

# UNDERSTANDING CHINA'S BELT AND ROAD INFRASTRUCTURE PROJECTS IN AFRICA

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## EXECUTIVE SUMMARY

In 2013, President Xi Jinping proposed that China would create a “Silk Road Economic Belt” across Central Asia and Europe and a “21st Century Maritime Silk Road” running through the South China Sea and the Indian Ocean, on to the Middle East and Europe — programs meant to revive ancient trade routes and reinforce existing ones. Beijing quickly wove these two visions together and dubbed them the Belt and Road Initiative (BRI).

While seemingly aimed at regional economic corridors, the BRI is in fact global and motivated by economic and strategic interests. A successful BRI would allow China to more efficiently utilize excess savings and construction capacity, expand trade, consolidate economic and diplomatic relations with participating countries, and diversify China's import of energy and other resources through economic corridors that circumvent routes that are controlled by the U.S. and its allies.

The initiative is generally popular in the developing world, where almost all countries face infrastructure deficiencies and a shortage of resources to overcome them. Through large amounts of loans to participating countries to construct infrastructure in various sectors, the BRI can potentially bring significant benefits to these countries by filling their infrastructure gaps and boosting economic growth.

While popular with developing countries, the initiative has received various criticisms from advanced industrial economies: that the program lacks transparency and serves to facilitate China's export of its authoritarian model; that the commercial loan terms are bringing on

a new round of debt crises in the developing world; and that the projects have inadequate environmental and social safeguards.

This paper examines the implementation of BRI infrastructure projects in Africa in light of available information and concludes that African experiences with the BRI are quite heterogeneous. Some of the major borrowers have debt sustainability problems, while others have integrated the loans from China into sound overall macroeconomic programs. Some of the major borrowers are authoritarian countries with poor records of human rights, but other major participants are among the more democratic countries of Africa. It is hard to make simple generalizations about BRI in Africa. For this reason, it would be wise for Western countries to tone down their rhetoric on BRI, as many of the projects will probably work out well. It would help if Western countries provided more support to the International Monetary Fund to help countries manage their borrowing and to the World Bank to provide more infrastructure financing that increased options for the developing countries of Africa.

## INTRODUCTION

President Xi Jinping of China proposed the Belt and Road Initiative (BRI) in a pair of speeches in 2013. In Kazakhstan, he outlined a vision of restoring overland trade routes from China to Central Asia and Europe — the ancient “Silk Road,” which in fact was a series of many paths through Central Asia. In Indonesia, he introduced the concept of a “maritime ‘Silk Road,’” which is essentially the already well-traveled sea corridor south from China through the South China Sea and the Indian Ocean, on to the Middle East and Europe.

While part of the Chinese effort on BRI is aimed at these specific corridors, in fact the program is global and not directed at any specific geography. Latin America is deeply involved, as are all parts of Africa. The main objective is for China to lend money to developing countries to construct infrastructure in transport, power, water supply and other sectors. In his opening remarks at the Belt and Road Forum in Beijing in May 2017, President Xi noted that:

Infrastructure connectivity is the foundation of development through cooperation. We should promote land, maritime, air and cyberspace connectivity, concentrate our efforts on key passageways, cities and projects and connect networks of highways, railways and sea ports.... We need to seize opportunities presented by the new round of change in energy mix and the revolution in energy technologies to develop global energy interconnection and achieve green and low-carbon development. We should improve trans-regional logistics network and promote connectivity of policies, rules and standards so as to provide institutional safeguards for enhancing connectivity.<sup>1</sup>

The initiative is generally popular in the developing world, where almost all countries face infrastructure deficiencies. According to the Chinese government, 125 countries have signed onto the BRI as of April 2019, including 37 African countries and the African Union.<sup>2</sup> China's loans are largely coming from its two policy banks, the China Development Bank and the Export-Import Bank of China (or EXIM Bank). They borrow on domestic and international capital markets and lend with a spread, so they expect to be financially self-sufficient. The EXIM Bank has access to some subsidies from the ministry of finance so that some of its lending can be concessional.

