

2 years later: China's ban on overseas coal power projects and its global climate impacts

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10/2023



CREA

Centre for Research on Energy and Clean Air



**PEOPLE OF ASIA FOR
CLIMATE SOLUTIONS**

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16 October 2023

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Acknowledgements

CREA gratefully acknowledges the support, feedback, and insight received from Tom Xiaojun Wang and the People of Asia for Climate Solutions (PACS).

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

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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.

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People of Asia for Climate Solutions (PACS) aims to inspire climate hope and promote climate actions in Asia, by working with and for people, from climate victims to renewable energy technicians, from energy consumers to investors, from journalists to governments. With the world's largest population, the fastest growing population, economy and urbanization, Asia is at a historical moment with a historical obligation to turn the climate crisis into an unprecedented opportunity for a cleaner, fairer, safer and stronger global future.

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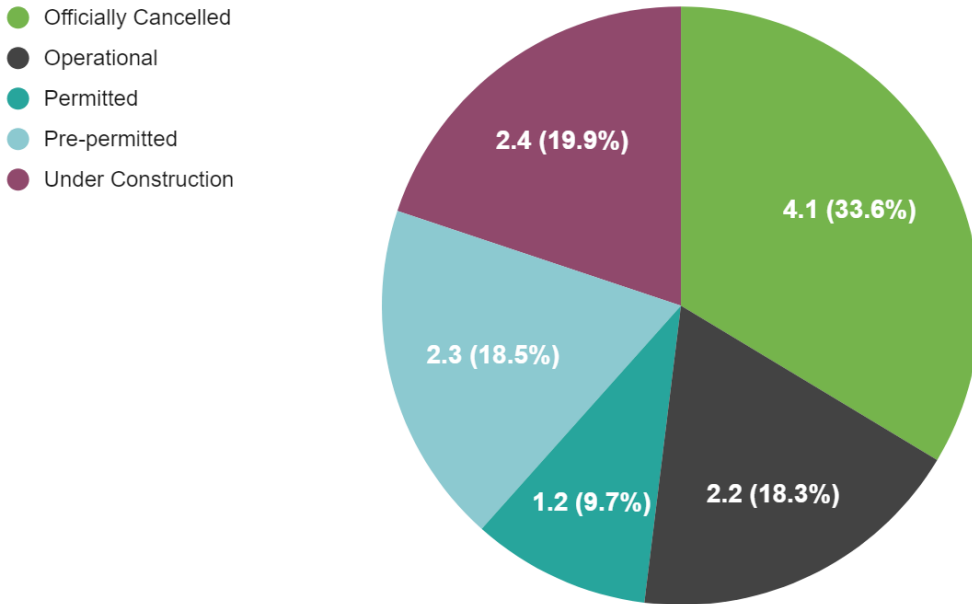
2 years later: China's ban on overseas coal power projects and its global climate impacts

Key findings

- Despite China's promise not to build new coal-fired power projects abroad, there has been significant progress in the operationalisation of coal plants in several countries.
- Approximately 103 coal plants – 104 gigawatts (GW) – in 28 countries were planned, considered, or under construction, with either Chinese financing, or engineering, procurement, and construction (EPCs) agreements at the time of the announcement back in September 2021, out of which one coal plant has advanced significantly in its progress.
- If the coal capacity currently planned were to be cancelled, it could result in an annual emission avoidance of 227 million tons of CO₂ – just short of Pakistan's total carbon emissions in 2021. This total avoidance would rack up to an estimated 5.9 billion tonnes of cumulative lifetime CO₂, assuming a retirement year of 2050, and align with the Paris Agreement's goal of keeping the rise in the mean global temperature to well below 2°C below pre-industrial levels.
- A year after the promise, 2.1 billion tonnes of cumulative carbon emissions from China-backed plants were avoided.
- Between September 2022 and July 2023, 17.65 GW of projects were cancelled, resulting in a total avoided 4.1 billion tonnes of carbon emissions.
- A year after the announcement, in our 2022 report, 7.6 GW capacity of China-backed plants were in operation. As of August 2023, this number increased to 18.1 GW.
- Another 7.2 GW of China-backed capacity has been pushed forward or revived from being cancelled or shelved in the last two years.
- Captive plants remain a grey area, totalling 3.1 GW at the end of August 2023.

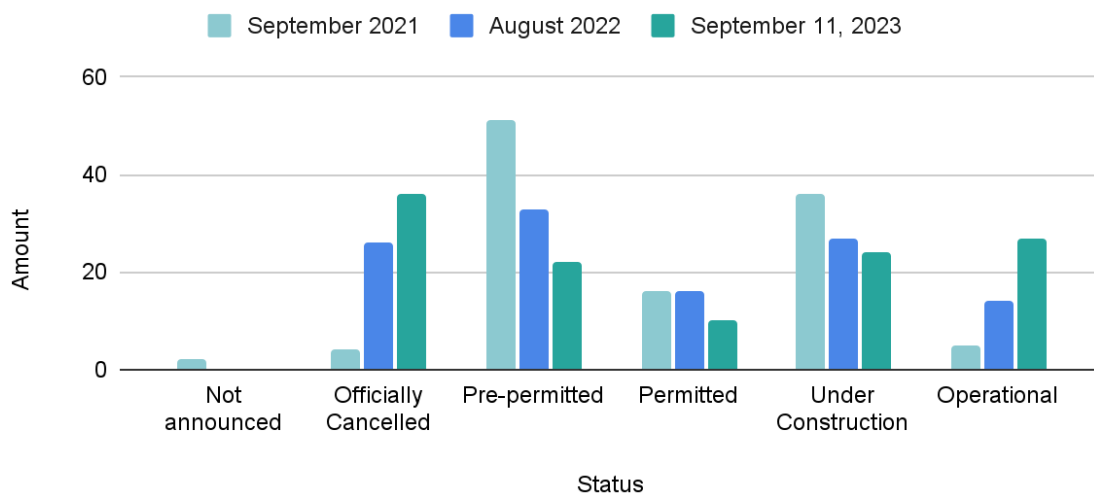
Estimated cumulative lifetime emissions from China-backed coal, billion tons

