

GLOBAL CHINA INITIATIVE



Cecilia Han Springer is a Senior Researcher with the Global China Initiative at the Boston University Global Development Policy Center. Her interdisciplinary research focuses on the environmental impacts of China’s overseas investment, policymaking processes within China and industrial decarbonization. Previously, she was a postdoctoral fellow at the Harvard Kennedy School. She earned a M.S. and Ph.D. from the Energy and Resources Group at the University of California, Berkeley, and a B.S. in environmental science from Brown University.

Up in the Air

POTENTIAL IMPLICATIONS OF XI JINPING’S GREEN ENERGY AND NO-OVERSEAS-COAL ANNOUNCEMENT

CECILIA HAN SPRINGER, XINYUE MA

Executive Summary

In September 2021, Chinese leader Xi Jinping announced at the 76th United Nations General Assembly that China would increase support for low-carbon energy in developing countries and not build new coal-fired power projects abroad. This policy brief explores the potential implications of the announcement by estimating the range of coal-fired power generating capacity that could be covered by the announcement and the avoided emissions associated with this foregone capacity, and charts opportunities for expanding Chinese support for renewable energy.

In this brief, Chinese support for overseas coal power plants is categorized into capital participation (including policy bank finance, commercial bank finance and foreign direct investment) and construction arrangements. The scope of the coal power projects discussed is those “under construction” and “under planning”, based on the most recent available data.

Main findings:

- Chinese capital participation investment tracked in this brief is associated with 23.5 GW of coal plants under construction and 18.4 GW of coal plants under planning.
- The capacity associated with construction arrangements is greater than for that associated with capital participation, representing 26.8 GW of coal plants under construction, and 32.1 GW under planning.

This policy brief was updated on November 10, 2021 to account for updated analysis.



Xinyue Ma is the China Research and Project Leader at the Boston University Global Development Policy Center. She holds a B.A. in International Politics and History from Peking University, Beijing, and an M.A. in International Economics and Energy, Resources and Environment from Johns Hopkins University, School of Advanced International Studies (SAIS), with a specialization in Infrastructure Policy and Finance.

- A total of 101 GW of coal-fired generating capacity could be affected under the most encompassing interpretation of Xi's announcement.
- If all overseas coal plants with Chinese capital participation and construction arrangements that are under construction and under planning are canceled, annual CO₂ emissions of 594 Mt could be avoided, which is roughly equal to Canada's current annual CO₂ emissions.

Policy recommendations:

- In order to avoid 594 Mt of future annual CO₂ emissions, Chinese policymakers should ensure Xi's announcement applies to both capital participation and construction arrangements.
- Working closely with host countries, Chinese financiers and companies abroad should provide opportunities for transition, especially to renewable energy, to mitigate the economic effects of canceling coal projects that are already under construction.
- To take Xi's announcement a step further, Chinese policymakers can include concrete provisions for shifting foregone coal support towards renewable energy and expand the announcement to cover the major coal-consuming industries that Chinese entities are financing and building overseas.

Introduction

In September 2021, Chinese leader Xi Jinping announced at the 76th United Nations General Assembly that China would increase support for low-carbon energy in developing countries and not build new coal-fired power projects abroad. Although a clear commitment to greening China's overseas activity, the wording of the announcement left significant room for interpretation. This policy brief explores the potential implications of the announcement by estimating the range of coal-fired power generating capacity that could be covered by the announcement and the avoided emissions associated with this foregone capacity, and charts opportunities for expanding Chinese support for renewable energy.

Chinese institutions are involved with the development of coal-fired power plants overseas through two primary channels: capital participation and construction arrangements. Chinese policy banks and commercial banks provide loans to host country borrowers for plant development. Chinese companies may also invest directly in power plants or through provision of equity funding (Manych et al. 2021a). In terms of construction arrangements, Chinese companies may be hired by project developers to provide equipment, procurement and construction (EPC) services or other types of construction and operation arrangements, such as Build-Operate-Transfer (BOT). In many cases, a coal plant may have both capital participation and construction arrangements with Chinese companies. In order to avoid double counting, this policy brief quantifies Chinese construction arrangements without associated Chinese capital.