The motivation for China is partly economic: The economy has excess savings and under-employed construction companies and heavy industry. The projects are a way to put these resources to use. Also, if infrastructure is improved in developing countries, then China — as well as other countries — benefits indirectly as trade expands. There is also strategic motivation, as China gains friends and influence through these projects. A further strategic consideration is that China would like to have alternate routes to transport natural

resources, routes that are not controlled by the U.S. and its allies.

While the initiative is popular with developing countries, it has received various criticisms from the leaders of advanced industrial economies. One valid criticism is that the program lacks transparency, so it is difficult to find details on how much China is lending for different projects, what the terms of the loans are, how contractors were chosen, and what environmental and social risks are involved. Sebastian Horn, Carmen M. Reinhart, and Christoph Trebesch find that much of China's overseas lending does not appear in the World Bank and International Monetary Fund (IMF) data for sovereign debt.<sup>3</sup> BRI has also been criticized as an effort to export China's authoritarian model, as a number of major loan recipients have poor records of democracy and civil liberties (e.g., Venezuela in Latin America, Cambodia and Laos in Asia, and Sudan and Zimbabwe in Africa). While the advanced economies have generally been critical of the initiative, Italy broke ranks with the rest of the G-7 and signed up for BRI in 2019.

China has been accused of “debt-trap diplomacy” — that is, of saddling countries with high-interest debt that they are unable to repay, giving China leverage over the borrowing country. In a speech in May 2019, Secretary of State Mike Pompeo criticized China for peddling “corrupt infrastructure deals in exchange for political influence,” and using “bribe-fueled debt-trap diplomacy” to undermine good governance.<sup>4</sup>

These concerns have been exacerbated by the case of Hambantota port in Sri Lanka. The revenue from this poorly conceived port was not going to be sufficient to service the loan that financed the project, hence the Sri Lankan government asked China to take over the port. To date, this is the only such case that has arisen, and the fact that the Sri Lankan government proposed the debt-for-equity swap suggests that it was not Chinese intent to set a trap. But it raises a more general concern of debt sustainability. External debt has ultimately to be serviced by exports so there is a limit to how much debt a country can take on without putting itself at risk of a financial and balance-of-payments crisis.

An additional concern is the large number of Chinese workers that have come to developing countries on construction contracts. This is a sensitive issue in Africa in particular. Given the young population there, Africa needs to create about 20 million jobs per year (similar to the challenge that China faced in the 1980s and 1990s, before its demographic shift). The working-aged population in China has already peaked and started to decline, while it is growing rapidly in Africa. So, it makes little economic sense to have large-scale migration of semi-skilled workers from China to Africa.

Finally, there is the issue of investment climate in the participating countries. The World Bank has examined the transport projects along the overland and maritime routes.<sup>5</sup> It concluded that there were potentially large benefits to the recipient countries, and to the world, if transport costs could be reduced through improved infrastructure. But the study also found that in many cases, policy impediments were greater than infrastructure impediments — that is, import tariffs, investment restrictions, customs delays, bureaucracy, red tape, and corruption often increase trade costs dramatically. The clear point from this study is that improving the investment climate is a necessary complement to investing in infrastructure. This notion is closely related to the concern about debt sustainability above: A country with a very poor investment climate is not likely to make good use of improved infrastructure and therefore is likely to be unable to service the debts that backstop the infrastructure.

This paper examines the implementation of BRI infrastructure projects in Africa in light of available information and to combat common misconceptions and unsubstantiated rhetoric. The next section uses data from the China Africa Research Initiative (CARI) at the John Hopkins School of Advanced International Studies (SAIS) to paint a picture of the scale of Chinese

lending to Africa, the main countries that are borrowing, the infrastructure sectors involved, and some of the key projects. The third section of the paper then takes up the main concerns of Western critics and examines these in light of the track record of implementation.

