Tracking Chinese Development Finance: An Application of AidData's TUFF 2.0 Methodology

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Introduction

China and other so-called "emerging" donors and creditors are fundamentally changing the international development finance landscape; however, many of these actors do not participate in existing global reporting systems, such as the OECD's Creditor Reporting System (CRS) and the International Aid Transparency Initiative (IATI). To address this challenge and help those who seek to understand the nature, distribution, and effects of development finance from emerging donors and creditors, AidData developed the Tracking Underreported Financial Flows (TUFF) in collaboration with an international network of researchers from Harvard University, Heidelberg University, the University of Göttingen, the University of Cape Town, Brigham Young University, and William and Mary. The methodology codifies a systematic, transparent, and replicable set of procedures that facilitate the collection of information about aid and credit from official sector donors and lenders who do not publish comprehensive or detailed information about their overseas activities. It does so by synthesizing and standardizing vast amounts of unstructured, open-source, project-level information published by governments, intergovernmental organizations, companies, nongovernmental organizations, journalists, and research institutions. The methodology was first introduced in April 2013 as a way of tracking Chinese government-financed development projects in Africa (Strange et al. 2013). It was then revised and extended to track Chinese government-financed development projects in Africa, Asia, Latin America and the Caribbean, the Middle East, Oceania, and Eastern and Central Europe in September 2015, January 2017, and October 2017 (Muchapondwa et al. 2016; BenYishay et al. 2016; Strange et al. 2017; Bluhm et al. 2018; Dreher et al. 2018, 2019, 2021, forthcoming).[1] These revisions are chronicled in a new book entitled *Banking on Beijing: The Aims and Impacts of China's Overseas Development Program* (Dreher et al. forthcoming). Since then, the TUFF methodology has been re-engineered to support the creation of AidData's Chinese Global Development Finance Dataset, Version 2.0, which was published in September 2021.

The TUFF 2.0 methodology involved three major improvements.

1. **Increased Use of Official Sources:** Instead of relying on media sources to identify individual projects, AidData began its search process by systematically reviewing tens of thousands of official sources. These sources include unredacted grant and loan agreements published in government registers and gazettes, official records extracted from the aid and debt information management systems of host countries, annual reports published by Chinese state-owned banks, Chinese Embassy and Ministry of Commerce (MOFCOM) websites, reports published by parliamentary oversight institutions in host countries, and AidData's direct correspondence with finance ministry officials in developing countries. Official source retrieval was undertaken on a country-by-country basis in order to comprehensively track the full range of financial and in-kind transfers

[1] The 1.0, 1.1, 1.2, and 1.3 versions of the TUFF methodology are available on the aiddata.org website. The TUFF 1.3 methodology was used to create AidData's Global Chinese Official Finance Dataset, Version 1.0. The TUFF 2.0 methodology was used to create AidData's Chinese Global Development Finance Dataset, Version 2.0.

from official sector institutions in China. Then, as a supplement, AidData conducted a set of systematic search procedures in Factiva—a Dow Jones-owned media database that draws on approximately 33,000 media sources worldwide in 28 languages, including newspapers and radio and television transcripts—to identify non-official sources that also provide useful information about Chinese government-financed projects.[2] In total, we assembled the 2.0 dataset with 91,356 sources (including 63,464 unique sources in more than a dozen languages, of which 34,075 are official sources). Whereas the average project record in the 1.0 dataset was based upon 3.6 sources, the average project record in the 2.0 dataset is based upon 6.8 sources. 89% of the project records in the 2.0 version of our dataset are underpinned by at least 1 official source (compared to 62% of the project records in the 1.0 dataset).[3]

2. **Enhanced Focus on Project Implementation:** The TUFF 2.0 methodology involved the implementation of an enhanced set of data collection and quality assurance protocols to identify important project implementation details, such as calendar day-level commencement and completion dates, precise geographical locations and features of project activities, and the contractors and subcontractors responsible for implementation. The 2.0 dataset provides an unprecedented level of detail on project implementation start dates, project completion dates, and the precise geographical locations where projects take place. AidData was able to identify precise implementation start dates for 5,539 projects and precise project completion dates for 6,061 projects. The 2.0 dataset also provides data on the originally scheduled project implementation start dates and completion dates, so that users can determine if projects have been implemented on schedule, behind schedule, or ahead of schedule. Additionally, for 3,285 projects that have physical footprints or involve specific locations, the 2.0 dataset extracts point, polygon, and line vector data via OpenStreetMap URLs and provides a corresponding set of GeoJSON files.[4] The dataset also captures details on the involved organizations. The dataset identifies 334 official sector institutions in China that provide funding and/or in-kind support, 460 co-financing institutions (some of which are traditional bilateral and multilateral agencies that have chosen to participate in syndicated loans or other types of consortia with Chinese counterparts), 2,450 recipient institutions, 3,523 implementing institutions, and 227 third-parties ("accountable agencies") that provide repayment guarantees, credit insurance policies, and collateral which can be seized in the event of default.

[2] In the 1.3 version of the TUFF methodology, Factiva/DNA was used during the first stage of data collection (i.e., project identification). This is a key difference between the 1.3 and 2.0 version of the TUFF methodology. For more on this change, see Section 3.
[3] The "1.0" dataset refers here to AidData's Global Chinese Official Finance Dataset, Version 1.0, which was published in October 2017 (Dreher et al. forthcoming, 2021).
[4] As a point of comparison, the geolocated dataset of Chinese overseas development finance produced by Boston University's Global Development Policy Center provides spatial data (polygons, lines, and points) for 615 Chinese government-financed projects (Ray et al. 2020, 2021). For a broader comparison of the 2.0 dataset to other Chinese development finance datasets, see Appendix F..

3. **More Transactional Details:** The TUFF 2.0 methodology prioritized the collection of more detailed information on the terms and conditions that govern the financing agreements issued by Chinese state-owned entities. Of the 3,103 loans, buyer's credits, or seller's credits that are captured in the 2.0 dataset, 2,757 identify a transaction amount, 1,659 have a known interest rate, 1,940 have a known maturity length, and 1,285 have a known grace period. These details ensure accurate measurements of financial concessionality levels according to the OECD-DAC guidelines for Official Development Assistance (ODA) and Other Official Flows (OOF).[5] For 50% of the loans, buyer's credits, and seller's credits (and 56% of the debt in monetary terms) in the 2.0 dataset, we obtained the three key pricing details that are needed to measure financial concessionality levels with the OECD-DAC grant element calculator. By way of comparison, only 29% of the loans and export credits in the 1.0 dataset included all three of these pricing details. Another important feature of the 2.0 dataset is the inclusion of five new variables that measure commitment fees, management fees, and the use of credit enhancements (including collateral, insurance, and third-party repayment guarantees. Special efforts were also undertaken to document the monetary value and timing of disbursements and repayments; the establishment of special purpose vehicles, subsidiary on-lending arrangements, and escrow/revenue/special accounts; and the monetary value and timing of underlying commercial contracts (in the dataset's "Description" field). Additionally, the 2.0 dataset provides stable URLs to a large number of unredacted grant, loan, export credit, and debt forgiveness/rescheduling agreements whenever they were successfully retrieved. AidData previously published a subset of these financing agreements at the time of the release of the *How China Lends* study in April 2021 (Gelpern et al. 2021). However, the 2.0 dataset published in October 2021 now provides the full set of agreements retrieved by AidData.

This paper has three sections. Section 1 provides an overview of the scope parameters and key features of the 2.0 dataset as well as guidance regarding how the dataset should be used in different types of applications. Section 2 explains how Chinese ODA and OOF is designed and delivered to other countries, and the coding rules and procedures that AidData used to capture and categorize projects financed with Chinese ODA and OOF. Section 3 describes the sources and methods that AidData useds to assemble a comprehensive and detailed picture of Chinese ODA- and OOF-financed activities around the globe. For analysis of key patterns and trends from AidData's Chinese Global Development Finance Dataset, Version 2.0, we encourage readers to consult Malik et al. (2021).

[5] The Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD-DC) defines Official Development Assistance (ODA) activities as those provided on highly concessional terms (with a minimum grant element of 25 percent) and with development intent. It defines Other Official Flows (OOF) as activities provided on less concessional terms (with a grant element below 25 percent) and/or activities without development intent. ODA projects are widely considered to be "development aid" in the strict sense of the term.

Section 1 - AidData's Global Chinese Development Finance Dataset, Version 2.0

1.1 - Scope Parameters of the 2.0 Dataset

When we set out to build Version 2.0 of AidData's Global Chinese Development Finance Dataset, our goal was to create a comprehensive and detailed picture of China's overseas development finance program. The dataset that we ultimately constructed covers all regions, all sectors, and all sources and types of financial and in-kind transfers from government and state-owned institutions in China. As Appendix F demonstrates, there are other datasets that capture official financial transfers from China to a single sector (e.g., energy) or region (e.g., Latin America), or that only track certain types of financial flows (e.g. loans) and funding sources (e.g. China's policy banks). However, the 2.0 version of AidData's Global Chinese Development Finance Dataset is unique in that it covers every major world region, every low-income and middle-income country, all sectors, and all types of financial and in-kind transfers from government and state-owned institutions in China. It is also different from other Chinese development finance datasets in that it measures financial commitments in *constant* (i.e. inflation-adjusted) U.S. dollars (USD), which ensures that reliable comparisons can be made over time and geographic space.[6]

Prospective users should be aware of several scope parameters of the dataset:

- **Financiers:** The 2.0 dataset captures the full range of projects that align with the OECD's definition of Official Development Assistance (ODA) and Other Official Flows (OOF). Therefore, any project that benefits from financial or in-kind support from any official sector institution in China is included, regardless of its purpose, level of financial concessionality, funding source, and overseas destination. The only type of Official Financing we do not seek to capture is Official Investment, although we do capture debt financing that facilitates investment. The 2.0 dataset captures projects supported by 334 different official sector institutions in China, including central government agencies (like the Ministry of Commerce, the Ministry of Foreign Affairs, and the Ministry of Agriculture), regional and local government agencies (like Chongqing Municipal Health Commission and Tianjin Municipal Government), state-owned enterprises (like CNPC, CMEC, CATIC, and CRBC), state-owned policy banks (like China Development Bank and China Eximbank), state-owned commercial banks (like ICBC, BoC, and CCB), state-owned funds (like the Silk Road Fund), and non-profit government organizations (like Hanban and the China Foundation for Poverty Alleviation).

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[6] It does so by capturing official financial commitments in their original currencies of denomination, converting these financial amounts into nominal USD values at the average exchange rates that were in effect during the commitment years, and subsequently converting the nominal USD values to constant 2017 USD values using the OECD's deflation methodology (to adjust for inflation and ensure comparability over time and geographic space). See Appendix D.

- ➔ **Types of Flows:** The 2.0 dataset captures grants, technical assistance, loans, buyer's credits, seller's credits, debt forgiveness, debt rescheduling, debt refinancing, scholarships, and training activities. By monetary value, the majority of the ODA and OOF transfers ("flows") that are captured in the dataset come from official sector loans, seller's credits, and buyer's credits. Yet the majority of the *projects* in the dataset represent other types of financial or in-kind support. For many flow types other than loans, seller's credits, and buyer's credits, AidData was not able to identify monetary commitment values. However, these project records still provide valuable information for users who are interested in capturing the full set of Chinese ODA- and OOF-financed activities in a given world region, country, or subnational area.
- ➔ **Sectors:** We capture all officially-financed projects/activities related to ODA and OOF, regardless of the sector that they support. We classify each project/activity in the 2.0 dataset according to the OECD's 3-digit sector classification scheme.[7] AidData coders follow the OECD's classification guidelines to identify the sector that a given project/activity is meant to support.
- ➔ **Recipients:** AidData used the 2.0 version of the TUFF methodology to systematically search for projects supported by official financial and in-kind transfers from China across 165 countries and territories. The resulting dataset covers official financial and in-kind transfers from China to every low-income, lower-middle income, and upper-middle income country and territory across every major world region, including Africa, Asia, Oceania, the Middle East, Latin America and the Caribbean, and Central and Eastern Europe. It also covers 11 high-income countries that were included to help ensure comprehensive coverage in each world region to the extent possible. In total, the dataset identifies Chinese government-financed projects in 145 countries and territories, meaning that no projects were identified in 20 countries and territories despite systematic searches. See Appendix B for a full list of the countries systematically included in the 2.0 dataset.
- ➔ **Temporal Coverage:** The 2.0 dataset captures the known universe of projects (with development, commercial, and representational intent) supported by official financial and in-kind commitments (and pledges) from China over an 18-year period (2000-2017), with details on the timing of project implementation over a 22-year period (2000-2021). The dataset also assigns every project to one of six status categories (Pipeline: Commitment, Implementation, Completed, Suspended, or Cancelled) based on sources that were available as late as August 2021.

1.2 - Key Features of the Dataset

The 2.0 dataset includes 70 fields (variables), each seeking to capture a different aspect of a project or provide information about the sources used to compile the project record. A complete

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[7] See https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/purposecodessectorclassification.htm

list of field names and definitions is provided in Section 1.4. The fields in the dataset capture the following types of information about each project:

- ➔ **Basic Project Information:** The dataset provides foundational information about each project, including its title in English, Chinese, and host country languages, a unique and stable project identification number, the date of the official commitment, the monetary value of the official commitment, the currency in which the official commitment was denominated, the identity of the funder and recipient, the primary purpose of the project, the current status of the project, and URLs for all of the sources that supported the creation of the project record.
- ➔ **Transactional Details:** AidData identifies the nature of the financial or in-kind transfer (e.g., grant, loan, technical assistance, export buyer's credit, export seller's credit, supplier's credit, debt forgiveness, debt rescheduling, scholarship/training) supporting each project in the dataset. Whenever applicable, it documents loan and export credit pricing details (interest rate, maturity, grace period, management fee, commitment fee); levels of financial concessionality, as measured by the OECD's grant element calculator; the monetary value and timing of disbursements and repayments; the use of credit enhancements, including guarantees, insurance, and collateral; the establishment of special purpose vehicles, subsidiary on-lending arrangements, and escrow/revenue/special accounts; and the monetary value and timing of underlying commercial contracts. The 2.0 dataset also provides stable URLs to unredacted grant, loan, export credit, and debt forgiveness/rescheduling agreements whenever they have been successfully retrieved.
- ➔ **Development Finance Categorization:** AidData seeks to designate each project in the 2.0 dataset as Official Development Assistance (ODA) or Other Official Flows (OOF) based on measurement of the project's primary intent and the concessionality level of the financing provided for the project. AidData adheres closely to the OECD-DAC reporting directives that outline the financial, structural, and intent-related eligibility criteria for ODA and OOF. This unique feature of the dataset allows users to make cross-donor and cross-lender comparisons at global, regional, national, and subnational scales and over time.
- ➔ **Sectoral Categorization:** AidData assigns 3-digit OECD sector codes and names to all projects in the 2.0 dataset using the OECD's classification criteria. This unique feature of the dataset enables cross-donor and cross-lender comparisons—at global, regional, national, and subnational scales—since most official sources of international development finance (including all of the members of the OECD-DAC and the most multilateral institutions) use the same criteria. It also facilitates analysis of sectoral patterns and trends over geographic space and time.
- ➔ **Stakeholder Organizations:** Another feature that sets the 2.0 dataset apart is the level of detail that it provides about the organizations involved in Chinese government-financed development projects. It provides information about five different types of organizations for each project: (1) the official sector institution in China that is responsible for providing

funding and/or in-kind support for the project; (2) the co-financing institutions from inside and outside of China that are supporting the same project; (3) the recipient institutions that are responsible for managing incoming funds and in-kind transfers; (4) the contractors and subcontractors that are responsible for project implementation, and (5) the third-parties that provide repayment guarantees, credit insurance policies, and collateral that can be seized in the event of default. The 2.0 dataset also categorizes each of these organizations by type (i.e., Government Agency, State-Owned Bank, State-Owned Company, State-Owned Fund, Intergovernmental Organization, Special Purpose Vehicle/Joint Venture, Private Sector, NGO/CSO/Foundation) and country of origin (i.e., China, Recipient Country, or Other). In the 2.0 version of the dataset, we identify 334 official sector financing institutions from China, 460 co-financing institutions, 2,450 recipient institutions, 3,523 implementing institutions, and 227 institutions that provide guarantees, insurance, or sources of collateral.

➔ Timing of Project Implementation: The 2.0 dataset records high-precision (i.e., calendar day) data on the implementation start dates and completion dates of Chinese government-financed projects. These variables were also included in an earlier, 1.0 version of the dataset. However, in the 2.0 version of the dataset, these variables have vastly improved coverage rates. Whereas AidData was able to identify precise implementation start dates for 745 projects and precise project completion dates for 906 projects in the 1.0 version of its dataset, we have identified precise implementation start dates for 5,539 projects and precise project completion dates for 6,061 projects in the 2.0 version of the dataset. With calendar day-level information on the timing of project implementation and exact locational details, users of the 2.0 dataset can now measure the spatio-temporal rollout of project implementation with a high level of precision. The 2.0 dataset also provides data on the originally scheduled project implementation start dates and completion dates, so that users can determine if projects have been implemented on schedule, behind schedule, or ahead of schedule.

➔ Location Details: For projects that have physical footprints or involve specific locations, the 2.0 version of the dataset provides precise locational information that technical users can use to conduct geospatial analysis and non-technical users can use to instantly view where projects are taking (or have taken) place. Written descriptions of the geographical locations and features of project activities and OpenStreetMap links are available in the 'Geographic Location' field, while corresponding GeoJSON files are available for download in the 'GeoJSON URL DL' field for each relevant project. In addition, the link provided in "geoJSON URL Viz" allows those who wish to see a visualization of the geoJSON data to do so. The 2.0 dataset provides GeoJSON files and OpenStreetMap URLs for 3,285 projects (worth $350 billion). AidData has made the complete set of GeoJSON files along with usage tips, and related documentation accessible via https://github.com/aiddata/china-osm-geodata

➔ Project Risks, Achievements, Failures, and Setbacks: The 2.0 dataset provides a suite of variables (e.g., Commitment Year, Implementation Start Year, Completion Year, Status) that allow users to track projects over their full life cycles. Whenever possible, the dataset also provides a detailed overview (in the Description field) of the various challenges that arose during project design and implementation (such as strikes, riots, public protests, wars, corruption scandals, natural disasters, public health restrictions, political transitions, bankruptcies, debt defaults, contractual disputes, lawsuits, and ruptures in diplomatic relations) and how funding, receiving, implementing, and accountable institutions responded to these challenges. Additionally, the dataset provides information about project achievements and failures, contractor performance vis-à-vis deadlines and deliverables, and findings from project audits and evaluations.

➔ **Sources:** One of the hallmarks of the TUFF 2.0 methodology is source transparency. For each record in the 2.0 dataset, a complete list of the sources is provided, including public URLs, the title of the source, the publisher, and the type of source. In total, the 13,427 project records in the dataset rely upon 91,356 sources, including 63,464 unique sources.[8] The number of sources attached to each record vary from 1 to 115, with an average of 6.8 sources per record. The sources used to create the dataset include both official and non-official sources.[9] In constructing the 2.0 dataset, we sought to identify and integrate as many official sources as possible. These sources are authoritative in that they provide data and documentation from funding agencies, recipient agencies, and implementing agencies that are directly involved in the project or have firsthand knowledge of the financial/in-kind transfer supporting the project.[10] We assigned special priority to the use of these sources during the construction of the 2.0 dataset. 89% of the project records in the 2.0 dataset were constructed with at least 1 official source.

1.3 - Guide to Using the Dataset

Given the comprehensive nature of the 2.0 dataset and some of the unique challenges that arise when data on Chinese ODA- and OOF-financed projects are collected from a highly decentralized set of open sources, we have created five fields to help users easily identify the subset of projects that they wish to analyze. These fields include:

- **Umbrella:** This field is designed to capture hierarchical relationships between projects and various types of agreements. A record in the dataset is identified as an "umbrella" project in two circumstances. The first circumstance is when a financial agreement was signed by at least one party in the donor/creditor country and one party in the receiving country, but funds were not allocated for a specific project/purpose (or set of

[8] In many cases, official sources provide information about *multiple* projects, which is one of the main reasons why the total number of unique sources is 63,464 but the total number of sources is 91,356.

[9] Official source types include "Donor/Recipient Official Source," "Implementing/Intermediary Organization Source," and "Other Official Source (non-Donor, non-Recipient, non-Implementing)." Non-Official source types include "NGO/Civil Society/Advocacy (non-Donor, non-Recipient, non-Implementing)," "Media Report," "Social Media, including Unofficial Blogs," "Academic Journal Article," "Other Academic (Working Paper, Dissertation)," and "Other."

[10] We also treat intergovernmental organizations—like the World Bank and the International Monetary Fund—with aid and debt monitoring responsibilities as official sources.

projects/purposes) until a subsequent date. These types of umbrella agreements include Economic and Technical Cooperation Agreements (ECTA) issued by China's Ministry of Commerce (MOFCOM), master facility agreements issued by China Eximbank, lines of credit issued by China Development Bank, and Framework Agreements issued by a variety of official sector institutions in China. Due to the nature of the TUFF data collection process, the subsidiary projects/transactions approved and financed under these types of umbrella agreements are likely captured elsewhere in the dataset. The second circumstance is when a debt forgiveness project could involve loans captured elsewhere in the 2.0 dataset. If a debt forgiveness project involves loans contracted before 2000 (when the 2.0 dataset begins its coverage of Chinese ODA and OOF), then the debt forgiveness project will not be marked as an umbrella. However, if the debt forgiveness project involves a loan contracted during the 2000-2017 period, or it is unclear when the original loan was contracted, then the project is designated as an umbrella project to avoid double counting. Umbrella projects are included in the 2.0 dataset to clarify linkages between projects and to capture relevant activities without double-counting financial amounts or project counts. As a general rule, no umbrella records should be included in financial analysis or analysis of project counts as doing so will almost certainly result in double-counting.

- **Status:** The 2.0 dataset captures the full range of potential, actual, and suspended/cancelled projects, and it distinguishes among them using the status field. This field identifies the latest status of a project. Each project is assigned to one of six categories: Pipeline: Pledge, Pipeline: Commitment, Implementation, Completed, Suspended, Cancelled (see Section 1.4 for a full description of each status). Project assigned to the Pipeline: Commitment, Implementation, and Completed categories represent active or completed projects that either benefit(ed) from (1) a binding, written agreement that governs the provision of financial or in-kind support from an official sector donor or lender in China (especially for loans and large grants), or (2) the provision of financial or in-kind support that has already taken place(e.g., humanitarian aid or small donations that were handed over to the recipient). As such, we consider the portfolio of projects assigned to to the Pipeline: Commitment, Implementation, and Completed categories to represent the actual portfolio of Chinese ODA and OOF (i.e., financial and in-kind transfers that have already happened, are underway, or scheduled to take place in the future). In contrast, projects assigned to the "Pipeline: Pledge" category represent projects that official sector institutions in China have indicated interest in supporting but have no binding legal obligation to do so. These projects may benefit from financial and in-kind transfers in the future, but additional steps need to be taken by the official sector institutions in China and/or recipient country counterparts before the projects can move forward with support from Chinese ODA or OOF.. Similarly, projects assigned to the Suspended and Cancelled categories projects represent those that were backed by an official commitment but subsequently suspended or cancelled (typically due to project design or implementation problems or disagreements) For analysis that requires the aggregation of projects supported by Chinese ODA or OOF commitments, including analysis of monetary amounts and project counts, only projects assigned to the Pipeline:

Commitment, Implementation, and Completed categories should be included. However, given that some analysts are interested in better understanding China's portfolio of pledged, cancelled, and suspended projects, we have included them in the full dataset to provide flexibility to users.

- **Recommended for Aggregates:** We recommend using this field for analysis that requires the aggregation of projects supported by Chinese ODA or OOF commitments, including analysis of monetary amounts and project counts.. The "Recommended for Aggregates" field was constructed based on the Umbrella field and the Status field. It is set to "Yes" for non-umbrella projects that are also formally approved (Status = Pipeline: Commitment), active (Status = Implementation), and completed (Status = Completed). It is set to "No" for umbrella projects and projects that have been assigned to the following status categories: Pipeline: Pledge, Suspended, and Cancelled.
- **Flow Type:** This field captures the type of financial or in-kind transfer supporting the project. Each project is assigned to one of nine categories: Loan, Export Buyer's Credit, Supplier's Credit/Export Seller's Credit, Debt Forgiveness, Debt Rescheduling, Grant, Scholarships/Training in Donor Country, Freestanding Technical Assistance, and Vague (TBD). Users interested in a particular type of financial or in-kind transfer can use this field to identify the relevant subset of projects. There are several issues that should be considered by users who wish to conduct analysis of the debt forgiveness and debt rescheduling records in the 2.0 dataset:
    - In cases of debt forgiveness, we set the Umbrella field to "Yes" if the original loan, buyer's credit, or seller's credit that was contracted by the borrower is (or could plausibly be) captured elsewhere in the dataset as a separate project record (given a flow type designation of Loan, Export Buyer's Credit, or Supplier's Credit/Export Seller's Credit). We have done so to help users avoid double counting. If the original loan, buyer's credit, or seller's credit that was contracted by the borrower occured before 2000 (the first official commitment year captured in the 2.0 dataset), then the Umbrella field is set to "No." As such, if users are interested in isolating all cases of debt forgiveness, we recommend turning the "Recommended for Aggregates" filter off and then using the "Flow Type" field to identify all projects assigned to the "Debt Forgiveness" category (irrespective of whether they are coded as umbrella projects).
    - In cases of Debt rescheduling or refinancing, we do not populate any fields related to transaction amounts [Amount (Original Currency), Original Currency Amount (Constant USD2017), Amount (Nominal)] for projects assigned to the "Debt Rescheduling" category to help users avoid double-counting. However, users who wish to undertake analysis of debt reschedulings can find detailed information about the terms and conditions of these reschedulings in the "Description" fields of the projects that are assigned to the "Debt Rescheduling" category.
- **Flow Class:** Based on OECD-DAC guidelines for Official Development Assistance (ODA) and Other Official Flows (OOF), this field assigns projects to one of three categories: ODA-like, OOF-like, Vague (Official Finance). See Section 1.4 for full descriptions of each

category. Flow class is a useful distinction for users who wish to (a) distinguish between "development aid" in the strict/traditional sense of the term (i.e., ODA) and official sector loans and export credits that are non-concessional or semi-concessional in nature (i.e., OOF); or (b) compare Chinese development finance to other sources of development finance that are categorized according to OECD-DAC definition and measurement criteria.