Source: GEM Data, CREA Analysis



Change in Status of China-backed plants from 2021 to 2023, amount

Source: GEM Data, CREA Analysis



- **Officially cancelled:** These are the coal power projects that have been removed from the pipeline, having been cancelled without replacement, converted to other fossil fuel sources, or cancelled and potentially converted to renewable energy plants. Some 36 plants with a total capacity of 36.3 GW have been cancelled, avoiding 163 million tonnes of CO₂ emissions per year. This is a 70% increase in cancelled capacity and 92% increase in avoided annual CO₂ emissions over 2022. The majority of the additional contribution to the cancelled coal power capacity over the past year comes from Mongolia, Vietnam, Bangladesh, and Indonesia.
- **Pre-permitted:** These coal power projects have appeared in corporate or governmental planning documents and are still in the process of securing financing and permits, some of them have had significant delays. There are 23 plants with a combined capacity of 19.2 GW in this category; cancelling them would avoid 89 million tonnes of CO₂ emissions per year. This is a 46% reduction in capacity and 48% reduction in annual CO₂ emissions over the previous year. Bangladesh, Zimbabwe, and Laos lead the countries currently, with the previous year's leader Mongolia having since cancelled the majority of their coal projects. These projects are categorised by delays in securing funding and investment with unclear development plans.
- **Permitted & potential to be converted into renewable energy:** These coal power projects are in the pre-construction phase, and their permitting and/or financing contracts have been signed. As no physical infrastructure is in place yet, it is still possible for contracts to be renegotiated to renewables. There are currently 10 plants, with a capacity of 10.2 GW, in this category, and converting them would avoid 47 million tonnes of CO₂ emissions annually. This is a 40% reduction in capacity and 44% reduction in annual CO₂ emissions over the previous year. Included in this list is one new coal plant whose contracts were signed after China's United Nations General Assembly (UNGA) commitment, which suggests that they are in violation of the ban.
- **Under construction:** Some 23 plants (20.4 GW) are under construction, estimated to contribute 91 million tonnes of carbon emissions annually. This is a 15% decrease in capacity and 12.5% decrease in annual CO₂ emissions from last year. One coal project, which was signed post-UNGA commitment, is included in this category. One plant in Indonesia (1.1 GW) and one plant in Laos (660 MW) have progressed in their development since last year and are now included in this category.
- **Operational:** These are plants that began operations in the past year. Some 26 plants (18.1 GW) have entered into operation, emitting 81 million tonnes of CO₂ emissions annually or a total of 2.2 billion tonnes of CO₂ emissions over their lifetime. This is a 138% increase in capacity and 125% increase in annual CO₂ emissions from last year. Eleven of these plants (11.6 GW) were commissioned in the past year, including three of the top countries: Indonesia, Pakistan and India.

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Introduction

In September 2021, Chinese President Xi Ping told the UN General Assembly that China would stop financing or building any new coal-fired power plants overseas while increasing its support towards renewable sources of energy – ushering in a new era of green commitments from the world’s largest builder of coal plants. In less than six months, the pledge was reflected in the country’s 14th Five-Year Plan on Modern Energy Systems, while five national ministries drafted a joint guideline that left no room for new coal capacities.

At the time of the announcement, 103 coal plants in 28 countries with a combined capacity of 104 gigawatts (GW) were planned, considered or in construction under either Chinese financing or engineering procurement and construction (EPCs) agreements. If these capacities are not realised, some 471 million tonnes of carbon emissions can be avoided annually.

