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The Economics of China’s Belt and Road Initiative in Africa: Debt Dependency and Infrastructure Finance

Assessing Financial Risk and Geopolitical Influence in Key African States

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Abstract

This research investigates China’s Belt and Road Initiative (BRI), focusing on its economic impact across the African continent. The aim of the study is to assess the extent to which African countries are financially dependent on Chinese loans, and to evaluate the sectoral distribution and economic implications of major BRI-funded development projects. This is achieved through a qualitative-dominant mixed-methods approach, combining secondary data analysis with a critical literature review. The findings highlight the uneven distribution of Chinese loans across African states, with countries like Angola, Djibouti, and Zambia exhibiting higher debt exposure and repayment vulnerability. In terms of sectoral focus, BRI lending is heavily concentrated in energy and transportation, often producing significant infrastructure but mixed economic returns. Flagship projects such as the Standard Gauge Railway in Kenya and the Caculo Cabaça hydropower plant in Angola illustrate both the developmental potential and fiscal risks associated with China’s financing model. The research concludes that while Chinese lending has enabled rapid infrastructure growth, its long-term effectiveness depends on local economic conditions, governance capacity, project performance, and strategic positioning. These findings offer valuable implications for international business and global geopolitics, particularly in contexts where infrastructure finance–often guided by major institutions like the World Bank and the IMF–intersects with strategic cross-national influence.

Keywords Belt and Road Initiative, Debt Dependency, China-Africa Relations, Infrastructure Finance

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Preface and Acknowledgements

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Mikkeli, 13 April 2025
Ondřej Moučka

Symbols and Abbreviations

Abbreviations

BRI	Belt and Road Initiative
BU	Boston University
CARI	China-Africa Research Initiative
CDB	China Development Bank
CLA	Chinese Loans to Africa
DRC	Democratic Republic of Congo
DRS	Debtor Reporting System
EPC	Engineering, Procurement, and Construction
EXIM	Export-Import Bank
FDI	Foreign Direct Investment
FOCAC	Forum on China-Africa Cooperation
IMF	International Monetary Fund
PPG	Public and Publicly Guaranteed
SAIS	School of Advanced International Studies
SGR	Standard Gauge Railway

1 Introduction

1.1 Background

The Belt and Road Initiative (BRI), launched by President Xi Jinping during a 2013 visit to Kazakhstan, represents China's flagship project to enhance global connectivity through infrastructure, trade, and investment (Huang, 2016). Since its inception, the BRI has expanded its reach into over 140 countries–including 53 out of 54 in Africa–making it one of the most ambitious international initiatives in modern history.

Over the past decade, the African continent has become a large recipient of Chinese loans and investments associated with the BRI. With vast infrastructure deficits and limited access to traditional financing, many African governments have welcomed the convenience of Chinese loans to fund large-scale local projects such as railways, ports, and energy infrastructure. For China, this engagement supports both domestic economic goals–like addressing its spatial fix, the strategy of overcoming economic challenges by extending investments into new geographies and supporting local state-owned enterprises–and broader geopolitical ambitions through soft power and economic influence (Lee, 2018; Carmody et al., 2022).

An ongoing debate surrounds these dual motives. Some scholars view the BRI relatively positively and support the benefits Chinese projects bring to the region, while others argue it fosters financial dependency and undermines the sovereignty of the recipient countries, particularly those with limited fiscal capacity (Hurley et al., 2019; Brautigam, 2019). Moreover, there is criticism for the lack of transparency of the loan contracts and long-term repayment risks.

More recently, the focus of the current academic debate has shifted from how easily countries access funding to what the long-term results of that funding are. The findings of this study reveal that while these investments boost short-term economic growth and infrastructure development, many countries face escalating debt levels and increasing financial dependency on China, compromising their long-term economic sovereignty and stability. This can be seen especially in countries where the loans come predominantly into individual sectors, such as energy. An example is Angola, where the majority of Chinese loans target the energy sector, or Kenya and Nigeria, which have many transportation projects. In cases like Angola's, this can lead to a debt burden. (World Bank, 2023).

This research explores these evolving dynamics by focusing on two core dimensions of China's engagement with Africa: the degree of African debt dependency on Chinese loans and the economic implications of the most affected sectors and prominent BRI development projects. In doing so, it examines the BRI not only as a development mechanism but also as a strategic tool through which China softly projects its power abroad.

