CLIMATE POLICY INITIATIVE

Slowing the Growth of Coal Power Outside China: The Role of Chinese Finance

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A CPI Report

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Descriptors

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About CPI

Climate Policy Initiative is a team of analysts and advisors that works to improve the most important energy and land use policies around the world, with a particular focus on finance. An independent organization supported in part by a grant from the Open Society Foundations, CPI works in places that provide the most potential for policy impact including Brazil, China, Europe, India, Indonesia, and the United States.

Our work helps nations grow while addressing increasingly scarce resources and climate risk. This is a complex challenge in which policy plays a crucial role.

Executive Summary

In recent years, China has grown into a major provider of coal power finance in overseas markets, replacing financing by major development institutions while providing potentially less stringent environmental guidelines. In September 2015, China made a surprise announcement that it would commit to "controlling public investment flowing" into high carbon overseas projects. This was followed by an announcement in November 2015 that OECD countries are committing to common standards for coal subsidies, also potentially significantly restricting international finance for coal power.

These announcements have been closely followed by the climate community, while information about overseas coal finance, particularly Chinese finance, has been lacking. Thanks to a new data collection effort, CPI has been able to identify China's role in international coal power generation deployment and to provide the most complete estimate of Chinese finance for overseas coal projects to date.

In absolute terms, we estimate that **USD 21-38 billion worth of Chinese finance went to overseas coal power projects over the last ten years and, prior to the commitment, USD 35-72 billion worth was planned to finance new overseas projects.**

The USD 35-72 billion figure represents an estimated 11-21% of total overseas coal finance (after adjusting for projects that are unfeasible and likely to be cancelled, irrespective of the recent commitments). However, **other nations, international investors and lenders also play an important role, with investment estimated at USD 272-307 billion. By comparison, local investment for coal power is estimated at USD 218 billion.**

Recipients of Chinese coal power finance

In terms of where Chinese overseas coal finance is going, we find that most of the historical Chinese coal power financing went towards South Asia and Southeast Asia, with three countries – India, Indonesia, and Vietnam – representing around 60% of the total. China's focus on Asian countries is in line with its overall direct investment trend in the region. More recently, China started diversifying the destination countries in its "portfolio", with multi-billion dollar projects being planned in Pakistan, India, and Russia, together representing more than 50% of the total Chinese overseas coal finance that hasn't yet reached financial closure.

Chinese public finance and support for state-owned enterprises

The vast majority of Chinese overseas coal finance to date is comprised of debt associated with equipment exports and engineering, procurement and construction contracts, provided by policy banks like China Development Bank and China Eximbank as well as Chinese commercial banks typically supported by China's export credit insurer, Sinosure.

For projects still at the planning stage, however, the portion of equity has increased significantly to more than 20% of total Chinese financing – reflecting a greater interest in overseas investments by Chinese state-owned enterprises. Overseas public finance and guarantees on export and construction contracts facilitate the expansion of an overseas market and help the Chinese government foster its own domestic economic growth and address the coal power industry's domestic overcapacity while working towards goals to reduce air pollution. To this end, the Chinese government has been providing financial and fiscal support to companies that are expanding their overseas investments, thus enabling Chinese engineering, procurement and construction companies to bid lower than the competition on project contracts and obtain a larger market share of overseas coal power development.

Of the USD 35-72 billion expected investment in planned projects, we estimate that the Chinese government could potentially discontinue plans to invest up to USD 18 billion in overseas coal power. This is in addition to the planned projects that are unfeasible and would not have gone ahead even without the commitment. The role of other international investors however is also critically important, given their even more significant role, compared to China, in financing overseas coal projects.

Contents

1. Introduction

Historically, public finance from Multilateral Development Banks (MDBs), as well as national development agencies and financial institutions in developed countries, has contributed significantly to overseas coal power development, to provide electricity access at low cost in developing countries and to support exports. Institutions such as the Japan Bank for International Cooperation, the Export-Import Bank of U.S., and the World Bank Group played important roles in financing coal power projects. In recent years, however, the Chinese government has been increasing its financial support of overseas coal power projects as backing from traditional lenders started to wane, and has become a key player in this space. In addition to public finance, in recent years Chinese power generation developers have also begun to invest directly in foreign coal power plants.

In September 2015, the U.S. and China issued a joint statement highlighting China's commitment to restrict public finance to projects with high pollution or carbon emissions, internationally as well as domestically.[1] The practical details of this major policy change have yet to be defined – but the impact of this commitment may be significant.

In this respect, it would be useful to better understand the scale of Chinese finance in a larger global context as well as the drivers and economic incentives for the country and stakeholders involved. This paper thus answers the following questions:

- How significant is global coal power financing? What is China's role in this?
- Which projects are attracting Chinese financial support?
- Which Chinese players are involved in these transactions?
- What are the main incentives for China and for host countries to engage in these transactions?
- If China reduced overseas coal power financing, would other financiers replace its role?

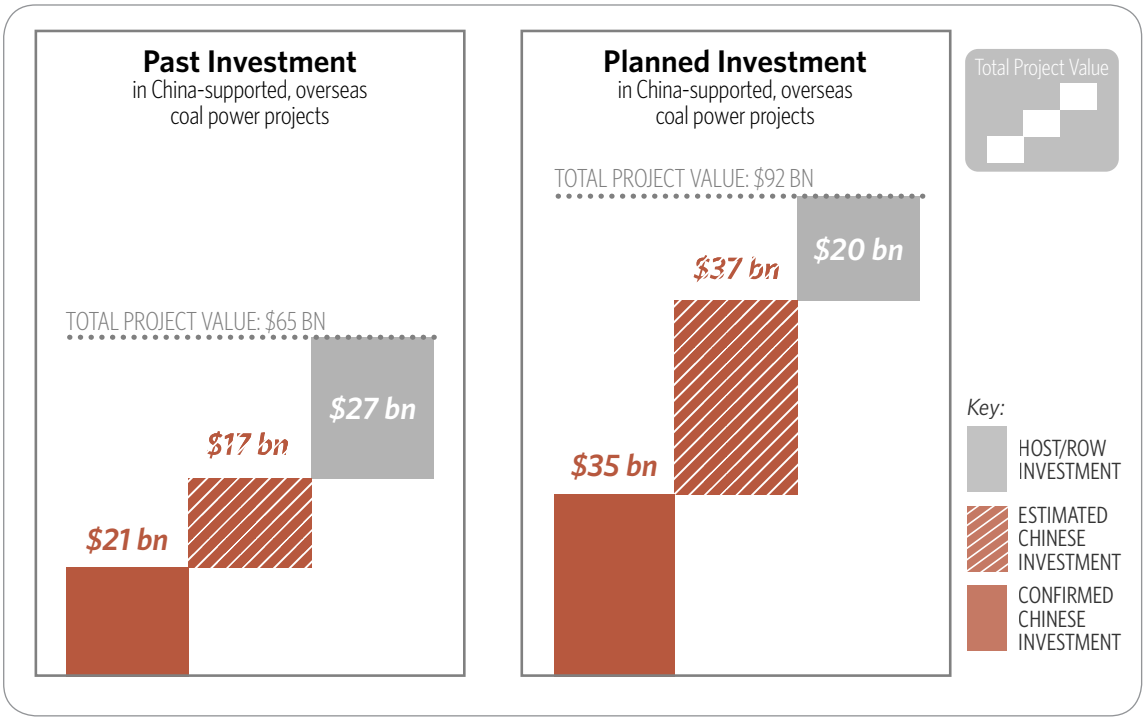
1 "China – one of the largest providers of public financing for infrastructure worldwide – agreed to work towards strictly controlling public investment flowing into projects with high pollution and carbon emissions both domestically and internationally" (http://www.whitehouse.gov/the-press-office/2015/09/25/fact-sheet-united-states-and-china-issue-joint-presidential-statement)

2. China grew into a significant provider of finance to overseas coal power generation

In this report, we estimate how much "overseas" coal-power generation China has financed and has plans to finance (see Figure 1 and the methodology box for more details). We find that USD 21-38 billion went to projects financed over the last ten years (2005-2014) and that up to another USD 35-72 billion is needed to finance projects still at the planning stage.[2] These estimates are significantly larger than previously estimated investment figures for China overseas investment.[3] This difference reflects our systematic effort (1) to disentangle the actual provision of finance (equity, debt, and loan guarantees) from other non financial proxies for Chinese involvement in coal projects (engineering contracts value notably) and (2) to estimate the amount of finance going to projects not confirmed to be Chinese-financed, but very likely to be or to have been financed by Chinese players (for example, projects that involve Chinese contractors and Chinese equipment providers).

To put these numbers in perspective, it is also important to keep in mind that China rarely finances 100% of total project costs. The total capital for the projects typically involves other sources of capital (including almost always local players, at least on the equity side). In particular, for our sample of China-backed projects over the last ten years, we find that China provided capital corresponding to around 30-60% of the total estimated projects' cost of USD 65 billion, for around 55 GW of coal power. For projects yet to be closed, we find a higher portion of Chinese money, close to 40-80% of the total estimated projects' cost of USD 92 billion, for 70 GW of coal power. The latter case reflects an increasing involvement of Chinese players on the equity side as well as very large projects where debt is expected to financed exclusively by China. Note that there is a significant chance that some projects still in the planning phase don't proceed, for various reasons, so these forward-looking estimates may differ from actuals.

Figure 1 – Estimated finance for China-supported overseas coal power projects – past investment is over 2005-2014.



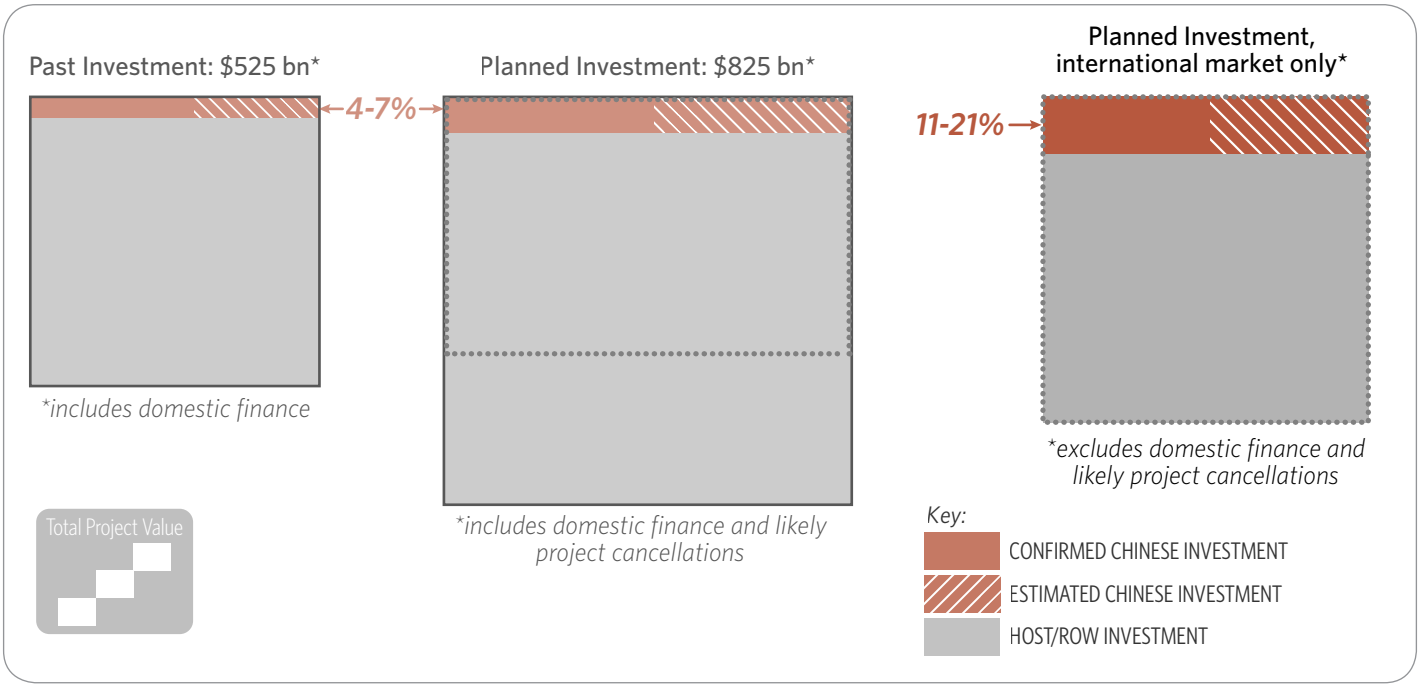
Source: CPI analysis based on various sources (see methodology box for more details). ROW stands for rest of the world.

When we put these estimates in perspective, we find that China has plans to provide 11-21% of total foreign financing for new overseas coal power projects (Figure 2). Chinese investment represents around 4-7% of total domestic and foreign investment in past projects. These

2 The estimate's lower bound is restricted to confirmed finance only while the upper bound also includes likely finance (based on the involvement of Chinese contractors, Chinese equipment providers, the pre-existence of a framework agreement between China and the coal power project host country or previous coal power finance deals involving Chinese money in the country).

3 A paper by the University of Tokyo estimates through a review of itemized loan agreements that Chinese public financing for international coal power projects from between 2007 and 2013 is over USD 13.1 billion – more than a third of all development finance institutions' financial support for coal globally. The number reaches USD 20.6 billion if accounting the projects pledged in Memorandums of Understanding.

Figure 2 – Estimated share of Chinese coal power capital in total overseas projects. Past investment represents projects that were not cancelled and includes financing from various sources including domestic sources.



Source: CPI analysis / CPI & PLATTS data

current projects are mainly financed by local actors (including equity investors and local banks such as in Turkey), Asian export credit agencies and investors from Japan, China, Korea, and India, and multilateral development banks.