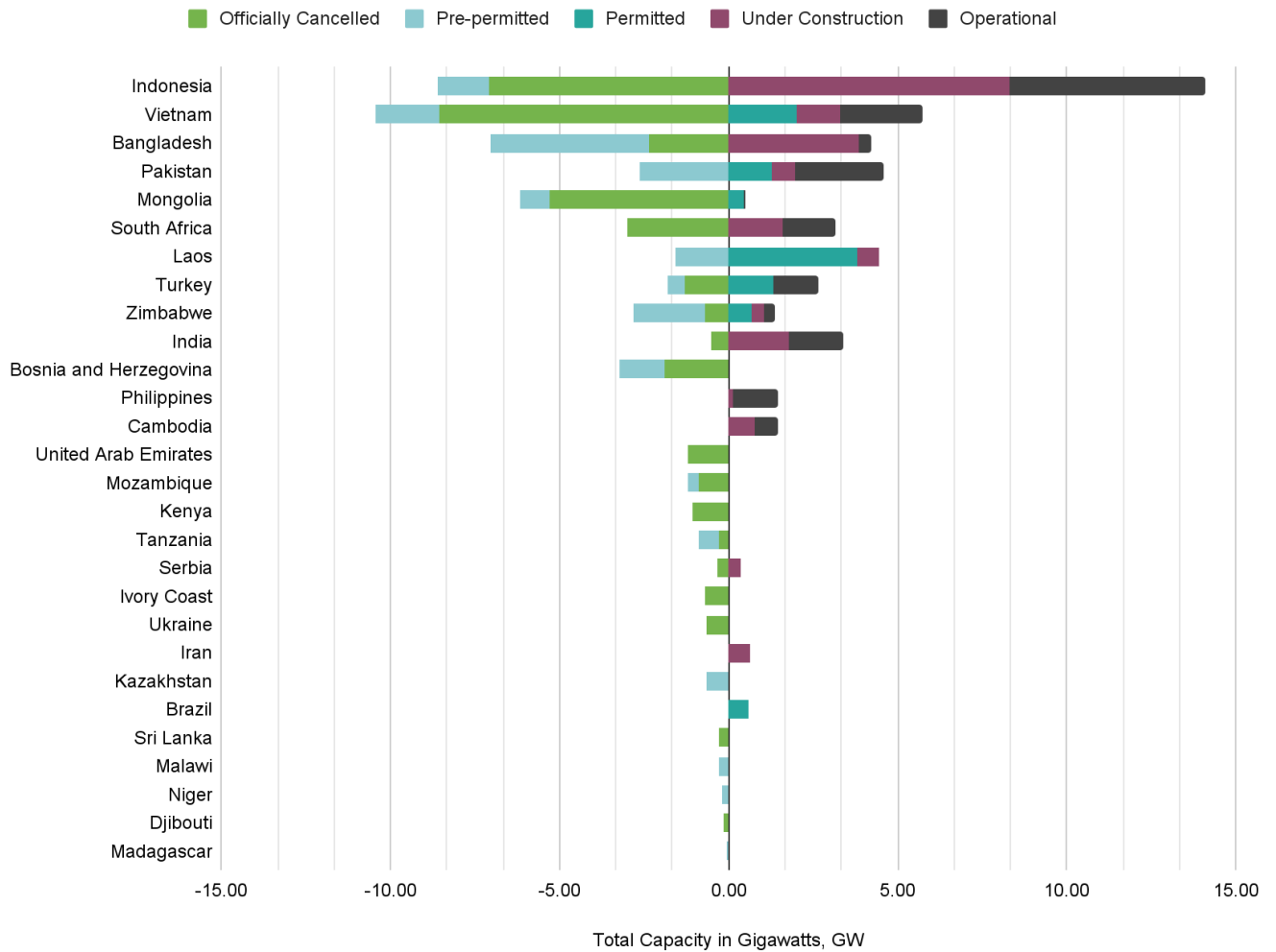
Recognizing the magnitude of the announcement, CREA tracked its progress. This report is an update to the previous year’s report that considers the original 103 coal plants in addition to two additional captive coal plants, which were previously excluded from last year’s report. This report also considers two more coal plants that expanded their capacity through the installation of new units. The study also examines the plants according to their potential impact on carbon emissions and how much they have progressed since the ban.

China’s national policies influence regional and global outcomes. The current volatility in the energy market, triggered by Russia’s invasion of Ukraine and the falling prices of renewable energy, is making more and more countries realise the futility of coal plants. For instance, Vietnam – with the highest cancelled/shelved capacity – has stopped building 8.6 GW of coal-fired plants.

As reflected in the data analysed in this report, China has kept its commitment for the most part, but its investments in overseas coal capacity haven’t come to a complete standstill –

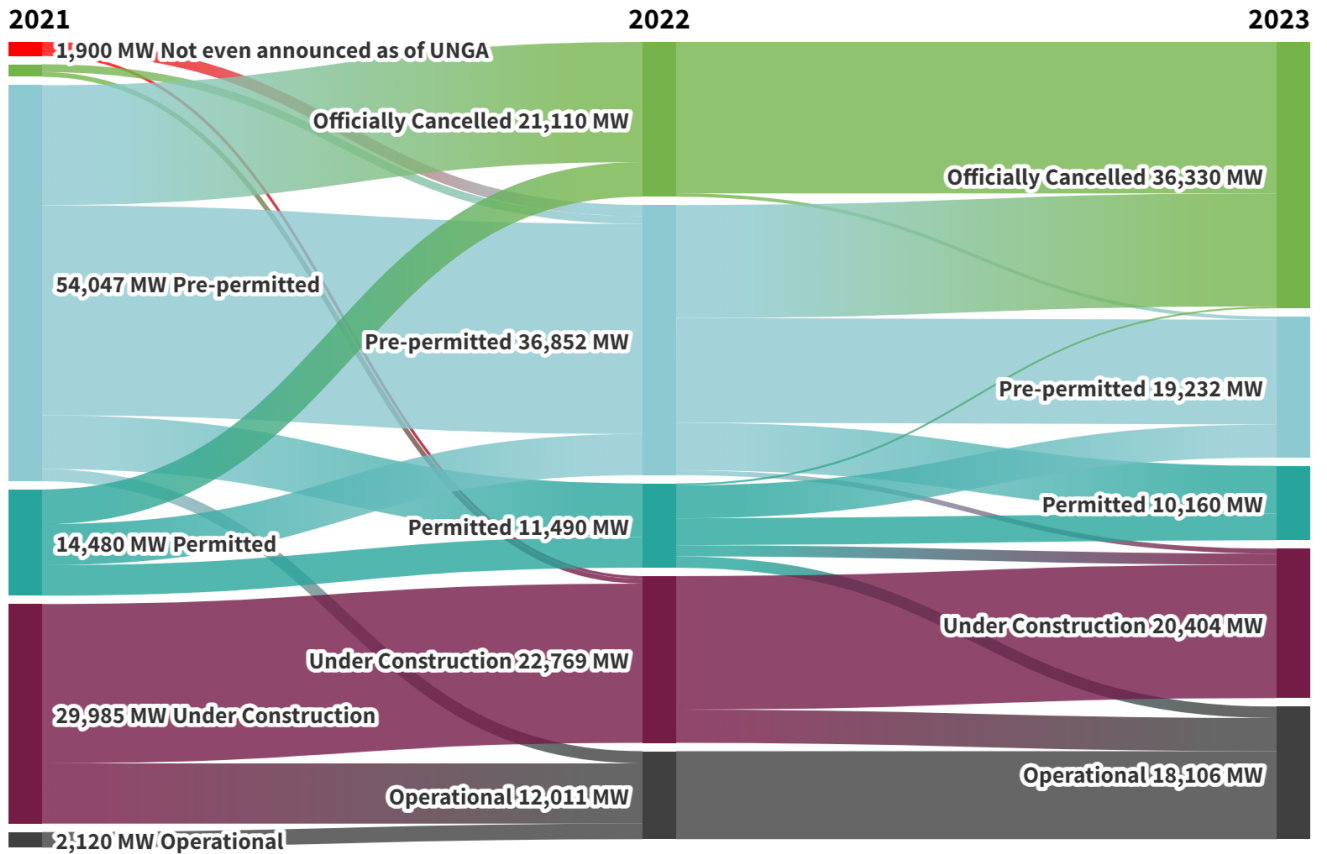
a non-negotiable in fighting the climate crisis.