1.2 Research Objectives and Questions

The objective of this research is to examine the economic impact of Chinese lending under the BRI in Africa, with a particular focus on patterns of debt dependency and sectoral distribution. Specifically, the study aims to identify which African countries are most financially exposed to Chinese loans and to assess how major development projects funded by China have influenced economic outcomes. This investigation also seeks to contextualize China's engagement in Africa within broader discussions on debt sustainability and geopolitical strategy.

These objectives are addressed through two central research questions:

RQ1. To what extent are African nations dependent on Chinese loans, and which countries are the most affected?

RQ2. Which sectors in Africa receive the most Chinese loans, and what are the economic implications of the biggest development projects?

To provide sufficient analytical depth in answering these questions, the following research objectives are pursued:

1. Analyse the debt structures of African countries in relation to Chinese financing, focusing on the extent of debt dependency, the impact of Chinese loans on financial vulnerability, and the creditor composition including the proportion of debt held by Chinese entities.

2. Identify the dominant sectors financed through Chinese loans and evaluate the economic and developmental outcomes of key projects in terms of their economic performance, long-term sustainability, and alignment with the development goals of recipient countries.

1.3 Research Limitations

This research has several limitations that should be acknowledged. First, it relies heavily on secondary data, which may be affected by inconsistencies, especially due to limited transparency in Chinese loan reporting. As a result, the study does not analyse detailed loan terms such as interest rates, grace periods, or repayment structures, which could have provided deeper insight into the financial implications of BRI lending. Second, the research focuses on a selection of countries and flagship projects, which may limit the implications of its findings across the continent. Third, while economic indicators are used to assess impact, broader social and political implications may not be fully captured. Finally, the analysis is bounded by a specific timeframe and does not include future projections; shifts in China's foreign policy or global economic conditions could alter the relevance of the findings. Nonetheless, the study provides valuable insights into debt dependency and Chinese financing trends in Africa.

2 Literature Review

2.1 Literature Review Introduction

The Belt and Road Initiative in Africa is relatively well-researched, particularly in individual regions and countries, focusing on the overall impact of China's local presence. However, it often lacks a bigger politico-economic picture and since the most influential works on this topic, like the one by Huang (2016) or Hurley (2019), were written before 2022, it is partially outdated and fails to address current trends, which have shifted from the 2010s. Moreover, there is a different rhetoric between Chinese, African, and Western authors, and since there is only a limited number of quantitative studies, it is often difficult to get an unbiased view of the issue.

To address this topic, this literature review synthesises both highly-cited literature from the late 2010s and the most recent one published in prestigious journals which may still be accruing citations. This literature review is structured around a conceptual framework visualized through a Venn diagram (Figure 1), which illustrates the intersections between two core themes: China's Belt and Road Initiative (BRI) and African Economic Development, both influenced by the contextual variable of Geopolitical & Sovereignty Issues. This approach provides a structured examination of the foundational research, emerging trends, and the important relationships among these areas.

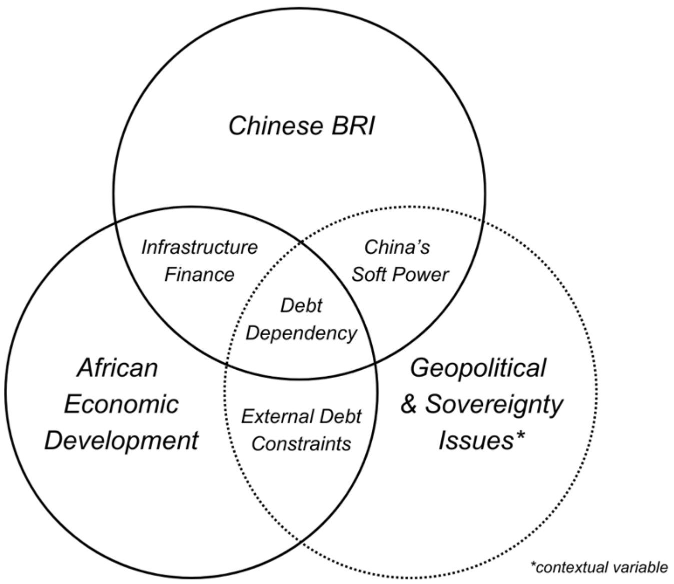

Figure 1. Venn Diagram Conceptual Framework

The review is divided into two key areas of focus: first, the regional economic development facilitated by Chinese projects in Africa, highlighting the impacts on infrastructure finance; second, the challenges posed by these investments, particularly in terms of economic and geopolitical sovereignty and the implications for fiscal sovereignty and external debt constraints.