## IMPLEMENTATION OF BRI PROJECTS IN AFRICA

CARI collects and reports data on Chinese lending to more than 50 African countries, following “a rigorous set of steps in triangulating and cross-checking reports of loans, emphasizing official websites of central banks and ministries of finance, Chinese contractors, and our own personal contacts in China and in African countries.”<sup>6</sup> Its researchers also explain that “the desk work was supplemented by in-country interviews and meetings with Chinese and African officials.” Since 2012, Chinese lending has averaged more than \$15 billion per year, so this is a significant source of infrastructure financing. This lending ramped up quickly after the global financial crisis in 2008-09, but there is no trend since 2012 — there is some variation from year to year, but no trend around the \$15 billion annual average. In my own 2016 research, I found that the Chinese financing in Africa is about one-third of the total external finance supporting infrastructure investment on the continent.<sup>7</sup>

The 10 largest borrowers between 2015 and 2017 are listed in descending order in Table 1. It is a diverse group of countries, including Nigeria, the Republic of Congo, and Cameroon in the west; Angola, South Africa, and Zambia in the south; Kenya, Uganda, and Ethiopia in the east; and Egypt in North Africa. The CARI database provides detail on some, but not all, projects.

**TABLE 1: LARGEST AFRICAN BORROWERS FROM CHINA (2015-17, MILLION U.S. DOLLARS)**

Country	Loans per year (2015-17, million USD)	Voice 2017 (Index)	External debt (2015-17, % GNI)	Logistics Performance Index 2016 (Index)
Angola	8,113	-1.1	33.3	2.24
Kenya	1,243	-0.2	32.9	3.33
South Africa	1,186	0.6	49.1	3.78
Egypt	1,030	-1.2	23.8	3.18
Zambia	980	-0.3	65.8	2.43
Cameroon	769	-1.0	26.7	2.15
ROC	756	-1.1	52.0	2.38
Uganda	738	-0.6	40.2	3.04
Ethiopia	730	-1.4	32.9	2.38
Nigeria	422	-0.3	8.4	2.63
Average	1,597	-0.68	36.5	2.75
Rest of Africa	45	-0.56	37.2	2.42

Note: The Voice index 2017 comes from the World Governance Indicators, a measure of democratic political rights and civil liberties. Sources: Johns Hopkins SAIS China-Africa Research Initiative Database; World Development Indicators; World Bank LPI Data.<sup>8</sup>

Some of the largest projects in recent years include:

- Ethiopia borrowed \$1.3 billion for the Addis Ababa-Djibouti Railway; the terms are 15 years with 6 years' grace period at an interest rate of Libor (London Interbank Offered Rate) + 3%;
- Uganda borrowed \$1.4 billion for the Karuma hydropower station; the terms are 20 years with 5 years' grace period and a fixed 2% interest rate;
- Uganda borrowed \$350 million for the Entebbe-Kampala Expressway; the terms are 20 years with 7 years' grace period and a fixed 2% interest rate;
- Kenya borrowed \$2 billion for rail lines; the terms are 15 years with 5 years' grace period and an interest rate of LIBOR + 3.6%;
- Cameroon borrowed \$500 million for the Memve'ele hydropower project; the terms are 16 years with 6 years' grace period and an interest rate of Euribor + 3.1%;<sup>9</sup> and

- Nigeria borrowed \$500 million for Abuja-Masaka light rail; the terms are 20 years with 7 years' grace period and a fixed interest rate of 2.5%.

Most of the Chinese lending finances projects in transport and power. The terms are not as generous as the concessional lending from the World Bank, but that financing is severely limited. The terms on the Chinese loans are attractive compared to other alternatives. The fixed 2% loans are quite concessional. A rate of Euribor (Euro Interbank Offered Rate) or Libor plus a spread of around 3% is, strictly speaking, commercial in that the Chinese banks can make a profit on such loans, assuming that they are repaid. But in general, other commercial lenders would not lend to developing countries at such rates.