The USD 35-72 billion figure of planned future investment (prior to the commitment announcement in September) represents an estimated 11-21% of total overseas finance, after adjusting for projects likely to be cancelled irrespective of the recent commitments and excluding domestic investment.[4]

It is important to note that other nations, international investors and lenders also play an important role, with planned investment estimated at USD 272-307 billion. By comparison, local investment for coal power is estimated at USD 218 billion.

2.1 Chinese funding of overseas coal power focused on South and Southeast Asia

Over the last ten years, we find that most of the Chinese overseas coal power capital went towards South Asia and Southeast Asia, with three countries – India, Indonesia, and Vietnam – receiving around 60% of the total Chinese overseas coal power capital. China's focus on Asian countries is in line with its overall direct investment trend in the region.[5]

More recently, China started diversifying the destination countries in its "portfolio", with multi-billion dollar projects being planned in Pakistan, India, and Russia, together representing more than 50% of the total Chinese finance overseas coal finance that hasn't yet reached financial closing. In the case of Pakistan, the main region of focus is the China-Pakistan Corridor. In India, China has been lending on commercial terms, which is still cheaper than local debt. In Russia, the project for which Chinese money is planned is a massive coal power project; the intent is to export the electricity back to China. In the meantime, projects in West Asia, Africa, and East Europe are also quickly picking up. We illustrate Chinese investments by

4 We find that Chinese projects are less likely to be cancelled compared to other providers of coal power finance for three main reasons: (1) Chinese players provided lower bids with tied financing making projects less likely to be cancelled for financing reasons, (2) Chinese projects are also about tied infrastructure deals and foreign affairs objectives hence fully backed by the Chinese government, and (3) Chinese lenders took over the financing of multiple projects from DFIs when the latter committed to cuts. This is discussed in greater detail throughout this report.

5 WRI, China's Overseas Investments Explained in 10 Graphics (2015): http://www.wri.org/blog/2015/01/china%E2%80%99s-overseas-investments-explained-10-graphics

Box: Methodology

To estimate how much Chinese coal power capital goes to power generation projects outside China, we undertook the following bottom-up modeling exercise. We believe this systematic approach allowed us to capture the most comprehensive picture of the extent and blend of Chinese overseas coal power capital (around 150 projects as of Summer 2015), including not just capital that is confirmed to be Chinese, but also capital that is most likely Chinese. Our approach:

1. **Identified projects with Chinese involvement.** To do so, we employed various data sources including the Platts World Electric Power Plants Database, the Coalswarm/SourceWatch wiki,[a] the Bankwatch database and reports,[b] the AidData database,[c] the industcards online database,[d] the Heritage Foundation database of Chinese foreign direct investments,[e] annual reports and press releases from Chinese coal power generation players (Engineering, Procurement, and Construction, i.e. EPCs, but also SOEs, lenders, equipment companies, etc.), government overseas agencies' websites, news reports, stakeholder interviews, and academic research.[f] The review was done for each region of the world on a country-by-country basis looking in-depth at all the coal power generation projects since 2005. We have used our judgment in processing conflicting information from different sources, to exclude cancelled projects, and to avoid double counting.
2. **Shortlisted and categorized projects.** We included projects that have confirmed involvement of a Chinese investor, lender or guarantor, as well as projects for which we can reasonably assume Chinese money is involved (Chinese contractors, equipment manufacturers, etc.). Projects were also categorized according to various dimensions of interest (location, year of financial close, project capacity, project status, etc.).
3. **Gathered useful data on project financing:** We noted the identity of local and international partners, co-investors, lenders, guarantors but also amounts involved, and financing terms (concessional vs. market rate, debt maturity, fees, etc.). When data was missing, we estimated these based on our understanding of project financing in various countries as well as previous similar transactions.

a International Chinese coal projects (http://www.sourcewatch.org/index.php/International_Chinese_coal_projects) but also individual country pages.
b http://bankwatch.org
c http://china.aiddata.org
d http://www.industcards.com
e Heritage Foundation, China global investment tracker (http://www.heritage.org/research/projects/china-global-investment-tracker-interactive-map)
f Notably The University of Tokyo, Quantifying Chinese Public financing for Foreign Coal Power Plants, 2014 (http://www.pp.u-tokyo.ac.jp/research/dp/documents/GraSPP-DP-E-14-003.pdf)

destination countries in Figure 3. As will be discussed in more detail in the next section of this report, all these transactions are consistent with China's domestic economic priorities and international ambitions.

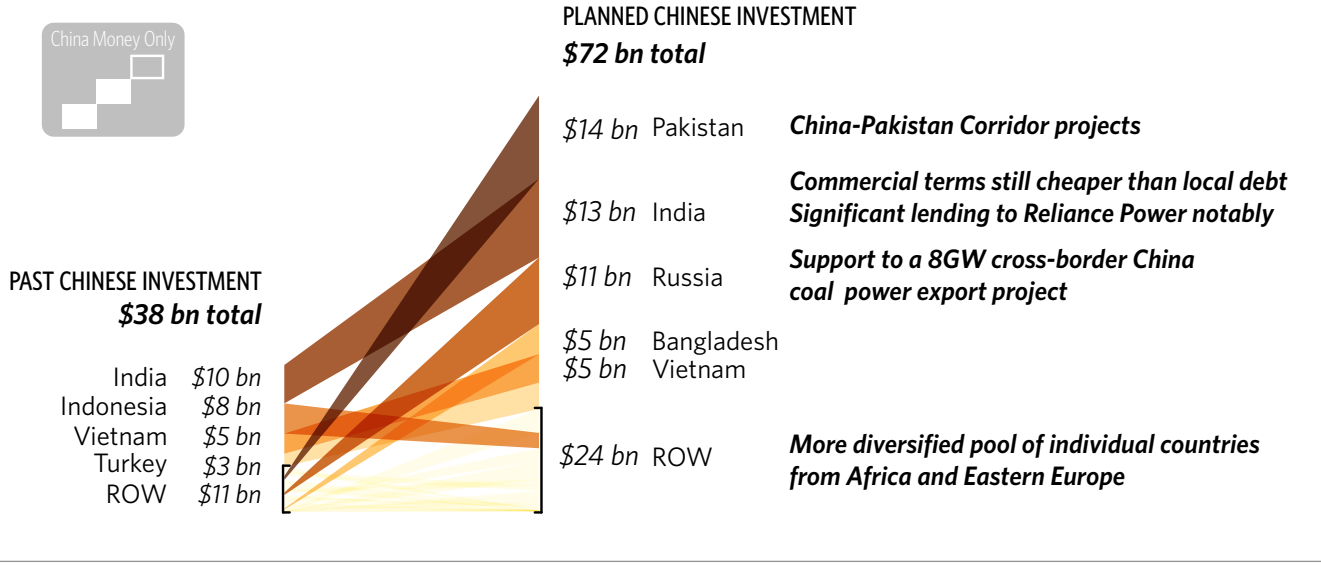
2.2 Chinese overseas coal power capital is mainly debt to support construction contracts & equipment exports

We next explore financing instruments for confirmed finance, since information is not available for unconfirmed finance. Out of USD 157 billion of finance for 125 GW of already built as well as planned China-backed coal power, USD 56 billion is confirmed to be Chinese capital and an additional USD 54 billion is likely to be Chinese. Figure 4 illustrates our findings for the portion of coal power capital that is confirmed to be from China:[6] USD 21 billion for projects financed over the last ten years and USD 35 billion for projects not yet financially closed.

Coal power generation projects are capital-intensive projects and the two single largest capital expenditures are the construction contract and plant equipment. Given that these two elements are key variables in

6 For China estimated financing (including finance that is likely to be Chinese, in addition to finance confirmed as Chinese), it would be fair to assume that Chinese coal power finance would be in the form of debt in similar portions to that for confirmed financings (either from policy or commercial banks supported by Sinosure).

Figure 3 – Top destinations for Chinese overseas coal power finance.



Source: CPI analysis based on previously mentioned sources.

international competitive biddings for power plant projects, China's support of equipment exports and extension of credit to Chinese participants in engineering, procurement, and construction (EPC) contracts is unsurprising.

For projects financed over the last ten years, we find that equity investments account for a very small portion of total Chinese coal power capital. The vast majority of finance is debt associated with equipment exports and EPC contracts, provided by policy banks like China Development Bank and China Eximbank as well as Chinese commercial banks typically supported by China's export credit insurer, Sinosure. The size of the export-driven lending is likely driven by Chinese goals to promote export and overseas construction activities. For projects yet to be closed, however, the blend of equity has increased significantly to more than 20% of total Chinese financing. Again, these are forward-looking estimates that may differ significantly from actuals.

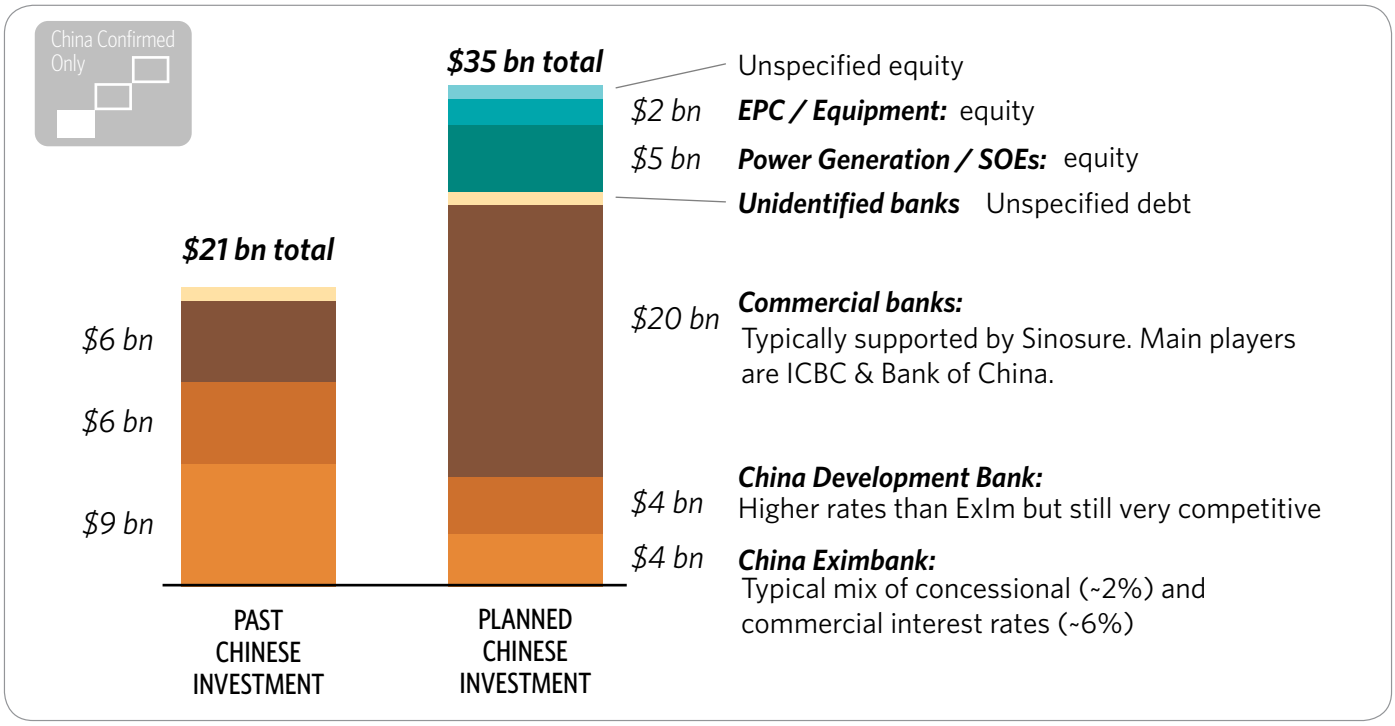
2.2.1 WHO PROVIDES THE EQUITY CAPITAL?

Major players in overseas coal power equity investment include domestic power generators (the Big 5 domestic power generators such as Huadian Group but also grid companies such as China Southern Power Grid) and project contractors such as Power Construction Corporation of China. Equity investors can be categorized in two distinct groups. The first group is domestic power generators. The generators often start out exploring overseas markets through smaller-scale EPC contract engagements through subsidiaries, and after a few years of gaining experience and confidence in operating in the host country, they begin to carry out larger scale equity investment projects (often forming joint ventures with local partners to invest in the projects). This can be seen from Big 5 companies' involvement in Indonesia. The second group would be made of project contractors (such as Power Construction Corporation of China). These undertake Build-Operate-Transfer projects and are responsible for obtaining concessional financing for the design, construction, operation, and maintenance of the projects. At the end of the concession period, the entire project is transferred to the government, enabling Chinese contractors to be compensated for their investment and operation costs. In some cases, Chinese companies keep a residual equity as part of joint venture agreements.

2.2.2 WHO PROVIDES THE DEBT AND ON WHAT TERMS?

To help coal power equipment manufacturers export their products including boilers, turbines, and generators, "policy banks" (China Eximbank and China Development Bank) and commercial banks extend loans in the form of export buyers' credits to foreign project developers to support their purchase of the equipment. Export buyers' credits ensure timely payment to manufacturers and greatly reduce the risks for major exporters including Dongfang Electric, Shanghai Electric, and Harbin Electric. This has become all the more important as equipment manufacturers have expanded

Figure 4 – Providers of Chinese coal power finance – confirmed financing only.