While users of the 2.0 dataset may rely on additional fields to identify the subset of transfers (flows) they are interested in better understanding, these five fields should be carefully considered before conducting any analysis.

1.4 - Field Definitions

The 2.0 dataset includes 70 separate fields (variables) to document a detailed picture of each Chinese ODA- and OOF-financed project. Field names and definitions are provided in the table below.

Field Name	Description
AidData TUFF Project ID	This field provides the unique identification number that AidData has assigned to every project record in the 2.0 version of the dataset. Whenever applicable, this number matches the identification number in AidData's Global Chinese Official Finance Dataset, Version 1.0
Recommended For Aggregates	This field identifies projects that AidData recommends including in analysis that requires the aggregation of projects supported by official financial (or in-kind) commitments from China, including analysis of monetary amounts and project counts. It is useful for identifying formally approved, active, and completed Chinese government-financed projects -- and excluding all cancelled projects, suspended projects, and projects that never reached the formal approval (official commitment) stage. The field is set to "Yes" for all projects with a status designation of Pipeline: Commitment, Implementation, and Completion that have not also been designated as umbrella agreements. It is set to "No" for all cancelled projects, suspended projects, and projects that never reached the official commitment stage (i.e. those projects with a status designation of Pipeline: Pledge, Suspended, and Cancelled). Additionally, to avoid double-counting, the field is set to "No" for all umbrella agreements. For more information on umbrella agreements, see the description of the "Umbrella" field in this file. Also, note that not all projects with a "Recommended for Aggregates" value of "True" identify a financial transaction value (since some transactions are difficult to monetize, such as in-kind donations, technical assistance, scholarships, and training activities).
Umbrella	This field identifies projects as "umbrella" agreements (with a "Yes" designation) in two circumstances. The first circumstance is when a financial agreement was signed by at least one party in the donor/creditor country and one party in the receiving country, but

	funds were not allocated for a specific project/purpose (or set of projects/purposes) until a subsequent date. These types of umbrella agreements include Economic and Technical Cooperation Agreements (ECTA) issued by China's Ministry of Commerce (MOFCOM), master facility agreements issued by China Eximbank, lines of credit issued by China Development Bank, and Framework Agreements issued by a variety of official sector institutions in China. Due to the nature of the TUFF data collection process, the subsidiary projects/transactions approved and financed under these types of umbrella agreements are likely captured elsewhere in the dataset. The second circumstance is when a single project is financed by multiple Chinese government or Chinese state-owned institutions. In these cases, AidData creates one umbrella record to record the full amount of the financial commitment for the project and a linked set of subsidiary project records to capture the respective financial commitments of each Chinese government or Chinese state-owned institution. All umbrella agreements in the dataset are assigned a designation of "No" in the "Recommended for Aggregates" field to help users avoid double counting.
Financier Country	This field captures the country from which the official financial or in-kind transfer originated.
Recipient	This field captures the country from which the entity receiving the official financial or in-kind transfer is located. If multiple entities from multiple recipient countries are involved, this field records the geographical region to which the recipient countries belong.
Recipient Region	This field captures the geographical region to which the recipient country belongs: Africa, Americas, Asia, Europe, Middle East, Oceania, or Multi-Region.
Commitment Year	This field captures the year in which an official financial commitment (or official commitment to provide in-kind support) was codified through the signing of a formal agreement by an official donor/lender in China and one or more entities in a recipient country or a set of recipient countries. In the event an official commitment was made for a project that entered implementation, but the official commitment year is not identifiable, AidData records the first year of project implementation as a proxy for the official commitment year. In the event an official commitment was made for a project that has not yet reached implementation, and the official commitment year is not identifiable, AidData records the year in which the underlying commercial contract (supported by the official commitment) was issued. If this information is unavailable, AidData records the first year in which an informal pledge was made as a proxy for the official commitment year. For projects with a status designation of Pipeline Pledge (i.e. cases in which an official commitment was not made), AidData records the year in which the informal pledge was made.
Commitment Year Estimated	For projects with a status designation of Pipeline: Commitment, Implementation, Completion, Suspended, and Cancelled, this marker designates whether AidData estimated the commitment year or reported the actual year in which the official commitment was made. The field is set to "Yes" when the "Commitment Year" field is

	estimated by AidData. It is otherwise set to “No,” which indicates that AidData has reported the actual commitment year. For projects with a status designation of Pipeline Pledge, this marker designates whether AidData estimated the pledge year or reported the actual year in which the informal pledge was made.
Implementation Start Year	This field captures the year in which a project supported by an official financial (or in-kind) commitment from China began implementation. Whenever possible, this field is based on the precise calendar day when project implementation began, which is captured in the 'Actual Implementation Start Date' field. For projects that involve the construction of buildings or infrastructure, the 'Implementation Start Year' field seeks to capture the first year of construction. In cases when the first year of construction is unavailable but a proxy for the first year of construction (e.g., the year in which a formal groundbreaking ceremony took place, a project commencement order was issued to the contractor responsible for implementation, or a project implementation agreement was signed) can be identified, AidData records the proxy for the first year of construction. For projects that do not involve construction but involve the provision of personnel, training, analytical/advisory support, equipment, supplies, or commodities, the 'Implementation Start Year' field captures the first year in which some type of support was delivered to an entity in the recipient country. For projects that only involve financial transactions (e.g., cash donations, loans issued to shore up a country’s foreign exchange reserves, forgiveness or rescheduling of outstanding debts), the 'Implementation Start Year' field captures the year in which the first disbursement was made (or the year in which new terms and conditions went into effect for a previously signed loan/export credit agreement).
Completion Year	This field captures the year in which a project supported by an official financial (or in-kind) commitment from China was completed. Whenever possible, this field is based on the precise calendar day when a project was completed, which is captured in the 'Actual Completion Date' field. For projects that involve the construction of buildings or infrastructure, the 'Completion Year' field seeks to capture the last year of construction. In cases when the last year of construction is unavailable but a proxy for the last year of construction (e.g., a road or railway is opened for use, a power plant reaches its commercial operation date and begins selling electricity to customers) can be identified, AidData records the proxy for the last year of construction. For projects that do not involve construction but involve the provision of personnel, training, analytical/advisory support, equipment, supplies, or commodities, the 'Completion Year' field captures the last year in which some type of support was delivered to an entity (or set of entities) in the recipient country. For projects that only involve financial transactions (cash donations, loans issued to shore up foreign exchange reserves, forgiveness or rescheduling of outstanding debts), the 'Completion Year' field captures the year in which the last disbursement was made (or the year in which new terms and conditions went into effect for a previously signed loan/export credit agreement).

Title	This field briefly describes the name or nature of the project. The identification numbers of other transactions that are linked to the project are also recorded in this field.
Description	This field provides a detailed summary of the main purposes and activities of the project; the funding, receiving, and implementing agencies involved in the project; the terms and conditions of the financial transaction(s) supporting the project; the timing of project implementation and completion; the challenges that arose during project implementation and how funding, receiving, and implementing agencies responded to these challenges; and main achievements and shortcomings of the project. For loan- and export credit-financed projects, AidData also records the monetary value and timing of underlying commercial contracts, disbursements, and repayments in this field.
Staff Comments	This field captures comments from AidData staff that clarify the assumptions, logic, and evidence used to address challenging coding and categorization determinations. It also provides foreign translations of project titles (used for source identification purposes), information about related projects/transactions, and information about the ownership structures of funding, receiving, and implementing agencies.
Status	This field identifies the latest status of a project. Each project is assigned to one of six categories: Pipeline: Pledge, Pipeline: Commitment, Implementation, Completed, Suspended, Cancelled. A project assigned to the "Pipeline: Pledge" category is one that an official sector institution in China indicated it was interested in supporting (or willing to consider supporting) but did not result in an official commitment. Projects assigned to this category include those that are identified in letters of intent, term sheets, memoranda of understanding, and non-binding announcements. All projects given a status designation of Pipeline: Commitment, Implementation, Completed, Suspended, or Cancelled reached the official commitment stage (i.e., a binding, written agreement that governs the provision of financial or in-kind support for a specific project/purpose was signed by an official sector donor or lender in China and an entity in a recipient country). A project assigned to the "Pipeline: Commitment" category is one that is backed by an official commitment but has not yet entered implementation. A project assigned to the "Implementation" category is one that is backed by an official commitment and has begun implementation with financial or in-kind support from the source of the commitment. A project assigned to the "Completion" category is one that is backed by an official commitment and that reached completion with financial or in-kind support from the sources of the commitment. Projects assigned to the "Suspended" and "Cancelled" categories are those that were backed by an official commitment but subsequently suspended or cancelled. The coding of the "Status" field in the 2.0 dataset is based on sources that were available as late as August 2021.
Intent	This field seeks to measure the primary purpose of the project. Each project is assigned to one of five categories: Development, Commercial, Representational, Mixed, or Military. Projects assigned to the "Development" category are those that are primarily oriented towards the promotion of economic development and welfare in the recipient

	country. Projects assigned to the “Commercial” category are those that primarily seek to promote the commercial interests of the country from which the financial transfer originated (e.g., encouraging the export of Chinese goods and services). Projects assigned to the “Representational” category are those that primarily seek to promote a bilateral relationship with another country or promote the language, culture, or values of the country from which the financial transfer originated (e.g., the establishment of a Confucius Institute or Chinese cultural center). If a project is assigned to the “Mixed” category, this designation indicates that it was not possible for AidData to identify the primary purpose of the project and the project has multiple purposes (i.e., some combination of development, commercial, and/or representational intent). Projects assigned to the “Military” category are those that seek to promote the security interests of the country from which the financial transfer originates or strengthen the capabilities of military institutions in the recipient country.
Flow Type	This field captures the type of financial or in-kind transfer supporting the project. Each project is assigned to one of nine categories: Loan, Export Buyer's Credit, Supplier's Credit/Export Seller's Credit, Debt Forgiveness, Debt Rescheduling, Grant, Scholarships/Training in Donor Country, Freestanding Technical Assistance, and Vague (TBD). In cases of debt forgiveness, the Umbrella field is set to "Yes" if the original contracted loan could be captured elsewhere in the dataset as a loan project record. This is done to avoid double counting. If the original contracted loans occured before 2000 (when the dataset begins to track Chinese Development Finance), then the Umbrella field is set to "No." As such, if users are interested in isolating all cases of debt forgiveness, AidData recommends turning the “Recommended for Aggregates” filter off and then using the “Flow Type” field to identify all projects assigned to the “Debt Forgiveness” category (irrespective of whether they are coded as umbrella projects). Also, to help users avoid double-counting, AidData does not populate any fields related to transaction amounts [Amount (Original Currency), Original Currency Amount (Constant USD2017), Amount (Nominal)] for projects assigned to the “Debt Rescheduling” category. However, users who wish to undertake analysis of debt reschedulings can find detailed information about the terms and conditions of these reschedulings in the “Description” fields of the projects that are assigned to the “Debt Rescheduling” category.
Concessional	This marker designates whether the flow is concessional in nature or not. For loan- and export credit-financed projects, this marker identifies whether the loan terms were provided on concessional terms or not. The concessionality determination is based on OECD's grant element calculator and 25% grant element threshold. For grants, scholarships, technical assistance, training activities, and debt forgiveness, the concessional marker is set to "Yes". If the concessionality is unknown, this marker is set to "vague".
Flow Class	Based on OECD-DAC guidelines for Official Development Assistance (ODA) and Other

	Official Flows (OOF), this field assigns projects to one of three categories: ODA-like, OOF-like, Vague (Official Finance). Projects are assigned to the ODA-Like category if they meet three criteria. First, the primary purpose of the project must be the promotion of economic development and welfare in the recipient country (i.e., have development intent). Second, the official commitment supporting the project must be concessional in nature (i.e., grant, technical assistance, scholarship, debt forgiveness, or loan with a grant element of at least 25%). Third, the project must take place in a country that qualifies for ODA based on its income level. Projects that are supported by an official financial or in-kind transfer but do not meet all three of these criteria are assigned to the OOF-Like category. Projects that are backed by an official commitment but cannot be reliably categorized as ODA-like or OOF-like because of insufficiently detailed information are assigned to the "Vague (Official Finance)" category. Projects in this residual category primarily consist of (a) those with an unspecified "Flow Type" (i.e., values of "Vague TBD"); and (b) those financed with development-intent loans for which AidData lacks the borrowing terms (interest rates, grace periods, or maturity dates) needed to concessionality determinations.
Sector Code	This field provides a 3-digit sector code based upon the primary sectoral focus of the project. It is based upon the OECD's sector categorization scheme. There are 24, three-digit OECD sector codes: education (110), health (120), population policies/programs and reproductive health (130), water supply and sanitation (140), government and civil society (150), other social infrastructure and services (160), transport and storage (210), communications (220), energy (230), banking and financial services (240), business and other services (250), agriculture, forestry and fishing (310), industry, mining, and construction (320), trade policies and regulation (330), general environmental protection (410), other multisector (430), general budget support (510), developmental food aid/food security assistance (520), other commodity assistance (530), action relating to debt (600), emergency response (720), reconstruction relief and rehabilitation (730), disaster prevention and preparedness (740), and unallocated/unspecified (998).
Sector Name	This field provides a sector name based upon the primary sectoral focus of the project. It is based upon the OECD's sector categorization scheme. There are 24, three-digit OECD sector codes: education (110), health (120), population policies/programs and reproductive health (130), water supply and sanitation (140), government and civil society (150), other social infrastructure and services (160), transport and storage (210), communications (220), energy (230), banking and financial services (240), business and other services (250), agriculture, forestry and fishing (310), industry, mining, and construction (320), trade policies and regulation (330), general environmental protection (410), other multisector (430), general budget support (510), developmental food aid/food security assistance (520), other commodity assistance (530), action relating to debt (600), emergency response (720), reconstruction relief and rehabilitation (730), disaster prevention and preparedness (740), and unallocated/unspecified (998).

Funding Agencies	This field captures the name of the agency that issued the official financial or in-kind commitment. The agency identified in this field must be based in the country (the People's Republic of China) from which the official financial or in-kind commitment originated. For projects assigned to the Pipeline: Pledge category, this field captures the name of the official sector agency that issued the pledge. The same "origin rule" applies to funding agencies that issued pledges rather than commitments. If multiple Chinese funding agencies are involved, the entries are pipe-delimited.
Funding Agencies Type	This field captures the type of funding agency that issued the commitment or pledge. Each project is assigned to one of six categories: Government Agency, State-Owned Policy Bank, State-Owned Commercial Bank, State-Owned Bank, State-Owned Company, and State-Owned Fund.
Cofinanced	This marker indicates whether a separate funding agency (belonging to the financier country or another country) provided funding for the project.
Cofinancing Agencies	This field provides the names of the cofinancing agencies providing funding for the project. If multiple cofinancing agencies are involved, the entries are pipe delimited.
Cofinancing Agencies Type	This field captures the type of cofinancing agency that provided funding. Each co-financing agency is assigned to one of twelve categories: Government Agency, State-Owned Bank, State-Owned Policy Bank, State-Owned Commercial Bank, State-Owned Company, State-Owned Fund, Intergovernmental Organization, Special Purpose Vehicle/Joint Venture, Private Sector, NGO/CSO/Foundation, Other, or No Organization Type Specified.
Cofinancing Agencies Origin	This field indicates the origin of the co-financing agency with respect to whether it is from the financier country, the recipient country, or another country. Each co-financing agency is assigned to one of the following categories: China, Recipient Country, or Other.
Receiving Agencies	This field provides the name of the agency designated to receive and manage the financial or in-kind transfer. For projects that are financed with loans or export credits, the receiving agency is the entity responsible for debt repayment. If a receiving agency (borrower) on-lends to the proceeds of a loan or export credit to an additional entity or entities, all entities with formal repayment responsibilities are identified in the "Receiving Agency" field (as pipe-delimited entries). Likewise, if more than one entity is responsible for receiving and managing an incoming grant or an in-kind transfer, all of these entities are identified in the "Receiving Agency" field (as pipe-delimited entries).
Receiving Agencies Type	This field captures the type of agency designated to receive and manage the incoming financial or in-kind transfer. Each receiving agency is assigned to one of ten categories: Government Agency, State-Owned Bank, State-Owned Company, State-Owned Fund, Intergovernmental Organization, Special Purpose Vehicle/Joint Venture, Private Sector, NGO/CSO/Foundation, Other, or No Organization Type Specified.
Receiving	This field indicates the origin of the receiving agency with respect to whether it is from

Agencies Origin	the financier country, the recipient country, or another country. Each receiving agency is assigned to one of the following categories: China, Recipient Country, or Other.
Implementing Agencies	This field provides the name of the agency responsible for implementing the project activities. If more than one agency is responsible for implementing the project activities, all such agencies are identified in the "Implementing Agencies" field (as pipe-delimited entries).
Implementing Agencies Type	This field captures the type of agency responsible for implementing the project activities. Each implementing agency is assigned to one of ten categories: Government Agency, State-Owned Bank, State-Owned Company, State-Owned Fund, Intergovernmental Organization, Special Purpose Vehicle/Joint Venture, Private Sector, NGO/CSO/Foundation, Other, or No Organization Type Specified.
Implementing Agencies Origin	This field indicates the origin of the implementing agency with respect to whether it is from the financier country, the recipient country, or another country. Each receiving agency is assigned to one of the following categories: China, Recipient Country, or Other.
Accountable Agencies	This field provides the name of any agency other than the receiving agency that has a contractual obligation to ensure that the official creditor (i.e. funding agency) directly or indirectly recovers the funds it lent to the receiving agency. These "accountable agencies" include any third-parties that (i) provide a repayment guarantee in the event the borrower (i.e. receiving agency) cannot service its debt; (ii) issue a credit insurance policy to ensure repayment in the event the borrower cannot service its debt; or (iii) pledge one or more sources of collateral that can be seized in the event the borrower defaults on its repayment obligations. If more than one agency other than the receiving agency has a contractual obligation to ensure that the official creditor recovers the funds it lent to the receiving agency, all of these agencies are identified in the "Accountable Agencies" field as pipe-delimited entries.
Accountable Agencies Type	This field captures the type of accountable agency that has a contractual obligation to ensure that the official creditor (i.e., funding agency) directly or indirectly recovers the funds it lent to the receiving agency. Each accountable agency is assigned to one of ten categories: Government Agency, State-Owned Bank, State-Owned Company, State-Owned Fund, Intergovernmental Organization, Special Purpose Vehicle/Joint Venture, Private Sector, NGO/CSO/Foundation, Other, or No Organization Type Specified.
Accountable Agencies Origin	This field indicates the origin of the accountable agency with respect to whether it is from the financier country, the recipient country, or another country. Each accountable agency is assigned to one of the following categories: China, Recipient Country, or Other.
Amount (Original Currency)	This field captures the monetary amount that the funding agency committed (or pledged) in its original currency of denomination. For projects that were at some point supported by an official commitment (i.e., projects with status designations of Pipeline: Commitment, Implementation, Completed, Suspended, Cancelled), this field captures

	the original commitment amount. For projects with status designations of Pipeline: Pledge, this field captures the amount of funding that was pledged.
Original Currency	This field captures that currency of denomination associated with the monetary amount that the funding agency committed (or pledged), as recorded in the Amount (Original Currency) field.
Amount (Constant USD2017)	This field captures the monetary value of the official commitment (or pledge) issued by the funding agency in constant 2017 U.S. dollars. To calculate this value, AidData first converts the financial commitment (or pledge) amount in its original currency of denomination to nominal U.S. dollars at the average exchange rate in effect during the commitment (or pledge) year, and then converts this amount to constant 2017 U.S. dollars using the OECD's deflation methodology to adjust for inflation and ensure comparability over time and space (see Appendix D for details).
Amount (Nominal)	This field captures the monetary value of the official commitment (or pledge) issued by the funding agency in nominal U.S. dollars. It is one of the inputs used to calculate financial commitment (and pledge) amounts in constant 2017 U.S. dollars, as recorded in the Amount (Constant USD2017) field.
Planned Implementation Start Date (MM/DD/YYYY)	This field captures the day on which a project supported by an official financial (or in-kind) commitment from China was originally scheduled to begin implementation. Whenever possible, this field is based on the precise calendar day when the project was originally scheduled to begin implementation. However, in cases when AidData is only able to identify the month and year in which project implementation was scheduled to begin (e.g., May 2018), the "Planned Implementation Start Date" field is set to the first day of the month (e.g., 05/01/2018).
Planned Completion Date (MM/DD/YYYY)	This field captures the calendar day on which a project supported by an official financial (or in-kind) commitment from China was originally scheduled to reach completion. Whenever possible, this field is based on the precise calendar day when the project was originally scheduled to reach completion. However, in cases when AidData is only able to identify the month and year in which a project was scheduled to reach completion (e.g., May 2018), the "Planned Completion Start Date" field is set to the first day of the month (e.g., 05/01/2018).
Actual Implementation Start Date (MM/DD/YYYY)	This field captures the calendar day on which a project supported by an official financial (or in-kind) commitment from China began implementation. Whenever possible, this field is based on the precise calendar day when project implementation began. However, in cases when AidData is only able to identify the month and year in which project implementation began (e.g., May 2018), the "Actual Implementation Start Date" field is set to the first day of the month (e.g. 05/01/2018). For projects that involve the construction of buildings or infrastructure, the "Actual Implementation Start Date" field seeks to capture the first day of construction. In cases when the first day of construction is unavailable but a proxy for the first day of construction (e.g., the date on which a formal groundbreaking ceremony took place, a project commencement order was issued

	to the contractor responsible for implementation, or a project implementation agreement was signed) can be identified, AidData records the proxy for the first date of construction. For projects that do not involve construction but involve the provision of personnel, training, analytical/advisory support, equipment, supplies, or commodities, the “Actual Implementation Start Date” field captures the first day in which some type of support was delivered to an entity (or set of entities) in the recipient country. For projects that only involve financial transactions (cash donations, loans issued to shore up a country’s foreign exchange reserves, forgiveness or rescheduling of outstanding debts), the “Actual Implementation Start Date” field captures the day on which the first disbursement was made (or the day on which new terms and conditions went into effect for a previously signed loan/export credit agreement).
Actual Completion Date (MM/DD/YYYY)	This field captures the calendar day on which a project supported by an official financial (or in-kind) commitment from China was completed. Whenever possible, this field is based on the precise calendar day when a project was completed. However, in cases when AidData is only able to identify the month and year in which a project was completed (e.g., May 2018), the “Actual Completion Date” field is set to the first day of the month (e.g., 05/01/2018). For projects that involve the construction of buildings or infrastructure, the “Actual Completion Date” field seeks to capture the last day of construction. In cases when the last day of construction is unavailable but a proxy for the last day of construction (e.g., a road or railway is opened for use, a power plant reaches its commercial operation date and begins selling electricity to customers) is available, AidData records the proxy for the last day of construction. For projects that do not involve construction but involve the provision of personnel, training, analytical/advisory support, equipment, supplies, or commodities, the “Actual Completion Date” field captures the last day on which some type of support was delivered to an entity (or set of entities) in the recipient country. For projects that only involve financial transactions (cash donations, loans issued to shore up foreign exchange reserves, forgiveness or rescheduling of outstanding debts), the “Actual Completion Date” field captures the day on which the last disbursement was made (or the day on which new terms and conditions went into effect for a previously signed loan/export credit agreement).
Loan Type	For loan- and export credit-financed projects, this field captures the nature of the debt that was issued. This field has five different categories: Interest-Free, Concessional, Non-Concessional, No Information, and Some Information.
Maturity	This field captures the total number of years it will take the borrower to repay a loan or export credit, as specified in the original loan or export credit agreement. Maturity lengths are inclusive of grace periods. In cases when a loan or export credit’s maturity is modified after an official commitment is issued, AidData captures the maturity modification through a separate record in the dataset that is given a flow type designation of “Debt Rescheduling.”
Interest Rate	This field captures the rate of interest (in percentage terms) that applies to a loan or

