

CUI BONO? EXPLAINING THE PERSISTENCE OF PUBLIC FINANCE FOR COAL-FIRED POWER PLANTS OVERSEAS

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Overview

Despite the Paris Agreement's call to make "finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" (UNFCCC, 2015), much coal finance is provided, to a large extent by foreign companies (Manych et al., in press). Steffen and Schmidt (2019) quantify the role of multilateral development banks in financing conventional and renewable energy. Chen et al. (2020) compare multilateral development banks to East Asian national development finance institutions. Chen and Schmidt (2017) show how G20 governments' public finance institutions invest in coal. Different dimensions of coal financing have also been investigated by several NGOs (BankTrack, 2018; Schücking, 2017; urgewald e.V., 2019).

Recent literature has discussed the particular role of Chinese public foreign direct investment for the development of coal and links the financing to Chinese exports of domestic technology (Kong and Gallagher, 2019; Li et al., 2020; Shearer et al., 2019). Other studies show the tendency of Chinese developers to develop plants abroad (Peng et al., 2017) or Japanese companies to export coal plants (Trencher et al., 2019). However, all of these papers look at a subset of financial transactions, e.g. from two specific Chinese banks only.

Our paper, to the best of our knowledge, is the first to i) provide a global analysis of coal finance on a plant level and ii) systematically assess the ties between financiers, manufacturers, sponsors, construction companies and other involved companies in the development of coal plants. This paper aims to understand reasons why financial institutions still invest in international coal. We add to an increasing literature on the political economy of coal in countries building new coal-fired plants (Jakob et al., 2020). We hypothesize that overseas coal finance may benefit domestic exporting industries, especially in the light of declining domestic markets. Our analysis is based on a new and comprehensive dataset, which allows analysing capital flows of financial institutions and other involved companies on a plant level. We find that for many coal plants the involved companies are foreign and stem from the financier's country.

Methods

In this paper we build a new and comprehensive dataset by extending and merging existing data on international coal finance. For information on coal plants we use the Global Coal Plant Tracker for latest plant data (Global Energy Monitor, 2020a) and the World Electric Power Plants Data Base for information on involved companies (S&P Global Platts, 2017). For finance data the authors rely on data by the Natural Resources Defense Council, Global Energy Monitor and urgewald e.V. (Global Energy Monitor, 2020b).

To obtain the novel plant level dataset we cleanse, match and extend the above mentioned datasets. Many transactions are linked to several units, thus some units appear more than once in the merged dataset. The facilitated generation capacity additions allocate the total capacity of each units to the respective financiers regardless of their amount of financing provided following (Chen et al., 2020). We additionally identify the host country of each company. This leaves us with a dataset with information on the financiers and all other involved companies for each unit-transaction.

The novel dataset allocates 346 transactions from 2013 onwards to 365 distinct units that belong to 161 distinct plants, resulting in 730 unit-transactions. It allows us to display the transaction amount per financier, country and year and link it to facilitated generation capacity additions. We afterwards analyse a broad set of companies involved in a particular coal unit's development by their origin. Finally, we link the financiers and the other involved companies for each plant and e.g. examine if they are from the same country.

Results

We separate units that will likely be developed, including those under construction, operating, permitted or under pre-permit from those of all status (including those that are announced, shelved or cancelled). We thereby distinguish between results from the entire sample and a subset of units with a particularly high likelihood to be developed.

In total, the transactions amount to US\$ 91 billion from 11 financing countries. Banks from China provided US\$ 60 billion, those from Japan and South Korea US\$ 20 billion and US\$ 7 billion, respectively. The remaining US\$ 4 billion stem from financial institution in India, Germany, Italy, Russia, South Africa, France, the United States and the Czech Republic. The facilitated generation capacity additions per country range from 284 GW for China to 500 MW for the United States. Japan and South Korea facilitated generation capacity additions of 49 GW and 35 GW, respectively.