Source: CPI analysis.

overseas significantly during the past few years.[7] For construction contracts, the biggest participants in EPC contracts are state-owned companies. Chinese EPC contractors usually enter into the contracts by winning the bids for construction, or come into the contracts as the designated counterparties under larger investment framework agreements struck between Chinese and foreign governments. The open bidding often takes longer for the projects to move forward, while contracts under government-to-government agreements are generally seen as a faster way to develop projects, with the advantages of government guarantees and other facilitations in favor of the projects.[8]

Promoting the export of domestic product and construction capacity is a typical objective of export credit agencies around the world. In China, financial institutions such as China Eximbank and China Development Bank are the main export facilitation and promotion agencies that support China's coal power projects overseas. Both banks are among the three policy banks established in 1994 to facilitate the government's economic and trade initiatives, focusing on export expansion and infrastructure projects; they have been supported by the government through capital injections, central bank funding, subsidies, and tax benefits.[9] In 2013, China Eximbank financed the export of mechanical and electronic equipment, high-tech products, overseas project contracts and investments for a cumulative total of USD 256 billion.[10] In the same year, China Development Bank had outstanding foreign currency loans of USD 251 billion.[11] These banks' financing of coal power is a very small amount relative

7 Dongfang Electric, a leading Chinese power generator manufacturer and project contractor, has seen its overseas revenue grow from 1% of total revenues in 2009 to over 20% in both 2012 and 2013. Other major power equipment manufacturers have also seen rapid growth trends in the share of their foreign market segments.

8 The following State-owned EPC contractors and subsidiaries were active in the overseas coal power market: (1) China Energy Engineering Group Corporation (CEEC) and its subsidiary, China Power Engineering Consulting Group Corporation (CPECC), (2) Power Construction Corporation of China (POWERCHINA) and its subsidiaries, Shandong Electric Power Construction Engineering Corporations (SEPCO I, II, III), and (3) China National Machinery Industry Corporation (SINOMACH) and its subsidiaries, China Machinery Engineering Corporation (CMEC), China National Electric Engineering Corporation (CNEEC), and China National Heavy Machinery Engineering Corporation (CHMC). Other state-owned power generation companies with major EPC businesses are also active participants in this market, such as China Gezhouba Group and Sinohydro. Although the largest players in the international coal power construction are state-owned entities, it is worth noting that privately held EPC contractors such as Wuhan Kaidi Electric Power and Sichuan Hongda Company, are a small but active group in this market.

9 Fitch Affirms China's 3 Policy Banks, Reuters (2013): http://www.reuters.com/article/2013/04/09/fitch-affirms-chinas-3-policy-banks-idUSFit65423820130409

10 China Eximbank Annual Report (2013): http://www.eximbank.gov.cn/tm/report/index_27_26379.html

11 China Development Bank Annual Report (2013): http://www.cdb.com.cn/web/Column.asp?ColumnId=284

to overall. For a foreign project to qualify for Chinese bank loans, it must have a certain level of Chinese stakeholder involvement -- either 50% of an export product's content, or 15% of the content in foreign construction contracts, must be Chinese. The sizes of these contracts are usually more than USD 2 million.[12] The buyer's down payment should be 15% of the total contract value; Chinese policy banks can provide lending for up to 85% of the value of the contract to coal power project developers. If the lending is provided to sovereign entities, the preferential buyer's credit and government concessional loan interest rates are as low as 2-3%, and lending terms can be as long as 20 years.[13] Regular export buyers' credits require higher rates, but are still cheaper than commercial loans.

Other Chinese state-owned commercial banks have also financed foreign coal power projects, especially through syndicated loans, where a consortium of banks can each take up a share of the total lending amount of a large project while reducing their individual risk in case of default. A lot of these coal power syndicated loan projects take place in South Asia and South East Asia, whereas policy banks such as China Development Bank, along with state-owned commercial banks such as Bank of China and Industrial and Commercial Bank of China, and sometimes foreign commercial banks such as Standard Chartered Bank and Barclays Capital, form consortiums to engage in the lending process.

As coal power projects often represent hundreds of millions of U.S. dollars in total value and can present significant credit risk to lenders. In order for foreign coal power projects to secure Chinese concessional lending, it is usually a prerequisite for governments of the host countries to either provide sovereign guarantees for these projects, or to designate supply of natural resources as the form of repayment (or as collateral) in contracts with Chinese natural resource purchase companies. However, when there is no sovereign guarantee or designation of natural resource as payback, China's export credit insurer (China Export and Credit Insurance Corporation, also known as Sinosure), can play an important role in reducing the non-payment risks posed to export credit agency loans. Established in 2001 when China joined the World Trade Organization, Sinosure has been a critical vehicle in encouraging large electro-machinery equipment export and overseas engineering contracts.[14] In 2011, Sinosure provided medium to long-term buyers' credit insurance for a total insured amount of USD 11 billion just for this year.[15] In the project database, we have identified cases where Sinosure guarantees up to 85% of the amount of the EPC contract. In such cases, they clearly play an important role in the viability of the project.

12 Steps on Applying Project Financing from China, Yang Chunlin (2009): https://books.google.com/books?id=z0m_Os7NQ8oC&printsec=frontcover#v=onepage&q&f=false
Understanding ECAs – Chinese Export Credit Agencies, CC Solutions Blog (2012): http://ccsolutionsblog.blogspot.com/2012/04/understanding-ecas-chinese-export.html

13 China Eximbank, Overview of two types of preferential loans (2013): http://www.chinca.org/cms/html/files/2013-12/16/20131216102948872930302.pdf

14 Sinosure website, accessed May 8, 2015: http://www.sinosure.com.cn/sinosure/english/Company%20Profile.html

15 Sinosure annual report 2012: http://www.sinosure.com.cn/sinosure/gywm/xbkw/gsnb/images/20120618/27216.pdf

3. National interests are driving Chinese finance in overseas coal power projects

We next delve into China's rationale for financing overseas coal power projects. The main reason for China's provision of public finance and guarantees for export and construction contracts is that overseas market expansion helps the Chinese government foster domestic economic growth, as well as strengthen strategic international political ties. Figure 5 summarizes our findings on the key drivers for Chinese coal power financing (past and planned) from the perspective of Chinese players as well from that of the countries hosting the coal power projects.[16] We identify four main trends, based on project data that we collected:

- Chinese involvement is intended to support its domestic players (up to 95% of total estimated transaction value) or to engage in profitable project ventures;[17]
- Finance also helps achieve foreign policy objectives (up to 38% of total estimated transaction value), secure a broader and more profitable infrastructure such as ports, mines, and railroads, import coal (up to 33% of total estimated transaction value), and import electricity back to China (10% of total estimated transaction value);
- For host countries, the main driver for seeking Chinese (or other international) finance is to meet local electricity demand, although local players also typically mention other motives such as infrastructure-led development (up to 87% of total estimated transaction value), reduced dependency on fuel imports (up to 61% of total estimated transaction value – although in several cases, the addition of a coal-fired power plant is creating this very exposure to coal imports), and reduction of domestic electricity costs (up to 80% of total estimated transaction value);[18]
- In a very limited number of projects, finance supports exports, such as the export-to-China projects mentioned above as well as to the Balkans, in a couple of projects (up to 17% of total estimated transaction value).

We explore these issues in more detail in this section.

3.1 Going global addresses the coal power industry's domestic overcapacity and shifting priorities

Domestically, the growth in demand for coal power is declining amid a variety of economic and political changes, including escalating environmental concerns, and slowing industrial demand. In regions like Northeast China, these changes have created coal power overcapacity, contributing to a low utilization rate for coal power and high curtailment of renewable energy.[19] EPC companies, primarily those in the thermal power sector, as well as equipment manufacturers specializing in boiler, generator, and turbine production, are eager to explore alternative outlets for their products and services in the international market. Since EPC and equipment manufacturing companies are mostly larger state-owned enterprises, overcapacity also concerns the government. In response, the government is supporting their overseas expansion.[20]

Developing overseas power projects, including coal-fired power, is part of the State Council's plan to absorb excess domestic production capacity and undertake major retrofits. In the May 2015 guidance, the State Council urged companies to utilize China's historical advantage in project contracts and finance support provided by financial institutions, and to explore alternative collaboration models with foreign countries, including the provision of export credit or other favorable financing terms for EPC or equipment

16 Note that each project can have multiple drivers. Dark brown coloring refers to a clear driver while the light orange coloring suggests a potential driver that cannot be easily confirmed (mainly due to the lack of transparency on project economics and financials).

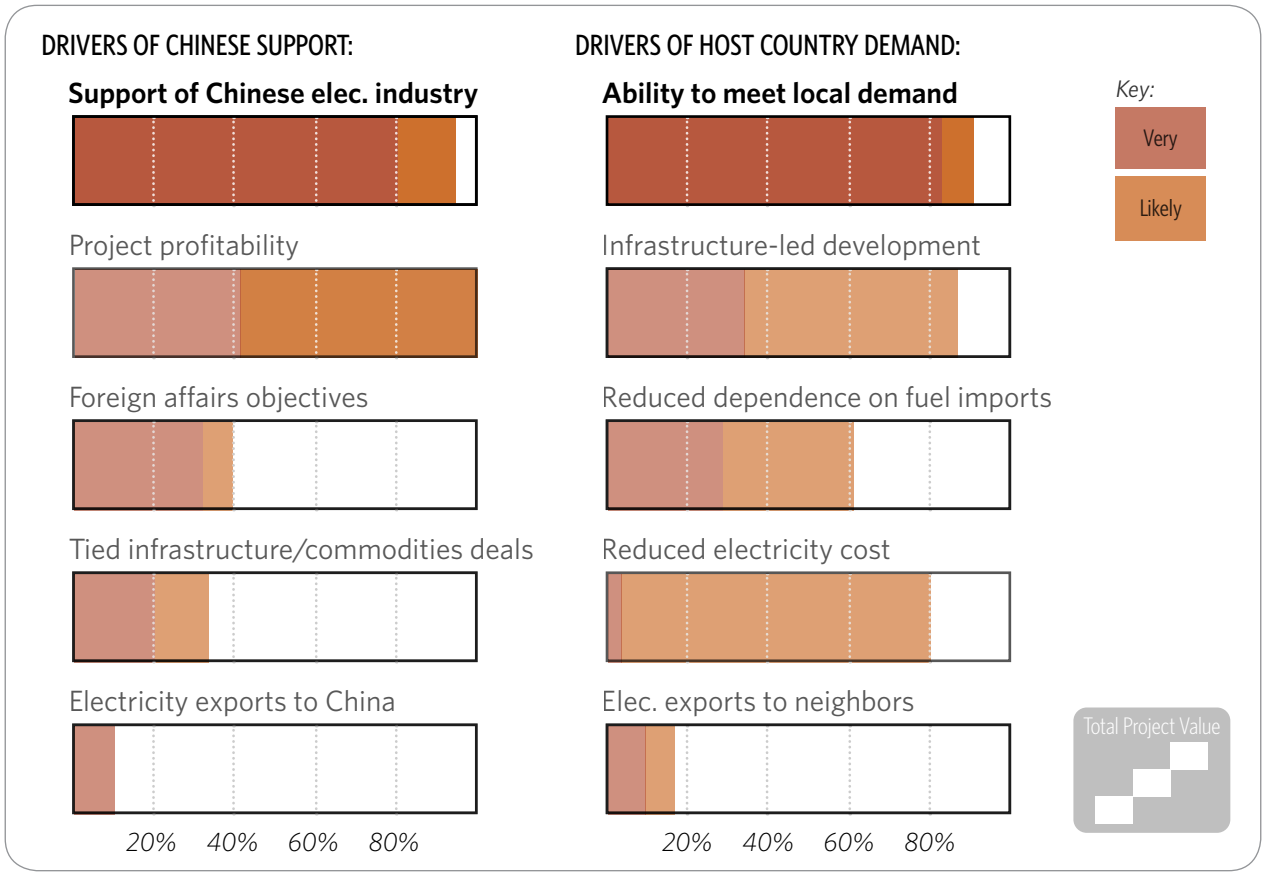
17 Ibid. It is very difficult to assess project profitability in the absence of transparent information on project economics. CPI identified these projects based on CAPEX for the technology deployed and power generation prices in various countries. As noted elsewhere, some unprofitable projects that support other Chinese goals go forward.

18 Again, profitability claims are typically hard to verify in the absence of transparent information.

19 Spilled Wind: An Update on China's Wind Integration Challenges, Michael Davidson (2014): http://theenergycollective.com/michael-davidson/346951/spilled-wind-update-china-s-wind-integration-challenges

20 Recently, in January 2015, State Council Premier Li Keqiang visited a subsidiary of the China Energy Engineering Group, an electric power design institute. He learned about the company's coal-fired EPC project in Vietnam, encouraged the equipment manufacturing industry to go global, and indicated accompanying fiscal policy support from the government. Yicai, Li Keqiang visits Guangdong Province to promote "Going Global" for Chinese equipment industry (2015): http://www.yicai.com/news/2015/01/4060518.html

Figure 5 – Drivers of China coal power financing as a % of total project value for both past & planned projects.



Source: CPI analysis.

purchases, the Build-Operate-Transfer model, and public-private partnerships.

Additionally, there is significant demand for Chinese equipment and construction in developing countries. Many developing countries have limited technology and capacity for supplying equipment and are highly reliant on the import of foreign equipment, providing a huge market for Chinese equipment manufacturers and project contractors who have both cost advantages and decades of expertise in sectors such as coal-fired power.