Upon initial search, Google Scholar returned about 24,800 articles on "Belt and Road Initiative" AND "Africa" published between 2013, when the Belt and Road Initiative started, and January 12, 2025. This result indicates a need for more focus on relevant research within the academic rigour in both economic and geopolitical fields. Therefore, the following databases were used with the same search terms: EconLit, JSTOR, and Scopus. With a focus on economic development, sovereignty, and debt-trap diplomacy, 67 most relevant and cited publications were identified. Additionally, the Litmaps tool was used to find links between those publications and identify other related works (Figure 2). At the end of this process, a total of 55 articles are used as a foundation without limiting additional research.

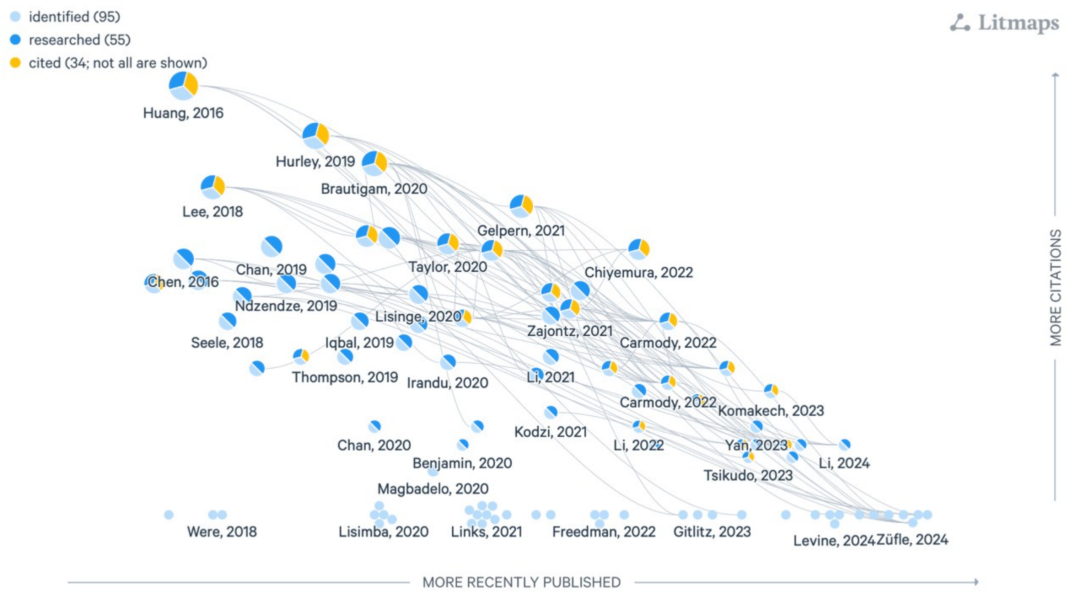

Figure 2. Literature Review Map of Sources (the author)

Most literature in this review focuses on the key topics while aiming to provide a broader context to demonstrate the relations between them. Throughout it, the main research gap is identified: the lack of empirical and quantitative studies on the long-term impacts of the BRI, particularly in the issue of fiscal sovereignty of African nations affected by a high volume of Chinese loans. Overall, to synthesise the academic literature and justify further research, 34 academic sources are cited.

2.2 African Economic Development

2.2.1 Infrastructure Development

Infrastructure development across the continent is at the centre of the African Union's *Agenda 2063* which aims to "connect Africa with world-class infrastructure" (African Union, 2015). This strategic alignment with the BRI has been a backbone for Sino-African relations in the past decade, creating a conducive environment for many development projects.

Since the beginning of the BRI in 2013, and in some cases even before, Chinese state-owned and private enterprises have financed numerous projects all over the continent, most notably the Chinese Rail Engineering Corporation (CREC) and the China Civil Engineering Construction Corporation (CCECC). Züfle et al. (2024) identified that these projects span mainly across energy and transportation sectors: modernizing power stations, transmission lines and telecommunications, railways, roads, and seaports–all leading to better regional connectivity and economic growth while creating local employment.