Two Years Later, China's Coal Ban has Varying Impacts on Host Countries' Coal Pipeline



This two-year update looks at the pipeline of Chinese-backed coal projects at the plant level to evaluate the avoidable carbon emissions that could result from the ban on overseas coal.

What has changed in the implementation of China's Overseas Coal Ban in the past two years?

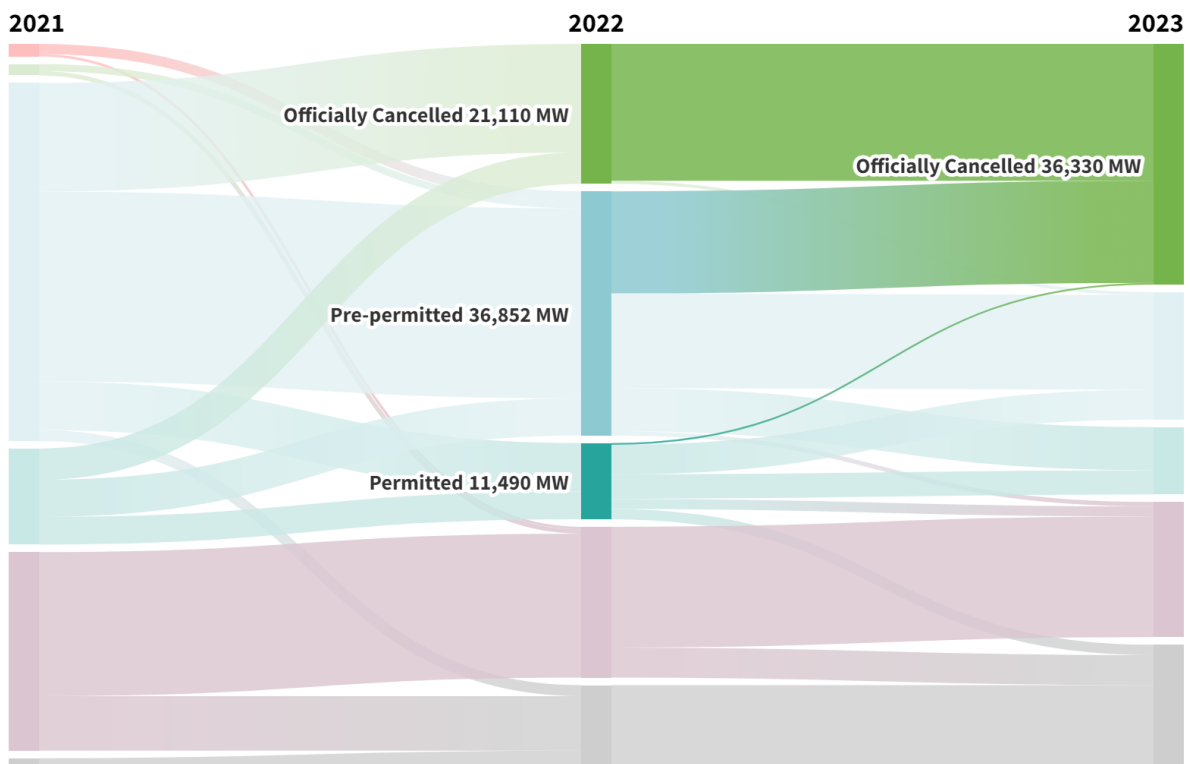


Source: GEM Data, CREA analysis

Tracking the promise

When China made its commitment to stop investing in overseas coal, some 103 coal plants with a combined capacity of 104 GW in 28 countries were under planning, consideration or in construction under Chinese financing or EPC agreements. This report tracks the status of these projects, and how they have progressed in the two years since the announcement.

The good ones



Source: GEM Data, CREA analysis

Since President Xi Jinping's announcement at the UNGA to cease the building of new coal plants in 2021, there have been 36 plants (amounting to 36.3 GW, see Table 1) supported by Chinese companies and banks that have been cancelled. If these plants had been commissioned, they would have emitted approximately 163 million tonnes of CO₂

annually, which is equivalent to the combined CO₂ emissions of the Philippines and Cambodia in 2021 (Friedlingstein et al., 2022).

Following the release of last year's report, there has been a cancellation of 17.65 GW of capacity (13 plants) between September 2022 and July 2023.

For example, the 2,000 MW Phulbari coal project in Bangladesh – jointly owned by GCM Resources and Power China – swiftly became dormant following the UNGA pledge and eventually vanished from the company's 2022 annual report (GEM Resources plc, 2022). Similarly, the proposed second unit of the Barisal power station, with a capacity of 250 MW, was put on hold after completing the first unit (Global Energy Monitor, n.d.).