The term "new" in Xi's announcement could include plants that are planned but have not reached financial closure, plants that have reached financial closure but that are not yet under construction, or also plants already under construction. This policy brief classifies and examines coal power projects "under construction" or "under planning" with capital participation or construction arrangements on the part of Chinese institutions overseas. The policy brief concludes with a discussion on how to maximize the climate benefits of this announcement, especially if China can channel foregone coal support towards renewable energy.



Estimating Affected Capital Participation

There are several channels through which Chinese institutions may finance coal plants overseas. This section describes each channel and quantifies the associated overseas coal capacity for each type of capital, separating co-financing to avoid double counting.

Chinese policy banks² – the China Development Bank (CDB) and China Export-Import Bank (CHEXIM) – provide loans to host country borrowers. Although Xi’s announcement did not use the word “finance” or “lend,” it is highly likely that policy bank lending will be covered by the announcement. These two policy banks are state-supported institutions responsible for implementing economic and financial policy (Boston University Global Development Policy Center 2020, CDB, CHEXIM n.d.). Their overseas activity is in part regulated by Chinese ministries and agencies that govern climate change policy. There is little reason to think these banks would not be covered by such a high-level announcement.

How much installed and planned overseas coal power generation capacity has been supported by China’s policy banks? According to the Boston University Global Development Policy Center’s interactive China’s Global Power (CGP) Database, policy bank finance has supported 29.6 GW of currently operational coal plants around the world (excluding within China) since 2000. Another 9.3 GW are under construction and 3.9 GW are under planning. Including co-financed arrangements between Chinese policy banks and Chinese companies, these numbers are 33.5 GW of currently operational plants, and 16.5 GW of plants under construction.

Chinese commercial banks are also involved in lending for overseas coal plant development. Three days after Xi’s announcement, the Bank of China subsequently pledged to stop financing overseas coal mining and power plant development from the fourth quarter of 2021 (Xie 2021). This rapid and voluntary compliance from one of China’s major commercial banks provides indications that other commercial banks may follow suit, or also be subject to the commitment.

According to Global Energy Monitor (GEM), between 2011 and 2020, Chinese commercial banks supported 8.3GW of coal-fired power generating capacity abroad (excluding those co-financed with CDB and CHEXIM and with Chinese FDI). Another 3.9 GW are under construction and 4.9 GW are under planning (Global Energy Monitor 2021). Much of the capacity under planning is associated with the Bank of China. The Bank of China has 3.7 GW of overseas coal capacity under planning that is not co-financed with Chinese policy banks. Since the Bank of China’s announced policy will come into effect in Q4 of 2021, it remains to be seen whether this pipeline would be covered by the Bank of China’s or Xi’s policy, and whether the planned projects of other Chinese commercial banks would be covered.

Chinese companies may also invest in power plants through provision of equity, or foreign direct investment (FDI). FDI is classified into new greenfield investment and mergers and acquisitions (M&A). According to the CGP Database, Chinese companies have provided greenfield FDI to 3.3GW of operating coal plants overseas, 3.1GW of coal plants under construction and 9.6GW of planned plants (not including plants with both FDI and Chinese policy bank finance). Chinese companies have invested in 4.2GW of already-existing coal plants via mergers and acquisitions. There are also 3.8GW of already operating plants, and 7.2GW of plants under construction that had capital participation of both Chinese policy banks and Chinese companies. These equity investments are likely an underestimate, as Chinese sovereign wealth funds like China Investment Corporation and the Silk Road Fund may have also been involved in providing equity for overseas coal plants.

² We define CDB as a policy bank based on its function, although in recent years it has been designated as a commercial bank by the Chinese government.

Just one day after Xi’s announcement, the Chinese company Tsingshan pledged to comply and not support any new coal plants overseas (Yi 2021). Given that Tsingshan is privately owned, this could be an indication that private, as well as state-owned companies might be working to adopt the coal exit commitment. Tsingshan is a steel company that was involved in coal plant development in Indonesia to provide captive power for steel and nickel production. Although Tsingshan’s announcement appears to be limited to their coal-fired power generation activities, the fact that Tsingshan is a metals company raises the prospect of Xi’s announcement having effects on other industries that use coal directly, rather than just for electricity generation.