The academic community generally acknowledges these positive impacts. Komakech & Ombati (2023), for example, researched the following five countries–Djibouti, Kenya, Egypt, Uganda, and Mozambique–for their strategic locations, and long-term relationships with China, and Bharti (2023) identified that these projects are especially crucial for landlocked countries like Ethiopia or Zambia. The Addis Ababa-Djibouti Railway, for example, has been instrumental in supporting Ethiopia's trade, with 90% of its trade passing through Djibouti port. The use of night-time satellite images (Figure 3) nicely depicts how the projects have contributed to connecting isolated regions through the construction of roads, electricity, and digital networks (Gu & Carey, 2019).

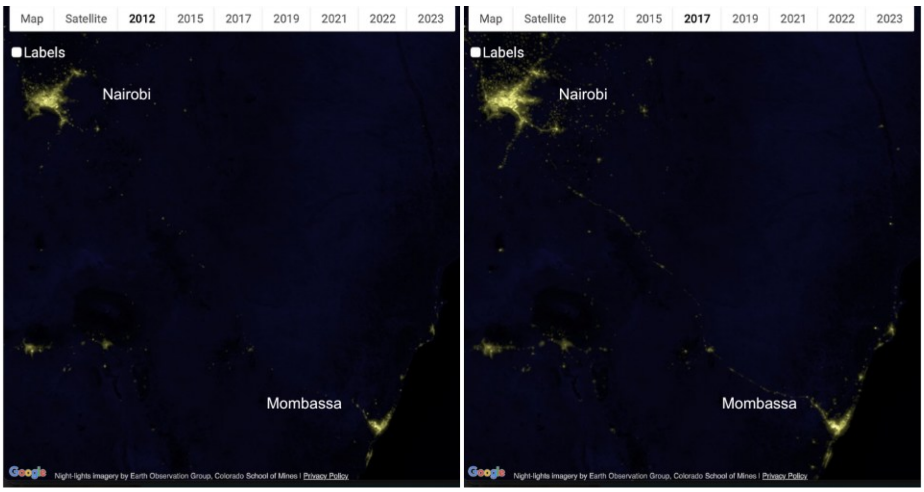

Figure 3. Night-Time Satellite Imagery Comparison of the Mombasa-Nairobi Railway Corridor–2012 vs. 2017 (Blue Marble, 2023)

The implementation of the BRI projects, however, has several challenges. Studies, including Chiyemura et al. (2023), indicate that Chinese financing typically imposes strict conditions, such as requiring a significant portion of contracts to be awarded to Chinese firms, and that the technology and material must at least partially come from China. Moreover, the decision-making regarding infrastructure projects in African countries is mostly centralized and follows a top-down approach. This often creates tensions between local and national authorities, especially when local communities feel sidelined from discussions about the projects in their region, that are supposedly designed to serve them. Such governance challenges can increase a country's vulnerability to financial risk and raise concerns about its ability to effectively oversee large foreign-funded projects. They also highlight limitations in governance capacity, particularly in negotiating agreements that align with national development goals and help manage growing debt dependence on China.

The substantial growth in China's own infrastructure, from roads to air travel, underscores its proven strategy: robust infrastructure is a cornerstone of economic advancement. By exporting this model to Africa, China has strengthened its role as a global superpower, contributing to the overall BRI initiative.

2.2.2 Investment Flows

Chinese financing and development projects in Africa started as a spatial fix to China's overaccumulation of capital in the early 2000s. In combination with Chinese falling profit rates, underconsumption, and scarcity of strategic resources, Bejing encouraged the so-called "Going out" policy by expanding into new geographical areas (Lee, 2018).

Züfle et al. (2024) identified that in Africa, these investments are mainly concentrated in the infrastructure sector, in the form of loans for construction projects and foreign direct investment (FDI). Their study shows that between 2010 and 2019, almost two-thirds of all the investments were allocated to the energy (USD 97 billion) and transportation (USD 86 billion) sectors. Consequently, Chinese contractors controlled 60% of the African market share in the engineering, procurement, and construction (EPC) industries. In 2019, China became the largest foreign investor in the region. Züfle et al. further mention that six of the ten biggest EPC companies operating in Africa are Chinese. The profit margins seem to be generally high. Nearly a quarter of the companies claim they had covered their initial investment within a year and in 2015, nearly a third reported margins of more than 20% (Taylor & Zajontz, 2020). Despite the profitable investments, while Chinese FDI in

Africa increased, the flow of US FDI in Africa rapidly declined in the past decade.