Captive power plants accounted for 42% (2,960MW) of cancellations in Indonesia, including Nanshan Industrial Park Power Station Phase 2–4 and Qingdao Zhongsheng Captive Power Station Unit 3–6, both of which were halted after the UNGA announcement. By signing a memorandum of understanding (MoU), the Nanshan Industrial Park Power Station Phase 2–4 will receive electricity supply from the Indonesian PT Perusahaan Listrik Negara (Persero) (State Electricity Company, known as PLN) (财富金色钥匙, 2022).

As of 2023, Vietnam has the highest amount of cancelled or shelved capacity. With the approval of the national electricity development plan for the period of 2021-2030 (known as PDP 8) (Prime Minister, 2023), a total of 8.6 GW of coal-fired power plants have been confirmed to either be shelved or converted. Specifically, the Hai Phong-3, Quang Trach-2 and Quynh Lap 1 & 2 projects have been cancelled. Meanwhile, the Quang Tri-2 and Vinh Tan-3 projects have been shelved due to financial difficulties .

Some cancelled projects have the potential to be converted to sources of renewable energy totalling 9.9 GW. For instance, the 300 MW capacity Mbeya Coal to Power Project in Tanzania signed a new MoU with Tanzania Electric Supply Company (TANESCO). This includes a power purchase agreement, signed in November 2022, that stipulates that the project will rely on biomass combustion (Enerdata, 2022).

Table 1. Cancelled projects from September 2021 to July 2023

Country	Plant	Capacity (MW)	Annual emissions (million)	Lifetime emissions (million)

			tonnes CO2)	tonnes CO2)
Bangladesh	Barisal power station Unit 2*	350	1.79	44.75
	Phulbari Coal Project (China Gezhouba) Units 1 and 2*	2000	9.16	229
Bosnia and Herzegovina	Banovici Power Station*	350	1.68	42
	Gacko Unit 2	350	1.72	43
	Kakanj Thermal Power Plant Unit 9	300	1.47	36.75
	Kamengrad Thermal Power Plant Units 1 and 2	430	2.3	57.5
	Tuzla Unit 8	450	2.01	46.23
Djibouti	Djibouti coal-fired power plant Units 1, 2, and 3	150	0.72	18
India	JSW Barmer Jalipa Kapurdi power station Unit 9	540	2.68	67
Indonesia	Banyuasin power station Units 1 and 2	240	1.22	35.38
	Jambi power station Units 1 and 2*	600	2.78	75.06
	Jawa-5 power station Unit 1	1000	4.07	109.89
	Nanshan Industrial Park power station Phase II Units 1-6, Phase III Units 1-4, and Phase IV Units 1-8*#	2700	13.68	396.72
	Qingdao Zhongsheng captive power station Units 3-6*#	260	1.32	33
	Riau-1 power station Units 1-2	600	2.9	63.8
	Sumsel-5 power station Unit 3	350	1.61	43.47
	Tanjung Jati A power station Units 1 and 2*	1320	5.5	140.25
Ivory Coast	San Pedro Port power station Units 1 and 2	700	2.84	71
Kenya	Lamu Power Project Units 1, 2, and 3	1050	4.32	108
Mongolia	Shivee Ovoo power station*	5280	32.97	824.25
Mozambique	Tete power station (China Energy)	200	0.94	26.32

	Tete power station (PowerChina) Units 1 and 2	700	3	75
Serbia	Kolubara Unit B1*	350	1.91	49.66
South Africa	Musina-Makhado power station	3000	5.53	138.25
Sri Lanka	Lakvijaya Power Plant Unit 4	300	1.3	35.1
Tanzania	Mbeya Coal to Power Project	300	1.3	32.5
Turkey	HEMA Amasra power station Units 1 and 2	1320	6.36	159
Ukraine	Slavyansk power station Unit 6a and 6b*	660	1.18	32.45
United Arab Emirates	Hassyan Clean-Coal Power Project Units 3 and 4*	1200	4.5	123.75
Vietnam	Cong Thanh power station Units 1 and 2*	600	3.16	82.16
	Hai Phong Thermal Power Station Units 1 and 2	1200	5.44	116.96
	Quang Trach Power Center Phase 2 Units 1 and 2	1200	5.12	122.88
	Quang Tri power station Phase 2 Units 1 and 2	1200	5.02	110.44
	Quynh Lap power station Phase 1 Units 1 and 2, Phase 2 Units 1 and 2	2400	10.04	230.92
	Vinh Tan power station Phase 3 Units 1, 2, and 3*	1980	8.43	207.94
Zimbabwe	Binga power station Units 1A and 1B	700	2.88	76.32
Grand total		36,330	162.85	4104.7

*: These are the units that have been cancelled since the previous report.

#: These are captive power plants.

The naughty ones

While plenty of capacity has been cancelled, naughty projects (totalling 7.2 GW) have either been revived from being cancelled or shelved, or progressed in securing financing or permitting, or have since started construction or operation. Plants that were already under construction before China's announcement and have since progressed to operationalisation are excluded from this category. Captive plants, perceived as a key grey area, have continued to expand despite the ban, with a total capacity of 3.1 GW.

All captive plants are based in Indonesia's power metals and mining industrial parks. Despite 2.7 GW of capacity at the Nanshan Industrial Park power station (owned by Shandong Nanshan Aluminum Co.) being cancelled, Unit 5 of Phase 1 still progressed with 30 MW (Global Energy Monitor, n.d.). Furthermore, a subsidiary of China Energy Engineering Co., Ltd. signed an engineering and procurement contract (EPC) for Unit 4 - 6 of the Sulawesi Labota power station just before the UNGA announcement and has started operating (中国能建浙江火电, 2023; Shen & Liu, 2023; Shen, 2023). Equipment procurement for Units 7 - 9 was reported in November 2021, and these units are currently under construction in 2023 (Beijing Huaxinjie Investment Consulting Co., Ltd., 2021; Liao & Zhou, 2023). There is very limited information on the public domain on Weda Bay Power Station, yet Units 10 and 11 have quietly transitioned from pre-permitted stages to operation and construction (中冶南方都市环保, 2023; 中冶南方, 2023).