The annual transactions from 2013 to 2020 differ widely. The absolute finance volume increased from US\$ 4.8 billion in 2013 to US\$ 18.4 billion in 2017 and decreased afterwards to reach US\$ 3.4 billion in 2020. Transactions that are currently pending equal US\$ 13.3 billion, transactions that were put on hold and those that got cancelled amount to US\$ 2.9 billion and US\$ 5.7 billion, respectively. From 2016 to 2020 the transactions can be fully allocated to China, Japan and South Korea (with India in 2017 being the only exception). The origin of finance that is currently pending, on hold or cancelled however shows a higher geographical diversity.

We analyse a broad set of companies with business activities related to a particular coal unit's development by their origin. The share of capacity, for that the companies are known, varies greatly between the different companies. The analysis is limited to 174 GW of capacity of unique units for which we have collected information on financing and the respective financiers, explaining the capacity share of known financiers being 100%. For sponsors (developers/operators or primary owners of a unit) and parent companies (of the sponsors) we can still identify 95% of companies. The share is reduced for manufacturers of turbines (TURBMFR), generators (GENMFR) and steam supply systems (SSSMFR), as well as the primary architect/engineering firms (AE) and the construction companies, varying between 30-50%. The manufacturers of the particulate control device (PARTMFR), FGD scrubber system (FDGMFR) and NOX control system (NOXMFR) are mostly unknown. When we look only at the subset consisting of units that are under construction, operating, permitted or under pre-permit development, the share increases for each company by up to 20 percentage points.

The headquarters of almost all companies are located in one of the 11 financing countries. One exception are sponsor and parent companies: the majority stem from the site country, i.e. where the unit is located. Manufacturers, architect firms and construction companies from the financing countries constitute the vast majority of above 80% of the capacity. This applies to the subset of units with a particularly high likelihood to be developed as well.

The companies providing equipment and those being involved in the construction do in most cases not stem from the country, where the unit is located. This becomes obvious when looking at the share of the 365 units that have foreign involvement for each company. The share of units that have solely foreign sponsors is 56%, while 16% of the units have domestic and foreign sponsors. For 3% of the units we do not have information on the sponsors. We find similar numbers for parent companies. For all other companies, the domestic share is below 8%. The foreign share on the other hand is multiple percentage points higher. For the 233 units that are under construction, operating, permitted and pre-permit development the share of unknown decreases for each company.

We aim to understand if there is a systematic correlation regarding the origin of financing institutions and power plant equipment manufacturers by looking into the capacity addition by financiers' and other involved companies, e.g. generator manufacturers', origin. We see that for the biggest capacity additions the financier's country equals the generator manufacturer's country. Other types of involved companies show a similar pattern.

Our analysis reveals a clear correlation between the origin of finance and equipment companies. Next to China and Japan, financing highly correlates with the origin of the turbine and generator manufacturer in India, France and the USA (i.e. levels higher 50%). For China, India and Italy, this is also true for construction and AE. Generally, if finance was granted by banks from France and India, we find a high likelihood that also equipment manufactures from those countries are involved. For 66% of the 730 unit-transactions, at least one other company is from the same country as the financier. For transactions from Chinese banks this number is around 64%. For Japan the share is 84%, for South Korea 73%, for South Africa 50% and for Germany 43%. When we consider only unit-transactions with units that are under construction, operating, permitted and pre-permit development the share increases for most countries.

Conclusions

Building a unique dataset, we show that manufacturers, construction companies and other involved companies in the development of a coal plant are in many cases from the same country as the public banks that finance the projects abroad. This holds true for finance of all units and of those that will most likely be developed. This opens room for interpretation. One potential explanation is that manufacturers are more likely to engage in a project if it is financed by a public bank from their country. Another reason could be that development and export-import banks support the export of coal technology. Potential drivers could be the electricity or more explicitly the coal overcapacity in a country ('overcapacity effect'). The export of technology could be a means to stabilize the manufacturing industry that is faced with decreasing sales in the home market, which again could be linked to domestic policies, e.g. recent carbon neutral pledges in banks' home countries (Kong and Gallagher, 2019). In this case exporting coal technology can be seen as a new way of outsourcing emissions, i.e. 'Carbon Leakage 2.0'.

To learn more about the drivers of the domestic bias we will develop this paper further by comparing finance by public banks to finance by commercial banks. We further aim to compare the situation of coal to that of renewable energy technologies, taking wind energy as an example. Finally, we will develop our descriptive statistical results further using robust econometric techniques.

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