One could say that the Chinese banks are more risk-taking, or at least that they under-price risk. At the moment, global interest rates are low, and Libor is around 2%. Hence, Libor + 3.6% would make for a total interest rate of 5.6%, which is attractive for a country

like Kenya. However, if global interest rates return to their historical average around 5-6%, then these flexible rate loans would be far more expensive, with total rates around 9-10%. Servicing costs would then obviously be higher, and risks of debt distress greater.

Aside from the fact that there is only a limited amount of highly concessional Western aid available, there is also the issue that doing big infrastructure projects with an institution like the World Bank is time-consuming and bureaucratic because of the environmental and social regulations.<sup>10</sup> Many developing countries prefer to use Western finance for things like budget support, health, and education, while turning to Chinese finance for big projects in transport and power. There is no reason why developing countries should have to choose between these alternative sources of finance (keeping in mind that there are limits to the overall amount of debt that countries can take on).

## HETEROGENEITY AND ADAPTATION

In earlier work, I argued that China's overseas lending for infrastructure was indiscriminate in the sense that there was no obvious geographic pattern and that the lending was uncorrelated with measures of governance.<sup>11</sup> China's recent lending to Africa shows the same pattern. East Africa is supposed to be part of one of the BRI transport corridors, but the lending in fact is spread around to all parts of the continent, with much of it in the west and south. BRI reaches all parts of Africa.



**It is not the case that Chinese lending favors authoritarian countries. The complex reality is that China is financing states with different kinds of governance.**

The borrowing countries are also quite heterogeneous in terms of governance. Table 1 includes the Voice index 2017 from the World Governance Indicators, a measure of democratic political rights and civil liberties. This index, by construction, has a worldwide

mean of zero and a standard deviation of 1. For African countries, the mean is -0.6. The big borrowers from China include countries with better than average Voice scores for the continent, such as South Africa, Kenya, Zambia, and Nigeria. The group also includes some countries with poor Voice scores: Angola, Cameroon, Egypt, the Republic of Congo, and Ethiopia. Uganda is right at the mean level. It is not the case that Chinese lending favors authoritarian countries. The complex reality is that China is financing states with different kinds of governance. It is financing some of the more authoritarian states in Africa and may be enhancing their ability to control their populations. It is also financing development in some of the more democratic states of Africa, and may be implicitly helping those states succeed. There is no simple relationship between Chinese lending practices and governance.

The borrowing countries are also quite diverse in terms of their external debt profiles. The 10 countries have an average external debt of 36.5% of Gross National Income (GNI), almost identical to the 37.2% for the rest of Africa. But the average masks very considerable variation. At one extreme, Angola, Kenya, and Nigeria have very low external debt. Angola and Nigeria are resource-rich countries with large Gross Domestic Products (GDPs) that can afford to take on significant foreign debt. Of the 10, Zambia is in the most worrisome position, with external debt of 65.8% of GNI. Zambia has an IMF program, and the most recent IMF debt sustainability analysis states:

Public debt has been rising unsustainably. It increased from 36 percent of GDP at end-2014 to 61 percent at end-2016... The composition of public debt has shifted towards external non-concessional debt. The share of central government's debt from multilaterals has fallen sharply from about 60 percent in 2011 to 20.5 percent, while the share of private banks/investors has risen to almost 50 percent.

The pace at which the authorities have contracted debt has increased considerably in recent years. The number and value of loans has increased sharply from 5 loans with a combined value of US\$0.5 billion in 2011 to 30 loans totaling US\$3.4 billion in 2016. This pace of borrowing needs to be slowed significantly to align resources with

the country's absorptive capacity and to ensure the sustainability of debt. The public investment cycle, including the selection, procurement, and monitoring of infrastructure projects, needs substantial strengthening to ensure public investment projects deliver value for money.<sup>12</sup>

In other words, Zambia used to borrow primarily from multilateral institutions such as the World Bank and the African Development Bank. Now it is borrowing primarily on commercial terms. Some of this is Chinese lending from the EXIM Bank and China Development Bank. But Zambia also floated a Eurobond in the global market. Whatever the source, it has been borrowing and trying to implement projects at an unsustainable rate and risks a debt crisis.