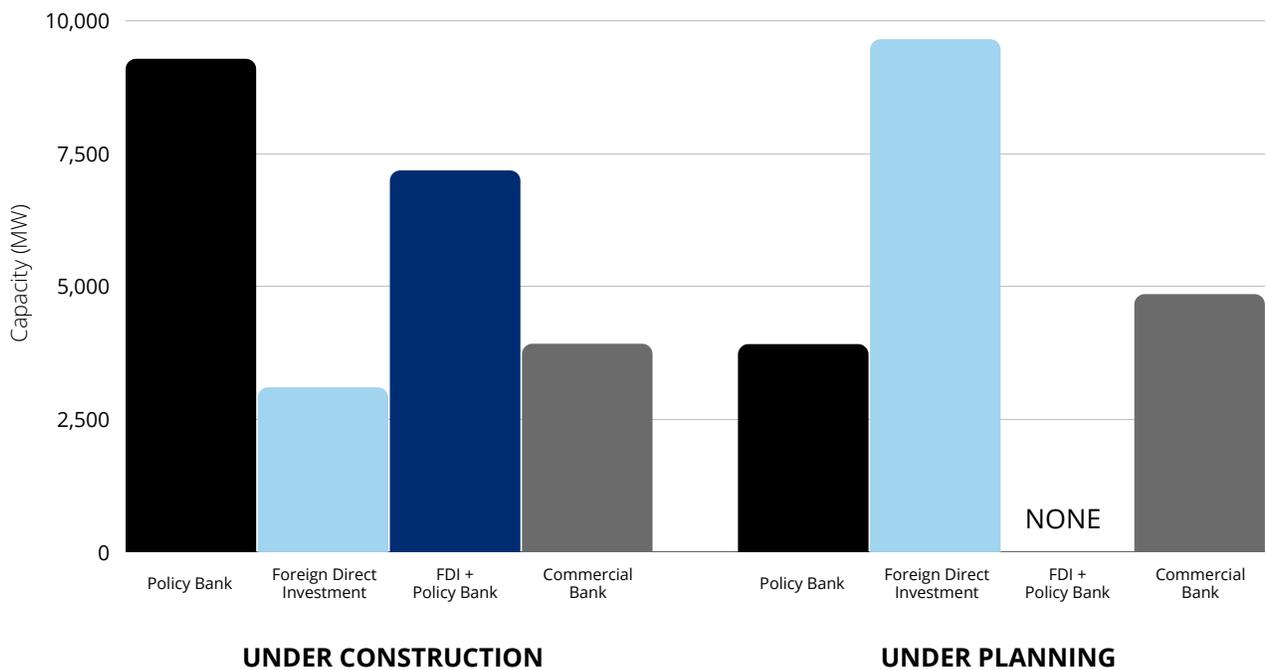
The amount of future capacity (i.e., under construction or planned) associated with different types of capital participation is shown in Figure 1 below.

Since policy banks, commercial banks and companies (both private and state-owned) are likely to be subject to Xi’s announcement for their financial support of overseas coal (Manych et al. 2021b), the primary remaining question is the extent to which planned projects will be affected. Assuming the total capacity of 23.5 GW of coal plants under construction with various forms of Chinese capital participation goes forward, that means 18.4 GW of planned coal plants scheduled to receive Chinese capital could be affected by the announcement.

Planned plants that have already reached financial closure would not necessarily be covered by the announcement. However, it is important to note that even before Xi’s announcement, some of these planned coal plants were already becoming unviable due to local protests. For example, the Lamu plant in Kenya is included within this 18.4 GW estimate of planned plants, but is currently delayed and unlikely to continue, as the Industrial and Commercial Bank of China, another commercial Chinese bank, withdrew financing for the project in 2020.