Besides the incentives provided to contractors and manufacturers, our interviews with stakeholders suggest that overseas markets provide equity investors (such as Big 5 generators and state-owned equity funds) with an additional source of revenue. In addition to helping state-owned enterprises meet the government's Going Global Strategy requirement to generate a certain percentage of income from overseas, foreign coal-fired power projects can provide electricity generation companies with profits, especially if the companies receive government fiscal support.[21]

3.2 Overseas presence facilitates the import of natural resources and helps unlock infrastructure contracts

Focusing on overseas infrastructure projects not only offers market opportunities for Chinese contractors, manufacturers, and investors, but also unlocks broader infrastructure projects and helps channel natural resources back to China. In some cases, China has provided finance to foreign coal power plants which supply electricity to the local mining and industrial sectors, and also built export infrastructure such as port facilities in these countries, in order to export natural resources to China later. In other cases, China has been importing other commodities (such as copper from Myanmar, where there is a Chinese coal power project).[22]

21 CPI interviews

22 SourceWatch, Kalewa power station http://www.sourcewatch.org/index.php/Kalewa_power_station

3.3 Overseas presence strengthens strategic political ties

Another benefit for China to participate in foreign infrastructure projects is to forge new political ties or strengthen existing ones with the developing world. Power infrastructure projects are often part of larger "development package deals" between China and foreign countries. For example, China launched an economic corridor plan to invest about USD 46 billion in railways, roads, energy, and other infrastructure projects in Pakistan.[23] This economic corridor plan is expected to strengthen the economic relationship between and the national security of the two countries as well as promote China's "One Belt, One Road" which encourages cooperation and joint economic development among Eurasian countries.[24] Engaging in foreign infrastructure projects has also increased China's bargaining power both economically and politically, which China can leverage to strengthen its position in the region.[25]

3.4 Additional reasons for Chinese money flowing into overseas projects

In addition to the major drivers for overseas investment highlighted above, we identified some additional reasons for China's financial support to overseas coal power generation projects. Two of the most interesting ones are (1) getting a higher return on foreign currency reserves and (2) investing in cross-border power generation with the intent of importing the power generated back to China (as discussed in the analysis of investment destination).

Financial support from the government mainly consists of debt finance from state-owned banks (policy banks and commercial banks often supported by Sinosure). In addition to this, major investment vehicles include the newly formed Silk Road Fund, the China-Africa Development Fund,[26] the China-ASEAN Investment Cooperation Fund,[27] and a subsidiary of China Investment Corporation dedicated to overseas direct investment.[28] These USD-dominated offshore equity facilities also take advantage of the significant amount of foreign currency reserves of China. The country currently holds nearly USD 4 trillion worth of foreign exchange reserves, two-thirds of are in U.S. dollars.[29] Investing these foreign currency reserves in overseas infrastructure projects, including power projects, provides an attractive alternative to holding low-yield U.S. treasury bonds.

In summary, China's engagement in the overseas coal power sector has helped Chinese companies alleviate domestic industrial overcapacity, find markets and opportunities for Chinese products, services, and investments, and generate additional profits. For the government, promoting overseas coal power development also helps it to strengthen strategic political ties and increase its sphere of influence. Because of these benefits, China has continued to support overseas coal power through debt finance and, increasingly, through equity investments.

23 Reuters, China and Pakistan launch economic corridor plan worth $46 billion (2015): http://www.reuters.com/article/2015/04/20/us-pakistan-china-idUSKBN0NA12T20150420

24 Lin Min Wang, China Foreign Affairs, University, China-Pakistan Economic Corridor will reinforce China-India Cooperation (2015): http://finance.qq.com/original/caijingguancha/f1462.html

25 Gavin Bowring, Financial Times Asean Confidential, Vietnam yields cautionary tale over Chinese investment, (2014): http://blogs.ft.com/beyond-brics/2014/11/27/vietnam-yields-cautionary-tale-over-chinese-investment/
Keira Lu Huang, South China Morning Post, State firms barred from Vietnam contract bids (2014): http://www.scmp.com/news/china/article/1528221/state-firms-barred-vietnam-contract-bids

26 Affiliated with China Development Bank.

27 Affiliated with China Eximbank.

28 State Council, Guidance opinion regarding the promotion of international production capacity and equipment manufacturing collaboration, 2015: http://wzs.ndrc.gov.cn/zcfg/201505/t20150521_692778.html

29 Financial Times, China's foreign exchange reserves near record $4tn, 2014 http://www.ft.com/intl/cms/s/0/4768bd3c-c461-11e3-8dd4-00144feabdc0.html#axzz3atguKxxY

4. China export support and absolute domestic cost advantage creates concerns regarding overseas coal power development

In this section, we investigate the international community's concerns about China's ability and ambition to finance coal power projects beyond its borders. The crux of the issue has to do with China's coal power generation cost advantage over international competitors (both technology and financing costs).[30]

4.1 The Chinese government provides financial support to companies going global

To facilitate the opening of new markets for Chinese contractors and manufacturers, the government has called for enhanced financial and fiscal support to help these companies go global. In the May 2015 policy guidance from the State Council,[31] the government outlined concessional loans, syndicated loans, export buyers' credit, access to project finance, commercial loans, equity investments, and export credit insurance as examples support it plans to provide to overseas equipment export, project contracting, and investment projects. One potential benefit stated in the guidance is to promote the Chinese yuan as an international reserve currency to be used to settle payments in cross-border transactions.

It is worth noting that China's support for exports is technology blind. First of all, while China's financing in overseas infrastructure projects is on the rise, there is no clear differentiation between financing for power versus non-power projects, or for coal power versus non-coal power projects. The power sector is one of a dozen of equipment and construction service sectors that the State Council guidance is pushing forward, and in the power sector specifically, China has been facilitating a variety of electric power projects in foreign countries. For example, China has developed more than 300 hydropower projects overseas, two-thirds of which are in Southeast Asia and Africa.[32] China has also invested USD 40 billion in wind and solar projects

Box: The central role of the Chinese Ministry of Commerce (MOFCOM)

Since overseas lending and investments are tied to national interests, the decision to provide financial assistance is not merely a decision at the level of the policy banks or equity funds. A variety of government agencies oversee this financing, including the Ministry of Commerce (MOFCOM), which provides the most direct oversight. MOFCOM facilitates the Going Global Strategy by coordinating commercial activities within host countries, including negotiating government-to-government agreements,[a] approving outward investment projects over a certain size,[b] and coordinating with the China Eximbank on concessional loans through regional departments and departments in charge of outward investments.[c] There are cases where, under a government-to-government framework agreement, MOFCOM is actively leading and pushing for the policy banks to provide loans to overseas coal power projects.[d] As a result, Chinese policy banks exhibit higher risk tolerance than other international lenders about certain commercial aspects of the projects.[e]

a WRI, Emerging Actors in Development Finance: A closer look at China's overseas investment, 2012 http://www.wri.org/resources/presentations/emerging-actors-development-finance-closer-look-chinas-overseas-investment
b Norton Rose Fulbright, Rules on overseas investments by Chinese companies, 2009 http://www.nortonrosefulbright.com/knowledge/publications/21814/china-insight-issue-17
c Rand Corporation, Chinese Engagement in Africa. Drivers, Reactions, and Implications for U.S. Policy, 2013 http://www.rand.org/content/dam/rand/pubs/research_reports/RR500/RR521/RAND_RR521.pdf
d CPI interview
e Chadbourne Project Finance Newswire, Negotiating with Chinese lenders – Chinese lenders emerging as a major source of funding in international project finance transactions, 2011 http://www.chadbourne.com/NegotiatingWithChineseLenders_Nov11_Projectfinance/

30 Support for domestic power generation helped create this cost advantage – this is discussed at length in an upcoming CPI paper.
31 State Council's Guidance regarding the promotion of international production capacity and equipment manufacturing collaboration, 2015: http://wzs.ndrc.gov.cn/zcfg/201505/t20150521_692778.html
32 Frauke Urban and Johan Nordensvard, China Dams the World: The Environmental and Social Impacts of Chinese Dams. 2014: http://www.e-ir.info/2014/01/30/china-dams-the-world-the-environmental-and-social-impacts-of-chinese-dams/

worldwide, primarily in developed countries.[33] As a result, China support doesn't appear to favor coal power deployment (within power generation, hydro, renewable energy, and gas-fired generation seem to be equally supported). We estimate that export credit providers' exposure to coal power is limited, representing at most, 12% of their overseas loan balance (in the case of China Eximbank).

4.2 China is a growing funder of overseas coal power development because Chinese Engineering, Procurement, and Construction (EPC) companies can bid lower than the competition on project contracts

Chinese companies have been able to obtain a larger market share of overseas coal power development primarily because of their capacity to bid lower prices for projects.[34] Compared to Engineering, Procurement, and Construction (EPC) contractors from other countries, Chinese companies often have lower construction, operation and financing costs, which enable them to outbid competitors.

These low costs are due to several advantages that Chinese EPC companies enjoy, including access to cheap equipment and services from Chinese suppliers and subcontractors, and inexpensive Chinese labor. In addition, the Chinese Yuan to US Dollar exchange rate in recent years has lowered their overseas project costs.

Another advantage Chinese EPC contractors often enjoy is access to low-rate loans from the Chinese policy banks to finance projects. Chinese EPC contractors' ability to arrange their own low-cost financing from China without the additional time and cost needed to arrange syndicate loans from other countries or other non-Chinese organizations makes them more attractive to host countries (making China a one-stop shop for host country project planners). For example, Vietnam adopted a policy in 2005 stating that EPC contractors who arranged finance for their projects would be awarded another contract, to help the country meet urgent electricity construction goals.[35] Moreover, Chinese lenders also maintained the ability to lend in very large amounts after the financial crisis in 2008.[36]

In addition, Chinese lenders often perceive risks, including project and country risks, differently than other international financiers, and subsequently Chinese banks are willing to lend more money to a greater number of countries.[37] For example, in the Eastern European market, there are instances where Japanese competitors have withdrawn from coal power tenders due to local political situations which altered project feasibility, but Chinese EPCs remained, with policy direction of the Chinese Ministry of Commerce (MOFCOM) and financial support from Chinese policy banks. Chinese state-owned policy banks and export guarantors are willing to give up certain economic benefits in order to gain a strategic foothold in emerging markets.

While Chinese banks offer Chinese companies relatively easy access to low-cost finance, they do not seem to be offering more favorable rates than other international lenders including multilateral development banks and export credit agencies. From the limited sources of information we have access to, Chinese concessional lending and syndicate loan rates and durations provided to overseas coal power projects are comparable to the level other international lenders, such as German development bank (KfW), Japan Bank for International Cooperation (JBIC), Japan International Cooperation Agency (JICA), and Asian Development Bank (ADB), have offered. In regions including Asia, Africa, and East Europe, long term concessional loans rates from China policy banks are concentrated around 2%-3%. That said, Chinese lending terms can be more flexible than those provided by other countries which abide by OECD guidelines. Due diligence carried out by Chinese banks can take longer to process than other lenders', partially due to Chinese lenders' lack of experience in financing projects in overseas markets.[38]

33 WRI, China's overseas investment in the wind and solar industries: trends and drivers, 2013: http://www.wri.org/sites/default/files/pdf/chinas_overseas_investments_in_wind_and_solar_trends_and_drivers.pdf

34 Vietnam Chamber of Commerce and Industry - Vietnam Business Forum, Chinese firms win 90% of Vietnam EPC Contracts, 2010, http://www.vccinews.com/news_detail.asp?news_id=21177

35 Vietnam Chamber of Commerce and Industry - Vietnam Business Forum, Diversifying Machinery Supply Sources, 2014, http://vccinews.com/news_detail.asp?news_id=30784

36 Chadbourne Project Finance Newswire, Negotiating with Chinese lenders – Chinese lenders emerging as a major source of funding in international project finance transactions, 2011: http://www.chadbourne.com/NegotiatingWithChineseLenders_Nov11_Projectfinance/

37 ibid.

38 Chadbourne Project Finance Newswire, Negotiating with Chinese lenders – Chinese lenders emerging as a major source of funding in international project finance transactions, 2011, http://www.chadbourne.com/NegotiatingWithChineseLenders_Nov11_Projectfinance/

4.3 China is supporting domestic Engineering, Procurement, and Construction (EPC) companies with a wide range of tax reduction programs

In addition to the advantage of low-rate loans, Chinese EPC contractors are able to reduce total project costs and bidding prices through tax benefits. For example, since 2013, the design portion of the projects under EPC contracts have enjoyed zero value-added tax, the supply of equipment and raw material has received an export tax rebate, and construction under an EPC contract is exempt from business tax.[39] Moreover, as of 2013, China had signed agreements with 99 countries and regions to avoid double taxation. These agreements have also included tax treaty benefits. For example, EPC projects are exempt from income tax for certain periods of time, and projects' staff is exempt from personal income tax while working abroad.[40]

In a similar fashion, Chinese equity investors in overseas EPC projects benefit from favorable tax treatment. In 2004, the National Development and Reform Commission and the export-import Bank of China, China EximBank, announced a policy to support Chinese stakeholders' equity investment in overseas projects, including in projects that promote export of equipment and technology.[41] There are additional tax benefits for overseas equity investments as well - for example income tax deductions and tariff benefits.[42]

In summary, government support through favorable lending and tax benefits have lowered the effective costs of financing for EPC companies and other Chinese investors in overseas coal power. This, combined with lower construction and operation costs, has led to China becoming a significant provider of finance for overseas coal power generation.