	export credit, as specified in the original loan or export credit agreement. In cases when the interest rate is tied to a floating rate such as LIBOR or EURIBOR, AidData calculates the value of the floating rate in the month (or year) when the official commitment was issued. In cases when a loan or export credit's interest rate is modified after an official commitment is issued, AidData captures the interest rate modification through a separate record in the dataset that is given a flow type designation of "Debt Rescheduling."
Grace Period	This field captures the number of years for which the borrower (receiving agency) is not expected to make principal repayments to the creditor (funding agency), as specified in the original loan or export credit agreement. In cases when a loan or export credit's grace period is modified after an official commitment is issued, AidData captures the grace period modification through a separate record in the dataset that is given a flow type designation of "Debt Rescheduling."
Management Fee	This field captures the management fee (in percentage terms) that applies to the loan or export credit, as specified in the original loan or export credit agreement. A management fee is a one-time, lump sum fee that is charged as a percentage of the face value of the loan. In cases when a loan or export credit's management fee is modified after an official commitment is issued, AidData captures the management fee modification through a separate record in the dataset that is given a flow type designation of "Debt Rescheduling."
Commitment Fee	This field captures the commitment fee (in percentage terms) that applies to the loan or export credit, as specified in the original loan or export credit agreement. A commitment fee is a fee that a borrower must pay to compensate the lender for its commitment to lend; it is usually payable semi-annually and the size of the fee is usually based on a fixed percentage of the undisbursed loan amount. In cases when a loan or export credit's commitment fee is modified after an official commitment is issued, AidData captures the commitment fee modification through a separate record in the dataset that is given a flow type designation of "Debt Rescheduling."
Grant Element	The field captures the grant element of the loan or export credit, at the time that the original loan or export credit agreement was signed. To calculate the grant element of a loan or export credit, which is a measure that varies from 0 percent to 100 percent, one needs to calculate the discounted cost (or "net present value") of the future debt service payments that will be made by the borrower. This calculation requires information about the loan or export credit's face value, maturity length, grace period, and interest rate. When AidData has access to loan or export credit's face value, maturity length, grace period, and interest rate, it uses the OECD's grant element calculator (assuming a fixed, 10 percent discount, 2 repayments per year, and equal principal repayments). In theory, a grant element calculator can generate values above 100% or below 0%. However, AidData bounds grant element values so that they cannot assume negative values (since negative values imply lending terms that are "less favorable than market terms," which is

	nonsensical if market terms are risk-adjusted prices agreed by willing buyers and sellers of credit) or values that exceed 100%. In cases when AidData does not have access to enough information to use the OECD's grant element calculator but the sources that underpin the project record identify a grant element estimate, AidData records the grant element estimate in this field.
Guarantee Provided	This field provides a marker of whether it is known that a loan or export credit repayment guarantee was issued by a third-party (accountable agency). It assumes a value of "Yes" whenever a sovereign or corporate guarantee is issued in support of a loan or export credit.
Insurance Provided	This field provides a marker of whether it is known that a third-party (accountable agency) issued a credit insurance policy to the borrower (receiving agency). For example, it assumes a value of "Yes" whenever a loan or export credit is backed by a credit insurance policy issued by China Export & Credit Insurance Corporation (Sinosure).
Collateralized/ Securitized	This field provides a marker of whether it is known that one or more sources of collateral (security) can be seized in the event the borrower defaults on its loan/export credit repayment obligations. It assumes a value of "Yes" when (i) a loan/export credit is collateralized through a formal lien or security interest; (ii) a borrower is required to deposit project-related revenues or unrelated revenues in a special account, escrow account, or revenue account that can be accessed (and debited) by the lender; and/or (iii) a security agent is appointed (to enforce rights against the collateral in the event that the borrower defaults on its repayment obligations). AidData also codes all pre-export finance (PXF) facilities as collateralized since they are almost always secured by (1) an assignment of rights by the producer under an 'offtake contract' (i.e., a sale and purchase contract between the producer and a buyer of that producer of goods or commodities), and (2) a collection account charge over a bank account into which proceeds due to the producer from the buyer of the goods or commodities under the offtake contract are credited.
Collateral	This field describes the nature of the collateral (security) that can be seized in the event the borrower defaults on its loan/export credit repayment obligations.
Official Source Count	This field provides a count of the total number of official sources used to create the project record. Official source types include Donor/Recipient Official Source Implementing/Intermediary Organization Source, and Other Official Source (non-Donor, non-Recipient, non-Implementing).
Non-Official Source Count	This field provides a count of the total number of non-official sources used to create the project record. Non-Official source types include NGO/Civil Society/Advocacy (non-Donor, non-Recipient, non-Implementing), Media Report, Social Media, including Unofficial Blogs, Academic Journal Article, and Other Academic (Working Paper, Dissertation), and Other.
Source URLs	This field provides URLs to the sources that were used to create the project record. The entries are pipe delimited

Source Titles	This field provides the titles of the source articles, reports, and websites used to create the project record. The entries are pipe delimited.
Source Publishers	This field provides the names of the publishers of the source articles, reports, and websites used to create the project record. The entries are pipe delimited.
Source Type	This field identifies the type of sources that were used to create the project record. The entries are pipe delimited.
Geographic Location	This field provides a description of the geographical locations of project activities. Whenever possible, AidData captures geographical information that makes it possible to identify (i) the precise physical boundaries and exact locations of buildings and facilities (e.g. schools, hospitals, stadiums, government buildings, power plants, and factories) with polygons or points; (ii) the precise geographical scope of special economic zones, industrial parks, mining concessions, protected areas, and plots of land under cultivation via polygons or points; and (iii) the exact routes of linear infrastructure (e.g., roads, bridges, tunnels, railways, power lines, canals, and pipelines) via line vectors. Whenever possible, AidData also records OpenStreetMap and GoogleMaps URLs that capture the geographical locations and features of projects. An important caveat is that AidData is only able to provide these types of geographical details for the subset of projects in the 2.0 dataset that have physical footprints (e.g. roads, railways, transmission lines) or involve activities at specific locations (e.g. medical teams stationed at a given hospital, equipment given to park rangers to patrol a protected area).
geoJSON URL Viz	This field provides stable URLs where users can view the geoJSON visualizations associated with each geographical location/feature of the project (when such information is available). These geoJSON shapefiles were constructed by AidData by using the OpenStreetMap URLs that are recorded in the "Geographic Location" field. AidData has made the complete set of GeoJSON files along with usage tips, and related documentation accessible via https://github.com/aiddata/china-osm-geodata
geoJSON URL DL	This field provides stable URLs where users can download the geoJSON shapefiles associated with each geographical location/feature of the project (when such information is available). These geoJSON shapefiles were constructed by AidData by using the OpenStreetMap URLs that are recorded in the "Geographic Location" field. AidData has made the complete set of GeoJSON files along with usage tips, and related documentation accessible via https://github.com/aiddata/china-osm-geodata
Contact Name	This field records the names of the people who were involved in the project and/or the financial (or in-kind) transfer for the project whenever this information is available.
Contact Position	This field records the position titles of the people who were involved in the project and/or the financial (or in-kind) transfer for the project whenever this information is available.
ODA Eligible Recipient	This field designates whether the recipient country was eligible for ODA (based on income level and OECD DAC categorizations) in the year that the official commitment

	was issued. For projects with a status designation of "Pipeline: Pledge," this field designates whether the recipient country was eligible for ODA (based on income level and OECD DAC categorizations) in the year that the informal pledge was issued.
Source Quality Score	This metric varies on a scale of 1 to 5, with 1 indicating that the project record is exclusively underpinned by unofficial sources and 5 indicating reliance upon multiple, official sources.
Data Completeness Score	This metric varies on a scale of 0 to 5, with 5 indicating that the basic fields of the project record are complete. The "threshold" for a score of 5 is similar to the key fields in the OECD-DAC's Creditor Reporting System: an actual rather than estimated commitment year, a non-missing transaction amount, a flow type/flow class that is not defined as "Vague", and identifiable funding, implementing, and receiving agencies.
Project Implementation Score	This metric varies on a scale of 0 to 5, with higher scores indicating that more implementation details have been captured in the project record. The following implementation details are considered: whether the project's implementing agency (or agencies), implementation start and completion dates (actual or planned), and geographical locations are specified; and whether the project has a specified sector allocation. Project Implementation Scores are only calculated for project records with a "Recommended for Aggregates" value of "True" and a "Status" value of "Implementation" or "Completion.
Loan Detail Score	This metric varies on a scale of 0-5, with higher values indicating that more financial transaction details are captured in the project record. Loan Detail Scores are only calculated for project records with a "Recommended for Aggregates" value of "True" and a "Flow Type" designation of "Loan," "Export Buyer's Credit," or "Supplier's Credit/Export Seller's Credit." A score of 5 indicates that a loan or export credit's interest rate, maturity, transaction value, loan type, funding agencies, and receiving agencies are all specified (i.e., not missing).

Section 2 - Capturing Chinese ODA and OOF

With the 2.0 version of the TUFF methodology, we seek to identify overseas projects supported by financial or in-kind transfers from official sector institutions in China (i.e., Chinese government and state-owned institutions). With respect to temporal coverage, we aim to identify all projects backed by official commitments that took place between 2000 and 2017, with details on the timing of project implementation over a 22-year period (2000-2021). With respect to spatial coverage, we aim to capture projects in every low-income, lower-middle income, and upper-middle income country and territory across every major world region, including Africa, Asia, Oceania, the Middle East, Latin America and the Caribbean, and Central and Eastern Europe. In total, AidData's Chinese Global Development Finance Dataset, Version 2.0 covers 165 countries: 140 countries where systematic searches were undertaken and Chinese government-financed projects were identified and 20 countries where systematic searches were undertaken but no Chinese government-financed projects were identified.[11]

Our goal is to capture a comprehensive and detailed picture of projects backed by Chinese ODA and OOF but not Chinese Official Investment (see Appendix A). Consistent with OECD definitions, we use the terms "Chinese Official Finance" to refer to financial or in-kind transfers (or "flows") from official sector institutions in China (i.e., Chinese government and state-owned institutions) to another country or territory. Official Finance consists of Official Development Assistance (ODA), Other Official Flows (OOF), and Official Investment. However, AidData only systematically tracks and publishes data on Chinese ODA and OOF. It does not systematically track and publish data on Chinese Official Investment. In the remainder of this paper, we document our efforts to define and measure Chinese ODA and OOF in support of the construction of AidData's Chinese Global Development Finance Dataset, Version 2.0.

The challenge of measuring ODA and OOF from China is not only capturing the full range of flows, but also classifying these flows accurately and in ways that make comparisons between different financiers valid. To make the study of financial and in-kind transfers from China more comparable with those from OECD-DAC donors and creditors, the 2.0 version of the TUFF methodology uses OECD definitions and measurement criteria, as outlined in the OECD-DAC Directives. We use these standards to classify each project according to its source of financing, type of financing, intent, and level of concessionality. This sets the 2.0 dataset apart from other Chinese development finance datasets (see Appendix F).

2.1 - Chinese ODA and OOF Agencies and Instruments

2.1.1 Sources of Chinese ODA and OOF

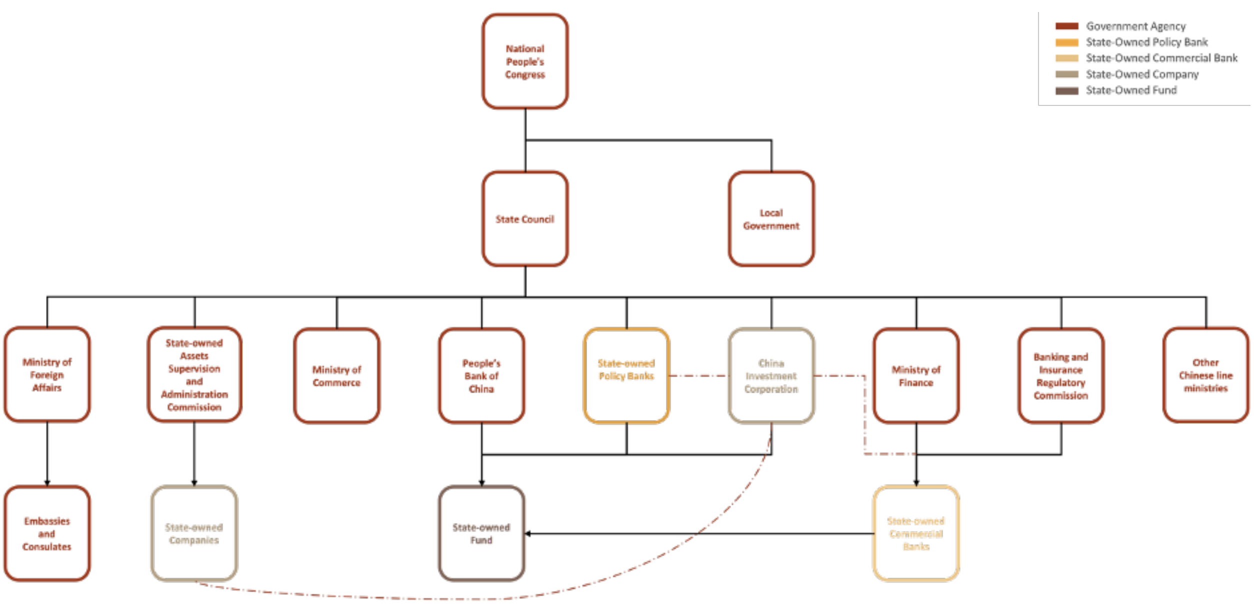
2.1.1.1: Overview

The OECD defines "Official Financing" as "transactions undertaken by the official sector (i.e. Government) at their own risk and responsibility, regardless of the source of funds (taxation of or borrowing from the private sector). Official agencies include federal, state and local departments and agencies."[12] The OECD also considers autonomous and semi-autonomous state-owned entities—like KfW, the German state-owned investment and development bank—to be official sector institutions. Therefore, the 2.0 version of the TUFF methodology seeks to capture ODA and OOF from all Chinese government and state-owned entities, including central government agencies (like the Ministry of Commerce, the Ministry of Foreign Affairs), regional and local government agencies (like Chongqing Municipal Health Commission), state-owned enterprises

[11] The dataset provides comprehensive coverage across low-income, lower-middle income, and upper-middle income countries and territories. 11 high-income countries and territories are also included in the 2.0 dataset to help ensure comprehensive coverage in every major world region to the extent possible. For more information, see Appendix B.
[12] See OECD factsheet at https://www.sheffield.ac.uk/polopoly_fs/1.659262!/file/Is_it_ODA.pdf.

(like China National Petroleum Corporation, China National Aero-Technology Import & Export Corporation), state-owned policy banks (like China Development Bank and China Eximbank), state-owned commercial banks (like Bank of China, China Construction Bank, and the Industrial and Commercial Bank of China),[13] state-owned funds (like the Silk Road Fund and the China Growing Together Fund), and non-profit government organizations (like Hanban and the China Foundation for Poverty Alleviation).[14] The specific agency or set of agencies that provide financial or in-kind support is captured in the "Funding Agency" field. Each funding agency is also assigned to one of six "Funding Agency Type" categories: Government Agency, State-Owned Policy Bank, State-Owned Commercial Bank, State-Owned Bank, State-Owned Company, and State-Owned Fund.

Figure 1: Chinese Official Sector Agencies



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[13] AidData classifies the following institutions as Chinese state-owned commercial banks: China Construction Bank Corporation (CCB), Industrial and Commercial Bank of China (ICBC), Bank of China (BOC), China Bank of Communications (BoCom or BoComm), Agricultural Bank of China, Postal Savings Bank of China (PSBC), China Bohai Bank, Bank of Shanghai, China CITIC Bank, China Merchants Bank, Huaxia Bank Co., Ltd., and China Everbright Bank Co., Ltd. This group of banks includes so-called shareholding commercial banks that are subsidiaries of state-owned enterprises (e.g., China CITIC Bank) and city commercial banks (i.e., Bank of Shanghai).

[14] We consider institutions to be "state-owned" if the government has the largest ownership stake compared to all other owners. Due to a lack of agreement about whether Huawei Technologies Co., Ltd. ("Huawei") should be treated as an official sector institution, we do include projects financed with aid or debt from Huawei or any of its subsidiaries in the 2.0 version of AidData's Chinese Global Development Finance Dataset. However, given that some analysts and decision-makers have expressed interest in learning more about Huawei-financed projects, AidData has published a separate Global Huawei Finance Dataset that captures 153 Huawei-financed projects worth $1.4 billion in 64 countries.

2.1.1.2: China's Ministry of Commerce (MOFCOM)

MOFCOM is the lead administrator of the country's interest-free (or "zero-interest") loan and grant program for developing countries.[15] While there are many different Chinese government institutions that provide small-scale grants and donations, MOFCOM is the primary Chinese government institution responsible for providing large-scale, RMB-denominated grants to host government institutions[16] that support the construction, maintenance, upgrading, or expansion of infrastructure and other physical assets (like schools, hospitals, convention centers, and government buildings).[17]

As part of its outreach to other countries, MOFCOM officials often meet with government counterparts in developing countries and sign Economic and Technical Cooperation Agreements (ETCAs, in Chinese: 经济技术合作协议). When MOFCOM signs an ETCA with a foreign government, it is issuing an official grant or interest-free loan *commitment*. The interest-free loan commitments that are issued via ETCAs are typically denominated in RMB with following borrowing terms: 20 year maturities, 10 year grace periods, and 0% interest rates.[18] Counterpart funding is not required, and when borrowers have difficulty repaying their debts to the Chinese government, these are often the first loans to be forgiven or rescheduled (Morris et al. 2020).

ETCAs are often signed with recipient governments for unspecified purposes (or generically worded purposes, such as economic development or disaster relief and reconstruction). Then, a bank account is set up between a Chinese state-owned bank (usually China Development Bank or Bank of China) and the recipient country's central bank or finance ministry to facilitate the transfer of funds. In many cases, a bank/loan agreement and/or "letters of exchange" are subsequently signed (sometimes multiple years after the original ETCA was signed). However, not every ETCA is implemented in this way. Sometimes, the ETCA, the bank account agreement, and letters of exchange are simultaneously approved. The vast majority of Chinese government grants and interest-free loans are funded through ETCAs, so AidData coders are informed that if a project is financed by a Chinese government grant or interest-free loan, there is a high likelihood that the project was funded through an ETCA (and supplemental online searches will

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[15] In August 2021, China International Development Agency (CIDCA), MOFCOM, and the Ministry of Foreign Affairs (MOFA) reviewed and approved a new set of foreign aid administration measures. These measures specify that, as of October 1, 2021, CIDCA will be responsible for all planning, policymaking, regulatory, and supervisory functions that support the country's foreign aid program. MOFCOM will continue to implement foreign aid projects, among other line ministries (including MOFA). See http://www.cidca.gov.cn/2021-08/31/c_1211351312.htm

[16] An illustrative MOFCOM grant agreement can be accessed here: https://www.dropbox.com/s/fv965ko40q88pp7/01.12.2020.%20ENG.pdf?dl=0

[17] MOFCOM grants and interest-free loans usually support projects with development intent, although there are some cases when it finances projects with representational, commercial, or military intent.

[18] An illustrative MOFCOM loan agreement can be accessed here: https://www.documentcloud.org/documents/20485643-cmr_2011_518. Based on the OECD-DAC concessionality calculator, these loans usually have a grant element of approximately 75% (Malik 2021).

most likely be necessary to determine if that project was funded through an ETCA and the specific date when the ETCA was signed).[19]

Although ETCAs represent official financial commitments, AidData coders are instructed to treat them as "umbrella" agreements—meaning that ETCAs are effectively framework agreements that govern follow-on grants and zero-interest loans for specific projects, but those projects are not specified at the time of ETCA signing. Also, recipient governments often sign multiple ETCAs over time, which means that one of the most challenging tasks associated with ETCAs is accurately tracking all of the subsidiary projects that they have funded.[20] AidData coders are instructed to track down the exact ETCA that is financing a project if it is reported that the project was financed through an ETCA.

AidData has several coding guidelines that are specific to ETCAs:

- The funding agency for an ETCA that has committed a grant or interest-free loan should always be coded as "China Ministry of Commerce." When a funding agency is not explicitly identified in the source materials, AidData coders are instructed to assign "China Ministry of Commerce" as the funding agency if the following criteria are met: (1) The grant or zero-interest loan is denominated in RMB, (2) the receiving agency is a government institution from the developing country, (3) the project has development intent, (4) the project involves the provision of large-scale funding for infrastructure or a physical asset. Chinese government grant- and loan-financed project activities/events that involve a MOFCOM representative are treated by AidData coders as evidence that MOFCOM is the funding agency. Additionally, when the underlying source materials used to construct project descriptions refer to MOFCOM as issuing project design or implementation contracts to Chinese firms or MOFCOM deploying personnel to conduct on-site project inspections or post-project evaluations, AidData coders are instructed to treat this as a evidence that MOFCOM is the funding agency.
- The ETCA should be explicitly identified by its full name in both the title and the project description. An ETCA should not be referred to as just "an agreement." AidData coders are instructed to differentiate ETCAs by specifying the year of signing of an individual ETCA in the project title. They are also instructed to specify the exact date of the ETCA signing in the description field if that information is available (as sometimes multiple ETCAs are signed in a given year).

[19] In many cases, MOFCOM's support for a specific project that is financed with the grant or loan proceeds from previously signed ECTAs will be codified in "letters of exchange," an "exchange of notes," or an "implementation agreement." For illustrative financing agreements that followed the signing of ECTAs, see https://www.dropbox.com/s/fv965ko40q88pp7/01.12.2020.%20ENG.pdf?dl=0 and https://www.dropbox.com/s/t86s480xiqyvzih/Supplemental%20Implementation%20Agreement%20for%20China%20Aided%20Ministry%20of%20Foreign%20Affairs%20Construction%20Project.pdf?dl=0

[20] This is especially true because (a) ETCAs and subsidiary agreements are often agreed upon in different years, and (b) it is not always immediately obvious that a project was funded by a particular ETCA (which itself may have been signed years ago).

- The commitment year of an ETCA should be the year in which ETCA was signed and countersigned, and not the year the ETCA was ratified by the recipient government's legislature.
- When an ETCA is issued for an unspecified purpose at the time of its signing, AidData coders are instructed to adhere to the following guidelines:
    - It should always be coded as an umbrella project.
    - The status of the ETCA should be coded as an official commitment and not as a pledge.
    - If it is found that the funds committed through the ETCA supported multiple, subsidiary projects, those projects should be created as separate records, and linked back to the ETCA umbrella record.
    - If it is found that the funds committed through the ETCA supported a single project, then the ETCA record should not be marked as an umbrella record, and all of the other project fields should be populated/updated.
- When specific projects are identified at the time of the ETCA signing, AidData coders are instructed to adhere to the following guidelines:
    - If multiple projects are specified, then AidData coders are instructed to create one umbrella record for the ETCA, and one record for each for the specified projects. Umbrella records should be status-coded as official commitments.
    - If there is only one specific project receiving the full amount of funding that was committed through the ETCA, then AidData coders are instructed to create only one project record (non-umbrella), with a description that specifies that the financial commitment for the project came from an ETCA.

2.1.1.3: Export-Import Bank of China

The Export-Import Bank of China (or "China Eximbank") is one of two state-owned policy banks in China that provide overseas financing. It is designated as China's official export credit agency and recognized as an official bilateral creditor. China Eximbank is also unique in that it is responsible for the implementation of the "two preferential loans" program, which consists of Government Concessional Loans (GCLs) and the Preferential Buyer's Credits (PBCs).[21] These are sometimes referred to in Chinese as 两优贷款. In addition to the loans provided through this program, AidData captures Buyer's Credit Loans (BCLs), Overseas Investment Loans, and Overseas Project Contracting Loans from China Eximbank. These lending instruments are described in greater detail below with the specific guidelines that AidData coders use to classify projects that are financed with these instruments.

Government Concessional Loans (GCLs): The GCL (in Chinese: 优惠贷款) is a loan that China Eximbank issues to foreign governments maintaining diplomatic ties with China.[22] These RMB-

[21] See https://www.dropbox.com/s/i5nau9n07ohkizt/392125610-Export-Import-Bank-of-China-pptx.pdf?dl=0

[22] An illustrative GCL can be found accessed here: https://www.documentcloud.org/documents/20485597-cmr_2011_172

denominated loans are granted on below-market terms (typically 20-year maturities, 5-year grace periods, and 2% interest rates).[23] China's Ministry of Finance calculates the difference between the interest rates attached to these loans and the central bank's benchmark rate and reimburses China Eximbank accordingly.[24] GCL proceeds can be used by borrowing institutions to finance up to 100% of the total cost of a commercial contract with a Chinese supplier. China Eximbank does not expect the borrowing institution to provide any "counterpart funding." The Chinese government characterizes the GCL as a form of ODA. Similar to preferential buyer's credits, GCLs will usually be explicitly identified as such in official sources.[25]

AidData has several coding guidelines that are specific to GCLs:

- **Currency:** The currency of denomination should be represented in RMB, unless the only information about the transaction amount is denominated in USD (or another currency).
- **Flow Type:** All GCLs should be coded as loans.
- **Intent**: AidData coders are instructed to categorize the intent variable according to the primary purpose of the project being financed with GCL. Even though the Chinese government refers to GCLs as foreign aid or ODA, GCL-financed projects may be coded as having development, commercial, representational, military, or mixed intent. In cases where GCL-financed projects are coded as having commercial, representational, military, or mixed intent, they are not given a flow class designation of ODA-like.
- **Title and Description:** If a project is financed with a GCL, AidData coders are instructed to make this clear in the project title and description. That is to say, if a GCL agreement was signed, it should be described as such and not simply referred to as a "loan agreement."