Based on this analysis, if the no-coal commitment is applied to all planned overseas coal plants receiving Chinese policy bank finance and FDI that have not started construction, about 74 Mt of

Figure 1: Overseas Coal Capacity Associated with Different Types of Chinese Capital Participation



Sources: China’s Global Power Database 2020, GEM 2021.



annual emissions could be abated.³ If also applied to plants already under construction, another 115 Mt of annual CO₂ emissions could be avoided. Commercial banks' pipeline of coal plants under construction and under planning could represent 52 Mt of annual emissions. If applied to all types of capital provision and coal plants under planning and under construction, this could represent a total of 240 Mt of CO₂ emissions could be avoided each year, in addition to foregone emissions from Chinese-funded coal plants that would have been announced in the future.

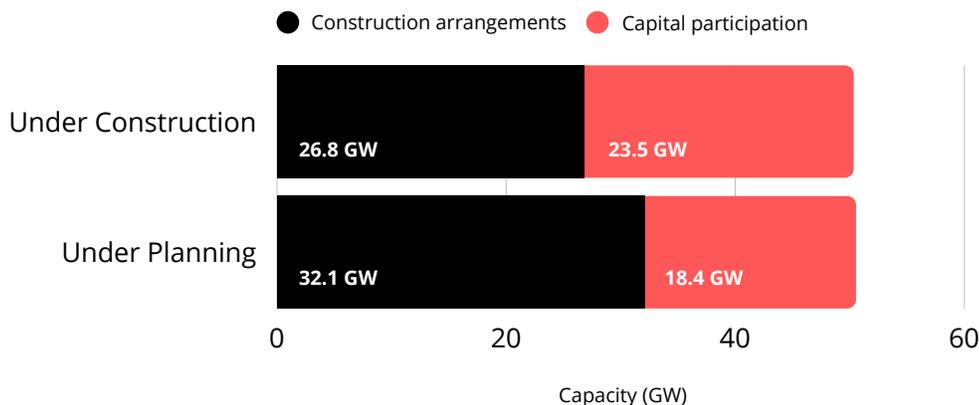
Estimating Affected Construction Arrangements

Xi's announcement also attracted attention due to the particular word "build," which implies that Chinese companies with construction arrangements for overseas coal plants would be covered by the announcement. China is often associated with financial support for overseas coal plants, but service exports in the form of construction arrangements in fact date back further and are associated with a larger amount of overseas capacity.

Chinese companies have been hired to provide equipment and construction services for coal plants in other Asian countries since at least the 1990s. On the other hand, the earliest coal plant built with Chinese finance in the CGP Database is a coal plant in Vietnam commissioned in 2006 and receiving loans from CHEXIM.

How much overseas capacity is associated with Chinese construction arrangements? The majority of China's overseas finance and investment supports projects that also use Chinese construction or equipment. Beyond that, there are a number of plants that have Chinese construction arrangements without associated Chinese capital participation. Research by Springer and Chen 2021 used the S&P Global World Electric Power Plants Database to identify the country of origin for construction companies listed for coal plants around the world. These plants were then cross-referenced with the CGP Database to eliminate plants with both Chinese capital participation and construction arrangements. The resulting list of coal plants represents 26.8 GW of capacity under construction, and 32.1 GW under planning. As shown in Figure 2, this is more coal-fired generating capacity under construction and under planning than those associated with all types of quantified Chinese capital participation.

Figure 2: Comparing Overseas Coal Capacity Associated with Chinese Capital Participation and Construction Arrangements



Sources: China's Global Power Database 2020, GEM 2021, Springer and Chen 2021.

³ Annual emissions are calculated for this policy brief based on the methodology detailed in the CGP methodological note (Li et al. 2020).

Coal power plants with Chinese construction arrangements overseas that are under construction and under planning respectively represent potential annual CO₂ emissions of 136 Mt and 174 Mt.

Range of Coal Plants Affected

As shown in the analysis above, the amount of coal-fired generating capacity affected by Xi's announcement could vary widely depending on if the announcement applies to both capital participation and construction arrangements, if it applies to various types of capital participation and whether it applies to plants under construction and/or under planning. Table 1 below shows a matrix of these possibilities in terms of generating capacity affected.