39 Finance and Accounting Journal, Discussion on the tax management of EPC contracts for companies implementing "going global" policy, 2014 http://www.sinosure.com.cn/sinosure/xwzx/rdzt/tzyhz/gjtzyj/164836.html

40 Finance and Accounting Journal, Discussion on the tax management of EPC contracts for companies implementing "going global" policy, 2014: http://www.sinosure.com.cn/sinosure/xwzx/rdzt/tzyhz/gjtzyj/164836.html

41 NDRC, Announcement on providing credit support to key overseas investment projects, 2004: http://wzs.ndrc.gov.cn/zcfg/200804/t20080411_670936.html

42 State Council Overseas Affairs Office website, Overview of "going global" strategy, 2011: http://qwgzyj.gqb.gov.cn/yjytt/159/1743.shtml

5. Interpreting China's commitment to control investment flowing to overseas projects

As discussed, China has been slowly replacing other funders in financing overseas coal power projects. Many international funders, such as the World Bank and the United States (via the US ExIM Bank notably),[43] have pledged to no longer support coal-fired plants due to climate change and other environmental and health concerns. Concerns about China increasing its share of coal power finance provision overseas are more pronounced as Chinese financial institutions environmental guidelines are not as restrictive as those of the historical lenders.

China has not only been stepping in to replace the market share of entities and countries who pledged to restrict support to coal power, but also the share of funder countries who have not pledged to do so. For example, in Vietnam, China outbid Japan and Korea to become the general contractor of 60% of Vietnamese thermal-electric projects from 2003 to 2011 (74% if including subcontracts).[44] Similarly, in Indonesia, Chinese contractors and investors have undertaken a dozen power generation projects in the Indonesian market since 2006 as part of the Indonesian government's first 10 GW Fast Track Program. In doing so, they have taken a significant portion of the market which had previously been financed and guaranteed largely by international export credit agencies such as the Japan Bank for International Cooperation (JBIC) and Korea Eximbank.[45]

That being said, China, in September 2015, indicated its commitment to restrict public finance to high-carbon projects. The question now becomes how to interpret China's commitment to "controlling public investment flowing into projects". This depends on several parameters that may be clarified in the next months.[46] We discuss some of these in greater detail in this section.

5.1 Uncertainty on the scope of the commitment

The first issue has to do with the definition of public finance. Is "public finance" to be interpreted as China's policy banks concessional support only? Does it include China's policy banks plus the share of commercial banks' financing supported by the China Export and Credit Insurance Corporation, Sinosure? Do all lending activities from state-owned banks fall within the definition? And what about equity investments from SOEs? Depending on the definition applied, anything between one quarter and all of the expected investment volumes could be affected by the commitment. Definitions matter a lot, and international observers have expressed concerns that finance for high-carbon and polluting power projects may leak from historical sources of Chinese public finance to new investment vehicles and institutions set up by China or jointly with other countries (e.g. Asian Infrastructure Investment Bank).

The Chinese government has also not yet clarified which projects will no longer receive public support. Arguably "projects with high pollution and carbon emissions" should include coal power generation but the government has not confirmed this in any public statement so far and it may be that highly unprofitable upstream oil and gas or coal mining projects are the real targets of this announcement. More likely, is that Chinese institutions will make a similar commitment to many other international development finance institutions that only coal power generation projects meeting specific criteria will be eligible to funding.[47] They may also make exceptions for some projects depending on who is receiving public money (like the US commitment[48]). As a result, we cannot take for granted that all of the planned projects with Chinese involvement will be affected or cancelled.

43 Reuters, World Bank to limit financing of coal-fired plants, 2013: http://www.reuters.com/article/2013/07/16/us-worldbank-climate-coal-idUSBRE96F19U20130716
The Washington Post, The U.S. will stop financing coal plants abroad, 2013: http://www.washingtonpost.com/blogs/wonkblog/wp/2013/06/27/the-u-s-will-stop-subsidizing-coal-plants-overseas-is-the-world-bank-next/

44 Vietnam Chamber of Commerce and Industry - Vietnam Business Forum, Diversifying Machinery Supply Sources, 2014, http://vccinews.com/news_detail.asp?news_id=30784

45 Norton Rose, Indonesia power projects – Ten things to know, 2013: http://www.nortonrosefulbright.com/files/ten-things-to-know-indonesia-power-projects-74165.pdf

46 Either announcements made during the climate negotiations or in the wake thereof.

47 Thermal efficiency thresholds like Germany, emissions performance standards like the European Investment Bank, or even requiring CCS to be eligible for funding.

48 http://www.treasury.gov/resource-center/international/development-banks/Documents/CoalGuidance_2013.pdf

5.2 The level of effort: ambitious or negligible cuts?

The most important measure for assessing this commitment is how much it will reduce Chinese public finance towards new overseas coal power projects. We now know that Chinese investment for such projects totaled USD 38 billion over the last ten years and we identified a pipeline of projects that could be financed with up to USD 72 bn. of Chinese money. Table 1 below illustrates how much investment by the Chinese could be cancelled under specific scenarios reflecting various definitions for public finance and various levels of effort. It also reflects the fact that many planned projects will not go ahead for a variety of reasons: faulty economics to begin with, strong local opposition, other bidders winning contracts, changing priorities for host countries' policymakers, etc.

We estimate that up to USD 30.2 bn. of Chinese coal power finance could be cancelled because of its recent commitment. A more reasonable range would be between USD 0.0 bn. (any level of effort below a reasonable estimate for projects that would be cancelled for other reasons regardless of whether the commitment was made) and USD 17.6 bn. (very significant cuts in Chinese public lending). The question is, then, how will these cuts in public finance prevent the construction of coal power plants beyond those that would have been cancelled anyway, irrespective of the new Chinese commitment.

5.3 The risk of other investors & lenders taking over China's market share

If the overseas coal power financing market could realistically lose up to USD 17.6 bn in Chinese public finance, there is a good chance that other investors and lenders might be interested in moving in to provide that finance. Who would they be? Figure 6 summarizes a project-by-project analysis of our project sample looking into whether various groups of actors would be definitely (brown bars) or potentially under certain circumstances (orange bars) interested in replacing Chinese sources of finance:

- We find that local lenders or central and local governments from other countries could cover 31-65% of the shortfall in financing caused by Chinese public institutions withdrawing from the market. However these governments may lack the knowhow that energy project finance lenders have and may have limited access to capital at an acceptable price.
- International lenders (BNP Paribas project finance unit for instance) and investors (private equity houses, independent power producers, etc.) could cover 42-77% of the shortfall in finance but would definitely not lend to some countries because of country, currency, or political risks. In addition, in some countries the cost of capital would not be competitive enough for projects to be built (or conversely would require too high a rate of return).
- Other development finance institutions could be interested (18-74%) but it ultimately depends

Table 1 – Potential amount of cancelled Chinese investment flows under various configurations (public finance definition and levels of efforts).

	EXIMBANK & CDB FINANCIAL SUPPORT ONLY	EXIMBANK, CDB, AND THE SHARE OF SINOSURE-SUPPORTED CCOMMERCIAL LENDING	ALL CHINESE FINANCE (INCL. SOE EQUITY INVESTMENT)
SCENARIO 1 - ADDITIONAL CUTS	$0.0 BN	$0.0 BN	$0.0 BN
SCENARIO 2 - ADDITIONAL CUTS	$3.2 BN	$7.1 BN	$12.2 BN
SCENARIO 3 - ADDITIONAL CUTS	$7.8 BN	$17.6 BN	$30.2 BN
REFERENCE BASE CASE	$18.6 BN	$41.8 BN	$72.0 BN

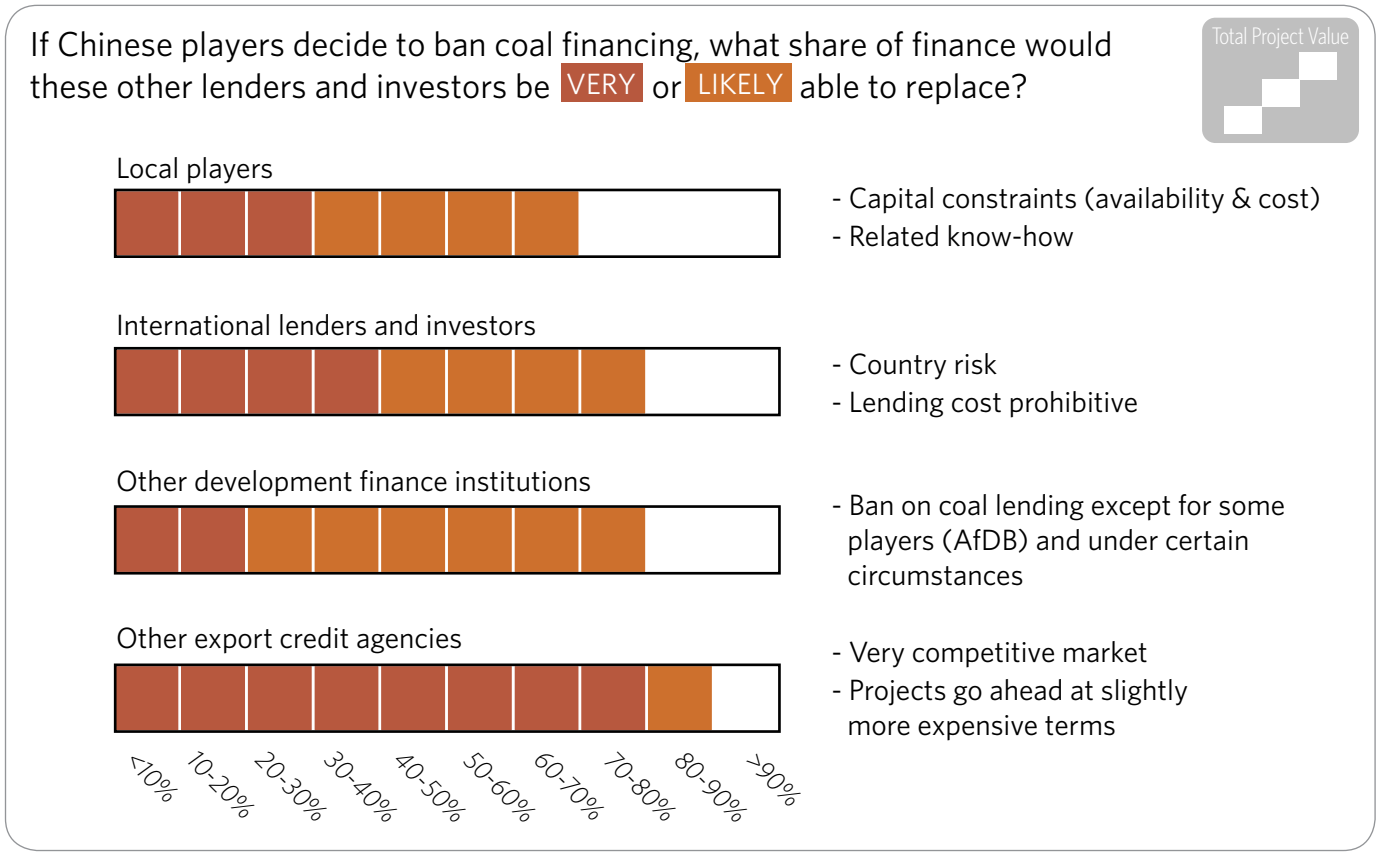
Scenario 1: Limited cuts (**20%**)
Scenario 2: Significant cuts (**50%**)
Scenario 3: Cuts except for most advanced technologies and/or specific countries (**80%**)

Other assumptions:

- 1/3 of the projects in the pipeline won't go ahead irrespective of the commitment
- Sinosure provides a guarantee for 50% of the total value of loans originating from commercial banks

Source: CPI analysis.

Figure 6 – Systematic assessment of various players' ability to replace Chinese sources of finance.



Note: Dark brown coloring refers to a clear ability to replace financing by this group of actors while the light orange coloring suggests a tentative ability to replace financing. Source: CPI analysis.

on the potential geographical coverage of the various institutions (i.e. countries of operations) and the nature of the self-restrictions imposed on coal power lending.

- Other export credit agencies could move most aggressively into the space vacated by the partial retreat from China (84-86%). This reflects again the very competitive nature of this market. Some projects might be able to go ahead at a higher capital cost than those provided by Chinese lending while other projects might no longer be competitive.

5.4 China's implementation plan matters

Whatever China's level of commitment, how it implements this change of strategy will be key. Will the Chinese government issue general investment guidelines to the various public finance entities (China Eximbank, China Development Bank, etc.)? Or can a single entity such as MOFCOM be used as the "flood gate" to prevent the flow of this funding? How will they deal with the risks that finance providers will workaround these recommendations[49]? In the absence of clarification about the envisaged arrangements for "strictly controlling" investment flows, it will be hard to evaluate how effective this commitment could be. Given that this announcement was made as part of the international climate negotiations, accountability and transparency in implementation will be instrumental. Likewise, whatever China ends up committing to, the same will be expected from other major lenders (country-level development and export credit agencies, as well as development banks).[50]

49 Linkages between the domestic and the overseas commitments and whether any reduction in domestic investment could be matched by similar increases in investment in overseas coal power generation, thus leaking the emissions overseas rather than reducing them. Likewise, there are trade-offs between this commitment and other priorities such as the already existing "going global" objectives.

50 There is currently no public clearinghouse to track progress towards commitments

6. Conclusion and next steps

By sourcing and analyzing new data on China's coal financing, we have identified China's role in international coal power generation deployment. International lenders and investors are slowly filling the void left by the retreat of developed countries' development banks and export credit agencies' from coal power lending. Over the last decade, China has become a significant, serious and increasingly motivated provider of finance for coal power projects, driven by domestic economic and foreign policy objectives. Reducing financing for this sector will impact China in different ways in the coming years, with domestic pressure to improve air quality and shrinking deployment targets for coal power plants being weighed against the Chinese government's desire to keep its national energy companies in strong financial shape.