Preferential Buyer's Credit (PBC) and Nonpreferential Buyer's Credit Loan (BCL) Program: PBCs (In Chinese: 优惠出口买方信贷) are USD-denominated loans that are granted to foreign government institutions.[26] When China Eximbank issues a PBC, it provides a loan to a foreign government institution (in a country that maintains diplomatic ties with China) and that government institution uses the loan proceeds to buy goods or services from a Chinese supplier. The borrowing terms of these loans vary, but they are offered with fixed rather than floating interest rates that are usually more generous than prevailing market rates.[27] China Eximbank has a policy of allowing borrowers to use PBC proceeds to finance 85% of the total cost of a commercial contract (often an Engineering, Procurement, and Construction contract) with a Chinese supplier. China Eximbank usually requires that the remaining 15% of the commercial contract cost be financed with "counterpart funding" from the borrowing institution. There are cases when China Eximbank deviates from this norm (e.g., by allowing a borrower to use up to

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[23] See Morris et al. (2020) and Export-Import Bank of China (n.d.).

[24] See https://www.dropbox.com/s/ctvqu1jmopny6vv/392125599-Key-Points-of-Evaluation-pptx.pdf?dl=0

[25] For example, the loan agreement ID number may contain the abbreviation "GCL" (referring to Government Concessional Loan)—e.g., CHINA EXIMBANK GCL NO.1 (2011) TOTAL NO. (351).

[26] An illustrative PBC agreement can be found accessed here: https://www.documentcloud.org/documents/20488747-phl_2018_422

[27] See Morris et al. (2020) and Export-Import Bank of China (n.d.).

95% of the proceeds of a PBC to finance a commercial contract), but most PBCs adhere to this policy. Similar to GCLs, PBCs will usually be explicitly identified as such in official sources.[28]

China Eximbank also has a (non-preferential) buyer's credit loan (BCL) program that shares many of the same features as the PBC program.[29] However, BCLs can be denominated in USD or EUR; they are usually priced at a floating market interest rate (LIBOR or EURIBOR) plus a margin; they often have shorter maturity lengths and grace periods than PBCs; and the borrowers need not be government institutions.[30]

AidData has several coding guidelines that are specific to PBCs and BCLs:

- **Transaction amount:** If the precise face value of the PBC or BCL is unknown but the total cost of the commercial (EPC) contract is known, AidData coders are instructed to to assume that the face value of the PBC/BCL is equivalent to 85% of the total EPC cost. AidData coders are also instructed to note any such assumptions were made in the "description" field or "staff comments" field.
- **Flow Type:** All PBCs and BCLs should be coded as Export Buyer's Credits.
- **Currency:** Eximbank PBCs are exclusively denominated in USD, so AidData coders are instructed to populate the amount field and the currency field accordingly.
- **Intent:** PBCs and BCLs are trade promotion instruments. As such, projects financed with PBCs and BCLs should never be given a development intent designation. The possible intent values for PBCs and BCLs (as well as export seller's credits) are mixed or commercial. If a PBC/BCL is sufficiently concessional and it is financing a project that seeks to improve economic development or welfare in the recipient country, AidData coders are instructed to code it as having mixed intent (i.e., both commercial intent and development intent). However, in cases when a PBC or BCL supports a project that *only* has commercial intent (for example, a loan to help a shipping company acquire vessels that will allow it to move ocean containers from country to country, a loan to help a company finance its general operations, or a loan to help a company service its existing debts), AidData coders are instructed to designate the project as having commercial intent.
- **Flow Class:** All export credits, PBCs and BCLs issued by China Eximbank, should be assigned to the flow class category of OOF-like.
- **Title and Description:** If a project is financed with a PBC or BCL, AidData coders are instructed to make this clear in the project title and description. That is to say, if a PBC or BCL agreement was signed, it should be described as such and not simply referred to as a "loan agreement" or an "export credit agreement."

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[28] For example, a PBC agreement ID number may contain the abbreviation "PBC" (referring to Preferential Buyer's Credit)—e.g., CHINA EXIMBANK PBC NO. (2016) 33 TOTAL NO. (421). Buyer's credit loans are usually referred to with the abbreviation "BCL" in official sources. However, among buyer's credit loans that were issued by China Eximbank in the early 2000s, it is not uncommon to see the abbreviation "BLA" in official sources.

[29] See https://www.dropbox.com/s/mlg5lz5fqnh8aef/China%20Eximbank%20Pitch%20Deck.pdf?dl=0

[30] An illustrative BCL agreement can be found accessed here: https://www.documentcloud.org/documents/20488172-ecu_2010_444

Overseas Investment Loans Program: Overseas Investment Loans (In Chinese: 境外投资贷款) are RMB and foreign-currency denominated loans issued by China Eximbank to support Chinese enterprises' overseas investments.[31] The proceeds of these loans can be used to fund acquisitions, fixed asset investments, and overseas equity investments approved by Chinese authorities.[32] These loans can also be used for working capital needs and be used to cover fees associated with overseas investments. The face value of an overseas investment loan can cover up to 70% of total contract value.

AidData has several coding guidelines that are specific to to Overseas Investment Loans:

- **Flow Type:** The flow type field should be coded based on the nature of financing (debt), not how loan proceeds are used (equity/investment). As such, AidData coders are instructed to assign these loans to the flow type category of "loan" (rather than "FDI"). These loans enable equity investments (FDI), but they are not themselves FDI.
- **Intent**: The intent of Overseas Investment Loans should always be coded commercial since they enable commercial investments.
- **Title and Description:** If a project is financed with an Overseas Investment Loan, AidData coders are instructed to make this clear in the project title and description. That is to say, if an Overseas Investment Loan agreement was signed, it should be described as such and not simply referred to as a "loan agreement."
- **Flow Class**: All Overseas Investment Loans should be assigned to flow class category of OOF-like.

Overseas Project Contracting Loans (In Chinese: 对外承包工程贷款): These loans are provided by China Eximbank to help Chinese companies finance overseas project contracts.[33] They can be denominated in USD or RMB. Per China Eximbank policy, the contract cost that is financed by the should not be lower than 1 million USD. Goods and services exported from China under the contract should not be lower than 15% of contract cost.

AidData has several coding guidelines that are specific to Overseas Project Contracting Loans:

- **Flow Type**: The flow type field should always be set to loan.
- **Intent**: The intent of Overseas Project Contracting Loans should be coded as mixed when they seek to facilitate the export of Chinese goods and services and promote economic development or welfare in the recipient country through the project that is being financed. The intent of Overseas Project Contracting loans should be coded as commercial if the loans only seek to facilitate the export of Chinese goods and services.
- **Title and Description:** If a project is financed with an Overseas Project Contracting Loan, AidData coders are instructed to make this clear in the title field and description field.

[31] See the following website for more information about Overseas Investment Loans: http://english.eximbank.gov.cn/Business/CreditB/SupportingCrossBI/201810/t20181016_6967.html

[32] See https://www.dropbox.com/s/r5xhu7zdqiebbn3/2.EXIM-Bank.pptx?dl=0

[33] See https://www.dropbox.com/s/r5xhu7zdqiebbn3/2.EXIM-Bank.pptx?dl=0

That is to say, if an Overseas Project Contracting Loan agreement was signed, it should be described as such and not simply referred to as a "loan agreement."

- **Flow Class**: All Overseas Project Contracting Loans should be assigned to the flow class category of OOF-like.

In addition to the types of loans that we have described, China Eximbank provides a range of other loans for various purposes (some concessional, some not). These include export seller's credits, which are loans to a Chinese company that the Chinese company may on-lend to a buyer/borrower who wishes to buy goods or services from that company. These types of loans from China Eximbank can be denominated in local or foreign currency.[34]

2.1.1.4: China Development Bank (CDB):

CDB is one of two state-owned policy banks in China that provides overseas financing. It has a wide array of lending instruments, including but not limited to term loans, bridge loans, revolving credit facilities, working capital loans, commodity-backed loans, club loans, syndicated loans, and buyer's credits. Its RMB-denominated and foreign-currency denominated loans are generally provided on less concessional terms than China Eximbank loans because, unlike China Eximbank, CDB must maintain its own balance sheets and lend without receiving official subsidies from the state.[35] Typically, the base interest rate on a CDB loan is tethered to the (floating) London Interbank Offered Rate (LIBOR) or Euro Interbank Offered Rate (Euribor), with an additional margin incorporated to account for borrower-specific risk and repayment capacity (Morris et al. 2020). While "all-in" interest rates on CDB loans usually fall somewhere in the 4.5% to 6% range, maturities and grace periods can vary widely. Loans from CDB are granted to both government agencies and companies. Debt collateralization is often required by the bank as a way to limit repayment risk. Whereas 29% of China Eximbank's overseas lending portfolio is collateralized, 70% of CDB's overseas lending portfolio is collateralized (Malik et al. 2021). China Development Bank also engages in inter-bank lending far more frequently than China Eximbank.[36]

CDB is characterized by the Chinese government as a bank that follows commercial lending practices. However, using the OECD's grant element calculator, AidData has found that some of its loans do qualify as concessional loans (i.e. they contain more than 25% grant element). CDB's lending portfolio has also become significantly concessional over time (see Malik et al. 2021).

AidData has several coding guidelines that are specific to China Development Bank loans:

- **Intent**: AidData codes the intent of all loans according to the purpose of the project that is being financed. Even though the Chinese government claims that CDB follows commercial lending practices, loans from CDB can be coded as having development,

[34] This means that export seller's credits may be denominated in RMB. See section 2.1.3.3 for more guidance for how export seller's credits are coded.

[35] An illustrative CDB loan agreement can be found at https://www.documentcloud.org/documents/20488181-ecu_2010_462_1_of_2

[36] Inter-bank lending involves one bank providing a loan to another, typically with higher interest rates and short maturities.

commercial, representational, military, or mixed intent, depending on the primary purpose of the project that is being financed. In cases where loans from CDB are identified as having development intent and a grant element in excess of 25%, AidData coders are instructed to make a flow class designation of ODA-like.

- **ETCAs**: As the bank accounts that are used to disburse ETCA funds are often opened with CDB, there is a risk of CDB being identified as the funding agency responsible for providing grants or interest-free loans through ETCAs. This is incorrect. AidData coders are therefore instructed to consistently identify MOFCOM as the funding agency responsible for providing grants or interest-free loans through ECTAs.

2.1.1.5: State-Owned Commercial Banks

AidData defines Chinese state-owned commercial banks as Chinese banks that are majority-owned by the Chinese government or one of its subsidiaries. The three largest state-owned commercial banks are the Industrial and Commercial Bank of China (ICBC), the Bank of China (BOC), and the China Construction Bank Corporation (CCB). There are some banks that are not officially designated as Chinese state-owned commercial banks but that are consistent with AidData's definition.[37] AidData classifies the following institutions as Chinese state-owned commercial banks: China Construction Bank Corporation (CCB), Industrial and Commercial Bank of China (ICBC), Bank of China (BOC), China Bank of Communications (BoCom or BoComm), Agricultural Bank of China, Postal Savings Bank of China (PSBC), China Bohai Bank, Bank of Shanghai, China CITIC Bank, China Merchants Bank, Huaxia Bank Co., Ltd., and China Everbright Bank Co., Ltd. This group of banks includes so-called shareholding commercial banks that are subsidiaries of state-owned enterprises (e.g., China CITIC Bank) and city commercial banks (i.e., Bank of Shanghai).

Loans from Chinese state-owned commercial banks term loans, bridge loans, revolving credit facilities, working capital loans, commodity-backed loans, club loans, syndicated loans, and buyer's credits.[38] They are typically denominated in USD or EUR. They are generally provided on less concessional terms than China Eximbank loans because, unlike China Eximbank, these institutions must maintain their own balance sheets and lend without receiving official subsidies from the state. The base interest rate on a loan from a Chinese state-owned commercial bank is usually tethered to the (floating) London Interbank Offered Rate (LIBOR) or Euro Interbank Offered Rate (Euribor), with an additional margin incorporated to account for borrower-specific risk and repayment capacity. Maturities and grace periods vary widely. These loans are granted to both government agencies and companies.[39]

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[37] For example, China Merchants Bank is officially classified as a joint-stock commercial bank, but its parent company, China Merchants Group, is under the direct supervision of State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and is classified as a state-owned enterprise. As such, China Merchants Bank fits AidData's definition of a state-owned enterprise, but has been coded as a state-owned commercial bank for the purposes of analysis.
[38] See, for example, https://www.dropbox.com/s/ekijqc9ubp1bdb7/ICBC%20Pitch%20Deck.pdf?dl=0
[39] See Morris et al. (2020).

2.1.2 Recipients of Chinese ODA and OOF

In tracking Chinese ODA and OOF, we seek to capture the provision of funding and in-kind transfers of goods and services from official sector institutions in China to any entity overseas (excluding transfers for investment purposes). Therefore, consistent with OECD-DAC guidelines, we seek to capture Chinese ODA and OOF flows to public sector and private sector agencies in recipient countries including but not limited to government agencies, state-owned banks, state-owned companies, private companies, and special purpose vehicles (including joint ventures) To capture the specific entities responsible for receiving and managing these incoming financial and in-kind transfers, we have created a "Receiving Agency" field, where the name of the agency receiving and managing the financial or in-kind transfer is recorded. For projects that are financed with loans, buyer's credits, or seller's credits, this field captures the name of the borrowing entity (e.g., the entity that has primary responsibility for debt repayment). Each receiving agency is also assigned to one of ten categories in the "Receiving Agencies Type" field: Government Agency, State-Owned Bank, State-Owned Company, State-Owned Fund, Intergovernmental Organization, Special Purpose Vehicle/Joint Venture, Private Sector, NGO/CSO/Foundation, Other, or No Organization Type Specified. Additionally, the "Receiving Agencies Origin" field indicates the origin of the receiving agency with respect to whether it is from China, the recipient country, or another country. Each receiving agency is assigned to one of the following categories: China, Recipient Country, or Other.

2.1.3 Chinese ODA and OOF financing mechanisms

2.1.3.1 AidData's "Flow Type" categorization

In an effort to capture all Chinese ODA and OOF, we record a wide range of projects and activities that benefit from transfers ("flows") of goods, services, or funding from official sector institutions in China. These flows include loans, export credits, grants, technical assistance, scholarships or training provided in China to citizens of other countries, debt forgiveness, and debt rescheduling. In the 2.0 dataset, these types of activities and flows are captured as a project's "Flow Type." Below is an overview of each flow type category:

- **Grant:** The donation of money or an in-kind donation of goods from an official sector institution in China. Chinese grant assistance commonly includes donations of supplies or equipment, the provision of humanitarian aid or disaster relief, the establishment of a Confucius Institute within the host country, or financing for the construction of a government building, school, hospital, or sports stadium.
- **Technical Assistance:** The formal provision of skills training, instruction, consulting services, and information sharing by official sector entities and experts from China.
- **Scholarships**: Funding from an official sector institution in China that allows a citizen from the host country to study at a Chinese university or other educational institution.

- **Training in Donor Country:** Training programs and activities that are sponsored by an official sector institution in China held for host country citizens in China. Training provided by Chinese entities outside of China is classified as technical assistance.
- **Loan:** A financial transfer from an official sector institution in China to an overseas entity under certain terms and conditions of repayment.
- **Export Buyer's Credit:** A type of loan provided by an official sector institution in China to an overseas entity for the purpose of facilitating the acquisition of Chinese goods and services (i.e., export promotion).
- **Supplier's Credit/Export Seller's Credit:** An export seller's credit is a loan issued by an official sector institution in China to a Chinese company for the purpose of increasing its exports. These proceeds of export seller's credits are to be used by borrowers (Chinese exporters) to finance their foreign sales. Chinese exporters usually secure export seller's credits when they need liquidity to offer a supplier's credit to an overseas buyer. If a Chinese company extends a loan to a borrower and the borrower is expected to use the loan proceeds to purchase goods and services from that Chinese company, then the loan is a supplier's credit. Supplier's credits are also referred to as seller's credits or vendor financing.
- **Debt Forgiveness:** The total or partial cancellation of debt owed by a borrowing institution in the host country to a Chinese government or state-owned entity.
- **Debt Rescheduling:** Changes to the terms of a loan issued by an official sector institution in China, such as interest rate, grace period, or maturity date. This is usually meant to ease the repayment burden of a borrower institution in the host country.

2.1.3.2 Financing agreements

Official sector institutions in China have developed several different types of "standard" financing agreements. These agreement types are described in greater detail below, with coding guidance for each type of agreement.

Framework Agreement (In Chinese: 框架协议)**:** This is a non-binding agreement that memorializes the intent of the lender and the prospective borrowing institution. These agreements typically precede the signing of an actual loan agreement and sometimes identify the expected face value of the loan and its borrowing terms. Framework agreements often correspond to a single project that will be financed with a single loan, but they can also serve as umbrella agreements through which multiple projects will be financed. Under a framework agreement, the borrowing institution (receiving agency) typically must request and secure approval for a specific loan/project from the official sector financing institution in China before the transfer of funds can occur.[40]

[40] By way of illustration, a concessional loan framework agreement can be accessed via https://www.dropbox.com/s/oc69pos782xj3sx/China_Framework%20agreement%20on%20concessional%20loan%20for%20Malekula%20and%20Tanna%20roads_09112018.pdf?dl=0

AidData coders are instructed to follow several coding guidelines that are specific to framework agreements (in 3 different scenarios):

- *Scenario 1: Only a framework agreement is signed.* If there is no evidence of a subsequent financing agreement being signed or a subsidiary project being approved under the framework agreement, the framework agreement should be coded as an umbrella project. The financing amount that is referenced in the framework agreement should be coded as the transaction amount. If the financing amount is unknown, the transaction amount should be set to missing. If only a framework agreement was signed, the status field should be coded as Pipeline: Pledge. If a framework agreement was signed for a single project, it should not be coded as an umbrella project.
- *Scenario 2: A single financing agreement for the full financial amount referenced in the framework agreement is signed.* The status field should be coded as Pipeline: Commitment. The commitment year field should be set to the year in which the financing agreement was signed and not the year in which the framework agreement was signed.
- *Scenario 3: Multiple projects are financed under the framework agreement.* The framework agreement should be retained as an umbrella project record, and separate (linked) project records should be created for any subsequent financing agreements and subsidiary projects.

Economic and Technical Cooperation Agreements (In Chinese: **济技术合作协定**): See Section 2.1.1.2 China Ministry of Commerce for coding guidance.[41]

Letters of Intent: Letters of Intent (and "term sheets") are usually pre-commitment documents that are issued unilaterally by official sector institutions in China to indicate interest in financing a project or an intention to finance a project.[42] Sometimes letters of intent from official sector institutions in China are characterized as a memorandum of understanding (MOU).[43]

AidData coders are instructed to follow one guideline that is specific to letters of intent (and term sheets):

- The status field should be set to Pipeline: Pledge.

Letters of Exchange (In Chinese: 项目换文 or 换文): Letters of Exchange constitute an agreement between the Chinese government and a recipient government institution regarding one or more specific projects. These documents provide explanations, detailed elaborations, or amendments

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[41] An illustrative ECTA can be found here: https://www.dropbox.com/s/pfuan0lxsmxosgz/Law%20for%2010%20million%20yuan%20loan%20in%202009.pdf?dl=0

[42] An illustrative pre-commitment document is accessible via https://www.dropbox.com/s/r608h03z7pjy4hy/2015.06.08%20ICBC%20_%20Amu%20Power%20Term%20Sheet.pdf?dl=0

[43] An illustrative MOU from China Eximbank can be accessed here: https://www.dropbox.com/s/l9hnqq9bzwxb61w/2015%20China%20Eximbank%20Loan%20for%20Central%20Termoelectica%20Manuel%20Belgrano%20Project%20in%20Argentina.pdf?dl=0

to projects financed with Chinese government grants or interest-free loans (usually from MOFCOM) that have been agreed upon by both governments. Letters of Exchange are sometimes referred to as an Exchange of Notes. Letters of Exchange can supplement an existing agreement, or serve as a stand-alone agreement.[44]

AidData coders are instructed to follow several guidelines that are specific to Letters of Exchange:

- Letters of exchange provide formal documentation that codifies and elaborates the Chinese government's official commitment to support a specific project. While the projects described in Letters of Exchange are sometimes funded with the grant or loan proceeds from an ETCA, they can also be supported through separate, stand-alone funding (usually from MOFCOM).
- Letters of Exchange provide evidence that an official commitment has taken place. Therefore, the status field should be set to Pipeline: Commitment (unless there is evidence that the project in question has progressed beyond the official commitment stage).
- If an ETCA was signed prior to the signing of Letters of Exchange, the project described in the Letters of Exchange should be linked to the ETCA record.

2.1.3.3 Loan Flow Type

Export Buyer's Credits (In Chinese: 优惠出口买方信贷)**:** Export buyer's credits are a type of loan provided by an official sector financing institution in China to an overseas entity for the purpose of facilitating the acquisition of Chinese goods and services (i.e., export promotion). China Eximbank provides two types of export buyer's credit facilities: preferential buyer's credits (PBC) and buyer's credit loans (BCLs). Sinosure provides credit insurance for both loan types.[45] China Development Bank and multiple Chinese state-owned banks also provide export buyer's credits.

In a typical export buyer's credit (loan) agreement, there are four parties (see Figure 2):

1. Chinese State-Owned Bank (Lender)
2. Chinese Company (Supplier)
3. Foreign Government (Borrower)
4. Foreign Government Ministry or SOE (Importer)

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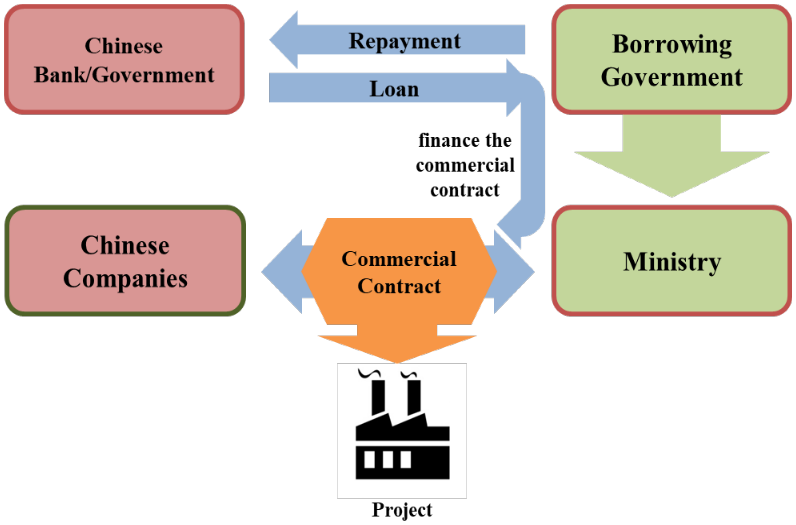
[44] For more information about different types of Letters of Exchange, see Subsection 3 (国际发展援助换文) of https://books.google.com/books?id=vFP1e9HQXNcC&pg=PA230&lpg=PA230&dq=%E6%94%BF%E5%BA%9C%E9%A1%B9%E7%9B%AE%E6%8D%A2%E6%96%87&source=bl&ots=TR03fKDb_y&sig=ACfU3U2dSs4DLDFLynnQBoMQDGG1LyGoJw&hl=en&sa=X&ved=2ahUKEwjX-aD3vqToAhUDmHIEHfAJA-AQ6AEwAHoECAkQAQ#v=onepage&q=%E6%94%BF%E5%BA%9C%E9%A1%B9%E7%9B%AE%E6%8D%A2%E6%96%87&f=false

[45] The full name of Sinosure (中国出口信用保险公司) is China Export & Credit Insurance Corporation.

Figure 2: The Structure of a Typical Export Buyer's Credit from China



Between these four parties, two agreements are concluded: (1) a commercial contract between the Chinese supplier and the foreign importer, and (2) a loan agreement between the Chinese state-owned bank and foreign borrower to partially finance the commercial contract. Typically, the borrower can use the proceeds of the loan to finance up to 85% of the total cost of the commercial contract between the Chinese supplier (exporter) and the foreign importer. However, this percentage can be higher or lower than 85%, depending on the policies and practices of the official sector financing institution in China. The borrower is expected to provide counterpart funding to cover the percentage of the total cost of the commercial contract that is not covered by the loan. Counterpart funding is sometimes used to provide an advance payment to the Chinese supplier so that project implementation can commence before the loan agreement is finalized.

The signing of the commercial contract usually predates the loan agreement, but discussions/negotiations with the Chinese state-owned bank are often underway at the time that the commercial contract is signed (or being negotiated). Consequently, it is not unusual for the foreign importer or Chinese supplier to publicly reference a loan agreement *before it is finalized.* AidData coders are therefore instructed not to automatically treat the signing of a commercial contract (that a foreign importer or Chinese supplier says will be financed by a Chinese state-owned bank) as evidence that an official financial commitment has taken place (i.e., a loan agreement has been signed).

Determining if a project is an export buyer's credit. Export buyer's credits are usually identified as such in source materials, but this is not always the case.[46] If a loan is not explicitly identified

[46] They are usually identified in official source materials as "buyer's credits" or "buyer's credit loans" rather than "export buyer's credits."

as an export buyer's credit, AidData coders are instructed to code the loan as an export buyer's credit only if it meets four criteria:

1. The loan is denominated in U.S. dollars or euros.
2. The borrower is a foreign company or foreign government.
3. The face value of the loan is explicitly identified in an official source, and it is not estimated or assumed.
4. The reported face value of the loan is worth less than 100% of the commercial contract cost.