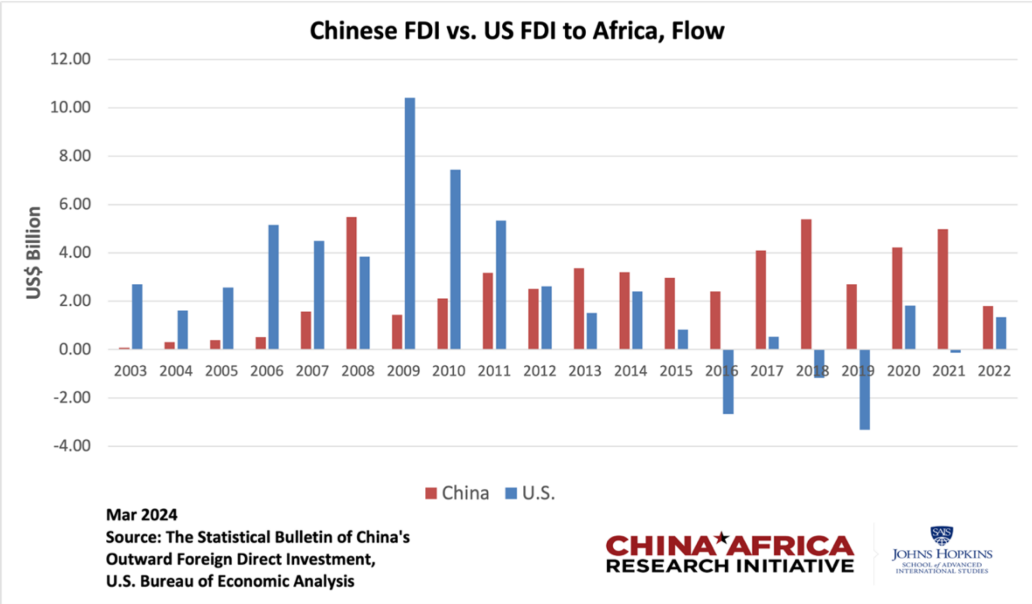

Figure 4. Chinese FDI vs. US FDI to Africa, Flow (China Africa Research Initiative, 2023)

Moreover, Carmody et al. (2022) analysed the volumes of Chinese loans to Africa that peaked in 2016 at $28.8 billion but generally have been diminishing in the past few years. While overall investment trends remain important, this decline in lending is especially relevant to this thesis, which focuses not on general investment, but specifically on loan-based financing and the financial risks it poses to African countries.

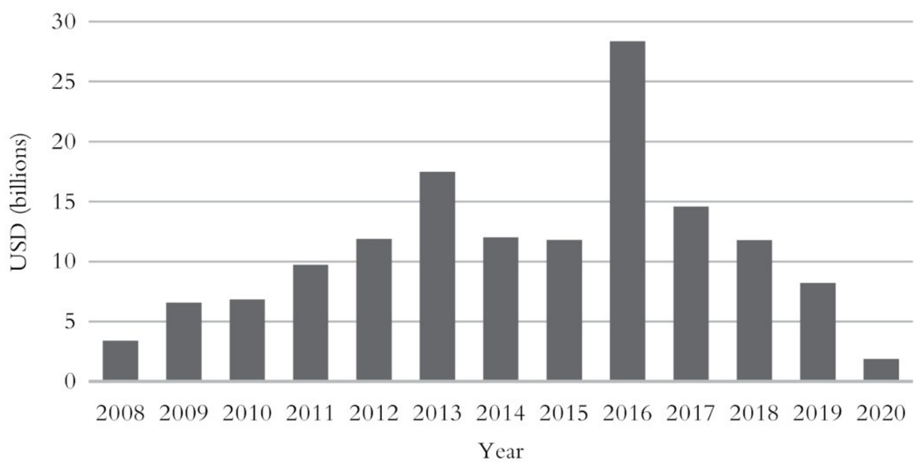

Figure 5. New Chinese loans to African countries (Boston University Global Development Policy Center, 2022).