Table 1: Capacity (in GW) of Coal-Fired Power Plants Affected by Different Interpretations of Xi's Announcement

Arrangement Type	Under Construction	Under Planning	Potential Total Affected
Capital Participation			
<i>Policy bank</i>	9.3	3.9	13.2
<i>FDI</i>	3.1	9.6	12.7
<i>FDI + Policy bank</i>	7.2		7.2
<i>Commercial bank</i>	3.9	4.9	8.8
Construction	26.8	32.1	58.9
<i>Potential Total Affected</i>	50.3	50.5	100.8

Sources: China's Global Power Database 2020, GEM 2021, Springer and Chen 2021.

Table 1 shows that a grand total of 100.8 GW of coal-fired generating capacity could be affected under the most encompassing interpretation of Xi's announcement, in which both capital and construction support for overseas coal plants are withdrawn, including for plants that are already under construction. This represents annual CO₂ emissions of 594 Mt if all of these plants came online in the future, which is roughly equal to annual energy-related emissions from the entire country of Canada today.

Discussion and Recommendations

Xi's announcement has yet to be translated into official policy documents, but bank and company responses provide indications of the kinds of capital participation and construction arrangements that may be affected. China has yet to clarify whether the announcement will apply to plants that have already begun planning processes or even construction. This policy brief has mapped out the range of coal-fired generating capacity that could be affected by the announcement.

There is also the possibility that the announcement would not apply to any project that has already begun planning, no matter how early-stage. Other countries that have declared an end to overseas coal support, notably Japan and South Korea, have not withdrawn from planned projects. For example, the expansion of the Vung Ang coal plant in Vietnam, with Japanese and Korean financial and construction support, is scheduled to begin construction in late 2021 (Reuters 2021). Assuming China's overseas coal pipeline all comes online, that would add hundreds of Mt of CO₂ emissions to the atmosphere every year – a consequence not in line with China's own rhetoric on greening the Belt and Road Initiative (BRI) (CCICED 2021).



If the policy does apply to the full range of plants discussed in this brief, China should shift foregone support for coal towards provisions to ensure that the economic consequences of halting a coal plant under development are equitably mitigated – especially for plants that are already under construction. One major opportunity for a transition away from coal is for China to re-direct support towards renewable energy. While far less in cumulative capacity than for coal, China is already channeling support to renewable energy overseas, and China’s financing for renewable power generation more than quadrupled between 2015 and mid-2019 (Springer 2021).

Chinese policymakers could take Xi’s announcement a step further in two ways. First, China could lay out options for shifting foregone support for overseas coal towards renewable energy. Given that electricity demand will continue to grow in countries that have sought support from China for coal plant development, China can continue to meet these needs by providing capital or equipment and construction services for renewable energy capacity instead. In fact, if developing countries are to meet their first Nationally Determined Contributions to the Paris Climate Agreement, there could be up to \$800 billion in renewable energy investment potential (Muñoz Cabré 2018).

Second, China could expand the scope of Xi’s announcement to include coal consumption for industrial output, such as for steel or cement plants with Chinese capital or construction arrangements. These industrial activities represent major sources of demand for coal combustion besides power generation for the electricity grid.

Host countries also have a key role to play in the course of implementing Xi’s announcement. Host country demand and policies are critical factors that determine a power project’s energy source (Kong and Gallagher 2020). In addition, the ability of Chinese actors to make changes differs across arrangements. In cases where Chinese entities are majority investors or financiers, they may have a bigger say in the direction of a project, such as proceeding with a planned project or project under construction or retiring a project early and reinvesting in renewable energy. In cases where Chinese entities are not the majority investor or are in a construction contracting arrangement, Chinese actors would be bound by the contract or the decision of the sponsoring institutions. If this transition is not aligned with host country energy policies, other financiers or contractors may take China’s place in developing coal. Therefore, candid engagement between Chinese and host country actors will be needed to reach the optimal result for sustainable development for each country and company involved.

Taking the most expansive interpretation of Xi’s announcement can reduce the CO₂ emissions associated with future BRI development. Examples of Chinese banks and companies adopting similar voluntary policies demonstrates that it is politically and economically feasible for Chinese companies and financial institutions to shift away from coal overseas. Shifting away from coal with provisions for transition, especially for renewable energy, will ensure China’s overseas engagement helps partner countries reduce their emissions and meet clean energy goals.