It is too early to decipher the true significance of China's announcement at the White House in September 2015 that it would phase out financing of "projects with high pollution and carbon emissions". How this commitment is implemented and the impact it will have will ultimately depend on the outcome of the negotiations, including pledges made by China and more importantly by other countries. We estimate that a potential USD 18 billion worth of coal power financing could be taken away from the international coal market if China is ambitious in cutting finance for this sector. To prevent construction of further polluting coal plants, however, it will be important for the international community as well as for China and other public finance providers to ensure that no other major player moves in to offer the finance that China is no longer providing. In addition, there are alternative sources of finance for coal, as evidenced by an increasingly number of projects financed by local players in Turkey or Eastern Europe, which will not be affected by changes in the international financing. Domestic policies thus will continue to play an important role in restricting the growth of coal power.

Appendix 1. Project List

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
BOTSWANA (AFRICA)	MORUPULE B (600 MW)	2009 (Operation)	$1,662m	$825m	Botswana Power Corp. ($498m)	China Commercial [ICBC] ($825m) + DFI [IBRD] ($136m) + DFI [AfDB] ($203m)	Domestic [Government of Botswana] ($825m) + DFI [IBRD] ($243m) + China Policy [Sinosure] ($553m)
GHANA (AFRICA)	GHANA COAL (700 MW)	2016 (Planning)	$1,500m	$188m	Volta River Authority (VRA) ($188m) + Sunon Asogli Power, the joint venture between Shenzhen (60%) and the Development Fund (40%) ($188m)	Unknown ($1125m)	
MALAWI (AFRICA)	KAMWAMBA POWER STATION - PHASE I (300 MW)	2013 (Construction)	$667m	$467m	Unknown - domestic ($200m)	China Policy [Exlm] ($467m)	
MOROCCO (AFRICA)	JERADA - EXTENSION (318 MW)	2017 (Financed)	$570m	$300m	Office National de l'Electricité (ONE) ($143m)	China Policy [Exlm] ($300m) + Unknown ($128m)	
NIGERIA (AFRICA)	EZINMO POWER STATION (1000 MW)	2018 (Planning)	$2,100m	$263m	Pacific Energy ($263m) + HTG ($263m)	Unknown ($1575m)	
TANZANIA (AFRICA)	MCHUCHUMA POWER STATION (300 MW)	2019 (Permitted)	$650m	$130m	National Development Corporation ($33m) + Sichuan Hongda ($130m)	Unknown ($488m)	
ZAMBIA (AFRICA)	MAAMBA MINE POWER STATION (300 MW)	2016 (Financed)	$830m	$365m	Nava Bharat Ventures ($156m) + Zambian government ($84m)	China Commercial [Undisclosed] ($365m) + DFI [AfDB] ($150m) + DFI [Other lenders (incl. DBSA)] ($75m)	China Policy [Sinosure] ($365m) + DFI [AfDB] ($75m)
ZIMBABWE (AFRICA)	HWANGE THERMAL POWER STATION EXTENSION (600 MW)	2018 (Financed)	$1,500m	$1,170m	Zimbabwe Power Company ($330m)	China Policy [Exlm] ($1170m)	
ZIMBABWE (AFRICA)	GWAYI MINE - PHASE I (600 MW)	2017 (Permitted)	$1,000m	$875m	Old Stone Investments ($125m) + Shandong Taishan Sunlight ($125m)	China Policy [Exlm & China Development Bank] ($375m) + China Commercial [ICBC] ($375m)	China Policy [Sinosure] ($375m)

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
KAZAKHSTAN (CENTRAL ASIA)	EKIBASTUZ-2 POWER STATION - UNIT 3 (500 MW)	2018 (Financed)	$700m	$200m	Inter RAO UES ($300m)	China Policy [CDB] ($200m) + DFI [Vnesheconombank] ($200m)	
KYRGYZSTAN (CENTRAL ASIA)	BISHKEK CHP POWER STATION RECONSTRUCTION (300 MW)	2017 (Financed)	$551m	$386m	Ministry of Industry, Energy and Fuel Resources ($0m)	China Policy [ExIm] ($386m)	
TAJIKISTAN (CENTRAL ASIA)	DUSHANBE POWER STATION (100 MW)	2016 (Construction)	$349m	$262m	Unknown - domestic ($87m)	China Policy [ExIm] ($262m)	
RUSSIA (CENTRAL ASIA)	USSURIYSK POWER STATION (370 MW)	2018 (Financed?)	$850m	$638m	Far Eastern Generating Company (RusHydro) ($213m)	China Policy [Undisclosed] ($638m)	
RUSSIA (CENTRAL ASIA)	ERKOVETSKAYA POWER STATION (8000 MW)	2019 (Announced)	$15,000m	$13,088m	Inter RAO ($1913m) + State Grid Corporation of China ($1838m) + Huaneng Group? ($0m)	China [Undisclosed] ($11250m)	
UZBEKISTAN (CENTRAL ASIA)	ANGREN CHP MODERNIZATION (150 MW)	2014 (Operation)	$214m	$114m	Uzbekenergo ($47m)	China Policy [ExIm] ($114m) + DFI [Fund for Reconstruction and Development of Uzbekistan] ($53m)	
BOSNIA AND HERZEGOVINA (EAST EUROPE)	STANARI THERMAL POWER PLANT (300 MW)	2016 (Construction)	$520m	$416m	EFT Rudnik i Termoelektrana Stanari d.o.o. (ETF Group - UK) ($104m)	China Policy [CDB] ($416m)	
BOSNIA AND HERZEGOVINA (EAST EUROPE)	UGLJEVIK 3 POWER STATION (600 MW)	2016 (Permitted)	$1,150m	$863m	Comsar Energy ($288m)	China Policy [CDB] ($863m)	
BOSNIA AND HERZEGOVINA (EAST EUROPE)	KAKANJ EXTENSION (KAKANJ B / KAKANJ UNIT 8) (300 MW)	2022 (Permitted)	$560m	$420m	JP Elektroprivreda BiH d.d ($140m)	China Policy [CDB] ($420m)	
BOSNIA AND HERZEGOVINA (EAST EUROPE)	TUZLA EXTENSION (TUZLA B / TUZLA UNIT 7) (450 MW)	2019 (Planning)	$903m	$768m	JP Elektroprivreda BiH d.d ($136m)	China Policy [ExIm] ($768m)	
MONTENEGRO (EAST EUROPE)	MAOCE POWER STATION (350 MW)	2020? (Announced)	$728m	$546m	Unknown - domestic ($182m)	China Policy [Undisclosed] ($546m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
MONTENEGRO (EAST EUROPE)	PLJEVLJA POWER STATION - UNIT 2 (220 MW)	2020? (Pre-permit development)	$380m	$285m	Unknown - domestic ($95m)	China Policy [Undisclosed] ($285m)	
ROMANIA (EAST EUROPE)	ROVINARI POWER STATION EXTENSION (500 MW)	2019 (Pre-permit development)	$1,300m	$163m	CE Oltenia ($163m) + China Huadian Engineering ($163m)	Unknown ($975m)	
ROMANIA (EAST EUROPE)	HALANGA POWER STATION EXTENSION (290 MW)	2018 (Construction)	$754m	$94m	Romanian Authority for Nuclear Activities (RAAN) ($94m) + China Power Energy Co Ltd ($94m)	Unknown ($566m)	
SERBIA (EAST EUROPE)	TPP KOSTOLAC B1 & B2 POWER PLANT REPLACEMENT (300 MW)	2019 (Pre-permit development)	$335m	$293m	Elektroprivreda Srbije (EPS) ($42m)	China Policy [Exlm] ($293m)	Domestic [Government of Serbia] ($293m)
SERBIA (EAST EUROPE)	TPP KOSTOLAC B3 POWER PLANT (350 MW)	2020? (Pre-permit development)	$390m	$332m	Elektroprivreda Srbije (EPS) ($59m)	China Policy [Exlm] ($332m)	Domestic [Government of Serbia] ($332m)
SERBIA (EAST EUROPE)	TPP NIKOLA TESLA POWER PLANT (744 MW)	2020? (Planning)	$2,700m	$450m	Elektroprivreda Srbije (EPS) ($225m) + China Environmental Energy Holdings ($225m) + Shenzhen Energy ($225m)	Unknown ($2025m)	
SERBIA (EAST EUROPE)	KOLUBARA B POWER STATION (750 MW)	2020? (Pre-permit development)	$837m	$711m	EPS ($63m) + Edison ($63m)	China Policy [Exlm] ($711m)	
BRAZIL (SOUTH AMERICA)	CANDIOTA-C (EXTENSION) (350 MW)	2010 (Operation)	$614m	$356m	Eletrobras ($0m)	China Policy [CDB] ($356m) + International [BNP Paribas] ($75m)	
BANGLADESH (SOUTH ASIA)	UCH IGCC (90 MW)	2006 (Operation)	$80m		Unknown ($20m)	Unknown ($60m)	
BANGLADESH (SOUTH ASIA)	MAHESHKHALI POWER STATION (AKA CHITTAGONG COAL-2) (1320 MW)	2018? (Announced)	$1,900m	$285m	China Huadian Hong Kong Limited ($285m) + Bangladesh Power Development Board (BPDB) ($285m)	Unknown ($1330m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
BANGLADESH (SOUTH ASIA)	BARAPUKURIA COAL POWER PLANT - PHASE I & II (250 MW)	2006 (Operation)	$221m	$188m	Bangladesh Power Development Board (BPDB) ($33m)	China Policy [Exlm] ($188m)	
BANGLADESH (SOUTH ASIA)	BARAPUKURIA COAL POWER PLANT - PHASE III (250 MW)	2016 (Pre-permit development)	$360m		Bangladesh Power Development Board (BPDB) ($108m)	Unknown ($252m)	
BANGLADESH (SOUTH ASIA)	KALAPARA POWER STATION (1320 MW)	2018? (Planning)	$2,000m	$300m	CMC -- China National Machinery Import & Export (Group) Corporation ($300m) + North-West Power Generation Company (a subsidiary of BPDB) ($300m)	Unknown ($1400m)	
BANGLADESH (SOUTH ASIA)	CHITTAGONG POWER STATION (S ALAM) (1320 MW)	2018? (Planning)	$1,800m	$270m	SEPCO III ($270m) + Bangladesh Power Development Board (BPDB) ($270m)	Unknown ($1260m)	
INDIA (SOUTH ASIA)	AKALTARA ULTRA MEGA POWER PROJECT (3600 MW)	2013-2016 (?)	$3,600m		Akaltara Power ($646m) + IFCI Ltd ($54m)	Unknown ($2900m)	
INDIA (SOUTH ASIA)	BALCO KORBA POWER STATION (3600 MW)	2013-2016 (?)	$3,209m		Bharat Aluminum Company ($963m)	Unknown ($2246m)	
INDIA (SOUTH ASIA)	MOTA LAYJA POWER STATION (AKA NANA LAYJA POWER PROJECT) (4000 MW)	2017 (Pre-permit development)	$3,565m	$1,535m	Infrastructure Leasing & Financial Services Ltd ($535m) + Huaneng Group ($535m)	China Commercial [ICBC] ($1000m) + Unknown ($1496m)	
INDIA (SOUTH ASIA)	VIDARBHA THERMAL POWER STATION (1320 MW)	2018? (Construction)	$1,176m	$1,000m	Lanco Infratech ($176m)	China Policy [CDB] ($300m) + China Commercial [Undisclosed] ($700m)	
INDIA (SOUTH ASIA)	TALWANDI SABO POWER PROJECT (1980 MW)	2015 (Construction)	$1,765m		Talwandi Sabo Power Limited ($529m)	Unknown ($1235m)	
INDIA (SOUTH ASIA)	SASAN ULTRA MEGA POWER PROJECT (3960 MW)	2011-2015 (Operation)	$4,200m	$825m	Reliance Power ($1260m)	China Various [CDB, Exim, and Bank of China] ($825m) + International [Standard chartered and others] ($2115m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
INDIA (SOUTH ASIA)	JHAJJAR POWER PLANT - PHASE I (1320 MW)	2010 (finaing agreement) / 2011 (Operation)	$1,300m	$115m	CLP India ($292m)	China Policy [CDB] ($58m) + China Policy [Exlm] ($58m) + International [The Bank of Tokyo-Mitsubishi, UFJ Ltd., HSBC, Standard Chartered Bank, and other lenders] ($893m)	
INDIA (SOUTH ASIA)	TIRODA THERMAL POWER PLANT (660 MW)	2014 (Operation)	$565m	$320m	Adani Power ($85m)	China Policy [CDB] ($160m) + China Commercial [ICBC] ($160m) + International [Standard Chartered Bank] ($160m)	
INDIA (SOUTH ASIA)	BHOGNIPUR POWER STATION (1320 MW)	2010 (MOU financing) / 2018? (Permitted)	$1,176m	$1,000m	Lanco Infratech ($176m)	China Policy [CDB] ($300m) + China Commercial [Undisclosed] ($700m)	
INDIA (SOUTH ASIA)	LANCO AMARKANTAK THERMAL POWER PROJECT (1320 MW)	2016? (Construction)	$1,176m	$1,000m	Lanco Infratech ($176m)	China Policy [CDB] ($300m) + China Commercial [Undisclosed] ($700m)	
INDIA (SOUTH ASIA)	OTHER RELIANCE POWER PROJECTS (6156.14973262032 MW)	2020 (Announced)	$6,156m	$2,616m	Reliance Power ($923m)	China Various [CDB, Exim, and Bank of China] ($2616m) + Unknown ($2616m)	
INDIA (SOUTH ASIA)	CUDDALORE SRM POWER STATION (1980 MW)	2010 (LOI EPC & financing) / 2018? (Permitted)	$1,400m	$1,190m	SRM Energy ($210m)	China Commercial [ICBC] ($1190m)	China Policy [Sinosure] ($1190m)
INDIA (SOUTH ASIA)	MAHAN SUPER THERMAL POWER PROJECT (UNIT 1 & 2) (1200 MW)	2013 (Construction)	$1,182m		Essar Energy ($355m)	Unknown ($827m)	
INDIA (SOUTH ASIA)	VS LIGNITE PLANT (135 MW)	2010 (Operation)	$133m		KSK Energy Ventures ($40m)	Unknown ($93m)	
INDIA (SOUTH ASIA)	AMRAVATI THERMAL POWER PROJECT (AKA JINDAL) (1350 MW)	2008 (X)	$1,330m		RattanIndia Power Ltd. ($399m)	Unknown ($931m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
INDIA (SOUTH ASIA)	ROSA PHASE I (600 MW)	2010 (Operation)	$591m		Reliance Power ($177m)	Unknown ($414m)	
INDIA (SOUTH ASIA)	ROSA PHASE II (600 MW)	2012 (Operation)	$591m		Reliance Power ($177m)	Unknown ($414m)	
INDIA (SOUTH ASIA)	CHITRANGI POWER PROJECT (3960 MW)	2016? (Construction)	$4,000m		Reliance Power ($1000m)	Unknown ($3000m)	
INDIA (SOUTH ASIA)	KAWAI THERMAL POWER PROJECT - PHASE I (1320 MW)	2014 (Operation)	$1,176m		Adani Power ($294m)	Unknown ($882m)	
INDIA (SOUTH ASIA)	UDUPI POWER PLANT (1320 MW)	2017? (Pre-permit development)	$1,176m		Adani Power ($294m)	Unknown ($882m)	
PAKISTAN (SOUTH ASIA)	BIN QASIM POWER STATION - REPOWERING / COAL CONVERSION (420 MW)	2017 (Permitted)	$400m		K-Electric ($120m)	Unknown ($280m)	
PAKISTAN (SOUTH ASIA)	BIN QASIM POWER STATION (ASIAPAK/DONGFANG) (1320 MW)	2017? (Announced)	$1,848m	$277m	Dongfang Electric ($277m) + Asiapak Investments ($277m)	Unknown ($1294m)	
PAKISTAN (SOUTH ASIA)	K-ELECTRIC POWER STATION (660 MW)	2017 (Announced)	$924m	$139m	Harbin ($139m) + K-Electric ($139m)	Unknown ($647m)	
PAKISTAN (SOUTH ASIA)	PORT QASIM BURJ POWER STATION (500 MW)	2018? (Planning)	$700m		Burj Power ($210m)	Unknown ($490m)	
PAKISTAN (SOUTH ASIA)	PORT QASIM SSRL POWER STATION (440 MW)	2018 (Planning)	$616m		J-Energy and Sino-Sindh Resources Ltd (SSRL) ($185m)	Unknown ($431m)	
PAKISTAN (SOUTH ASIA)	APTMA POTHOHAR POWER STATION (330 MW)	2016? (Planning)	$462m		All Pakistan Textile Mills Association (APTMA) ($139m)	Unknown ($323m)	
PAKISTAN (SOUTH ASIA)	GWADAR POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR? (300 MW)	2018? (Announced)	$420m		Undisclosed ($126m)	Unknown ($294m)	
PAKISTAN (SOUTH ASIA)	HUBCO POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR (1320 MW)	2018? (Announced)	$1,848m	$1,571m	Hub Power Company ($0m)	China Commercial [Undisclosed] ($1571m)	China Policy [Sinosure] ($1492m)