Another potential grey area is biomass co-firing. Between April and August 2022, the North China Power Engineering Co., Ltd., a subsidiary of the China Power Engineering Consulting Group, secured two consecutive bids for engineering design and technical services totaling 1,010 MW in Laos. One of the projects, the Namphan power station, is designed to co-fire biomass and coal (Yuan, 2022; 华西能源, 2023). While the plant should still be treated as coal-fired, the fuel mix introduces some ambiguity, as there is no clear definition in the policy. Another project, Houaphanh unit 1, relies solely on coal as its fuel source and is therefore clearly in defiance of President Xi's pledge (Wang, 2022).

Meanwhile, in Europe, in our previous report we highlighted a loan guarantee issue in Bosnia and Herzegovina that led to the cancellation of Tuzla 7 (450 MW) at the end of 2021. This issue stemmed from a conflict between Bosnia and Herzegovina's approval of the loan guarantee for the unit and their obligation to adhere to EU legislation regarding state aid. However, in 2023, the decision to approve the loan guarantee was reinstated, and EPBIH's 2023 - 2025 business plan indicated the intention to proceed with the construction of Tuzla

7. This decision may have been influenced by concerns that shelving the project would burden the public with stranded, state-owned property (CEE Bankwatch Network, n.d.).

A few projects also seem to be pushed more by their host countries. In Iran, the Tabas power station has been revived within the context of the Iranian government's plan to develop 5,000 MW of coal-fired capacity to address gas supply constraints during the cold season (Presstv, 2021). In Niger, under the commitment of increasing the rate of household access to electricity to 30% by 2026 by the Prime Minister Ouhoumoudou Mahamadou, the Salkadamna power station has gradually moved into pre-permitted stage in 2023 (ANP, 2021; Cabinet du Premier Ministre et al., 2022).

Table 2. Progressed/revived project after China's pledge

Country	Plant	Status from UNGA to Present	Capacity (MW)	Lifetime emissions (million tonnes CO2)
Bosnia and Herzegovina	Tuzla Unit 7*	pre-permit -> shelved-> pre-permit	450.00	49.00
Indonesia	Nanshan Industrial Park power station Phase I Units 5#	pre-permit -> operating	30.00	4.35
	Sulawesi Labota power station Units 7-9#	announced -> construction	1,140.00	127.50
	Sulawesi Labota power station Units 4-6#	pre-permit -> operating	1,140.00	127.50
	Weda Bay power station Units 11#	pre-permit -> construction	380.00	42.50
	Weda Bay power station Units 10#	pre-permit -> operating	380.00	42.50
Iran	Tabas power station Units 1 and 2	shelved -> construction	650.00	69.50
Laos	Houaphanh power station Unit 1	shelved -> pre-permit	350.00	37.50
	Nam Phan power station Units 1 and 2	announced -> construction	660.00	70.00
	Xekong power station Phase I, II, and III	announced -> permitted	1,800.00	172.77

Niger	Salkadamna power station Phase I Units 1-4	announced -> pre-permit	200.00	25.50
Grand total			7,180.00	768.62

#: These are captive power plants.

The problematic ones

In the past two years, two entirely new coal plant projects (see Table 3), totalling 1.9 GW in capacity, have emerged. Both of these projects are captive and are located within nickel-related industrial parks in Indonesia. Remarkably, they were not disclosed at the time of the 2021 United Nations General Assembly (UNGA) pledge.

In January 2022, reports surfaced regarding China Energy Engineering Group Tianjin Electric Power Construction Co., Ltd. winning the bid for the initial phase of a 4 × 380 MW project known as PT Halmahera Persada Lygend Nickel Smelter Phase III (走出去导航网, 2022). This project is a collaboration between Ningbo Lygend Resources & Technology Co., Ltd. and Indonesia Khalida Group.

As mentioned earlier, the Weda Bay power station provides limited information to the public regarding its financing and planning. In September 2021, it was reported that unit 9 of the 6 × 250 MW and 5 × 380 MW coal-fired projects had successfully started, indicating the existence of only 11 proposed units (Henan Province Second Building Engineering Development Co., Ltd., 2021). However, the groundbreaking ceremony for unit 12 was reported by Henan Province Second Building Engineering Development Co., Ltd. on 6 May 2022 (Henan Province Second Building Engineering Development Co., Ltd., 2022).

Table 3. New projects after China’s pledge

Country	Plant	Status from UNGA to Present	Capacity (MW)	Lifetime emissions (million tonnes CO2)
Indonesia	PT Halmahera Persada Lygend Nickel Smelter Phase III Units 5-8 [#]	Not announced -> pre-permit	1,520.00	174.00
	Weda Bay power station Unit 12 [#]	Not announced -> construction	380.00	42.50
Grand Total			1,900.00	216.50

[#]: These are captive power plants.

Methodology

In this report, only the Scope 1 direct CO₂ emissions associated with coal combustion for power generation were estimated. For each coal plant unit, carbon dioxide emissions were calculated based on the following information:

- unit capacity in MW
- emission factor (kilograms of carbon dioxide produced per gigawatt hours) for each type of coal
- heat rate as a measurement of how well a plant performs the task of converting coal into electricity
- capacity factor based on the actual utilisation rate of coal plants in each country in 2022
- an operating life of new coal plants assumed to be until 2050, in line with recommendations for coal phase-out in developing countries by the IEA and IPCC. If the start year for plants that are in the approval stage was not available in the GEM database, 2025 was assumed to be the start date.