AidData coders are also instructed that the following conditions provide evidence that a loan may be an export buyer's credit, but none of these conditions should be considered to be sufficient to assume so:

1. The loan is covered by buyer's credit insurance.
2. The loan is insured by Sinosure, and the insurance appears to be credit insurance rather than investment insurance.[47]
3. The proceeds of the loan are to be used by the borrower to procure goods, equipment, or services from a Chinese company.

AidData coders are instructed to follow several coding guidelines that are specific to export buyer's credits:

- **Flow type**: Although an Export Buyer's Credit is a type of loan, it should always be assigned to the "Export Buyer's Credit" flow type category.
- **Intent**: Export buyer's credits can either have commercial intent or mixed intent.
  - Commercial intent should be identified when there is no evidence that the project is seeking to improve economic development or welfare in the recipient country.
  - Mixed intent should be identified when there is at least some evidence that the project is seeking to improve economic development or welfare in the recipient country.
  - Export buyer's credits should never be coded as having only development intent since they are explicitly designed to promote the export of Chinese goods and services.
- **Title and Description**: If an export buyer's credit (loan) agreement was signed, it should be explicitly identified as such in the project title and description and not referred to as simply a "loan agreement."
- **Flow class**: All export buyer's credits should be assigned to the "OOF-like" flow class category.

Supplier's Credit/Export Seller's Credit (In Chinese: **出口卖方信贷**)**:** An export seller's credit is a loan issued by a Chinese bank to a Chinese company for the purpose of increasing its exports. These

[47] If there is evidence of Chinese investment, then the provision of investment insurance from Sinosure cannot be ruled out. See https://www.dropbox.com/s/uziiuht4wtuyzsg/Sinosure%20pitch%20deck.pdf?dl=0 and https://www.dropbox.com/s/g4wvemp0txonztm/CDB%20and%20Sinosure%20Pitch%20Deck.pdf?dl=0

proceeds of export seller's credits are to be used by borrowers (Chinese exporters) to finance their foreign sales. Chinese exporters usually secure export seller's credits when they need liquidity to offer a supplier's credit to an overseas buyer.

If a Chinese company extends a loan to a borrower and the borrower is expected to use the loan proceeds to purchase goods and services from that Chinese company, then the loan is a supplier's credit. Supplier's credits are also referred to as seller's credits or vendor financing. Supplier's credits from Chinese state-owned enterprises (e.g. ZTE, CATIC, NORINCO, AVIC International, and Poly Technologies) are granted to both public and private sector customers. Their terms vary widely, but they usually have shorter maturities and grace periods, and interest rates are typically tethered to LIBOR plus a margin.[48]

There are typically 2 scenarios involving supplier's credits (issued by Chinese state-owned enterprises) and export seller's credits (issued by Chinese state-owned banks):

1. *Scenario 1.* A Chinese state-owned enterprise (exporter) provides supplier's credit to a buyer (borrower) in the recipient country for the purchase of its goods and/or services. This scenario involves 1 agreement (i.e., the supplier's credit agreement).
2. *Scenario 2.* A Chinese state-owned bank provides an export seller's credit to a Chinese state-owned enterprise (exporter) to finance its sales to a buyer in the recipient country. The Chinese state-owned enterprise, in turn, uses the proceeds of the export seller's credit to issue a supplier's credit to the buyer (borrower) in the recipient country. This scenario involves 2 agreements (i.e., the supplier's credit agreement between the Chinese state-owned enterprise and the buyer/borrower in the recipient country and the export seller's credit agreement between the Chinese state-owned enterprise and the Chinese state-owned bank).

AidData coders are instructed to follow several coding guidelines that are specific to supplier's credits and export seller's credits:

- When a Chinese supplier receives an export seller's credit from a Chinese state-owned policy bank (or any other Chinese state-owned bank) and uses the proceeds of the export seller's credit to on-lend to its foreign customers, it is ultimately funding from the Chinese government that is being transferred to the recipient country. The funding agency in this case should only be coded as the bank that provides the export seller's credit. The Chinese supplier that receives the export seller's credit and the foreign customer in the recipient country that in turn receives the supplier's credit from the Chinese supplier should both be coded as receiving agencies.
- In the event that a supplier's credit is provided by a Chinese state-owned enterprise (supplier) and there is no evidence of the provision of an export seller's credit from a Chinese state-owned bank to that Chinese supplier, then the Chinese state-owned

[48] An illustrative supplier's credit agreement can be accessed at https://www.documentcloud.org/documents/20488282-gha_2019_485

enterprise should be coded as the funding agency and the foreign customer (borrower) that received the supplier's credit should be coded as the receiving agency.

- Export seller's credits from China Eximbank can be denominated in both local and foreign currency. This means that export seller's credits may be denominated in RMB.
- **Intent:** Supplier's credits and export seller's credits can either have commercial intent or mixed intent.
    - Commercial intent should be coded when there is no evidence that the project is seeking to improve economic development or welfare in the recipient country.
    - Mixed intent should be coded when there is evidence that the project is seeking to improve economic development or welfare in the recipient country
    - Supplier's credit/export seller's credit should never be coded as having only development intent since they explicitly promote the export of Chinese goods and services.
- **Flow Type:** Supplier's credits and export seller's credits are collapsed into a single flow type as it can be difficult at times to discern if a supplier's credit ultimately originated from the Chinese supplier's own funds or from the proceeds of an export seller's credit issued by a Chinese state-owned bank.
- **Title and Description**: When a supplier's credit/export seller's credit agreement is issued, it should be explicitly identified as such in the project title and description and not referred to as simply a "loan agreement."
- **Flow class**: All supplier's credits and export seller's credits should be assigned to the OOF-Like category.

Preferential loan facilities: Preferential loan facilities are exclusively provided by China Eximbank under its Government Concessional Loans (GCL) and Preferential Buyer's Credit (PBC) programs. For details on these programs and coding instructions, see Section 2.1.1.3. Other official sector lenders from China may provide concessional loans (with grant elements that exceed 25%), but these are not part of an institutionalized, preferential loan program of the Chinese government (Malik et al. 2021).

Interest-free loans (In Chinese: 无息贷款、零息贷款、or 免息贷款)**:** Interest-free loans are predominantly offered by China Ministry of Commerce via ETCAs, although there are a few exceptions. For a full discussion of interest-free loans from the Ministry of Commerce, see Section 2.1.1.2. If an interest-free loan is issued by a funding agency other than MOFCOM, AidData coders should set the "loan type" field to "interest-free" and the interest rate field to 0%.

Collateralized Loans: Collateral is a right to an asset or a revenue stream that a creditor can rely upon to secure repayment in the event that a borrower defaults on its payment obligations. Collateral can come in many forms including "cash, stocks, and negotiable bonds; irrevocable letters of credit; certificates of deposit; assignment of receivables such as export earnings, electricity generation charges, road tolls, and telecoms receipts; as well as physical assets such as buildings, ports, and industrial plants. [...] Collateral can be (i) an existing or future asset (stock) or (ii) a future flow or stream. The latter case, also called future receipts or future receivables, can be defined as a financial amount (e.g. USD) or a physical amount of goods to be delivered (e.g. barrels of crude oil)" (IMF and World Bank 2020: 4, 6).

An example of a collateralized loan is the buyer's credit loan (BCL) that China Eximbank issued to the Government Ghana for the Bui Dam Construction Project (ID#183). It was collateralized with (a) net revenue from a Power Purchase Agreement (PPA) between Bui Power Authority, an organization with a mandate to plan, execute and manage the Bui Hydroelectric Project, and the Electricity Company of Ghana (ECG) for the purchase of the energy to be generated from the Bui hydroelectric power plant, and (b) receivables from the Ghana Cocoa Board's sale of cocoa beans to Genertec International Corporation of Beijing.

In a legal sense, collateralized debt "entails a borrower granting liens over specific existing assets or future receivables to a lender as security against repayment of the loan" (IMF and World Bank 2020: 4). However, collateralized debt "also includes arrangements that do not constitute granting of a formal security interest, but that have an equivalent effect." For example, regardless of whether a formal security interest is granted over an escrow account (or a so-called "revenue account," "special account," or "proceeds account") with a minimum cash balance requirement, *a loan is de facto (rather than de jure) collateralized if the account is controlled by the lender (*Gelpern et al. 2021).

According to the IMF and the World Bank (2020: 6), "[c]ollateral can be related or unrelated to the purpose of the loan. Collateralized debt is considered to have 'related collateral' if the loan is used to purchase or construct a new asset (e.g. an airplane, an oil platform), and the asset or the future receipts it is expected to generate (e.g., airline ticket sales, the revenues from the sale of oil) serve as collateral to secure the debt. An example of 'unrelated collateral' is a budget loan collateralized with oil receivables."

Sometimes official sector lenders in China will demand an escrow account (or a so-called "revenue account," "special account," or "proceeds account") as a form of collateral (Gelpern et al. 2021). These are often offshore bank accounts (in the lending country) into which project revenues or the proceeds from export sales are deposited. The funds held in the account can then be used to service the loans and/or serve as collateral (sometimes called a "security package").

- E.g.: As a guarantee for a $1 billion China Eximbank loan, the Republic of Congo is required to keep a minimum deposit balance equivalent to 20% of total outstanding China Eximbank loans in an escrow account (that China Eximbank controls) from the proceeds of its oil sales to China.

Collateral requirements in loan agreements do not affect the way that a loan's grant element is calculated._However, they do influence the favorability of lending terms in a broader sense. If two loans have identical interest rates, maturities, grace periods, and fees, but one requires the borrower to provide a source of collateral that China can seize in the event of default (e.g., foreign currency earnings in an escrow account, a revenue-generating infrastructure asset) and the other does not, the borrower would almost certainly consider the loan with the collateral requirement to be less favorable than the one without such a requirement (Morris et al. 2020).

Determining whether a loan involves collateralization. When source materials do not specify if a loan is collateralized, AidData coders are instructed to follow several guidelines to determine if the loan is collateralized in a de facto or de jure sense:

- If a source indicates that the borrower granted a formal lien or security interest to the lender, the loan should be coded as collateralized.
- If a source mentions a source of "security" for the loan or characterizes the loan as "securitized," this should be treated as evidence that the borrower granted security interest to the lender and the loan should be coded as collateralized (e.g., "The escrow account will provide a source of security for the loan.").
- If a source indicates that a security agent was appointed (to enforce rights against the collateral in the event that the borrower defaults on its repayment obligations), the loan should be coded as collateralized.
- If a special account, escrow account, revenue account, or proceeds account (into which the borrower is required to deposit project-related revenues or unrelated revenues) is mentioned, and the account is either (a) controlled by the Chinese lender or (b) located in China, then the loan should be coded as (de facto) collateralized. Under these conditions, it is not difficult for the Chinese lender to seize or debit the account without the consent of the borrower. However, when the account is controlled by the borrower or a third party (or the account is located in the borrower country or a third country), the Chinese lender does not have a de facto source of collateral.
- All pre-export finance (PXF) facilities should be coded as collateralized since they are almost always secured by (1) an assignment of rights by the producer under an 'offtake contract' (i.e., a sale and purchase contract between the producer and a buyer of that producer of goods or commodities), and (2) a collection account charge over a bank account into which proceeds due to the producer from the buyer of the goods or commodities under the offtake contract are credited.
- If the word 'guarantee' is mentioned in relation to the repayment of the loan by a non-English language source, this *may* indicate collateralization. In languages other than English, collateralized debt arrangements are sometimes referred to as 'guarantee' or 'guaranteed.' However, in English, a (third-party) guarantee is a concept that is distinct from collateralization. Whenever a loan guarantee is issued, an entity other than the primary borrower (or 'the primary obliger') agrees to repay the loan if the primary obliger goes into default. So if the primary obliger is a government line ministry, subnational government, or state-owned enterprise and a sovereign guarantee is issued in support of the loan, that means that a central government entity (usually the Ministry of Finance) has agreed to serve as the loan guarantor. As such, whenever a guarantee is issued, there has to be an additional entity responsible for repayment in the event that the primary obliger goes into default. It is possible for a loan to be both guaranteed (in the English-language sense) and collateralized. China Eximbank's 2004 MLFA with the Government

Angola was guaranteed by Sonangol (the country's state-owned oil company) and collateralized with future revenues from the sale of oil exports.

- If the word 'guarantee' is mentioned in relation to a specific asset/revenue stream, it is most likely referring to collateral. A third-party repayment guarantee (e.g., a sovereign guarantee or corporate guarantee) is not related to a specific asset or revenue stream. The issuance of a third-party repayment guarantee allows the creditor to secure repayment by pursuing *any* assets or revenue streams controlled by the guarantor in the event of default (assuming the assets/revenue streams in question are not protected by sovereign immunity). E.g., "The Government of Togo agreed to establish an airport fee (RDIA) to guarantee the repayment of the PBC and the GCL." In this case the airport fee reported is a form of loan collateral, instead of a third-party guarantee.
- If a source refers to a lending arrangement that is following the 'Angola model' or the 'resources-for-loan' model, this should be treated as evidence of collateralization. The resources-for-loan model pioneered by China Eximbank in Angola, or the 'Angola model,' involves collateralization. In Chinese, the resources-for-loan model is sometimes called "互惠贷款" (reciprocal loan) or "资源与贷款合作框架协议" or "'资源、信贷、项目'一揽子合作模式" or "'石油、信贷、工程'一揽子合作模式" (oil-backed loan) or "安哥拉模式."[49]

AidData coders are also instructed to follow several additional guidelines that are specific to collateralized loans:

- The Collateralized/Securitized field should be set to "Yes" and the specific source(s) of collateral should be identified in the Collateral Description field.
- The organization responsible for providing the collateral should be coded as an Accountable Agency.
- Collateralization should not be used to determine a project's intent designation, concessionality designation, or flow class designation.

Syndicated Loans (In Chinese: **银团贷款**): Syndicated loans are offered by a group of lenders and are an attractive option when one lender does not have the capacity to finance a large project on its own and/or wishes to share credit risk. The full loan amount can be offered in several tranches that need not have identical terms (e.g., Tranche A is a term loan with a 2% interest rate and a 10 year maturity, Tranche B is a working capital loan with a 4% interest rate and a 5 year maturity; Tranche C is a bridge loan with a 7% interest rate and a 1 year maturity); nor does each member of the syndicate need to participate in each tranche. Lenders can also sell their shares of a syndicated loan in the secondary market. China's state-owned policy banks and commercial banks are the main official sector financing institutions in China that participate in syndicated loans.[50]

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[49] See https://www.dropbox.com/s/r5xhu7zdqiebbn3/2.EXIM-Bank.pptx?dl=0

[50] An illustrative syndicated loan agreement can be found accessed here: https://www.documentcloud.org/documents/20488803-sle_2017_468

AidData coders are instructed to follow several coding guidelines that are specific to syndicated loans:

- *Scenario 1: Each official sector financing institution from China and its financial commitment amount to the syndicate is known.* In this scenario, separate project records should be created for each official sector financing institution from China. *The transaction amounts in these records should be populated with the* financial amount that each official sector financing institution from China committed to the syndicated loan. All of the project records should be linked through the title and project description fields (referencing each project ID number). For each project record, the official sector financing institution from China whose loan is being captured should be coded as the funding agency, and other lenders that participate in the syndicate should be coded as co-financing agencies.
- *Scenario 2: Every official sector financing institution from China (or the total number of official sector financing institutions from China in the syndicate) is known but the individual financial contributions (commitments) of each participant in the syndicate are not known.* In this scenario, AidData coders are instructed to (a) assume that each official sector financing institution from China contributed (committed) an equal amount to the syndicated loan and (b) estimate the contributions (commitments) of each financier by dividing the total face value of the loan with the total number of financiers in the syndicate. AidData coders are additionally instructed to create a single project record that captures the total amount contributed (committed) by all of the official sector financing institutions from China that participated in the syndicate. . In this scenario, all official sector financing institutions from China are coded as funding agencies. Participants in the loan syndicate that are not official sector financing institutions from China are coded as co-financing agencies.
- *Scenario 3: Every official sector financing institution from China (or the total number of official sector financing institutions from China in the syndicate) is known and the individual financial contributions (commitments) of each participant in the syndicate are also not known.* AidData coders are instructed to create a single project record with no transaction amount. The official sector financing institutions from China of the syndicated loan are coded as funding agencies. Participants in the loan syndicate that are not official sector financing institutions from China are coded as co-financing agencies.

Loans that support limited-recourse and no-recourse project finance transactions (In Chinese: 项目融资): A loan that is directly issued to a government agency is called a full-recourse sovereign loan. The repayment of this type of debt does not depend upon the financial viability of a project or the cash flow generated by any particular asset. The sovereign government borrower guarantees the repayment of the loan, regardless of whether the project supported by the loan generates enough revenue to facilitate repayment. The creditor has a legal right to seize any and all assets of the borrower until the full amount of the debt is recovered (i.e., it has "full recourse" to the assets of the borrowing government). By contrast, when a project is financed with a limited-recourse or no-recourse structure, the loan that is used to finance the acquisition, construction, and/or maintenance of an asset—such as a toll road, a seaport, or an electricity grid—is exclusively repaid with the cash flow generated by the asset (e.g., toll revenue, container fees, or electricity sales), and the creditor either has no claim ("recourse") or a limited claim to any other assets as a basis for recovering the debt. In a standard, limited-recourse or no-recourse project finance transaction, a creditor lends to an independent legal entity that is established for the express purpose of developing, owning, and operating a specific project. This entity is often called a special purpose vehicle (SPV)—or special purpose entity (SPE)— because it is only allowed to engage in activities that relate to a specific purpose (project) and it is legally prohibited from incurring debts or obligations that are not related to that purpose (project).

Limited-recourse and no-recourse project finance transactions usually involve a mix of equity from the project sponsor[51] (also known as equity investors or project founders) and debt from banks/financial institutions. Common debt-to-equity ratios are 90:10, 80: 20, and 70:30. More often than not, project sponsors have limited financial means and cannot on their own provide the total capital required for the construction, development and operation of the project/asset.

An example of a limited-recourse project finance transaction that is supported by an official sector financing institution in China is the China-Laos Railway Project (captured via Project ID#33726 and ID#85304).[52] To implement this project, three Chinese state-owned companies and a Lao state-owned enterprise established a joint venture (SPV) called the Laos-China Railway Company Limited (LCRC). The LCRC was established as a limited liability corporation (LLC) to finance, design, construct, and manage a 418 kilometer railway between the Chinese city of Kunming and the Laotian capital of Vientiane on a public-private partnership (PPP) basis. The total cost of the China-Laos Railway Project is $5.9 billion—equivalent to roughly one-third of Laos' GDP—and it is being financed according to a 60:40 debt-to-equity ratio ($3.54 billion of debt and $2.36 billion of equity). LCRC directly secured $3.54 billion of debt financing from China Eximbank, and the Government of Laos and the Chinese Government contributed $730 million and $1.63 billion of equity financing, respectively. In order to make its $730 million equity contribution to the project, the Government of Laos secured a $480 million loan from China Eximbank and it agreed to provide $250 million of its own funding (in annual instalments). The $3.54 billion debt secured by LCRC, which is jointly owned by three Chinese state-owned companies that collectively hold a 70% equity stake and one Lao state-owned enterprise that owns a 30% equity stake, is not backed by a sovereign guarantee.

AidData coders are instructed to follow several coding guidelines that are specific to limited-recourse and no-recourse project finance transactions:

[51] In a public-private partnership (PPP) context, the terms project sponsor, project owner and concessionaire are often used interchangeably. That being said, a concessionaire is slightly different (from a typical project sponsor/owner) because its ownership of the project is time-limited (as determined by the concession agreement). So, ownership of the project can return to the host government at the end of the concession agreement.

[52] For an illustrative loan agreement issued by official sector financing institutions in China in support of a limited-recourse project finance transaction, see https://www.documentcloud.org/documents/20488803-sle_2017_468

- These loans can be partially or exclusively issued by official sector financing institutions from China. As such, AidData coders should follow the same guidance that the 2.0 version of the TUFF methodology provides for syndicated loans.
- If the debt component of the project was exclusively financed by an official sector financing institution from China and no information on the exact amount of debt financing is identified, coders should use the debt-to-equity ratio and the total project cost to estimate the transaction (debt financing) amount. E.g. The total project cost is 100 million USD and the project is financed through a debt-equity ratio of 80:20, and the debt financing is exclusively provided by an official sector financing institution from China. The transaction amount should be coded as 80 million USD.
- If a JV/SPV is set up to receive the funding and manage the project, then AidData coders should identify the JV/SPV's owners (and their respective ownership stakes in the JV/SPV) and include this information in the project description. The JV/SPV should be identified as the receiving agency with an agency type designation of JV/SPV.

Loans supporting equity investments/acquisitions: China Eximbank's Overseas Investment Loans (In Chinese: 境外投资贷款) specifically support Chinese enterprises' overseas investments. See section 2.1.1.3 China's Export-Import Bank.

Other Chinese state-owned policy banks or commercial banks provide investment, acquisition, or bridge loans to support Chinese companies' overseas investments. Loans from official sector financing institutions in China that are used to facilitate the acquisition of an equity stake should be recorded as Chinese OOF. E.g. ZTE's 51% equity stake in La société Congo Chine Télécom (CCT) was financed by a Chinese government bank loan.

Master Loan Facility Agreements and Credit Lines: Master loan facilities and lines of credit are not loan agreements and are not treated as such in the 2.0 methodology. They are agreements designed to support multiple subsidiary projects with multiple loans that must be individually approved by the lender. In a typical master loan facility agreement or credit line agreement, the lender and borrower first agree on the types of allowable projects and the terms and conditions of lending. Then, the borrower prepares individual project loan applications to give to the lender for approval under the parameters established in the master facility agreement. Master loan facilities and lines of credit typically identify the total amount of funding that can be accessed, the types of projects that can be supported, and the borrowing terms o(e.g., interest rate, maturity, grace period) for subsidiary projects under the agreement. Master loan facilities are sometimes called master facilities, master loan agreements, or framework agreements.[53]

[53] These should not be confused with "facility agreements," which is a shorthand term that is often used by (Chinese state-owned) banks to refer to loan (or export credit) agreements. See, for example, https://www.documentcloud.org/documents/20488803-sle_2017_468

A single loan can have multiple purposes or components. The key distinction between a single loan with multiple components and a master loan facility is that the latter involves subsidiary loan agreements that must be individually approved by the lender.

AidData coders are instructed to follow several guidelines that are specific to master loan facilities and lines of credit:

- *Scenario 1: If the master loan facility (or line of credit) is for unspecified purposes, and there is information about how much has been drawn down from the facility.* Create one umbrella project record for the master loan facility, and one subsidiary project record for the drawn down amount.
- *Scenario 2: If the master loan facility (or line of credit) is for specified purposes, and coders know the exact number of subsidiary projects financed through the facility.* Create one umbrella project record for the master loan facility, and subsidiary project records for each project that was financed through the facility with separate transaction amounts.
- *Scenario 3: If the master loan facility (or line of credit) is for specified purposes, and coders are unable to identify all subsidiary projects financed through the facility (i.e., coders only find information on one or a few of the subsidiary projects financed through the facility).* Create one project record to capture the entire transaction amount and set the umbrella field to "No." For any subsidiary projects financed by the facility that coders are able to find, create subsidiary project records for each project that was financed through the facility but do not record their specific transaction amounts to avoid duplication of transaction amounts.
- *Scenario 4: If the master loan facility (or line of credit) is for unspecified purposes, and there is evidence that the facility has been completely (100%) drawn down.* Create one project record to capture the entire transaction amount and set the umbrella field to "No."
- *Scenario 5: If the master loan facility (or line of credit) is for unspecified purposes, and we are confident that (1) there is no risk of duplication with existing flows, (2) the financing is going to one specific recipient entity, (3) there is little to no chance of coders identifying the specific, subsidiary projects funded through the facility, and (4) there is no evidence that the financing was provided through a cooperation agreement*. Create one project record to capture the entire transaction amount and set the umbrella field to "No."
- *Scenario 6: If the master loan facility (or line of credit) is provided to the Central Bank of the recipient country*. Create one project record to capture the entire transaction amount and set the umbrella field to "No."

Section 3 - TUFF 2.0 Data Collection Process

The TUFF 2.0 data collection process is undertaken in three stages: (1) project identification, (2) project verification and enhancement, (3a) project-level data quality assurance, and (3b) quality assurance of the dataset as a whole. In this section, we document each of the stages, which were followed to construct the 2.0 version of AidData's Global Chinese Development Finance Dataset.

3.1 - Stage 1: Finding New Projects and Sources

The objective of Stage 1 is to first identify the universe of Chinese ODA- and OOF-financed projects.[54] This is done on a recipient country-by-recipient country basis, so each step of Stage 1 is repeated for each of the 165 countries included in the 2.0 dataset.