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
PAKISTAN (SOUTH ASIA)	THAR SSRL POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR (1320 MW)	2018? (Announced)	$1,848m	$1,848m	China Power International (CPI) ($554m)	China Commercial [ICBC] ($1294m)	China Policy [Sinosure] ($1229m)
PAKISTAN (SOUTH ASIA)	PORT QASIM EPC POWER STATION - PHASE I - CHINA-PAKISTAN ECONOMIC CORRIDOR (660 MW)	2017 (Construction)	$770m	$118m	Power China ($118m) + Al-Mirqab Capital of Qatar ($113m)	Unknown ($539m)	
PAKISTAN (SOUTH ASIA)	PORT QASIM EPC POWER STATION - PHASE II - CHINA-PAKISTAN ECONOMIC CORRIDOR (660 MW)	2019? (Announced)	$770m	$118m	Power China ($118m) + Al-Mirqab Capital of Qatar ($113m)	Unknown ($539m)	
PAKISTAN (SOUTH ASIA)	KARACHI POWER STATION (AKA PORT QASIM KARACHI) (1320 MW)	2019 (Permitted)	$1,950m	$298m	Power China ($298m) + Al Malaki Group ($287m)	Unknown ($1365m)	
PAKISTAN (SOUTH ASIA)	SALT RANGE POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR (300 MW)	2019? (Announced)	$420m	$126m	CMEC ($126m)	Unknown ($294m)	
PAKISTAN (SOUTH ASIA)	THAR ENGRO POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR (660 MW)	2018 (Announced)	$1,300m	$1,105m	Thar Power Company (THARCO) ($195m)	China Policy [CDB] ($1105m)	
PAKISTAN (SOUTH ASIA)	THAR BLOCK VI POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR (600 MW)	2018? (Pre-permit development)	$1,300m	$1,125m	SEPCO ($20m) + Oracle Coalfields Plc ($176m)	China Commercial [Undisclosed] ($1105m)	China Policy [Sinosure] ($1050m)
PAKISTAN (SOUTH ASIA)	FAISALABAD FIEDMC POWER STATION (270 MW)	2016? (Construction)	$378m	$378m	Shandong Ruyi Technology Group ($113m)	China Commercial [ICBC] ($265m)	
PAKISTAN (SOUTH ASIA)	SAHIWAL POWER STATION - CHINA-PAKISTAN ECONOMIC CORRIDOR (1320 MW)	2018? (Announced)	$1,500m	$1,500m	Huaneng Shandong Electricity ($225m) + Shandong Ruyi Group ($225m)	China Commercial [ICBC] ($1050m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
SRI LANKA (SOUTH ASIA)	LAKVIJAYA POWER PLANT PHASE I (AKA NOROCHCHOLAI 1) (300 MW)	2012 (Operation)	$535m	$455m	Ceylon Electricity Board ($80m)	China Policy [Exlm] ($455m)	
SRI LANKA (SOUTH ASIA)	LAKVIJAYA POWER PLANT PHASE II (AKA NOROCHCHOLAI 2) (300 MW)	2014 (Operation)	$1,048m	$891m	Ceylon Electricity Board ($157m)	China Policy [Exlm] ($891m)	
MYANMAR (SOUTHEAST ASIA)	HTANTABIN POWER STATION (270 MW)	2017? (Announced)	$378m	$38m	Huaneng Lancangjiang Hydropower Co. of China ($38m) + Myanmar government ($38m) + Htoo Trading Co. ($38m)	Unknown ($265m)	
MYANMAR (SOUTHEAST ASIA)	TIGYIT POWER PLANT (120 MW)	2005 (Operation)	$168m		Eden Group ($50m)	Unknown ($118m)	
CAMBODIA (SOUTHEAST ASIA)	SIHANOUKVILLE CID POWER STATION - UNIT 1-3 (405 MW)	2015 (Construction)	$543m	$81m	Cambodia International Investment Development Group (CIIDG) ($81m) + Huadian ($81m)	Unknown ($380m)	
CAMBODIA (SOUTHEAST ASIA)	SIHANOUKVILLE CID POWER STATION - UNIT 4-7 (540 MW)	2018? (Permitted)	$724m	$109m	Cambodia International Investment Development Group (CIIDG) ($109m) + Huadian ($109m)	Unknown ($507m)	
CAMBODIA (SOUTHEAST ASIA)	SIHANOUKVILLE CEL (100 MW)	2013 (Operation)	$170m	$35m	Cambodia International Investment Development Group (CIIDG) ($15m) + Leader Universal Holdings Berhad ($15m)	Domestic [Undisclosed] ($105m) + China Commercial [Bank of China] ($35m)	
INDONESIA (SOUTHEAST ASIA)	BANJARSARI POWER STATION (220 MW)	2015 (Construction)	$264m	$190m	PT Bukit Asam, PLN, and MAXpower Group (joint venture) ($0m)	China Commercial [Bank of China] ($190m) + Unknown ($8m)	
INDONESIA (SOUTHEAST ASIA)	TELUK SIRIH POWER STATION (224 MW)	2014 (Operation)	$269m	$94m		China Policy [CDB] ($94m) + Domestic [Asosiasi Bank Daerah (ASBANDA)] ($94m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
INDONESIA (SOUTHEAST ASIA)	PUNAGAYA POWER STATION - PHASE I (250 MW)	2011 (Operation)	$250m	$88m	Bosowa Group ($75m)	China Policy [Undisclosed] ($88m) + Unknown ($88m)	
INDONESIA (SOUTHEAST ASIA)	PUNAGAYA POWER STATION - PHASE II (250 MW)	2017 (Construction)	$300m	$105m	Bosowa Group ($90m)	China Policy [Undisclosed] ($105m) + Unknown ($105m)	
INDONESIA (SOUTHEAST ASIA)	PANGKALAN SUSU POWER STATION - UNIT 3&4 (400 MW)	2017 (Pre-permit development)	$480m		PT PLN ($144m)	Unknown ($336m)	
INDONESIA (SOUTHEAST ASIA)	KALTIM TELUK BALIKPAPAN POWER STATION - UNIT 1&2 (220 MW)	2015 (Construction)	$264m		PT PLN ($79m)	Unknown ($185m)	
INDONESIA (SOUTHEAST ASIA)	PALU POWER STATION (CENTRAL SULAWESI) (30 MW)	2006 (Operation)	$36m		PT Pusaka Jaya Palu Power ($11m)	Unknown ($25m)	
INDONESIA (SOUTHEAST ASIA)	NAGAN RAYA POWER STATION (AKA MEULABOH POWER STATION, ACEH) - UNIT 1&2 (220 MW)	2014 (Operation)	$264m	$124m	PT PLN ($66m)	China Policy [Exlm] ($124m) + Unknown ($74m)	
INDONESIA (SOUTHEAST ASIA)	BARRU POWER STATION (AKA SULAWESI SELATAN (SULSEL) POWER STATION) (100 MW)	2013 (Operation)	$120m		PT PLN ($36m)	Unknown ($84m)	
INDONESIA (SOUTHEAST ASIA)	AMURANG POWER STATION (50 MW)	2012 (Operation)	$50m		PT PLN ($13m)	Unknown ($38m)	
INDONESIA (SOUTHEAST ASIA)	KALTENG-1 PULANG PISAU POWER STATION (120 MW)	2015 (Construction)	$120m		PT PLN ($30m)	Unknown ($90m)	
INDONESIA (SOUTHEAST ASIA)	SUMSEL-7 POWER STATION (300 MW)	2015 (Pre-permit development)	$455m		Madhucon Group ($114m)	Unknown ($341m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
INDONESIA (SOUTHEAST ASIA)	ADIPALA POWER STATION (AKA BUNTON POWER STATION) (660 MW)	2015 (Operation)	$792m	$277m	PT PLN ($238m)	China Policy [CDB] ($277m) + Unknown ($277m)	
INDONESIA (SOUTHEAST ASIA)	CILACAP SUMBER POWER STATION (UNIT 1 & 2) (600 MW)	2006 (Construction)	$510m	$408m	PT Sumber Segara Primadya (S2P) ($102m)	China [Undisclosed] ($408m)	Domestic [BKPM] ($200m)
INDONESIA (SOUTHEAST ASIA)	CILACAP SUMBER POWER STATION (UNIT 3 EXPANSION) (660 MW)	2016 (Construction)	$792m	$700m	PT Sumber Segara Primadya (S2P) ($92m)	China Policy [CDB] ($700m)	
INDONESIA (SOUTHEAST ASIA)	SURALAYA - UNIT 8 (625 MW)	2011 (Operation)	$750m	$308m	PT PLN ($188m)	China Policy [ExIm] ($308m) + Unknown ($255m)	
INDONESIA (SOUTHEAST ASIA)	SUMSEL-5 POWER STATION (AKA SUMATERA SELATAN-5) (300 MW)	2015 (Construction)	$360m	$318m	Sinar Mas Group ($42m)	China Policy [CDB] ($318m)	
INDONESIA (SOUTHEAST ASIA)	BANGKO TENGAH (SS-8) POWER STATION (AKA SOUTH SUMATRA 8) - PHASE I (1240 MW)	2019 (Permitted)	$1,590m	$1,415m	China Huadian Indonesia ($215m) + PT Bukit Asam Tbk (PTBA) ($176m)	China Policy [ExIm] ($1200m)	
INDONESIA (SOUTHEAST ASIA)	PELABUHAN RATU POWER STATION (945 MW)	2009 (Operation)	$1,134m	$481m	PT PLN ($284m)	China Policy [ExIm] ($481m) + Unknown ($370m)	
INDONESIA (SOUTHEAST ASIA)	PEKANBARU TENAYAN POWER STATION (AKA RIAU TENAYAN - PLTU NAD) (220 MW)	2015 (Construction)	$264m	$124m	PT PLN ($79m)	China Policy [ExIm] ($124m) + Unknown ($61m)	
INDONESIA (SOUTHEAST ASIA)	PARIT BARU POWER STATION (100 MW)	2016 (Construction)	$172m	$146m	PT PLN ($26m)	China Policy [ExIm] ($146m)	
INDONESIA (SOUTHEAST ASIA)	PACITAN POWER STATION (630 MW)	2011 (Operation)	$756m	$293m	PT PLN ($463m)	China Policy [ExIm] ($293m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
INDONESIA (SOUTHEAST ASIA)	INDRAMAYU POWER STATION (990 MW)	2011 (Operation)	$694m	$118m	PT PLN ($102m)	China Commercial [China Construction Bank] ($118m) + Domestic [Undisclosed] ($474m)	China Policy [Sinosure] ($562m)
INDONESIA (SOUTHEAST ASIA)	TANJUNG AWAR-AWAR, EAST JAVA (700 MW)	2013 (Operation)	$588m	$372m	PT PLN ($217m)	China Commercial [Bank of China] ($372m)	China Policy [Sinosure] ($353m)
INDONESIA (SOUTHEAST ASIA)	REMBANG POWER STATION (630 MW)	2011 (Operation)	$560m	$131m	PT PLN ($168m)	China Policy [CDB] ($131m) + Unknown ($261m)	
INDONESIA (SOUTHEAST ASIA)	TANJUNG KASAM POWER STATION (130 MW)	2012 (Operation)	$156m	$150m	PT PLN ($6m)	China Policy [ExIm] ($150m)	China Policy [Sinosure] ($143m)
INDONESIA (SOUTHEAST ASIA)	CELUKAN BAWANG POWER STATION (426 MW)	2015 (Construction)	$761m	$761m	China Huadian ($190m)	China Policy [CDB] ($571m)	
INDONESIA (SOUTHEAST ASIA)	BANTEN SURALAYA POWER STATION - UNIT 8 (625 MW)	2011 (Operation)	$750m		PT PLN ($188m)	Unknown ($563m)	
INDONESIA (SOUTHEAST ASIA)	BANTEN LABUAN POWER STATION (630 MW)	2010 (Operation)	$756m		PT PLN ($189m)	Unknown ($567m)	
INDONESIA (SOUTHEAST ASIA)	BANTEN LONTAR POWER STATION (AKA TELUK NAGA) (945 MW)	2012 (Operation)	$805m	$455m	PT PLN ($201m)	China Commercial [Bank of China] ($455m)	China Policy [Sinosure] ($432m)
INDONESIA (SOUTHEAST ASIA)	PLN PAITON BARU POWER STATION (AKA PAITON UNIT-9) (660 MW)	2012 (Operation)	$792m	$308m	PT PLN ($198m)	China Policy [ExIm] ($308m) + Unknown ($287m)	
INDONESIA (SOUTHEAST ASIA)	PT PEMBANGKITAN JAWA-BALI (EARLIER UNITS) (600 MW)	2005 (Operation)	$400m		PT PLN ($100m)	Unknown ($300m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
INDONESIA (SOUTHEAST ASIA)	MADURA PTBA POWER STATION (400 MW)	2018? (Announced)	$500m	$125m	Datang ($125m)	Unknown ($375m)	
MALAYSIA (SOUTHEAST ASIA)	BALINGIAN NEW POWER STATION - PHASE I (600 MW)	2018 (Construction)	$720m		Sarawak Energy ($180m)	Unknown ($540m)	
MONGOLIA (SOUTH ASIA)	TELMEN THERMAL POWER PLANT (100 MW)	2015 (Construction)	$170m	$21m	New Asia Group ($21m) + Unidentified Chinese Partner ($21m)	Unknown ($128m)	
MONGOLIA (SOUTH ASIA)	TEVSHIIN GOBI POWER STATION (600 MW)	2016? (Permitted)	$1,000m		Mogul Power ($250m)	Unknown ($750m)	
PHILIPPINES (SOUTHEAST ASIA)	MISAMIS ORIENTAL POWER STATION (405 MW)	2016 (Construction)	$668m		Filinvest ($167m)	Unknown ($501m)	
PHILIPPINES (SOUTHEAST ASIA)	MARIVELES POWER PLANT - PHASE I (600 MW)	2010 (financing) / 2013 (Operation)	$1,000m	$493m	Sithe Global Power (Blackstone Group) ($150m) + Ayala Corporation ($150m)	China Policy [CDB] ($493m) + Unknown ($207m)	China Policy [Sinosure] ($468m)
PHILIPPINES (SOUTHEAST ASIA)	LANAO KAUSWAGAN POWER STATION (552 MW)	2017 (Pre-permit development)	$1,000m	$350m	GNPower Kauswagan ($300m)	China Policy [Undisclosed] ($350m) + Unknown ($350m)	
PHILIPPINES (SOUTHEAST ASIA)	MISAMIS ORIENTAL POWER STATION (540 MW)	2011 (Operation)	$349m		Vinacomin ($44m) + Cẩm Phả Thermal-power Joint-Stock Company ($43m)	Unknown ($262m)	
VIETNAM (SOUTHEAST ASIA)	HA TINH FORMOSA PLASTICS STEEL COMPLEX POWER STATION - PHASE I (650 MW)	2015 (Construction)	$845m	$13m	Formosa Plastics Group ($241m) + China Steel ($13m)	Unknown ($592m)	
VIETNAM (SOUTHEAST ASIA)	HA TINH FORMOSA PLASTICS STEEL COMPLEX POWER STATION - PHASE II (1500 MW)	2020 (Announced)	$1,950m	$29m	Formosa Plastics Group ($556m) + China Steel ($29m)	Unknown ($1365m)	
VIETNAM (SOUTHEAST ASIA)	VINH TAN POWER STATION - VẦNH TÂN-1 (1200 MW)	2018 (Permitted)	$1,650m	$220m	China Southern Power Grid Company ($110m) + CPIC ($110m) + Vinacomin ($110m)	DFI [ADB] ($1320m)	