Except for the capacity factor and years of operation, individual plant information was obtained from the Global Coal Plant Tracker database (Global Energy Monitor, n.d.). Further details can be found at Estimating Carbon Dioxide Emissions from Coal Plants on GEM.wiki (Global Energy Monitor, n.d.).

List of plants by Status

Officially cancelled

Country	Plant	Capacity (MW)	Annual Emissions (million tonnes CO ₂)	Lifetime emissions (million tonnes CO ₂)
Bangladesh	Barisal power station Unit 2	350	1.79	44.75
	Phulbari Coal Project (China Gezhouba) Units 1 and 2	2,000	9.16	229.00
Bosnia and Herzegovina	Banovici Power Station	350	1.68	42.00
	Gacko Unit 2	350	1.72	43.00
	Kakanj Thermal Power Plant Unit 9	300	1.47	36.75
	Kamengrad Thermal Power Plant Units 1 and 2	430	2.30	57.50
	Tuzla Unit 8	450	2.01	46.23
Djibouti	Djibouti coal-fired power plant Units 1, 2, and 3	150	0.72	18.00
India	JSW Barmer Jalipa Kapurdi power station Unit 9	540	2.68	67.00
Indonesia	Banyuasin power station Units 1 and 2	240	1.22	35.38
	Jambi power station Units 1 and 2*	600	2.78	75.0635
	Jawa-5 power station Unit 1	1,000	4.07	109.89
	Nanshan Industrial Park power station Phase II Units 1-6, Phase III Units 1-4, and Phase IV Units 1-8*#	2,700	13.68	396.72
	Qingdao Zhongsheng captive power station Units 3-6*#	260	1.32	33.00
	Riau-1 power station Units 1-2	600	2.90	63.80

	Sumsel-5 power station Unit 3	350	1.61	43.47
	Tanjung Jati A power station Units 1 and 2*	1,320	5.50	140.25
Ivory Coast	San Pedro Port power station Units 1 and 2	700	2.84	71.00
Kenya	Lamu Power Project Units 1, 2, and 3	1,050	4.32	108.00
Mongolia	Shivee Ovoo power station	5,280	32.97	824.25
Mozambique	Tete power station (China Energy)	200	0.94	26.32
	Tete power station (PowerChina) Units 1 and 2	700	3.00	75.00
Serbia	Kolubara Unit B1*	350	1.91	49.66
South Africa	Musina-Makhado power station	3,000	5.53	138.25
Sri Lanka	Lakvijaya Power Plant Unit 4	300	1.30	35.10
Tanzania	Mbeya Coal to Power Project	300	1.30	32.50
Turkey	HEMA Amasra power station Units 1 and 2	1,320	6.36	159.00
Ukraine	Slavyansk power station Unit 6a and 6b*	660	1.18	32.45
United Arab Emirates	Hassyan Clean-Coal Power Project Units 3 and 4*	1,200	4.50	123.75
Vietnam	Cong Thanh power station Units 1 and 2*	600	3.16	82.16
	Hai Phong Thermal Power Station Units 1 and 2	1,200	5.44	116.96
	Quang Trach Power Center Phase 2 Units 1 and 2	1,200	5.12	122.88
	Quang Tri power station Phase 2 Units 1 and 2	1,200	5.02	110.44
	Quynh Lap power station Phase 1 Units 1 and 2, Phase 2 Units 1 and 2	2,400	10.04	230.92
	Vinh Tan power station Phase 3 Units 1, 2, and 3*	1,980	8.43	207.94
Zimbabwe	Binga power station Units 1A and 1B	700	2.88	76.32
Grand Total		36,330	162.85	4,104.70

Pre-permitted

Country	Plant	Capacity (MW)	Annual Emissions (million tonnes CO ₂)	Lifetime emissions (million tonnes CO ₂)
Bangladesh	Gazaria power station (Orion)	700	3.21	89.88
	Phulbari Coal Project (Sinohydro) Units 1-4	4,000	18.32	458.00
Bosnia and Herzegovina	Kakanj Thermal Power Plant Unit 8	300	1.47	36.75
	Tuzla Unit 7	450	1.96	49.00
	Ugljevik 3 power station Units 1 and 2	600	3.44	86.00
Indonesia	PT Halmahera Persada Lygend Nickel Smelter Phase III 5-8	1,520	6.96	174.00
Kazakhstan	Ekibastuz-2 power station Unit 3	636	3.16	82.16
Laos	Hongsa power station Unit 4	626	2.59	64.75
	Houaphanh power station Unit 1	350	1.50	37.50
	Sekong power station (Electricite du Cambodge) Units 1 and 2	600	3.00	75.00
Madagascar	Imaloto Coal power station	60	0.28	7.00
Malawi	Kamwamba power station Units 1-6	300	1.44	36.00
Mongolia	Baganuur power station Units 1 and 2	700	2.92	73.00
	Shivee Ovoo power station	200	1.50	37.50
Mozambique	Ncondezi power station Units 1 and 2	300	1.42	35.50
Niger	Salkadamna power station Phase I Units 1-4	200	1.00	25.50
Pakistan	Keti Bandar power station Units 1 and 2	1,320	5.40	135.00
	Thar Block VI power station Units 1 and 2	1,320	5.60	151.20
Tanzania	Mchuchuma power station Units 1-4	600	2.80	70.00