Stage 1 is completed in three steps:

1. Coders review a catalogue of official sources that AidData faculty and staff have assembled in order to (a) identify projects that are supported by official sector institutions in China and consistent with OECD-DAC definitions of ODA and OOF; and (b) document any basic/foundational information about these projects (e.g., funding agency, receiving agency, commitment year, transaction amount) that is specified by these official sources. Coders then create a unique record in AidData's data management platform for each project with a unique identification number ('AidData TUFF Project ID') and populate as many fields as possible for those records with the information that is provided by the official sources.
2. Coders review a fixed and pre-processed set of media articles from Factiva/DNA in order to identify (a) any additional projects that are supported by official sector institutions in China and consistent with OECD-DAC definitions of ODA and OOF; and (b) any additional details about the projects exclusively identified via Factiva/DNA and the projects jointly identified by official sources and Factiva/DNA.
3. AidData faculty and staff (with support from coders) conduct supplemental searches to identify any major sources of Chinese ODA or OOF—and specific Chinese ODA- and OOF-financed projects— that were not identified during the first two steps of Stage 1.

A description of each of these steps is detailed in the next section.

3.1.1 - The Official Source Catalogue and Recipient Country Profiles

Before Stage 1 is initiated, AidData faculty and staff create (or update) an Official Country Profile (OCP) for each recipient country. The OCP is a catalogue of all known official sources that may provide information about Chinese ODA- or OOF-financed projects in a given recipient country. Each OCP identifies websites, documents, and datasets from official sources, such as the Chinese

[54] In early iterations of the TUFF methodology, AidData relied on global databases of news reports (Factiva, DNA) to identify Chinese ODA- and OOF-financed activities during stage 1. Then, during the project verification and enhancement stage (Stage 2), AidData would use additional sources to find and verify project details. These additional sources in Stage 2 often included "official" sources—such as official publication from Chinese government agencies or data and documentation from recipient government agencies. However, the 2.0 version of the TUFF methodology takes a different approach. In Stage 1, we use a large catalogue of official sources (that covers 165 countries) to identify projects, and then supplement the list of Chinese ODA- and OOF-financed projects that are identified via official sources with media-based sources to identify any remaining missing projects.

government, the recipient government, and official sector entities with international aid and debt monitoring responsibilities (e.g., the World Bank and the IMF). On average, each recipient country's OCP includes 25 official sources.

- Every country's OCP includes key Chinese government sources, such as the Chinese embassy and Economic and Commercial Counselor (ECCO) websites in the given recipient country, MOFCOM investment guides, and the annual reports of Chinese state-owned banks and state-owned companies. These sources typically demonstrate that a project exists; , provide precise official commitment dates and project implementation start and end dates (e.g., the calendar days on which the loan agreement was signed and construction started/ended); identify a official project title (in Mandarin Chinese); and provide information about the funding agency, the receiving agency, and/or the nature of the flow type (e.g., a preferential buyer's credit from China Eximbank was issued to the Ministry of Finance in the recipient country to support the project).
- Every country's OCP identifies key recipient government sources, such as the Ministry of Foreign Affairs website, the debt registry and budget documents of the Ministry of Finance, government registers and gazettes that publish information about foreign loan and grant agreements, the government's aid and debt information management system, and the websites of legislative and executive oversight institutions in host countries (e.g. Public Accounts Committee, Office of the Auditor General). These sources often identify official commitment dates, funding agencies, receiving agencies, transaction amounts, borrowing terms, information about the timing and value of disbursements, information about project implementation progress (including but not limited to construction start and end dates), and official project titles in local languages.
- Official sources that are not from the Chinese government or recipient government—like International Monetary Fund's (IMF) Article IV Staff Reports—also appear in each country's OCP.

Coders are instructed to take a source-specific approach to data collection, which means that they retrieve information from one official source at a time, compiling an initial project list that is de-duplicated as they review additional official sources

Within each OCP, AidData faculty and staff provide coders with specific descriptions of each official source and source-specific instructions, which is important because the sources that are identified in the OCP often contain a great deal of information that is *not* related to Chinese ODA- or OOF-financed projects.[55] Therefore, AidData faculty and staff review each source in advance and specify which particular sections require the attention of coders.

- Source-specific instructions also include guidelines for navigating websites, documents, and datasets t as well as tips for conducting searches in foreign languages:

[55] The OCPs were initially created in 2018. Then, in 2021, AidData revamped and expanded the OCPs because the number of Chinese government sources have exponentially increased. The latest OCPs also identify the websites of Chinese state-owned enterprises (SOEs) most active in a given recipient country. The latest OCPs also contain archived records of previous OCPs so that country-specific data collection information, advice, and challenges can be passed on to future coding teams.

    - E.g. "肯尼亚" is the Chinese name for Kenya
    - E.g. Google this search term: "http://dj.china-embassy.org/chn/" 贷款 (Loan in chinese)
    - E.g. Use Ctrl+F in this French-language document to search for "Chine" and "Chinois"
- Coders are instructed to download especially useful sources and add them to OCPs for future rounds of data collection (e.g., a time-stamped export of a recipient country's Aid Management Platform).

3.1.2 - DNA/Factiva Articles

After AidData coders conduct a systematic review of official sources that provide information about Chinese ODA- and OOF-projects in each recipient country, they search for additional projects and project-level information through targeted searches in Factiva and Dow Jones DNA[56]. Factiva—a Dow Jones-owned media database that draws on approximately 33,000 media sources worldwide in 28 languages, including newspapers and radio and television transcripts—is the primary database that AidData has historically used for the systematic review of media articles that report on Chinese ODA- and OOF-financed projects. However, as the scope of our data collection efforts has expanded to a larger number of recipient countries and a wider set of commitment years, we have turned to Dow Jones DNA to more efficiently extract and process media articles when our Factiva queries return more than 1,000 results for a single recipient country in a single commitment year. Whereas Factiva was not designed to support machine learning applications, Dow Jones DNA—a cloud-based content processing and storage platform—makes the entire, 30-year Factiva archive and approximately 1 million income news articles per day accessible to users who wish to use this information in machine learning applications.

We use a standardized set of search criteria to query Factiva and Dow Jones DNA.[57] The queries generate a long list of media articles, but only a subset of these "candidate sources" contain information about Chinese ODA- and OOF-financed projects. We therefore use a machine learning algorithm[58] to identify the subset of articles that are most likely to contain information

[56] Factiva and Dow Jones DNA sources often provide coverage of smaller grants, in-kind contributions, technical assistance and medical team projects. The articles help identify or confirm implementation details of potential projects (e.g., dates of signing or handover ceremonies, officials and ministries present at these ceremonies, and other organizations or contractors involved in the project).

[57] All of these queries rely on a standardized set of keywords (such as grant, loan, and donate), but we run them independently for each recipient country.

[58]To classify the documents, the machine learning software uses a linear Support Vector Machine (SVM) classifier—with balanced TRUE/FALSE classes—and the "term frequency–inverse document frequency" (TFIDF) transformation from the Scikit-learn Python library classes. Classes were balanced by oversampling the TRUE class. For more information about the linear SVM classifier package, see Pedregosa et al. (2011).

about Chinese government-financed projects.[59] We refer to this machine learning tool as the "TUFF Robot." It combs through millions of search results at a rate of approximately 15,000 results per hour—or 475,000 results per week. It categorizes search results as either "relevant" or "irrelevant" based on whether they seem to contain information about Chinese ODA- and OOF-financed projects. AidData coders then review each of the Factiva and Dow Jones DNA records that the machine learning algorithm has classified as "relevant" and make case-by-case determinations about whether those sources do indeed contain information about Chinese ODA- and OOF-financed projects.

For each commitment year, AidData coders review approximately 32,000 articles from Factiva and 16,000 articles from Dow Jones DNA (across the full set of 165 countries in the dataset)[60]. Across 18 commitment years (2000-2017), this amounts to over 850,000 articles. In order to conduct this manual review process, the coder assigned to the OCP for a specific recipient country will also review the news article search results for that specific country. To conduct this review in a time efficient manner, coders are advised to scan article titles, and if the title indicates the possibility that the article may contain information on Chinese ODA- or OOF-financed activities in the recipient country, the coder will then scan the text of the article. If the coders identify information related to Chinese ODA- or OOF-financed activities in the text of the article, they conduct a more thorough review and ensure the relevant information from the news report is added to the relevant project records in AidData's data management platform. In cases where multiple news reports provide the exact same text (e.g., republished stories from the Associated Press), coders are instructed to include only attach one of these sources to the relevant project record, with the objective of identifying the article from the original news outlet that reported the information, or otherwise from the donor/creditor country news outlet or recipient country news outlet that would be more closely tied to the project.

When these news databases are queried, AidData coders search for media reports that include (a) some derivation of the name of the country/government from which the financial or in-kind transfer originates; (b) some derivation of the name of the country/government to which the financial or in-kind transfer is directed; and (c) at least one keyword related to financing or

[59] To train the machine learning tool, we use large amounts of training data (articles that we identified via Factiva/Dow Jones DNA and then classified as containing or not containing information about projects financed by the official donor/lender of interest) to "teach" the algorithm to accurately classify hundreds of thousands of articles into "relevant" and "irrelevant" categories. Use of this tool significantly reduces the amount of time that researchers would otherwise spend reviewing false positives—articles that contain no information about projects financed by the official donor/lender of interest. To continuously improve the accuracy of the TUFF Robot in classifying articles as either relevant or irrelevant, we update the training set each data collection cycle with all new articles that our team of coders manually sorted during the previous data collection cycle.

[60] In cases where Factiva returns less than 1,000 search results for a single recipient country in a single commitment year, we prefer to use this database for the systematic review of media articles. This database is designed to have a user-friendly interface which is ideal for this type of manual review process, and coders can easily manage the systematic review of less than 1,000 search results in this interface while working in a time-efficient manner. Performing a systematic review of thousands of search results per recipient country per commitment year would be too costly and less than ideal for this kind of interface, which is why in cases where Factiva returns more than 1,000 search results for a single recipient country in a single commitment year we employ the use of Dow Jones DNA and the TUFF Robot.

development projects, such as "grant," "loan," or "medical team." An illustrative set of search terms for Chinese ODA- and OOF-financed activities in Chile is provided below:

(China or chinese or chin*) near5 (Chile or Chilean or Chile* or Santiago) AND (assist* or grant* or loan* or lend* or lent or donat* or donor* or fund* or invest* or financ* or economic package or development package or aid or scholarship* or capacity building or training* or joint* near5 train* or train* near5 program* or technical cooperat* or exchange* or medical team* or experts or provid* or provision* or support or debt* near5 forgive* or debt* near5 relie* or debt* near5 cancel* or export credit* or mixed credit* or buyer* credit* or disburse* or feasibility stud* or relief effort* or disaster relief or humanitarian relief or emergency relief or relief supplies or relief materials or sign* near5 agreement)

3.2 - Stage 2: Project Record Enhancement and Verification

In Stage 2, AidData coders populate as many "empty" dataset fields (i.e., financing and implementation details) as possible for each project that was identified in Stage 1. They also seek to corroborate key project details by cross-checking them with new sources. Additionally, in Stage 2, AidData coders identify and remove duplicate project records.

3.2.1: De-duplication and Detailed Searches

Stage 2 is undertaken in four steps:

1. Coders review the project information collected during Stage 1 and conduct duplicate checks to ensure that newly-generated project records capture new/unique projects that are not already captured elsewhere in the data management platform.
2. Coders review and seek to verify the coding and categorization determinations that were made during Stage 1 with the same set of sources that were identified during Stage 1. They also review the "Staff Comments" field to identify key information gaps that need to be addressed.
3. Coders conduct targeted searches with English, Mandarin Chinese, and local language terms. These searches include the following steps:
    a. With English and Mandarin Chinese terms, search Chinese government sources[61] to verify the existence of the project, dates related to key variables, the flow type, the transaction amount, and the official project title in Mandarin Chinese;

[61] One example of using Chinese search terms to identify information from Chinese government sources is as follows: "site:mofcom.gov.cn 中加友谊体育场贷款". This combination of search terms, which includes the url of a Chinese government site, the project name in Chinese (Sino-Gabon Friendship Stadium), and the word "loan" in Chinese, will yield information about loans provided to fund the Sino-Gabon Friendship Stadium.

b. With English and local language terms, search recipient government sources[62] to verify transaction amounts, borrowing terms, loan disbursements, locational details, and the official project title in local language of the recipient country;
c. With English, Mandarin Chinese, and local language terms, search implementing agency sources[63] (e.g. annual reports of Chinese state-owned enterprises) to collect locational details and up-to-date information about the implementation status/progress of the project; and
d. With English, Mandarin Chinese, and local language terms, search additional official sources (e.g. IMF Article IV report) to cross-check and verify the transaction amount, the commitment date, loan pricing details, and loan disbursement information.

4. Coders fix broken sources (hyperlinks) that were identified during Stage 1. They also update the Staff Comments field to flag unresolved discrepancies and key information gaps that require the attention of Stage 3 (Quality Assurance) coders.

As coders conduct these searches and identify new information, they systematically populate 70 fields for each project record. That process and the field-specific coding instructions that are given to AidData coders are detailed in the next section.

3.2.2 Dataset Variables & Structure

As part of Stage 2, AidData coders seek to verify existing information and collect new information in order to accurately populate all 70 fields (variables) in the 2.0 dataset for each project record. See Section 1.4 for a complete set of field names and definitions. AidData coders are instructed to adhere to the following guidelines as making populate these fields.

- **Umbrella marker (Yes/No):** There are two primary reasons why a project's "Umbrella" field can be set to Yes: (1) to avoid double counting projects (and commitment amounts) across the dataset; and (2) to capture an overarching agreement/pledge of funding that ultimately leads to multiple, subsidiary projects (such as a master loan facility, an ETCA, or a framework agreement). The most common types of umbrella projects involve (a) debt forgiveness of loans that were contracted (or may have been contracted) during the 2000-2017 period (and thus may be captured elsewhere in the dataset); and (b) and grants/interest-free loans issued through ETCAs for unspecified purposes/projects (which since multiple, unknown projects may have been financed through these agreements,

[62] One example of using local language search terms to identify information from recipient government sources is as follows: "site:gub.uy acuerdo de cooperación económica y técnica China 2009". This combination of search terms, which includes the url of a recipient government site, the type of agreement in Spanish, the word "China" in Spanish, and the year the agreement was signed, will yield information about the Economic and Technical Cooperation agreement signed between the Chinese government and Uruguayan government in 2009.
[63] One example of using English language search terms to identify information from implementing organizations' sources is as follows: "site:gwcl.com.gh China Kpong Water Supply Expansion Project". This combination of search terms, which includes the url of a local contractor's web page, the name of the financier, and the project name in English, will yield information about the Kpong Water Supply Expansion Project financed by China Eximbank in Ghana.

which creates a risk of double-counting of other projects and commitment amounts). . When a project's "Umbrella" field is set to Yes, AidData coders are instructed to provide a justification in the "Staff Comments" field. However, since the field is relatively new, there are some records that are missing this information. In future iterations of the dataset, AidData coders will strive to provide this contextual information for every project record. There are also a few exceptions where AidData coders confirmed the complete disbursement of a large line of credit, but could not identify the full range of sub-projects.[64]

- **Commitment Year/Commitment Year Estimated**: The commitment year field captures the year in which an official financial commitment (or official commitment to provide in-kind support) was codified through the signing of a formal agreement by an official donor/lender in China and one or more entities in a recipient country or a set of recipient countries. When the year of the formal signed commitment is known, it is recorded in the commitment year field. However, in some cases, the official commitment date is unknown. In such cases, we use the following proxies to estimate the commitment year (in hierarchical order):
    - First year of project implementation
    - The year in which the underlying commercial contract (supported by the official commitment) was signed
    - The first year in which an informal pledge was made

  If any of these proxies are used to estimate the commitment year, the "commitment year estimated" field is set to "Yes." For projects that are assigned to the Pipeline: Pledge status category, AidData coders are instructed to record the year in which the informal pledge was announced.
- **Title:** In this field, AidData coders are instructed to include the following information when they create or edit a project title: the funding agency name, the flow type (e.g., loan, grant, technical assistance), the commitment amount (if applicable), and the formal English-language project title. If a formal English-language project title is unavailable, the purpose of the transfer is identified. Lastly, the project title field should identify any linked projects, if any exist. Example: "China Eximbank provides $267.2 million preferential buyer's credit for 500 kV North-South Power Transmission Line Project (Linked to Project ID#39984, #70910)".
- **Description:** AidData coders are instructed to include the following information when they are creating or editing the description field:
    - *Basic project information*. Coders should identify the funding agencies, the amount of funding they officially committed for the project, the currency of denomination, the official commitment date, and a description of the purpose of the funding. Sometimes this is straightforward (e.g., a grant to build a hospital). However, at times, the financial commitment indirectly supports a project (e.g., a

[64] In these rare and specific cases (Project ID#66806 and #40135), AidData coders have marked the main commitment/disbursement project as a non-umbrella project, and removed the transaction amount from any individual subsidiary projects to avoid double-counting.

loan is issued to a company which then invests in a project). In such cases, coders are instructed to clearly document how the financing is used, and for what purposes.

- *Project implementation details.* Coders should provide a description of major project events and the precise calendar dates when they took place (e.g., commercial contract signing date, implementation start date, project completion date, commercial operations date, and major milestones such as when a project passes a midterm or final inspection by the funding agency). Additionally, coders should identify all implementing agencies, co-financing agencies, receiving agencies, or accountable agencies.
- *Financial details.* Coders should identify the specific terms and conditions that govern the financing agreement, the timing and monetary value of commercial contracts and financial disbursements, and the existence of any special arrangements (such as on-lending agreements or offshore escrow accounts into which project revenues must be deposited). They should also document any key calculations or assumptions, such as the way in which an "all in" interest rate was measured. For example: "The CDB loan had a variable interest rate of 6-month LIBOR + a 2.90% margin. The interest rate of the loan that supported this project is coded based on the 6-month LIBOR at time of signing of the loan agreement. The average 6-month LIBOR rate in June 2012 was 0.736%. The interest rate was therefore coded as 0.736% + 2.90%, or 3.636%."
- *Geographical information.* Coders should record geographical details that accurately and precisely document project's physical footprint, including location names and types; the position or distance of the project's location vis-à-vis other geographical features (e.g., the building is located across the street from the country's parliamentary complex in the capital city); the name, length, and start points and end points of physical infrastructure supported by the project (e.g., the 115.85 kilometer A1 highway runs from Colombo to Kandy); the total land area occupied by the project site (e.g., the industrial park occupies a 10 square kilometer area); and latitude and longitude coordinates of specific project features (e.g., the coordinates of Olkaria IV Geothermal Power Station Kenya at Hells Gate National Park are -0.918056, 36.334444).
- *Name the sources.* When key project details are provided in the description (e.g., transaction amounts, commitment years), coders should identify the specific source or sources which provide such information. Example: "According to the 2017 Annual Debt Report published by Sierra Leone's Ministry of Finance, the Government of Sierra Leone signed a government concessional loan (GCL) agreement with China Eximbank on March 13, 2016 for a National Broadband Project that carries the following borrowing terms: 20 year maturity, 5 year grace period. 2% interest rate."
- *Project Risks, Achievements, Failures, and Setbacks.* Whenever possible, coders should include a detailed overview of the various challenges that arose during project design and implementation (such as strikes, riots, public protests, wars,

corruption scandals, natural disasters, public health restrictions, political transitions, bankruptcies, debt defaults, contractual disputes, lawsuits, and ruptures in diplomatic relations) and how funding, receiving, implementing, and accountable institutions responded to these challenges. Additionally, the description should include information about project achievements and failures, contractor performance vis-à-vis deadlines and deliverables, and findings from project audits and evaluations.

- **Staff Comments:** This field is used to identify the assumptions, logic, and evidence that coders used to address coding and categorization determinations. It also provides contextual information and source materials that users (and future AidData coders) may find helpful if and when they seek to collect supplementary information about the project (or revisit previous coding and categorization determinations). More specifically, this field seeks to document::
    - *Discrepancies between sources*: Coders should explicitly identify discrepancies across different sources when they relate to key fields (such as the commitment year, the transaction amount, the funding agency, the receiving agency, and loan pricing details). They should also specify how they adjudicated between competing sources and resolved discrepancies. Example: "In the database of Chinese loan commitments that SAIS-CARI released in July 2020, it identifies a $264 million China Eximbank loan in 2009 for this project. However, AidData relies on the face value of the CMEC supplier's credit ($551,507,000) and the commitment year (2005) of the supplier's credit agreement that is specified in the agreement itself. It is possible that CMEC obtained an export seller's credit from China Eximbank to finance its supplier's credit with the Republic of Congo; however, AidData has not yet independently confirmed that this occurred. [...] The CMEC supplier's credit agreement can be accessed in its entirety via https://www.dropbox.com/s/g4bkuq71ezrpjoy/L%20n%C2%B019-2019%20du%2024%20mai%202019.pdf?dl=0 or https://www.documentcloud.org/documents/20488096-cog_2005_490."
    - *Explanations of why project records are linked to each other*: "This project is linked to Project ID#52515 because the original $492 million PBC was split into two, but both amounts are still for the same highway project."
    - *Project titles in English, Chinese, and local languages*. Example: This project is also known as the Third Bridge Construction Project. The Chinese project title is 马里共和国巴马科第三大桥 or 援马里巴马科第三大桥项目. The French project title is La construction du 3ème pont de Bamako or Pont de l'amitié sino-malienne.

    Specific justifications for challenging coding and categorization determinations. Example: "AidData has coded this transaction as a collateralized loan because ICBC was selected as the security agent (i.e. collateral agent) for the loan. When lenders take collateral as security for their loans, a collateral/security agent is often appointed to enforce rights against the collateral in the event of the borrower's default under the loan."

- *Issues that were not fully resolved and/or that require further investigation.* Example: "According to the financial reports published by JP EPS, it contracted a $35,938,868.58 loan with the Chinese Government on June 25, 2010 to finance the imports of goods and services — including transformers, transmission lines, conveyors and bulldozers — from China. This loan also has an 11 year repayment period (between July 21, 2010 and January 21, 2010) and it also carries an interest rate of 6-month LIBOR plus a 1.3% margin. It is unclear if this loan is distinct from the China Eximbank loan that was rescheduled on February 20, 2009. For the time being, in order to err on the side of caution, AidData does not record a separate loan to capture the loan that JP EPS reportedly contracted on June 25, 2010. However, this issue merits further investigation."
- *Hyperlinks to uniquely important sources, such as unredacted EPC contracts, unredacted grant and loan agreements, official correspondence between lenders and borrowers, and direct correspondence between AidData and government officials in recipient countries.* Example: "The 2011 prepayment facility agreement between PetroChina and PetroEcuador can be accessed in its entirety via https://www.dropbox.com/s/gfl6z608d9abalf/CONTRATO_PRINCIPAL_2011048.pdf?dl=0."

- **Status:** AidData coders are instructed to follow a two-step process to make status field determinations. First, coders are instructed to determine if an official commitment has taken place Second, if an official commitment has taken place, coders are instructed to determine if the project has reached implementation or completion—or if it was subsequently suspended or cancelled.
  - Guidance on when to assign projects to the Pipeline: Pledge, Pipeline: Commitment, Implementation, or Completed status category:
    - If a commitment from an official sector institution in China took place, and the project was reportedly implemented or completed, assume that the financial or in-kind transfer took place (at least in part) and assign the project to the Implementation or Completion status category.
    - If a pledge was issued by an official sector institution in China, and the project was reportedly implemented or completed, do not assume that the financial or in-kind transfer took place (in part or in whole). Assign the project to thePipeline: Pledge status category. Additionally, if negotiations with an official sector institution in China are ongoing, keep the project in the Pipeline: Pledge status category. If negotiations with an official sector institution in China do not result in an official commitment, keep the project in the Pipeline: Pledge status category.
    - If a commitment from an official sector institution in China took place but the financial or in-kind transfer never materialized, and the project was reportedly completed (with an alternative source of financing), the project should either be assigned a status code of Pipeline: Commitment (with an

explanation that there is no evidence of disbursements taking place) or a status code of Suspended or Cancelled (if there is clear evidence that the official sector institution in China withdrew its support).

    - If a project's status is unknown, but sources indicate that an official sector institution from China fully disbursed the funds that it previously committed to the project (with no reports of suspension/cancellation), assign the project to the Completion status category.

- Guidance on when to assign projects to the Suspended or Cancelled status category
    - Only projects that previously secured a commitment from an official sector institution in China can be assigned to the Suspended or Cancelled status category. A project that was assigned to the Pipeline: Pledge category and never secured a commitment from an official sector institution in China should not be assigned to the Suspended or Cancelled status category (even if it is known that the project was never carried out). Such projects should remain in the Pipeline: Pledge category.
    - If a loan agreement was signed but subsequently rejected by the parliament or judicial body in the recipient countries, then it should be assigned to the Cancelled status category.
    - If a loan agreement was suspended and then a new loan request was made by the borrowing institution, two separate project records should be created: one for the suspended loan agreement and another for the new loan request (which should be assigned to the Pipeline: Pledge status category).
    - If financial disbursements took place prior to the cancellation/suspension of a project that previously secured a commitment from an official sector institution in China, coders should record the original financial commitment amount in one project record and assign it to the Suspended or Cancelled status category, and create a separate project record to capture disbursed amount prior to cancellation/suspension and assign it to the Completed status category.
    - If a loan agreement was issued by an official sector institution in China but official sources indicate that no disbursements were ever made, the project should be assigned to the Suspended status category.
    - If no official sources explicitly report a suspension or cancellation of the financing agreement and information about the project's progress is either sparse or absent, coders should seek to identify (1) evidence of the receiving agency (or another entity in the recipient country) identifying an alternative source of funding to finance the commercial contract; (2) evidence of the receiving agency (or another entity in the recipient country) signing a new commercial contract with a different contractor; and (3) whether the financing agreement is recorded from the country's aid/debt information management system (registry). In any of these 3

scenarios, it is possible that the financing agreement was never finalized (i.e., an official commitment never took place), and coders should assign the project to the Pipeline: Pledge status category.

