

# BRI Database FAQs

## CONTENTS

<b>1. Scope.</b>	<b>1</b>
<b>1.1. What is this database?</b>	<b>1</b>
1.2. What does this database include? What does it not include?	1
1.3. What are the BRI countries? Why these countries?	2
1.4. What does each of the database observations mean?	2
1.5. What information does this database provide?	2
1.6. How many projects (much investment) does this database include?	2
<b>2. Overall Methodology Questions.</b>	<b>2</b>
2.1. What are the sources of data?	3
2.2. How is the database built?	3
2.3. Are there any modifications to source data?	3
2.4. What if two databases provide inconsistent information? How do we deal with it?	3
2.5. Why are there multiple years associated for a project?	4
2.6. How does one use the database to analyze equity or debt investments?	4
2.7. What factors should a person consider when analyzing and comparing this database to other data sources?	4
<b>3. Future Plan and Limitations.</b>	<b>4</b>
3.1. What is the plan to maintain and update the database?	4
3.2. What information is missing?	4
<b>4. How Do I Cite the Data?</b>	<b>5</b>

## 1. Scope

### 1.1 WHAT IS THIS DATABASE?

The China Overseas Finance Inventory Database is a project that leverages existing public and commercial data sources to build a comprehensive database on China's outward investment, with the initial phase focusing on power generation sector. This project is a collaboration among the Global Development Policy Center at the Boston University, the Inter-American Dialogue, the China-Africa Research Initiative at the Johns Hopkins University (CARI), and the World Resources Institute (WRI).

### 1.2 WHAT DOES THIS DATABASE INCLUDE? WHAT DOES IT NOT INCLUDE?

The database includes power-generation projects in Belt and Road Initiative (BRI) countries financed by Chinese corporations and banks that reached financial closure from 2000 to 2020. Types of financing include debt and equity investment, with the latter including greenfield foreign direct investments (FDI) and cross-border mergers and acquisitions (M&As). Greenfield investments establish a new entity in a foreign country, while M&As involve the acquisition of existing foreign firms.

Projects with only Chinese engineering, procurement, and construction (EPC) contractors involved are not covered, as they assume less responsibility for making the investment decisions,

compared with debt and equity investors. The database also does not cover projects without project specifics or those that reach only preliminary agreement but not financial closure.

The database excludes stand-alone power transmission and distribution projects but includes those projects that are designed to connect a power plant to the grid, which the database combines with the power plant. The database also excludes captive power plants. These plants provide localized power to a user, typically industrial facilities.

The database excludes projects cancelled within the database time frame.

### 1.3 WHAT ARE THE BRI COUNTRIES? WHY THESE COUNTRIES?

BRI countries are those that have signed the BRI memorandum of understanding with China. As of June 2021, there are 140 countries, and it is a constantly evolving list.

China's leadership is increasingly aware of the importance of environmental sustainability as a key factor in the success of the BRI, an initiative first raised publicly by Chinese President Xi Jinping in 2013. The BRI puts transportation and energy infrastructure among its top priority areas, and it emphasizes the consideration of environmental and climate-change impacts in infrastructure development. Data for baselining and tracking Chinese investment in the BRI are critical to understanding how green China's BRI investment is. More comprehensive data can also enable Chinese policymakers, financial institutions, and other stakeholders to hold themselves accountable and identify how they can help make the BRI green.

### 1.4 WHAT DOES EACH OF THE DATABASE OBSERVATIONS MEAN?

Each observation of the database includes an equity and/or a debt investment for a power plant. However, some power plants have received multiple debt investments in different years and cannot be recorded in one observation. As a result, there are multiple observations for the same power plant to

record these different investment transactions. We created a variable called duplicated power plant in the database to document extra observations for the same power plant so that we can avoid duplication in analysis.

### 1.5 WHAT INFORMATION DOES THIS DATABASE PROVIDE?

This database provides two broad types of information: technical characteristics of power plants and financial transaction information. Information on power plants includes name, capacity, commissioning year, country, and primary fuel types. Financial information includes financial instruments, investor name, amount, and investment year.

### 1.6 HOW MANY PROJECTS (MUCH INVESTMENT) DOES THIS DATABASE INCLUDE?

The database captures 430 power plants in 76 BRI countries, including 220 equity investment transactions and 253 debt investment transactions made by Chinese investors. Thirty-five projects are both debt and equity invested. There are more transactions than projects because some power plants have multiple transactions in different years and also because some projects have both debt and equity investment.

We do not have the amount information for all equity investment transactions.

The total value of debt investment \$106.35 billion, but 31 (12 percent) debt investment transactions do not have information about the individual amount of debt investment.

## 2. Overall Methodology Questions

### 2.1 WHAT ARE THE SOURCES OF DATA?

This database includes data from nine databases. There are two major types of data sources: power plant characteristics data and investment data:

- Power plant characteristics
  - UDI Electric Power Plants Database from S&P Global Platts.
  - Global Power Plant Database from WRI

## ■ Investments

- China's Global Energy Finance Database from Boston University Global Development Policy Center
- Chinese Loans to Africa Database from CARI at the Johns Hopkins School of Advanced International Studies
- China-Latin America Finance Database from Inter-American Dialogue and Boston University
- China's Global Power: Estimating Chinese Foreign Investment in the Electric Power Sector
- Refinitiv Loan Database from London Stock Exchange Group
- Refinitiv M&A Database from London Stock Exchange Group
- fDi Markets from *Financial Times*

## 2.2 HOW IS THE DATABASE BUILT?

Each of the nine source databases provides a piece of information that could provide a comprehensive view of a project if they were consolidated together (like a mosaic). However, we could not simply combine these databases together since some projects could be included in multiple data sources.