Turkey	Ilgın power station Units 1 and 2	500	3.12	78.00
Vietnam	An Khanh - Bac Giang power station Units 1 and 2	650	3.28	88.56
	Nam Dinh power station Phase I Units 1 and 2	1,200	5.44	136.00
Zimbabwe	Sengwa power station Units 3-8	2,100	9.48	237.00
Grand Total		19,232	89.29	2,263.30

Permitted

Country	Plant	Capacity (MW)	Annual Emissions (million tonnes CO ₂)	Lifetime emissions (million tonnes CO ₂)
Brazil	Pedras Altas power station Units 1 and 2	600	4.40	105.60
Laos	Boualapha power station Units 1 and 2	2,000	7.50	187.50
	Xekong power station Phases I-III	1,800	7.14	172.77
Mongolia	Tavan Tolgoi power station (Rio Tinto) Units 1-3	450	3.42	85.50
Pakistan	Gwadar power station Units 1 and 2	300	1.40	37.10
	Jamshoro power station Unit 6	660	2.50	62.50
	Siddiqsons power station	330	1.50	42.00
Turkey	Kirazlıdere power complex Phases I and II	1,320	7.40	185.00
Vietnam	Song Hau Thermal Power Plant Phase II Units 1 and 2	2,000	8.52	221.52
Zimbabwe	Sengwa power station Units 1 and 2	700	3.16	79.00
Grand Total		10,160	46.94	1,178.49

Under construction

Country	Plant	Capacity (MW)	Annual Emissions (million tonnes CO ₂)	Lifetime emissions (million tonnes CO ₂)
Bangladesh	Banskhali power station (S Alam) Units 1 and 2	1,224	5.7	159.60
	Patuakhali power station (BCPCL) Phase II Units 1 and 2	1,320	6.06	163.62
	Patuakhali power station (RPCL/NORINCO) Units 1 and 2	1,320	6.3	163.80
Cambodia	Botum Sakor power station Units 1 and 2	700	3	78.00
	Sihanoukville SEZ power station Unit 2	50	0.23	5.75
India	KSK Mahanadi Power Project Units 4-6	1,800	8.49	246.21
Indonesia	Bangko Tengah power station (SS-8) Units 1 and 2	1,200	5	140.00
	Banten Suralaya power station Units 9 and 10	2,000	8.02	212.53
	Delong Nickel Phase III power station Units 2-7	810	4.08	118.32
	Nagan Raya power station Units 3 and 4	400	2.02	52.52
	PT Halmahera Persada Lygend Nickel Smelter Phase II Units 3 and 6	300	1.5	37.50
	Sulawesi Labota power station Units 5-9	1,140	5.1	127.50
	Sulawesi Mining power station Phase 5 Units 1-3	1,080	4.96	124.00
	Sumsel-1 power station Units 1 and 2	600	2.78	80.62
	Weda Bay power station Units 11 and 12	760	3.4	85.00
Iran	Tabas power station Units 1 and 2	650	2.78	69.50
Laos	Nam Phan power station Units 1	660	2.8	70.00

	and 2			
Pakistan	Jamshoro power station Unit 5	660	2.5	67.50
Philippines	Concepcion power station Unit 2	135	0.68	19.72
Serbia	Kostolac Unit B3	350	1.87	46.75
South Africa	Kusile Power Station Units 5 and 6	1,590	6.56	167.28
Vietnam	Van Phong power station Phase I Units 1 and 2	1,320	5.62	148.93
Zimbabwe	Hwange power station Unit 8	335	1.43	40.04
Grand Total		20,404	90.88	2,424.69

Operational

Country	Plant	Capacity (MW)	Annual Emissions (million tonnes CO ₂)	Lifetime emissions (million tonnes CO ₂)
Bangladesh	Barisal power station Unit 1	350	1.79	48.33
Cambodia	Sihanoukville CIIDG power station 2 Units 1 and 2	700	2.94	77.91
India	Adani Godda power station Units 1 and 2	1,600	7.44	208.32
Indonesia	Bengkulu power station Units 1 and 2	100	0.51	15.30
	Delong Nickel Phase II power station Units 2-10	1,645	8.24	238.58
	Ketapang Smelter power station Units 1 and 3	160	0.55	15.40
	Nanshan Industrial Park power station Phase I Units 1-5	140	0.75	21.75
	PT Halmahera Persada Lygend Nickel Smelter Phase II Units 4 and 5	300	1.5	37.50
	Qingdao Zhongsheng captive power station Units 1 and 2	130	0.66	16.50
	Sulawesi Labota power station Unit 4	1,140	5.1	127.50

	Sulbagut-1 power station Units 1 and 2	100	0.5	14.75
	Sulut-3 power station Unit 2	50	0.25	7.25
	Wanxiang Nickel Indonesia power station Units 1 and 2	130	0.66	16.50
	Weda Bay power station Units 3-10	1,890	8.76	223.88
Mongolia	Erdenet power station	50	0.38	11.02
Pakistan	Port Qasim Lucky power station	660	2.6	75.40
	ThalNova power station	330	1.5	42.00
	Thar Block I power station Units 1 and 2	1,320	5.2	143.00
	Thar Energy Limited power station	330	1.5	43.50
Philippines	Dinginin power station Units 1 and 2	1,336	5.46	158.34
South Africa	Kusile Power Station Unit 4	795	3.28	82.00
	Medupi Power Station Unit 1	795	3.25	94.25
Turkey	EMBA Hunutlu power station Units 1 and 2	1,320	6.2	173.60
Vietnam	Duyen Hai Power Generation Complex Phase 2 Units 1 and 2	1,200	5.24	151.96
	Thai Binh Power Center Phase II Units 1 and 2	1,200	5.32	154.28
Zimbabwe	Hwange power station Unit 7	335	1.43	40.04
Grand Total		18,106	81.01	2,238.86

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