- **Intent:** Identifying the intent of a project should be based on three considerations:
  - *Does the project seek to improve the economic development or welfare in the host country?* If so, the project should be coded as having development intent, which is consistent with OECD-DAC guidelines. Development intent is determined independently from the concessionality calculation for loans. A project can have development intent and also be non-concessional. Any infrastructure projects that can improve economic development or welfare in host countries that are financed with Chinese debt and without Chinese equity should be coded as development intent, *regardless of whether the debt is offered on concessional or non-concessionary terms*. Most projects are assumed to have development intent unless there is specific evidence of commercial, representational, or military intent.
  - *Does the project seek to enhance the commercial interests of the financier country (China)?* If so, the project should be coded as having commercial intent.[65] Loans to help shipping companies acquire vessels that will allow them to move ocean containers from country to country or shipping equipment should be coded as commercial intent as they are designed to support the commercial operations of the companies and not to advance an economic development objective in the host country. A loan to help a company finance its general operations, or a loan to help a company service its existing debts should also be coded as having commercial intent. Working capital loans or "working credit facilities" provide funds for a borrower's day-to-day operations should be coded as commercial intent. Cross-currency interest rate swaps are a form of corporate financing and such they represent transactions with commercial intent.
  - *Does the project seek to disseminate or promote Chinese culture, language, or values?* If so, the project should be coded as having representational intent. Donations of equipment that apparently will be used to spread Chinese culture, language or values should be coded as representational intent. This includes donations of Chinese books on Chinese traditions, donations of lion dance props, and even donations of luxury items from China (e.g., the Hongqi L5 vehicle). Projects to establish or upgrade Confucius Institutes and Chinese cultural centers are considered projects with representational intent. Projects that involve the dispatch of Chinese language instructors to recipient countries are considered projects with representation intent.
- **Sector Code/Sector Name:** Based on the OECD's 3-digit sector codes and names, AidData coders should assign each project to the sector that it is meant to support. If the

[65] Projects assigned to the "Commercial intent" status category are those that primarily seek to promote the commercial interests of the country from which the financial transfer originated (e.g., encouraging the export of Chinese goods and services)

specific activities of a project are unknown, the project should be assigned to the sector of the receiving agency (i.e., financing with unspecified purpose to a major oil and gas company should be coded to the energy sector). Projects with unknown activities/purposes and unknown receiving agencies are assigned to the unspecified sector (998).

- **Funding agency:** Only the official sector institution in China providing the financial or in-kind support should be identified as a funding agency. Co-financing agencies should be identified in the co-financing field (regardless of whether they are official sector institutions from China). The transaction (commitment) amount should correspond to the financial or in-kind transfer from the specified official sector institution in China. If the project was financed by multiple official sector institutions from China, and the respective financial commitments of each institution are known, a separate record should be created for each commitment amount and corresponding funding agency. If, however, the respective financial commitments of each institution are not known (but the total commitment amount from all official sector institutions in China is known), then a single record should be created, with all of the official sector institutions from China identified as funding agencies.
- **Co-financing agency/marker:** If a project has a co-financier, the co-financing field (marker) should be set to "Yes". The co-financing agency's name and origin should also be identified. Counterpart funding from the recipient agency/company is not considered co-financing.
- **Receiving Agency**: The receiving agency identifies the entity receiving the financial or in-kind transfer. All loans (and loan types) should have a receiving agency recorded. Grants and grant-like transfers should also, whenever possible, identify the receiving agency. For seller's credits, the Chinese state-owned enterprise receiving an export seller's credit from the Chinese state-owned bank and the foreign customer (borrower) in the recipient country which is in turn receiving the supplier's credit from the Chinese state-owned enterprise should both be coded as receiving agencies. When a Chinese state-owned enterprise uses its own funds (without any known export seller's credit from a Chinese state-owned bank) to provide a supplier's own financing to a foreign customer (borrower) in the recipient country, only the foreign customer should be coded as the receiving agency. If an official sector institution in China provides a loan to a bank or financial institution in the recipient country, and that bank or financial institution in-turn uses the proceeds of the loan to on-lend to state-owned companies or agencies in the recipient country, then the entity who is on-lending the proceeds of the loan loan and the entity (or entities) receiving the loan should all be coded as receiving agencies.
- **Implementing Agency:** The organizations/entities involved in carrying out the project activities should be identified in this field.
- **Accountable Agency:** There are three types of accountable agencies that should be identified by name in this field (and in the description field). These all correspond to loans; no other flow types should identify accountable agencies:
    - *An agency providing credit insurance.* If a third-party (i.e., not the funding agency or the receiving agency) issues a credit insurance policy to ensure repayment in

the event the borrower cannot service its debt, it should be identified as an accountable agency. A common scenario is one in which Sinosure issues a credit insurance policy in support of an export buyer's credit from a Chinese state-owned bank. However, the insurer need not be an official sector institution in China to be identified as an accountable agency. If an insurance agency is identified, the "insurance" field should be set to "Yes."

    - *An agency providing a loan repayment guarantee*. If a third-party (i.e., not the funding agency or the receiving agency) issues a loan repayment guarantee, it should be identified as an accountable agency. By providing a guarantee, the guarantor is promising to repay the loan if the receiving agency (primary borrower) defaults on its repayment obligations. Government agencies from the recipient country may issue a sovereign guarantee, though guarantees can also come from private companies, state-owned companies, or other types of agencies (in China, the recipient country, or another country). If a third-party repayment guarantee is issued, the "guarantee" field should be set to "Yes."
    - *An agency that is pledging a source of collateral.* If an entity pledges one or more sources of collateral for a loan that can be seized in the event the borrower defaults on its repayment obligations, it should be identified as an accountable agency. The Collateralized/Securitized field should also be set to "Yes," and the collateral field should be populated to describe the nature of the collateral that was pledged.
- **Agency Type:** For each kind of agency involved in a project (i.e., funding, cofinancing, receiving, implementing, or accountable agency), coders are instructed to identify the agency type. Specific considerations for certain agency types include the following:
    - *Government agencies*. These agency type designations are given to any entities that are a part or an extension of the governmental structure in the country (whether in China or in the recipient country).
    - *State-owned policy bank/state-owned commercial bank.* These agency type designations are only used for Chinese state-owned policy banks and commercial banks that provide overseas funding. The policy banks include China Eximbank and CDB. The state-owned commercial banks include those that are at least 50% owned by the Chinese government. The state-owned commercial banks also include so-called shareholding commercial banks that are subsidiaries of state-owned enterprises (e.g., China CITIC Bank) and city commercial banks (i.e., Bank of Shanghai).
    - *State-owned bank*. This agency type designation is only used in recipient countries when the bank is at least 50% owned by the recipient government.
    - *State-owned company*. We consider all companies with the state as their largest shareholder to be state-owned companies. These include companies that are wholly-owned or majority-owned or partially-owned by the state. Wholly-owned subsidiaries of state-owned companies are also coded as state-owned. This definition holds for Chinese and recipient state-owned companies.

  - *Private sector.* This agency type designation encompasses all companies with no state ownership or where the state was not the largest shareholder.
  - *State-owned fund*: This agency type designation is only used for funds set up and financed by Chinese governmental and state-owned banking entities. Certain funds are region-specific, such as the Africa Growing Together Fund, and the China Co-financing Fund for LAC. Some funds may serve a specific purpose, such as the Silk Road Fund, that is dedicated to providing financing in countries participating in the Belt and Road Initiative. Others are set up to support intergovernmental organizations, such as the People's Republic of China Poverty Reduction and Regional Cooperation Fund, and China Trust Fund.
  - *Special purpose vehicle/joint venture.* This agency type designation captures project companies (independent legal entities) that are established to manage the financing and implementation of a particular project. Ownership information, if known, should be noted in the project description.
- Agency Origin: For each kind of agency involved in a project (i.e., funding, cofinancing, receiving, implementing, or accountable agency), coders are instructed to identify the agency origin. Specific considerations for certain agency types include the following:
  - The agency origin field should be set to China if the agency is wholly-owned by the Chinese government or a Chinese company.
  - The agency origin field should be set to "recipient country" if the agency is wholly-owned by the government or companies in the recipient country. It should be set to "other" if (1) the organization is wholly-owned by an entity not from the recipient country or China; (2) the organization is an intergovernmental organization; or (3) the organization is partially owned by an entity from China and an entity from the recipient country.
- Transaction Amount: In most circumstances, only the face values of loans and grants (or the monetary values of in-kind transfers) from official sector institutions in China should be recorded as transaction amounts. When an official commitment amount is identified, AidData coders are instructed to record it as the official transaction amount even if the disbursed amount is different from the official committed amount. However, if an official commitment amount is not provided and a disbursement amount is provided, AidData coders are instructed to record to use the disbursement amount as a proxy[66] for the official commitment amount. However, this coding rule only applies to completed projects.
  - There are cases where a separate project record should be created for the sole purpose of capturing disbursements: (1) disbursement (drawn down amount) for a line of credit that has been coded as umbrella project - see section on Master

[66] Sometimes there are cost overruns on projects and the Chinese government ends up providing top-up funding beyond the original commitment amount to address these cost overruns. So, in effect, a higher disbursement figure compared to the original commitment amount serves as a proxy for the final official commitment amount *after the top-up funding is included*. There is often an agreement revision/addendum to officially increase the face value of the loan (but we usually don't have access to these agreement revisions/addenda).

Loan Facilities/Agreements and Credit Lines (Section 2.1.3.2),[67] and (2) disbursements made prior to a project cancellation (one project record already created for the cancelled project).
- If a coder is not certain that an official sector institution in China fully financed the entire project, the total project cost should not be recorded as the transaction amount. The transaction amount should only capture the financial amount provided by the official sector institution in China.
- If there are two transaction amounts in a single project (e.g. two disbursements in different currencies), coders are instructed to create two separate project records. The title field and description field should identify the project records as linked through their unique identification numbers.

For the vast majority of projects in the 2.0 dataset, the reported transaction amount is based on information in the primary (hyperlinked) source materials. However, there are a few unique scenarios in which transaction amounts are estimated by AidData coders using information that is provided in the project record itself.

- *Scenario 1 (estimating transaction amounts for preferential or non-preferential export buyer's credits). I*f the underlying source materials confirm that the financing for a project was issued in the form of an export buyer's credit (buyer's credit loan) from an official sector institution in China, and the face value of the export buyer's credit is unknown, coders assume that it is equivalent to 85% of the commercial contract cost. AidData recognizes that Chinese state-owned banks may sometimes deviate from this practice and provide an export buyer's credit that covers as little as 60% of a commercial contract or as much as 95% of a commercial contract, but for estimation purposes, we adhere to the "85% rule." If coders record a transaction amount that is estimated based on the 85% rule, they should include a staff comment that reads "The face value of the buyer's credit loan is not reported by any of the underlying sources. AidData estimates that the face value by taking 85% of the value of the underlying commercial (EPC) contract supported by the buyer's credit loan." AidData coders are instructed to not make any inferences or assumptions based upon the amount of export credit financing that is insured by Sinosure (since Sinosure typically insures the loan's principal and interest, but the transaction amount field in the 2.0 dataset is only intended to capture the loan's principal).[68]
- *Scenario 2 (estimating transaction amounts for government concessional loans from China Eximbank).* If AidData coders are confident that the financing for a project is in the form of a government concessional loan (GCL) from China Eximbank, they can assume that the proceeds of the GCL were used to finance

[67] We do not count the face value of a line of credit (or master loan facility) as an official commitment amount if it is not fully utilized by the borrower.

[68] If a guarantee was provided for the loan and the guarantee amount is known while the loan's face value is not known, AidData coders are instructed to infer the face value of the loan (commitment amount) from the monetary value of the guarantee. This is because the guarantee amount is equivalent to the face value of the loan (i.e. the loan's principal).

100% of the commercial (EPC) contract costs and code the transaction amount field accordingly. The absence of a counterpart financing requirement is a core design feature of the GCL lending instrument/program. If AidData coders record a GCL transaction amount that is estimated, they should include a staff commend that reads "The face value of the government concessional loan is not reported by any of the underlying sources. AidData estimates that the face value by taking 100% of the value of the underlying commercial (EPC) contract supported by the government concessional loan."

- S*cenario 3 (estimating transaction amounts for MOFCOM's interest-free loans).* If AidData coders are confident that the financing for a project is in the form of a interest-free loan from MOFCOM, they can assume that the proceeds of the loan were used to finance 100% of the commercial (EPC) contract cost. The absence of a counterpart financing requirement is a core design feature of MOFCOM's interest-free loan lending instrument/program. Therefore, the transaction amount field can be set to 100% of the commercial contract cost. If AidData coders record a transaction amount that is estimated, they should include a staff comment that reads "The face value of the interest-free loan is not reported by any of the underlying sources. AidData estimates that the face value by taking 100% of the value of the underlying commercial (EPC) contract supported by the interest-free loan."
- *Scenario 4 (estimating transaction amounts of MOFCOM/Chinese government grants for infrastructure projects).* If AidData coders are confident that an infrastructure project is being financed with a grant from MOFCOM/the Chinese government, they can assume that the grant was used to finance 100% of the commercial (EPC) contract cost. Therefore, the transaction amount field can be set to be 100% of the commercial contract cost. If AidData coders record a transaction amount that is estimated, they should include a staff comment that reads "The face value of the grant is not reported by any of the underlying sources. AidData estimates that the face value by taking 100% of the value of the underlying commercial (EPC) contract supported by the grant." These fully funded projects are often referred to in official Chinese source materials as "China-aided projects."
- *Scenario 5 (if every financier or the total number of financiers in the syndicate is known but individual committed amounts are not known).* In this scenario, AidData coders are instructed to assume that each financier contributed (committed) an equal amount and estimate the individual amounts contributed (committed) by each financier by dividing the total face value of the loan by the total number of financiers in the syndicate. AidData coders are also instructed to create one project record to capture the total amount contributed by only the official sector institutions from China. In such cases, all official sector institutions from China are coded as funding agencies. If non-Chinese financiers (not including recipient government entities providing counterpart financing) are involved they should be coded as co-financing agencies.

- **Implementation dates:** Section 1.4 of this paper provides a discussion of what the planned implementation start date, actual implementation start date, planned completion date, and actual completion dates fields capture.. All of these fields seek to capture precise calendar dates. However, in cases when AidData coders are only able to identify the month and year in which a project implementation start date or completion date took place (or was scheduled to take place), the first day of the month is used as a proxy measure.
- **Maturity:** This field captures the total number of years it will take the borrower to repay a loan or export credit, as specified in the original loan or export credit agreement. AidData includes loans with maturities less than 1 year in duration to ensure comprehensive coverage of official financial flows to China. However, users of the 2.0 dataset who wish to exclude these loans from their analysis to ensure strict comparability with OECD-DAC statistics can use the maturity field to filter out loans with values less than 1.
- **Interest Rate:** This field captures the rate of interest (in percentage terms) that applies to a loan or export credit, as specified in the original loan or export credit agreement. Loans can have fixed interest rates or variable interest rates. Variable interest rates are also referred to as floating interest rates. These rates are based on market rates that float over time added to a fixed margin. The actual interest paid back is determined by the trends of the market rate over the term of the loan. We are not able to measure these trends in the market rate over the term of the loan; therefore, to calculate the grant element, we instruct AidData coders to convert the variable interest rate to a "fixed" interest rate at a single point in time. Specific rates (floating interest rates at a single point in time) and the number of basis points[69] (the fixed margin) are sometimes detailed on official documents published by relevant agencies. If a specific rate is not provided in official sources, then AidData coders use the rate at the time that the project agreement was finalized (i.e., the time of the official commitment).
    - To calculate the "all in" interest rate of a loan with a floating rather than fixed interest rate, AidData coders anchor the floating market interest rate to the value of the rate at the time the loan was issued. They first identify the average rate during the month of the official commitment (e.g. average 6-month LIBOR rate in January 2017 of 1.34%), and then add it to the margin specified in the loan agreement. If a loan or swap was committed in a specific calendar year, and the specific month is unspecified (e.g. 2017 as opposed to March 2017), the average monthly rate during that calendar year is used. If a floating interest rate is calculated in this manner, the details should be included in the project description.
        - Website for LIBOR and EURIBOR: https://www.global-rates.com/interest-rates/libor/american-dollar/2017.aspx

[69] 500 basis points = 5%, 100 basis points = 1%, 50 basis points = 0.5%; 3 Month LIBOR + 100 bps = 3 Month LIBOR + 1%.

        - Website for JIBAR: https://www.jse.co.za/downloadable-files?RequestNode=/Safex/mtmdata
- **Grant Element:** This field captures the grant element of a loan or export credit at the time that the original loan or export credit agreement was signed. See Section 1.4 of this paper for a full discussion. For each loan where AidData coders identify loan pricing details (in particular the maturity and interest rate), AidData uses the OECD's grant element formula to calculate the grant element. If a grace period is available, the grant element formula will include that information. However, if no grace period is available, AidData assumes a grace period of 0 years. The OECD's grant element calculation is based on the cash-flow measurement methodology, which uses a discount rate of 10% to calculate the grant element of a loan compared to commercial terms. More details on the OECD's grant element formula can be found here: https://one.oecd.org/document/DCD/DAC/STAT(2018)9/ADD2/FINAL/en/pdf
- **Guarantee**: Loan repayment guarantees can come from governments, companies, or other entities. Sovereign guarantees are legally binding commitments by a sovereign government to assume responsibility for servicing a debt on behalf of another entity under specific conditions (e.g. default). A sovereign guarantee represents a contingent liability on the recipient government's balance sheet. Sovereign guarantees can be provided to public or private entities. Sovereign guarantees are also sometimes referred to as government guarantees or public guarantees.[70]
    - AidData coders are instructed to adhere to the following guidelines
        - If the recipient government issues a sovereign guarantee in support of a loan issued to another entity, this information should be recorded in the description field.
        - The recipient government agency that issued the guarantee should be coded as an Accountable Agency.
        - The Guarantee Provided field should be set to "Yes."
- **Source information:** For each source identified in any stage of data collection or verification, AidData coders are instructed to attach the source to the project record. Included in the source material is the public URL where the source can be accessed, title, source, date, and type of source (including whether it is an official donor or recipient source, a media article, an academic source, etc). The information on a project's sources is published alongside the project information to allow for transparency in how the record was compiled.
- **Geographic location:** Coders should record geographical details that accurately and precisely document project's physical footprint, including location names and types; the position or distance of the project's location vis-à-vis other geographical features (e.g., the building is located across the street from the country's parliamentary complex in the

[70] A sovereign guarantee is typically not related to a specific asset or revenue stream. The issuance of a sovereign guarantee allows the creditor to secure repayment by pursuing any assets or revenue streams controlled by the sovereign government in the event of default (assuming the assets/revenue streams in question are not protected by sovereign immunity). If a guarantee is mentioned in relation to a specific revenue stream, it may be a reference to collateral (see section on "Collateralized Loans" in Section 2.1.3.3).

capital city); the name, length, and start points and end points of physical infrastructure supported by the project (e.g., the 115.85 kilometer A1 highway runs from Colombo to Kandy); the total land area occupied by the project site (e.g., the industrial park occupies a 10 square kilometer area); and latitude and longitude coordinates of specific project features (e.g., the coordinates of Olkaria IV Geothermal Power Station Kenya at Hells Gate National Park are -0.918056, 36.334444). Whenever possible, coders should also capture (i) the precise physical boundaries and exact locations of buildings and facilities (e.g., schools, hospitals, stadiums, government buildings, power plants, and factories) with polygons or points; (ii) the precise geographical scope of special economic zones, industrial parks, mining concessions, protected areas, and plots of land under cultivation via polygons or points; and (iii) the exact routes of linear infrastructure (e.g., roads, bridges, tunnels, railways, power lines, canals, and pipelines) via line vectors. Additionally, whenever possible, coders should record OpenStreetMap and GoogleMaps URLs that capture the geographical locations and features of projects.

3.3 - Stage 3a: Project-Level Quality Assurance

Once Stage 2 is completed for a given project record,[71] it advances to Stage 3a (Quality Assurance, or QA). AidData coders assigned to Stage 3a should assess (a) whether a project's sources, variables, title, and description tell a coherent narrative; (b) whether the project record is complete (with respect to the 70 fields in the 2.0 dataset); and (c) whether the underlying sources support the coding and categorizations determinations that were made in prior stages. Every project record newly created or amended during the 2.0 data collection process is subjected to Stage 3a.

Stage 3a consists of a series of rigorous and systematic QA procedures that are designed to identify and eliminate common mistakes, coding errors, biases, false assumptions, and information gaps. Stage 3a coders also ensure that there is sufficient evidence from official sources to confirm key project details. AidData staff conduct Stage 3a for (a) countries receiving especially high volumes of Chinese ODA and OOF and (b) and countries with many complex transactions. AidData's strongest and most experienced coders quality assure the remaining project records.

- **Logical consistency**: Some fields depend on the coding of other fields. For example, a project's flow class is a function of intent, concessionality, flow type, and funding agency. Therefore, export credits by definition cannot have an ODA-like flow class, regardless of concessionality, because they can only have commercial or mixed intent. Stage 3a coders are responsible for resolving these logical inconsistencies.

[71] Projects with flow type equal to Foreign Direct Investment (FDI), Joint Venture (JV), or Official Investment undergo Stage 2 but not QA because they are excluded from AidData's final Global Chinese Development Finance Dataset, 2.0.

    - **Auto-fill logic**: In 2021, AidData transitioned to a new internal data management platform One of the most consequential upgrades involved the introduction of "auto-fill logic," which has reduced the frequency of Stage 1 and Stage 2 coding errors and made it easier for Stage 3a coders to perform logical consistency checks. For example, if Sinosure is coded as an Accountable Agency, then the Insurance Provided field automatically populates to "Yes." In other cases, the coding of one field limits the coding options for a different field. For instance, if a private entity is coded as the Funding Agency, then only unofficial flow classes can be selected by coders.
    - However, the auto-fill logic does not address project titles or descriptions, so Stage 3a coders must carefully scrutinize those fields. For example, if a description field mentions a handover ceremony for a finished project, then the Actual Completion Date field should not be blank and the Status field should be coded as Completed. If the description field mentions linked projects, then those project identification numbers should be added to the title field.
- **Reduce and eliminate double counting**: In light of the fact that the TUFF methodology draws information from a range of sources and tracks Chinese ODA- and OOF-financed projects over time, there is a risk of capturing the same transactions multiple times. AidData staff and coders eliminate instances of double-counting by deactivating duplicates and assigning some project records to the Umbrella category.
    - **Duplicate checks**: During Stage 1 and Stage 2, the data management platform is searched for duplicates before further amending or creating project records. Stage 3a coders practice strategic filtering and keyword searches to identify and sometimes deactivate duplicate records.
    - **Umbrella**:[72] When a project's Umbrella field is set to "Yes," it usually means that it is capturing a signed financial agreement but the funds are not allocated for a specific project/purpose until a subsequent date. Umbrella projects serve as a placeholder until separate, subsidiary projects are created recording the entire financial breakdown. Stage 3a coders verify whether the umbrella marker is necessary or not.
- **High value checks**: Stage 3a coders are instructed to pay special attention to records with transaction amounts over $100 million. This means verifying the financial details in official donor/creditor and/or recipient government sources but also ensuring that the project record as a whole is as close to correct and complete as possible.
- **Verify calculations**: Some project entries demand a little arithmetic. Stage 3a coders performing QA should always check a loan's floating interest rate calculations to make sure the previous coder(s) correctly identified the "all in" interest rate.
- **Clarify assumptions**: Only AidData staff and coders who have demonstrated the strongest grasp of the TUFF methodology and most reliable judgment are asked to conduct QA activities because this stage requires making judgements that other coders cannot not be expected to make. For example, if a loan meets the minimum requirements for

[72] See Section 1.4 for more details on the Umbrella field.

assuming that it is an export buyer's credit,[73] the Stage 3a coder is responsible for recognizing that possibility, re-coding fields, and justifying their assumptions in the description or staff comments fields.

Once Stage 3a is complete, project records are passed on to senior AidData faculty and staff for review and feedback. Those records are then passed back to AidData staff and coders for feedback incorporation and another round of QA. Stage 3a is the last comprehensive record-by-record review before regional and global checks are undertaken.