Uganda provides an interesting contrast with Zambia. It has borrowed from China for key projects in hydropower and transport, but has been more disciplined and has kept its external debt to 40% of GNI. The most recent IMF debt sustainability analysis finds:

Uganda remains at low risk of external debt distress ... While most of the existing stock of external public debt is on concessional terms, the semi-concessional component has been on the rise reflecting sizable borrowing from China since FY2015/16. These three investments financed by the Export-Import Bank of China (EXIM) account for three-fourths of all semi-concessional financing. Commercial loans are typically buyers' credits for electricity equipment provided by the China EXIM Bank and the Japan Bank for International Cooperation (JBIC). In sum, China EXIM Bank accounts for 23.4 percent of the external loan portfolio and is assumed to remain an important financing source going forward.<sup>13</sup>

To summarize the debt issues for the African countries borrowing from China: Zambia highlights the risk of taking on too much debt too quickly, especially non-concessional debt. If it follows its IMF program, however, then the growth of debt should decline to sustainable levels. This is a key role for the IMF, to help developing countries manage their external borrowing. Most of the top-10 African borrowers from China are not at risk of debt distress; an important caveat, however, is that not all Chinese lending may be included in the standard data for external debt. China should be more

transparent about its lending. The finding that most African borrowers are in reasonable financial shape is consistent with other studies that examined different parts of the BRI. For example, John Hurley, Scott Morris, and Gailyn Portelance assess the likelihood of debt problems in 68 countries along the land and maritime transport corridors.<sup>14</sup> They find that 8 out of 68 countries are at risk of debt distress because of borrowing from China. Most vulnerable are small economies such as the Maldives, Mongolia, and Laos.

Another important issue is logistics performance. The World Bank study of transport projects along the BRI corridors emphasized that physical infrastructure is just one aspect of connectivity to markets.<sup>15</sup> There is also the soft infrastructure of customs clearance, trade facilitation, and efficiency of logistics services. The World Bank calculates a Logistics Performance Index (LPI) that combines the hard and soft infrastructure into a single measure. Good logistics performance is necessary for countries to actively participate in international trade. This has become even more important in an era of global value chains. Components often cross borders multiple times; hence, excessive costs at the border *cascade*. Countries with low LPI levels are simply not involved in global value chains.

Table 1 shows the most recent LPI values for the 10 big borrowers from China. On this measure, the borrowers perform significantly better (mean of 2.75) than the rest of Africa (2.42). Countries such as Kenya, South Africa, Egypt, and Uganda all score well above the African average. These countries have reasonably good trade environments, in which infrastructure investment should have a high return. This kind of correlation can be interpreted in multiple ways. It is possible that the Chinese-financed infrastructure is contributing to better logistics, though this seems unlikely as a main explanation simply because many projects are still under implementation and the improved services will only come in the future. A more likely explanation is that the same governments that have succeeded in improving the software of trade also are ones that put a priority on investing in infrastructure. Either way, it is good news that some of the big borrowers score well on this measure of investment climate. That makes it more likely that projects will have an economic return and that the governments will be able to service the resulting debts.

A final issue of concern is Chinese workers in Africa. Table 2 presents data from the Chinese government on the number of workers in different African countries on construction projects or labor service. These are averages for the periods 2015-17 and 2012-14.

**TABLE 2: CHINESE WORKERS IN AFRICA**

Country	2012-14	2015-17
Angola	48,120	33,034
Kenya	3,430	8,099
South Africa	3,436	966
Egypt	740	1,899
Zambia	6,659	7,311
Cameroon	2,798	3,585
Republic of Congo	10,120	6,711
Uganda	1,737	4,529
Ethiopia	9,630	9,840
Nigeria	8,057	9,257
Average	9,473	8,523
Rest of Africa	2,707	3,107

Source: Johns Hopkins SAIS China-Africa Research Initiative Database.<sup>16</sup>