By consolidating—matching entries from different databases—we could avoid the issue of double accounting. In addition, we could improve the quality of coverage by piecing together different information collected by these databases.

We took three major steps to address these challenges and consolidate these databases together. We first performed data preprocessing to standardize data before we used a computer program to automatically join various databases. Then, we did a comprehensive manual matching to ensure accuracy of the consolidation. For a more detailed approach of our consolidation effort, please refer to our technical note.

## 2.3 ARE THERE ANY MODIFICATIONS TO SOURCE DATA?

We make some adjustments to information related to investment amount from source databases. Equity

investment amount information is mostly missing. This is because we do not include the investment amount estimated by source database like the fDi market. For further explanation of why the equity amount is missing, please refer to question 3.2.

We extracted or estimated individual loan contributions from total investment based on the level of investment details available in source databases. There were two types of situations that required different approaches:

- If individual loan contributions were missing but both the total amount of loan and the number of participants were available, we used the average loan contribution as an estimate for individual loan contributions. For example, some projects in Boston University's China Global Energy Finance database were financed by both CDB and China Eximbank without their individual contribution. We divided the total amount evenly and assigned it to the two banks.
- When an entry in a source database contained financing for multiple power plants with one aggregate investment amount, we calculated the investment amount for each power plant weighted by its installed capacity.

## 2.4 WHAT IF TWO DATABASES PROVIDE INCONSISTENT INFORMATION? HOW DO WE DEAL WITH IT?

The general principle in dealing with inconsistency is that we choose the information from the source databases with a more rigorous and transparent research approach and/or greater details.

For power-plant characteristic information, we use the UDI World Electric Plants Database (Platts) as the standard. For financial information, we use CARI or Refinitiv Loan for individual bank loan information as the standard.

For equity investment information, all entries have a maximum of one source of data providing equity amount information; therefore there are no inconsistencies. But if equity investor names are inconsistent, we usually check the official website and standardize the names.

## 2.5 WHY ARE THERE MULTIPLE YEARS ASSOCIATED FOR A PROJECT?

The database records three types of year: commissioning year, debt investment year, and equity investment year.

The commissioning year is the year a power plant entered or is scheduled to enter operation. The debt and equity investment year is the year of financial closure of a debt or equity transaction. Usually, there is a three-to-five-year gap between debt investment and commissioning year, with commissioning year after the debt investment year. For greenfield investment, commissioning years usually fall after the equity investment years. However, in M&A transactions, the equity investment year can be years after a power plant is commissioned.

## 2.6 HOW DOES ONE USE THE DATABASE TO ANALYZE EQUITY OR DEBT INVESTMENTS?

When analyzing debt investment amounts, users should be aware of the difference between loan commitment and actual disbursement. According to OECD's definitions, the loan commitment is an undertaking or obligation made in a year without consideration of when the disbursement is made. Disbursements record the actual transfer of the loan, and it can take several years to disburse a commitment. Our database records the loan commitment for a certain year and not actual disbursement.

The investment amount should only provide a rough picture of where Chinese companies are investing and not how much their exact portion is.

## 2.7 WHAT FACTORS SHOULD A PERSON CONSIDER WHEN ANALYZING AND COMPARING THIS DATABASE TO OTHER DATA SOURCES?

Different datasets have different scopes, methodologies, and definitions. Users should take these into consideration when comparing data from different sources. For example, this database only includes power-generation projects in BRI countries, while other databases could include projects in any countries or any sectors. Other databases could include EPC contracts that this database excludes.

Both this database and the Chinese official FDI statistics provide data on Chinese outward equity investments. The official FDI statistics are published in the Statistical Bulletin of China's Outward Foreign Direct Investment every year, but only at the aggregated country or sector levels. There are no breakdown data on power-generation investments. The official statistics include three compositions of China's outward FDI—new equity investment, reinvested earnings, and debt instruments—while this database only includes new equity investment.

# 3. Future Plan and Limitations

## 3.1 WHAT IS THE PLAN TO MAINTAIN AND UPDATE THE DATABASE?

We will update the database annually, which aligns with the timeline of several source databases. The annual update will include new projects for each newly added year and corrections for existing projects in previous years.

We are considering expanding and improving the database if we obtain additional resources. These could include extending the database to additional sectors, adding new databases, and developing methods to address missing values.

## 3.2 WHAT INFORMATION IS MISSING?

In this version of the database, all equity investment amounts are missing. This is because the equity amount is either missing or estimated in the source databases. For M&A, because the amount often includes the purchase of an entire company, which could have multiple power plants, it is difficult to determine the investment amount for each power plant without sufficient details.

Depending on source databases, some columns can also have missing information. We find the biggest gap in latitude and longitude information because there is only one source out of nine providing this information. Another gap is in the equity investment year. One of our source databases focusing on greenfield investment does not contain information on year.

## 4. How do I cite the data?

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