REFERENCES

- Boston University Global Development Policy Center. 2021. “Database Methodology Guidebook.” https://www.bu.edu/gdp/files/2021/03/GDPC-Database-Methodology-Guidebook_EN.pdf
- China Council for International Cooperation on Environment and Development (CCICED). 2021. “Green BRI and the 2030 Agenda for Sustainable Development – Enhancing Environmental Management System and Policy Studies for BRI Projects.” Special Policy Study. <https://cciced.eco/research/special-policy-study/green-bri-and-2030-agenda-for-sustainable-development-2/>

GLOBAL CHINA INITIATIVE

The Global China Initiative (GCI) is a research initiative at the Boston University Global Development Policy Center. The GDP Center is a University wide center in partnership with the Frederick S. Pardee School for Global Studies. The Center's mission is to advance policy-oriented research for financial stability, human wellbeing, and environmental sustainability.

www.bu.edu/gdp

The views expressed in this Policy Brief are strictly those of the author(s) and do not represent the position of Boston University, or the Global Development Policy Center.

China Development Bank [WWW Document], n.d. URL http://www.cdb.com.cn/English/gykh_512/khjj/ (accessed 11.3.21).

CHEXIM, n.d. Introduction: The Export-Import Bank of China [WWW Document], URL <http://english.exim-bank.gov.cn/Profile/AboutTB/Introduction/> (accessed 11.3.21).

Gallagher, Kevin, Zhongshu Li, Xu Chen, and Xinyue Ma. 2019. "China's Global Power Database." Boston University Global Development Policy Center. <http://www.bu.edu/cgp/>

Global Energy Monitor. 2021. "Global Coal Public Finance Tracker." <https://globalenergymonitor.org/projects/global-coal-public-finance-tracker/>

Li, Zhongshu, Xinyue Ma, and Kevin Gallagher. 2020. "China's Global Power Database Methodological Note." Boston University Global Development Policy Center. https://www.bu.edu/gdp/files/2020/10/CGP-Method-Note_English.pdf

Manych, Niccolò, Jan Christoph Steckel, and Michael Jakob. 2021a. "Finance-based accounting of coal emissions." *Environmental Research Letters* 16 (4). <https://iopscience.iop.org/article/10.1088/1748-9326/abd972>

Manych, Niccolò, Cecilia Springer, Michael Jakob, and Jan Christoph Steckel. 2021b. "China holds the financial key to huge carbon emissions avoidance." *East Asia Forum*. <https://www.eastasiaforum.org/2021/10/29/china-holds-the-financial-key-to-huge-carbon-emission-avoidance/>

Muñoz Cabré, Miquel, Kevin P. Gallagher, and Zhongshu Li. 2018. "Renewable Energy: The Trillion Dollar Opportunity for Chinese Overseas Investment." *China & World Economy* 26, no. 6: 27-49. <https://doi.org/10.1111/cwe.12260>

Reuters. 2021. "Construction on Vietnam's Vung Ang 2 coal plant to begin in December." <https://www.reuters.com/world/asia-pacific/construction-vietnams-vung-ang-2-coal-plant-begin-december-2021-10-26/>

Springer, Cecilia. 2021. "For China, an end to coal should spur support for renewable power." Thomson Reuters Foundation News. <https://news.trust.org/item/20211018120140-lgmqk/>

Springer, Cecilia and Han Chen. 2021. "China's Uneven Regional Energy Investments." *GREEN Journal Issue 1, Group d'Etudes Geopolitiques*. <https://geopolitique.eu/en/articles/chinas-uneven-regional-energy-investments/>

Xie, Echo. 2021. "Bank of China pledges to end funding for foreign coal mining and power plants." *South China Morning Post*. <https://www.scmp.com/news/china/politics/article/3150108/bank-china-pledges-end-funding-foreign-coal-mining-and-power>

Yi, Shi. 2021. "China to stop building new coal power projects overseas." *The Third Pole*. <https://www.thethirdpole.net/en/energy/china-to-stop-building-new-coal-power-projects-overseas/>