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VIETNAM (SOUTHEAST ASIA)	VINH TAN POWER STATION - VẤNH TÂN-2 (1245 MW)	2014 (Operation)	$1,300m	$300m	Electricity of Vietnam ($195m)	China Policy [Exlm] ($300m) + DFI [Vietnam Development Bank] ($805m)	
VIETNAM (SOUTHEAST ASIA)	VINH TAN POWER STATION - VẤNH TÂN-3 (1980 MW)	2018 (Permitted)	$1,100m	$73m	CLP Group ($73m) + Mitsubishi ($73m) + Electricity of Vietnam ($73m)	Unknown ($880m)	
VIETNAM (SOUTHEAST ASIA)	UONG BI POWER STATION - UÔNG BÍ-2 EXPANSION UNIT 8 (330 MW)	2011 (Operation)	$211m	$179m	Electricity of Vietnam ($32m)	China Policy [Exlm] ($179m)	
VIETNAM (SOUTHEAST ASIA)	VUNG ANG POWER STATION - PHASE I (1200 MW)	2015 (Construction)	$1,200m	$673m	PetroVietnam ($200m)	China Policy [CDB] ($673m) + International [Japan Bank for International Cooperation, Sumitomo Mitsui, Bank of Tokyo-Mitsubishi UFJ, HSBC, Credit Suisse and Intesa SanPaolo] ($327m)	
VIETNAM (SOUTHEAST ASIA)	VUNG ANG POWER STATION - PHASE II (1200 MW)	2018 (Permitted)	$1,200m	$120m	CLP Group ($120m) + Mitsubishi ($120m)	Unknown ($960m)	
VIETNAM (SOUTHEAST ASIA)	DUYEN HAI POWER GENERATION COMPLEX - PHASE I (1245 MW)	2015 (Construction)	$1,600m	$504m	Vietnam Electricity Group ($592m)	China Policy [Exlm] ($504m) + International [Banks from France] ($504m)	China Policy [Sinosure] ($479m)
VIETNAM (SOUTHEAST ASIA)	DUYEN HAI POWER GENERATION COMPLEX - PHASE II (1200 MW)	2020 (Pre-permit development)	$1,542m		MMC Corporation Berhad ($386m)	Unknown ($1157m)	
VIETNAM (SOUTHEAST ASIA)	DUYEN HAI POWER GENERATION COMPLEX - PHASE III (UNIT 1 & 2) (1200 MW)	2016 (Construction)	$1,500m	$1,000m	Vietnam Electricity Group ($500m)	China Policy [CDB] ($333m) + China Commercial [Bank of China] ($333m) + China Commercial [ICBC] ($333m)	China Policy [Sinosure] ($633m)
VIETNAM (SOUTHEAST ASIA)	HAI PHONG THERMAL POWER STATION - PHASE I (300 MW)	2011 (Operation)	$600m	$210m	Vinacomin ($92m) + Cẩm Phả Thermal-power Joint-Stock Company ($88m)	China Policy [Exlm] ($210m) + DFI [JBIC] ($210m)	
VIETNAM (SOUTHEAST ASIA)	HAI PHONG THERMAL POWER STATION - PHASE II (300 MW)	2014 (Operation)	$600m	$210m	Vinacomin ($92m) + Cẩm Phả Thermal-power Joint-Stock Company ($88m)	China Policy [Exlm] ($210m) + DFI [JBIC] ($210m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
VIETNAM (SOUTHEAST ASIA)	MAO KHE POWER STATION (440 MW)	2011 (Operation)	$557m	$275m	Vinacomin ($111m)	China Commercial [Bank of China] ($275m) + International [BNP Paribas] ($171m)	China Policy [Sinosure] ($261m) + Domestic [MOF Vietnam] ($171m)
VIETNAM (SOUTHEAST ASIA)	QUANG NINH POWER STATION - QUẢNG NINH-1 (600 MW)	2010 (Operation)	$600m	$510m	Quang Ninh Thermal Power Joint Stock Company ($90m)	China Policy [ExIm] ($510m)	
VIETNAM (SOUTHEAST ASIA)	THANG LONG POWER STATION (600 MW)	2018 (Construction)	$645m		Hanoi Export-Import Company ($161m)	Unknown ($484m)	
VIETNAM (SOUTHEAST ASIA)	MONG DUONG POWER STATION - MÔNG DẢẢNG-2 (1120 MW)	2015 (Construction)	$1,950m	$105m	CIC ($105m) + AES ($281m) + POSCO ($165m)	Unknown [but not Chinese] ($1400m)	
IRAN (WESTERN ASIA)	TABAS POWER PLANT (650 MW)	2012 (Construction)	$1,000m	$850m	Iran Power Development Company ($150m)	China Policy [ExIm] ($850m)	
TURKEY (WESTERN ASIA)	EMBA HUNUTLU POWER STATION (AKA YUMURTALIK EMBA POWER STATION) (1320 MW)	2020? (Pre-permit development)	$1,727m	$275m	Shanghai Electric Power ($259m) + AVIC International Equipment Co. ($15m) + 4 Turkish partners ($244m)	Unknown ($1209m)	
TURKEY (WESTERN ASIA)	AMASRA BARTIN POWER STATION (AKA HEMA / WESTERN BLACK SEA / BATI KARADENIZ) (1320 MW)	2017 (Pre-permit development)	$1,000m	$150m	Hattat Holding ($150m) + AVIC International Equipment Co. ($150m)	Unknown ($700m)	
TURKEY (WESTERN ASIA)	BEKIRLI BIGA POWER STATION (405 MW)	2009 (Operation)	$506m	$430m	İÇDAŞ ($76m)	China Policy [Undisclosed] ($430m)	
TURKEY (WESTERN ASIA)	ATLAS ENERJI POWER STATION (AKA ISKENDERUN ATLAS) - UNIT 1 & 2 (1250 MW)	2015 (Operation)	$1,136m		Diler Holding ($170m)	Unknown [Domestic or Chinese] ($966m)	
TURKEY (WESTERN ASIA)	TEYO TUFANBEYLI POWER STATION (700 MW)	2020? (Permitted)	$1,200m	$150m	Teyo Yatırım ve Dış Ticaret A.Ş ($150m) + Weiqu Energy Investments (Chinese investment firm) ($150m)	Unknown ($900m)	

GEO	NAME	STATUS / YEAR	TOTAL VALUE ($M)	CONFIRMED FROM CHINA, EXCL. GUARANTEES	EQUITY	DEBT	GUARANTEES
TURKEY (WESTERN ASIA)	AYAS POWER STATION (600 MW)	2010 (Planning)	$750m		Ordu Yardımlaşma Kurumu (OYAK, 50%), Koç Holding (25%), AES Corporation (25%) ($188m)	Unknown ($563m)	
TURKEY (WESTERN ASIA)	İÇDAŞ BEKIRLI POWER STATION (1200 MW)	2014 (Operation)	$1,091m		İÇDAŞ ($273m)	Unknown ($818m)	
TURKEY (WESTERN ASIA)	ÇANKIRI ORTA POWER STATION (150 MW)	2017 (Construction)	$136m		Bereket Enerji Üretim A.Ş. ($34m)	Unknown ($102m)	
TURKEY (WESTERN ASIA)	SOMA KOLIN POWER STATION (510 MW)	2017 (Construction)	$464m		Hidro-Gen Enerji Ithalat Ihracat Dağıtım ve Ticaret A.Ş. (Kolin Group) ($116m)	Unknown ($348m)	
TURKEY (WESTERN ASIA)	EYNEZ POWER STATION (647 MW)	2019 (Pre-permit development)	$588m	$74m	Polat Madencilik (Turkish coal mining company) ($74m) + Zhejiang Provincial Energy Group ($74m)	Unknown ($441m)	
TURKEY (WESTERN ASIA)	ICDAS STEEL PLANT SELF-GEN (389 MW)	2009 (Operation)	$486m		İÇDAŞ ($122m)	Unknown ($365m)	
TURKEY (WESTERN ASIA)	ŞIRNAK SILOPI POWER STATION (AKA SILOPI I, II, III) (405 MW)	2016? (Partially commissioned)	$450m		Silopi Elektrik Üretim A.Ş. (Ciner Group) ($113m)	Unknown ($338m)	
			$157,410m	$60,523m			