Permanent Mission of the People's Republic of China to the UN. https://un.china-mission.gov.cn/eng/hyyfy/202109/t20210922_9568875.htm

Zhu, M., Lou, J., Cui, R. Y., Cheng, X., Li, S., Li, D., Tumiwa, F., Arinaldo, D., Li, W., & Hultman, N. (2023). *Decarbonizing captive coal power plants in Indonesia and implications for Chinese stakeholders: Trends, challenges and opportunities*. Center for Global Sustainability, University of Maryland, & Institute for Essential Services Reform. https://cgs.umd.edu/research-impact/publications/decarbonizing-captive-coal-power-plants-indonesia-and-implications