The variation is striking, so clearly there is no simple relationship between Chinese loans and Chinese workers. The borrowing countries' legislation and local labor market conditions affect the number of workers. Angola had roughly 48,000 Chinese workers in the former period, declining to roughly 33,000 in the more recent period. That is by far the largest number among these borrowing countries. Some of the big borrowers like Egypt and South Africa have very few workers. Kenya, Zambia, and Ethiopia all have close to 10,000. For the 10 borrowers, the total number of Chinese workers went down by 10% between the earlier period and the later one, despite the fact that lending volumes remained about the same and the pipeline of projects has grown. It has become increasingly expensive to send workers from China to Africa, as wages have risen rapidly back home. So it makes economic sense for Chinese contractors to train local workers wherever possible.

## CONCLUSIONS

One of the main objectives of this paper is to make the African experience with BRI infrastructure projects more real: What infrastructure are these projects building? Which countries are the main borrowers? What are the terms of the loans, and how do they fit into the borrowing government's overall debt management? Are we likely to see a slew of debt crises? Are the recipient governments mostly authoritarian ones? Do the borrowing countries have the necessary supporting "software" to connect to global markets? Are these projects providing jobs to the local population?



**The most striking result from this review is the heterogeneity of experiences.**

These are difficult questions to answer definitively, but experience and data are increasing. The most striking result from this review is the *heterogeneity* of experiences. The projects are mostly in transport and power, but are nevertheless diverse: international rail, inter-city rail, expressways, seaports, hydropower, carbon-based power, transmission lines, water supply, sanitation — to name just a few. The 10 major borrowing countries are spread out over the continent and not confined to the geography of the BRI as originally laid out by Xi Jinping. Some of these are authoritarian countries, whereas others are more democratic.

The external debt for the major borrowers is the same on average as for all of Africa. IMF reports indicate that some of these countries are in sound shape in terms of their overall external debt and repayment obligations. The borrowing from China is integrated into their overall debt and budget management. On the other hand, Zambia has built up its external debt at too rapid a pace — partly though not exclusively from Chinese lending. It has a program with the IMF that should slow down the pace of borrowing and put the country on a sustainable path. A few other borrowers are moving into riskier positions as a result of borrowing from China. Most worrisome are the loans that are at flexible interest rates tied to Libor or Euribor: If global interest rates rise, the cost of servicing these

loans will go up. It is in China's interest to pay attention to debt sustainability issues. Sebastian Horn and his colleagues find at least 140 instances of China restructuring or writing off debts since 2000.<sup>17</sup> Poor lending practices end up costing China money.

It is also encouraging that the major borrowers have good logistics performance, on average. For the infrastructure projects to really pay off, these countries need to connect more to the regional economy and to the global economy. That requires not just physical infrastructure, but also efficient customs and good transport services.

Finally, I would argue that there is some initial evidence that China is learning from its experience and improving its practices. In the early days of Chinese lending to Africa, Chinese institutions showed little concern for debt sustainability issues. Now the Chinese lending is captured in IMF programs that have overall borrowing ceilings and that should ensure sustainable build-up of debt. The reduction in the number of Chinese workers in the big borrowing countries also suggests that construction companies have learned that it is more efficient to train local workers. Daniel Russell and Blake Berger similarly find pragmatic adaptation on the part of the Chinese in their Southeast Asian projects.<sup>18</sup>

These results also have implications for how the U.S. and its Western allies should respond to BRI:

- Dial down the anti-China rhetoric; many of these projects will have net benefits, and unremitting hostility to Chinese lending makes the U.S. seem uninformed;
- Support additional human and financial resources for the IMF, as this is the institution that is best placed to help developing countries manage their external borrowing and to integrate Chinese projects into their budget management and development strategies;
- Encourage the World Bank to focus more on infrastructure and to reduce processing times for its loans, giving developing countries competitive alternatives;
- Encourage China to be more transparent in its lending and to put more finance into concessional lending — both by contributing more to the International Development Association window at the World Bank and via its own bilateral program; and
- Continue the focus in U.S. assistance on democracy promotion and strengthening civil society; this enhances the capability of countries to manage borrowing from China and other sources.



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