3.4 - Stage 3b - Dataset-Level Quality Assurance

Following Stage 3a, AidData staff perform a rigorous set of protocols (Stage 3b) to remove any errors and biases in order to produce the most consistent, complete and replicable dataset possible. These procedures are detailed below:

- **Targeted Review:** After a record-by-record review during Stage 3a, the dataset undergoes another layer of review that focuses on high-value projects (as indicated by especially large commitment amounts). A staff member reviews all records greater than $1 billion for accuracy and missing information. This review is meant to add an additional layer of scrutiny to ensure no additional data can be identified, field codings are correct, financial values are accurate, and no duplication of projects has occurred. A staff member will also review any project records still marked as "suspicious" after the QA stage and update records as needed. In addition, a staff member reviews the dataset for any incorrect inclusions or exclusions of projects that could substantially influence analysis that involves aggregate financial commitment amounts. .
- **Data Checks:** After Stage 3a is completed and the Targeted Review is carried out, AidData staff perform a series of data checks to make sure all fields are correctly coded and to any outstanding information gaps (of special importance to analysts) are addressed. This process include (1) reviewing variable fields such as Commitment Year, Flow Type, Flow Class, and Sector Code that were not coded; (2) reviewing projects with Flow Type designations of Vague TBD; (3) reviewing the flow class of loan/export credit projects; (4) reviewing any Grants/Technical Assistance/Scholarships with non-ODA/non-OOF/non-Vague OF Flow Class designations for funding agencies that should be set as official funding agencies (thus updating the Flow Class coding); (5) reviewing project records that have a status designation of Pipeline: Pledge and Pipeline: Vague *and* specific implementation dates or completion dates; (6) reviewing project records with Suspended or Cancelled status designations that should have been assigned to the Pipeline: Pledge category (because no financial commitment was ever issued)e; (7) reviewing project records with Pipeline: Commitment stage designations where only a framework agreement was signed; (8) reviewing any ETCAs that were assigned to the

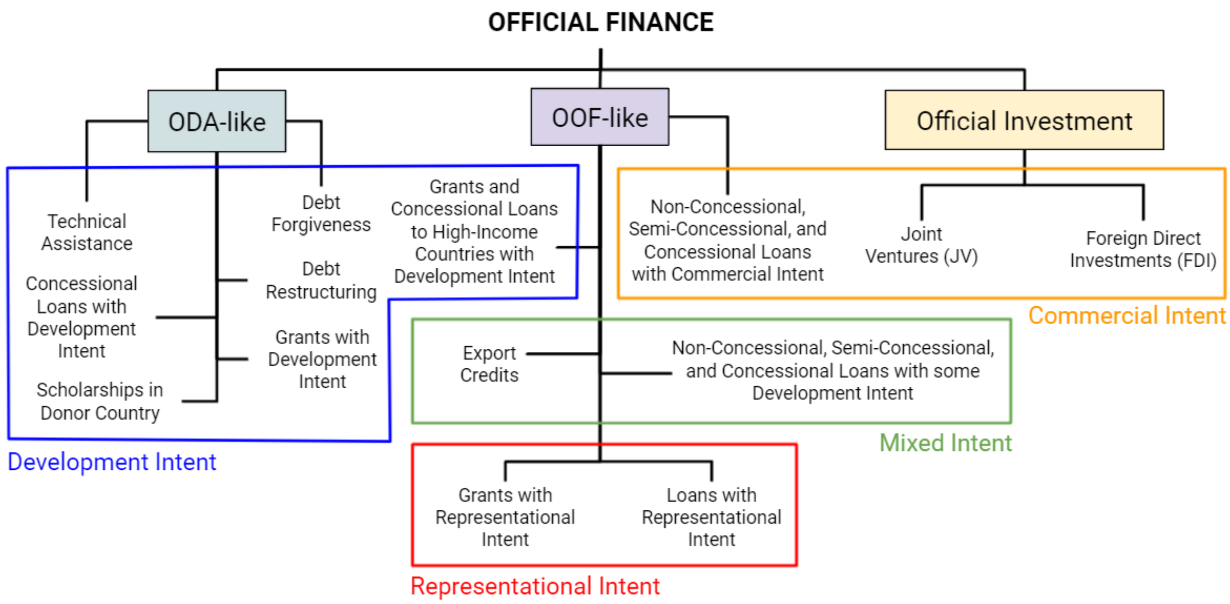
[73] See Section 1.1.3.3. for more details on these minimum requirements.

Pipeline: Pledge or Pipeline: Vague status categories; (9) reviewing any lines of credits that should not be coded as umbrella projects; (10) ensuring consistent coding of participating organizations (e.g. funding agencies, co-financing agencies), including their organization type and origin designations; (11) ensuring consistent application of coding guidelines to key variable fields (e.g., guidelines to estimate transaction amounts); and (12) reviewing health of record scores for each record and targeting an extra layer of review for projects with lower scores on any of the 4 measures (see Appendix E for more details on the Health of Record scores).

- **Logical Consistency Checks:** To uncover logically inconsistent values assigned to different variables for an individual project, AidData staff members conduct a targeted query of the dataset by generating descriptive statistics to identify anomalies or suspicious results. These include:
    - Check for flow type = export credits, intent = development/flow class = ODA/Vague OF - these projects were not updated in the new internal, so the autofill logic was not able to run
    - Check for flow type = loan/export credits, concessionality = Vague, but Loan Type = Concessional/Non-concessional/Interest-free
    - Check for flow type = loan/export credits, concessionality = Yes/No, but Loan Type = No information/Some information/Blank
    - Check for concessionality = Vague, but Flow Class = ODA-like
    - Check for concessionality = Yes/No, but Flow Class = Vague OF
- **Extended Review:** Once the dataset has gone through all of the previously described steps, it is reviewed by a new set of AidData staff and a different cohort of external coders. These reviewers vet the dataset using various methods, including but not limited to (1) generating descriptive statistics with the dataset to identify anomalies or suspicious results; (2) comparing the dataset and the resulting financial amounts to other published estimates of Chinese development finance (or subsets thereof) to identify significant deviations from other estimates, including White Papers published by the Chinese Government and estimates published by third parties; (3) comparing individual project records to official sources to ensure comprehensive and accurate coverage; (4) reviewing individual project records for errors or missing data; and (5) identifying biases in the data and identify potential ways to address them.
- **Deflation & Financial Review:** To ensure the financial commitment values are comparable across years, all of these values are calculated in constant 2017 U.S. dollars using the deflation methodology that is described in Appendix D. As part of this process, potential local currency changes and revaluations are identified and the currency exchange rates are adjusted accordingly.

Appendices

Appendix A: Classification of Official Finance



AidData seeks to assign each project to an official finance classification (for the ODA and OOF projects we capture) based on the OECD-DAC guidelines. Doing so allows users to make comparisons between Chinese development finance and development finance from other donors. The classification between ODA and OOF is based on three criteria: intent, concessionality, and the income level of the recipient country. For a project to qualify as ODA, a project must meet criteria on each of these characteristics. First, the primary purpose of the project must be the promotion of economic development and welfare in the recipient country (i.e., have development intent). Second, the official commitment supporting the project must be concessional in nature (i.e., grant, technical assistance, scholarship, debt forgiveness, or loan with a grant element of at least 25%). Third, the project must take place in a country that qualifies for ODA based on its income level. Projects that are supported by an official financial or in-kind transfer but do not meet all three of these criteria are assigned to the OOF-Like category. Projects that are backed by an official commitment but cannot be reliably categorized as ODA-like or OOF-like because of insufficiently detailed information are assigned to the "Vague (Official Finance)" category. Projects in this residual category primarily consist of (a) those with an unspecified "Flow Type" (i.e., values of "Vague TBD"); and (b) those financed with development-intent loans for which AidData lacks the borrowing terms (interest rates, grace periods, or maturity dates) needed to concessionality determinations. We do not capture Official Investment flows at this time.

Appendix B: Geographic Coverage of the 2.0 Dataset

Country	Record Count
Afghanistan	123
Albania	47
Algeria	40
American Samoa	No projects found
Angola	350
Antigua and Barbuda*	59
Argentina*	67
Armenia	40
Aruba*	No projects found
Azerbaijan	27
Bahamas**	31
Bangladesh	120
Barbados*	74
Belarus	112
Belize	No projects found
Benin	107
Bhutan	No projects found
Bolivia	103
Bosnia and Herzegovina	29
Botswana	88
Brazil	134
British Virgin Islands**	No projects found
Brunei Darussalam**	26
Bulgaria	42
Burkina Faso	No projects found
Burundi	113
Cabo Verde	85
Cambodia	308
Cameroon	132
Cayman Islands**	No projects found
Central African Republic	107
Chad	96
Chile*	32
Colombia	46
Comoros	68
Congo	168
Cook Islands	34
Costa Rica	49
Cote D'Ivoire	94
Cuba	118
Curacao**	2
Korea, Dem. Rep.	126
Democratic Republic of the Congo	249
Djibouti	96

Country	Record Count
Dominica	83
Dominican Republic	5
Ecuador	122
Egypt	71
El Salvador	1
Equatorial Guinea	121
Eritrea	61
Eswatini	No projects found
Ethiopia	218
Fiji	152
French Polynesia**	2
Gabon	82
Gambia	16
Georgia	43
Ghana	156
Grenada	93
Guam**	1
Guatemala	No projects found
Guinea	101
Guinea-Bissau	78
Guyana	69
Haiti	33
Honduras	3
India	55
Indonesia	257
Iran	77
Iraq	20
Israel**	15
Jamaica	79
Jordan	72
Kazakhstan	124
Kenya	191
Kiribati	1
Kosovo	No projects found
Kyrgyz Republic	96
Lao People's Democratic Republic	240
Lebanon	71
Lesotho	114
Liberia	144
Libya	7
Madagascar	111
Malawi	155
Malaysia	39
Maldives	77

Country	Record Count
Mali	149
Marshall Islands	41
Mauritania	99
Mauritius	95
Mexico	59
Micronesia	142
Moldova	43
Mongolia	139
Montenegro	20
Morocco	59
Mozambique	117
Myanmar	280
Namibia	140
Nauru	13
Nepal	157
New Caledonia**	No projects found
Nicaragua	1
Niger	115
Nigeria	104
Niue	23
North Macedonia	35
Northern Mariana Islands*	No projects found
Oman*	10
Pakistan	280
Palau	1
Panama*	8
Papua New Guinea	145
Paraguay	3
Peru	97
Philippines	92
Puerto Rico*	No projects found
Romania	28
Russia	146
Rwanda	104
Saint Lucia	15
Samoa	123
Sao Tome and Principe	22
Senegal	83
Serbia	66
Seychelles*	101
Sierra Leone	166
Sint Maarten (Dutch part)*	1
Solomon Islands	No projects found

Country	Record Count
Somalia	50
South Africa	105
South Sudan	120
Sri Lanka	174
St. Kitts and Nevis	No projects found
St. Martin (French part)	No projects found
St. Vincent and the Grenadines	No projects found
Sudan	285
Suriname	63
Syrian Arab Republic	60
Tajikistan	110
Tanzania	204
Thailand	55
Timor-Leste	75
Togo	120
Tonga	110
Trinidad and Tobago*	29
Tunisia	75
Turkey	59
Turkmenistan	38
Turks and Caicos Islands**	No projects found
Tuvalu	No projects found
Uganda	144
Ukraine	70
Uruguay*	49
Uzbekistan	149
Vanuatu	120
Venezuela	84
Viet Nam	111
Virgin Islands (U.S.)**	No projects found
West Bank and Gaza Strip	30
Yemen	74
Zambia	167
Zimbabwe	204

*These countries and territories were classified as middle-income at some point during the data collection commitment year period (2000-2017), but by 2017 they are classified as high-income.

**These countries and territories were classified as high-income for the entire data collection commitment year period (2000-2017).

These row counts include both projects that are marked "Yes" and "No" in the Recommended for Aggregates field. In addition to the row counts listed above, we also capture 173 regional records.

Appendix C: TUFF Source Prioritization Protocol

It is common for sources to have conflicting information on a certain project. In this case, it is necessary to have a hierarchical ranking of how much we weigh in each source.

Ranking of Resource Types based on Reliability of Project Data

1. Official government source, from a donor or recipient government agency
2. Implementing or intermediary agency report/website
3. Other official source (e.g. IMF, World Bank, CIA, etc.)
4. Peer-reviewed scholarly article
5. Other scholarly output, including working papers and dissertations
6. NGO, civil society, or advocacy group report/website
7. Media reports, including Wikileaks
8. Social media, including blogs from any unofficial source

If any conflicting information exists on a project detail, then the AidData coder or staff member will arbitrate by explicitly stating within the project description a) the source of this conflict and b) the reasoning for the proposed solution in the Staff Comments field. See Appendix C for a hierarchical list of prioritized sources in the case of conflicting information.

Appendix D: AidData's Deflation Methodology

1. Currency Conversion and Deflation Purpose

Financial values collected as part of AidData's data collection activities, including TUFF, must be converted and deflated so that they are comparable across currencies and years. AidData's methodology follows after the OECD's methodology.[74] The full methodology involves two steps: 1) Calculating nominal exchange rates and 2) calculating deflation rates detailed below. Where available for countries that belong to the OECD Development Assistance Committee, we use the OECD's deflators with a base year of 2014. For other countries, including China, we calculate the deflators based using the OECD's methodology using World Bank sources for exchange rates and inflation.

2. Exchange Rates

2.1 Exchange Rate Methodology

Before deflation, all values must first be expressed in nominal (current) U.S. dollars (USD). This is done with an LCU per USD exchange rate, applied by:

(original value) / (LCU per USD) = (new value)

For example:

100 EU / .7 = 142.57 USD

2.2 Exchange Rate Sources

Global Economic Monitor -- Official exchange rate, LCU per USD, period average (annual), https://databank.worldbank.org/source/global-economic-monitor-(gem)

2.3 Currency Revaluations/Changes in Currencies

The standard data from the World Bank does not take into consideration currency revaluations and currency changes. So to reflect this nuance, we identified the complete list of countries that had undergone currency changes or revaluations that would affect the exchange rates used in TUFF datasets. In cases where the financial amount was quoted in old currencies, we used historical exchange rates (annual period average) from OANDA to calculate the exchange rate to USD.

3. Deflators

Deflation is necessary to take the USD nominal amount and deflate (or inflate) that amount into a constant year across the whole dataset so all the financial values are comparable despite year values. Deflators control for two changes over time: inflation in the donor country and change in buying power in the donor country relative to the United States. Both of these changes are

[74] Available at http://www.oecd.org/dac/aidstatistics/informationnoteonthedacdeflators.htm

calculated separately, and then multiplied together to get the final deflator used by AidData. The formula is the following:

*Inflation * Change in Buying Power = Deflator*

3.1 Inflation

The first part of the deflator formula is to calculate the inflation value from the base year to the constant year.

Inflation is measured as relative to a given base year. AidData 4.0 will use the base year of 2014. Percentages were then generated using the following formula:

$$\text{Percentage}_{\text{Year}} = \text{Percentage}_{\text{Previous Year}} + (\text{Percentage}_{\text{Previous Year}} * \text{Inflation}_{\text{Year}})$$

For example, in 2014, Colombia's GDP inflation was 4.2%. Taking 2014 as the base year, the percentage for 2014 is 100%. So, to calculate the percentage for 2010, using 2014 as the start year:

$$100 = P_{previous} + (P_{previous} * .04)$$

$$P_{year} \; I_{year}$$

This yields 96% as Colombia's percentage for 2012. (Decimals have been rounded for this example, but were not rounded for AidData's deflator table.) In 2012, Colombia's GDP inflation was 8%. Then, to calculate 2012, 2013 is the start year:

$$96 = P_{previous} + (P_{previous} * .08)$$

$$P_{year} \; I_{year}$$

This yields 89% as Colombia's percentage for 2012.

The following sources are used to compile the inflation values: World Bank GDP Inflation -- http://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG

3.2 Change in Buying Power

The second part of the deflators formula is to calculate the change in Buying Power for the donor country.

The change in buying power is taken from the LCU per USD rate and expressed as:

$$\text{Exchange Rate}_{\text{Base Year}} / \text{Exchange Rate}_{\text{Transaction Year}} = \text{Change in Buying Power}$$

For example, the Korean Won to USD rate was 1273.9 in 2014 and 804.4 in 1996. The subsequent change in buying power is:

1273.9 / 804.4 = 1.58

Note that this methodology yields a ratio of 1 for all currencies pegged to the USD.

The data used for the buying power formula are generated from the historical exchange rates described above.

3.3 Finalized Deflators

The GDP inflation and change in buying power numbers are combined to create annual deflators for donor countries:

Inflation * Change in Buying Power = Deflator

4. Examples on Using GDP Deflators

Amounts in LCU should be converted to nominal USD, using the LCU per USD exchange rates found in sheet A1. Then, the values should be *divided by* the percentages in sheet "E1". For example, in 1975, Kuwait funded an electrification project in Bangladesh worth 6,400,000 *KD1975* (AidData ID 2427051). To convert this amount to USD 2014, first, convert it to USD 1975:

6,400,000 *KD 1975* / (.29003 *KD/USD 1975*) = 22,066,505.30 *USD 1975*

Next, divide it by the AidData deflator:

22,066,505.30 *USD 1975* / 20.83% = 105,936,175.20 *USD 2014*

Note that amounts that are *already reported in USD* do not need to be converted. They only need to be deflated (divided by the appropriate deflator).

Appendix E: Health of Record Scores

With the 2.0 version of AidData's Global Chinese Development Finance Dataset, we have revamped our 'health of record' scores, creating four separate measures. These measures are meant to signal the quality of each record in four dimensions: 1) the quality of the sources used to underpin the record, 2) the completeness of the record in terms of foundational project information, 3) the level of detail available on project implementation, and 4) the financial details available for the project. The details of each score are listed below.

Source Quality Score: This metric varies on a scale of 1 to 5, with 1 indicating that the project record is exclusively underpinned by unofficial sources and 5 indicating reliance upon multiple, official sources. This score is meant to communicate which projects meet our preferred threshold for reliability/quality of the sources. We would consider records with a score of 3 or lower as records that have a lack of authoritative sources underpinning the record, flagging to users records that may have reliability issues. The average score across the entire 2.0 dataset is 4.2, indicating that most records successfully meet our threshold for quality of sources (scoring a 4 or 5). The full scoring criteria is detailed below:

Criteria for Source Quality Score:
Source Categorizations:

- Official sources include Donor/recipient official source, implementing/intermediary organization source, Other Official Source.
- Tier 1 Non-official sources include Academic Journal Article, Other Academic
- Tier 2 Non-official sources = Media Report, NGO/Civil Society/Advocacy, Other, Social media

Assign a value based on the following criteria:

- 1 = Only media sources (source type = Media Report)
    - Source type = Media Reports (any number).
- 2 = Only Tier 2 non-official sources or non-official sources + any media sources (not required)
    - Source types = NGO/Civil Society/Advocacy OR Other OR Social media (at least one). Can have Media Report source types as well (any number).
- 3 = At least 1 Tier 1 Non-official source (but no official sources) + any Tier 2 Non-official sources (not required)
    - Source types = Academic Journal Article OR Other Academic (any number). Can have media reports, NGO/Civil Society/Advocacy, Other, OR Social media (any number).
- 4 = Only 1 Official Source (No additional official sources) + any Non-official sources, either Tier 1 or 2 (not required)
    - Has only 1 source type that matches Donor/recipient official source OR implementing/intermediary organization source OR Other Official Source. Can

have media reports, NGO/Civil Society/Advocacy, Other, OR Social media OR Academic Journal Article OR Other Academic (any number).

- 5 = At least 2 Official Sources
    - Has at least 2 sources with source type Donor/recipient official source, implementing/intermediary organization source, or Other Official Source. Can have media reports, NGO/Civil Society/Advocacy, Other, Social media, Academic Journal Article OR Other Academic (any number).

Data Completeness Score: This metric varies on a scale of 0 to 5, with 5 indicating that the basic fields of the project record are complete. The "threshold" for a score of 5 is similar to the key fields in the OECD-DAC's Creditor Reporting System: an actual rather than estimated commitment year, a non-missing transaction amount, a flow type/flow class that is not defined as "Vague", and identifiable funding, implementing, and receiving agencies. The average Data Completeness Score for the 2.0 dataset is 3.4.

Criteria for Data Completeness Score:
Start at 5, then

- Projects with year uncertain = -1
- Projects with no transaction amount (include umbrella projects) = -1
- Projects with vague flow class or flow type = -1
- Projects with a missing or unspecified Funding Agency = -1
- Projects with EITHER a missing Implementing Agency OR Receiving Agency= -1

*Min: 0, Max = 5

Project Implementation Score: This metric varies on a scale of 0 to 5, with higher scores indicating that more implementation details have been captured in the project record. The following implementation details are considered: whether the project's implementing agency (or agencies), implementation start and completion dates (actual or planned), and geographical locations are specified; and whether the project has a specified sector allocation. Project Implementation Scores are only calculated for project records with a "Recommended for Aggregates" value of "Yes" and a "Status" value of "Implementation" or "Completion. The average Project Implementation Score in the 2.0 dataset is 3.4.

Criteria for Project Implementation Score
Add an additional point for each of the criteria met below where Status = Implementation/Completion AND recommended for aggregates is == TRUE

1. The presence of implementing agency when Status = Implementation/Completion
2. The presence of start/end dates based on Status = Implementation
    a. actual start date = 1 point
    b. planned end date = 1 point
3. The presence of start/end dates based on status = Completion
    a. actual start date = 1 point
    b. actual end date= 1 point

4. The presence of location details when status = implementation/completion
5. Sector code != unallocated/unspecified

Loan Detail Score: This metric varies on a scale of 0-5, with higher values indicating that more financial transaction details are captured in the project record. Loan Detail Scores are only calculated for project records with a “Recommended for Aggregates” value of “Yes” and a “Flow Type” designation of “Loan,” “Export Buyer’s Credit,” or “Supplier's Credit/Export Seller's Credit.” A score of 5 indicates that a loan or export credit’s interest rate, maturity, transaction value, loan type, funding agencies, and receiving agencies are all specified (i.e., not missing). The average Loan Detail Score in the 2.0 dataset is 3.6.

Criteria for Loan Detail Score
Add an additional point when each of the fields below is not blank. Calculated only for projects where flow type = loan, export credits, or supplier credits AND recommended for aggregates is == TRUE.

- Interest rate != blank
- Maturity != blank
- Transaction value != blank
- If no interest rate or maturity, and Loan type != blank or “no information”
- Funding agency != blank OR Receiving agency != blank
- Grace Period != blank

Appendix F: AidData 2.0 Dataset Comparison to Other Datasets

Institution & Dataset	Sectors	Geographies	Financiers	Types of Flows	# of Records	# of Fields	Sources Available	Total $ Tracked	Timeframe	Financial Details	Involved Agencies	Implementa-tion Details	Avg Desc	OECD Classifications	Sub-national Locations
AidData															
Global Chinese Development Finance Dataset (Version 2.0)	All	Global (165 countries)	All Official Entities: EXIM, CDB, People's Bank of China, State-Owned Commercial Banks, Government Agencies, State-Owned Companies (totaling 369 Chinese official entities)	Loans, Grants, Scholarships, Technical Assistance, Debt Rescheduling and Debt Forgiveness	13,386	70	90,000	$851 Billion	2000-2017, with implementation details through 2021	Transaction Amount (in Local Currency, Nominal & Constant USD), Interest Rate, Maturity, Grace Period, Management Fee, Commitment Fee, Grant Element, Insurance, Guarantee, Collateral	Funding, co-financing, implementing, receiving, and accountable agencies	Status, Commitment year, planned/actual implementation and completion dates.	~142 words	Sectors, Flow Class (ODA, OOF)	~3,000 physical locations.
Boston University															
China's Global Energy Finance Database	Energy	Global (73 countries)	EXIM, CDB	Loans	281	11	None	$245 Billion	2000-2020	Transaction Amount (in Nominal USD)	Funding Agency, Receiving Agency	Commitment year	~5 words	None	City or province location
China's Overseas Development Finance Database	All	Global (94 countries)	EXIM, CDB	Loans	858	8	None	$462 Billion	2008-2019	Transaction Amount (in Nominal USD)	Funding Agency, Receiving Agency	Commitment year	~5 words	None	Physical locations for 615 projects
China's Global Power Database	Power	Global (83 countries)	EXIM, CDB, Investors	Non-concessional Loans & FDI	77	17	None	None	2000-2033	None provided	Funding/Investing entity, Receiving agency	Year of Commission, status	None	None	None
China Africa Research Initiative and Boston University															
Chinese Loans to Africa Database	All	Africa (54 countries)	All Lenders (EXIM, CDB, Private/ Commercial Banks, State-Owned Companies, Private Businesses, People's Bank of China)	Loans	1,141	15	None	$153 Billion	2000-2019	Transaction Amount (in Nominal USD), Collateral, Interest Rate, LIBOR Rate, Grace Period, Term	Funding Agency, Receiving Agency, Implementing Agency	Commitment year, status	~7 words	Sectors	None
Boston University and Inter-American Dialogue															
China-Latin America Finance Database	All	Latin American & the Caribbean (18 countries)	Exim, CDB	Loans	99	6	None	$137 Billion	2005-2020	Transaction Amount (in Nominal USD)	Funding Agency	Commitment Year	None	None	None
Inter-American Dialogue															
China-Latin America Commercial Loans Tracker	Mining & Infrastructure	Latin American & the Caribbean (9 countries)	5 Chinese Commercial Banks	Loans	40	6	None	None	2012-2020	None	None	None	~5 words	None	None
Lowy Institute															
Pacific Aid Map (v2020)	All	Pacific Islands (8 countries)	EXIM, and Government Agencies	Loans, Grants, Technical Assistance	287	~20	~450 Sources	$6.7 billion	2011-2020	Transaction Amount (Nominal USD)	Implementing Agency	Commitment Year, Completion Year, Status	~75 words	Sectors	Geo-coordinates for 250+ projects

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