However, these numbers should be viewed with caution due to a lack of new quantitative studies on the exact amounts of infrastructure loans and FDI in Africa. Moreover, Taylor (2020) and Carmody (2022) notably state that since Beijing does not partake in the OECD's Creditor Reporting System, no official data on Chinese loans exists. Researchers have to build only on estimates. In addition, with most articles focusing only on a particular country's investment flows, the overall picture is incomplete and potentially biased (Li & Lu, 2024).

Until the mid-2010s, China was primarily financing the infrastructure in Africa through bilateral agreements and loan-financed projects (Gu & Carey, 2019). In the first case, the state-owned banks like the China Development Bank (CDB), the Export-Import Bank of China (China Exim Bank), and the Agricultural Development Bank of China (ADBC) would provide money directly to the governments of African partner countries. Often part of broader bilateral trade and cooperation agreements, these loans covered a broad range of economic operations, spanning beyond just infrastructure.

In the other case, loan-financed projects were used primarily for infrastructure projects such as roads, bridges, ports and railways. And since these projects were usually executed by Chinese firms and procurement, a notable portion of these funds would flow back to China through contractor payments. Lesutis (2022) researched an often-mentioned example of this dual nature of Chinese investment: the Standard Gauge Railway in Kenya. Financed by the China Exim Bank, while also ensuring that Chinese companies handled much of the engineering, construction, and management. This practice has raised concerns about the sustainability of such financing, as it can foster dependency on Chinese capital. However, the level of vulnerability differs across countries, with some facing greater financial risk due to higher debt levels or weaker fiscal capacity, addressing the RQ1. (a thorough review can be found in the chapter *2.3. Geopolitical and Sovereignty Issues*).

In response to these allegations, the Chinese government started promoting public-private partnerships (PPPs) as an alternative to traditional loan financing. Instead of funding the projects from Chinese state-owned banks, the African governments would directly enter into agreements with Chinese state-owned enterprises (SOEs) and finance the projects through future revenues or taxes. While this may seem like a plausible solution to debt dependency, van Wieringen & Zajontz (2023) identified that, in reality, the PPPs may involve long-term liabilities for African governments due to off-budget planning and not enough profitable projects. Moreover, the SEOs, while operating autonomously, closely align with the directives of the Chinese Communist Party, therefore suggesting little change to the overall Chinese agenda and practices.

2.2.3 Regional Integration and Trade

Throughout the Sino-African cooperation, China became the continent's largest bilateral trade partner, reaching trade volumes of $282 billion in 2023. However, Wachira (2024) shows that there is a significant imbalance between imports and exports. In 2023, China was exporting $173 billion to Africa, mainly in the form of materials and technology for development projects, compared to the imports which reached only $109 billion. Fan (2023) attributes this to Africa's still relatively small economy with large heterogeneity between its countries, which makes further trade expansion complex and challenging.

Nevertheless, China has several solid trade agreements in Africa, particularly in the mineral extraction and manufacturing sectors. Gregory & Milas (2024) for example report that in the Democratic Republic of Congo (DRC), where 70% of the world's cobalt is mined, Chinese firms own or have a stake in 15 of 19 cobalt mines. Through Angola, the DRC, and Zambia also run the Lobito railway corridor that facilitates the efficient transportation of the minerals (Mwakideu, 2024). Additionally, Bharti (2023) mentions Ethiopia as a manufacturing hub, particularly in the textile sector, enhancing local skills and employment opportunities. Unfortunately, there have been reports of corruption and poor treatment of African workers by Chinese managers at some projects, particularly in Kenya, raising several concerns (Komakech & Ombati, 2023).

All trade, FDI, and development project loans are discussed across various platforms and associations, with the Forum for China-Africa Cooperation (FOCAC) at the centre. FOCAC serves as the main official platform for Sino-African dialogue, focusing on various sectors: mostly trade and infrastructure development, but also cultural exchange. It operates through periodical summits, bringing together Chinese and African stakeholders including government officials, business leaders, and trade organizations to discuss and set the agenda for the next few years. These summits typically result in concrete commitments like financial aid or the inception of new projects (Züfle et al., 2024). However, many negotiations and agreements also occur outside these official platforms, often behind closed doors, which further contributes to the broader issue of limited transparency in Chinese development financing.

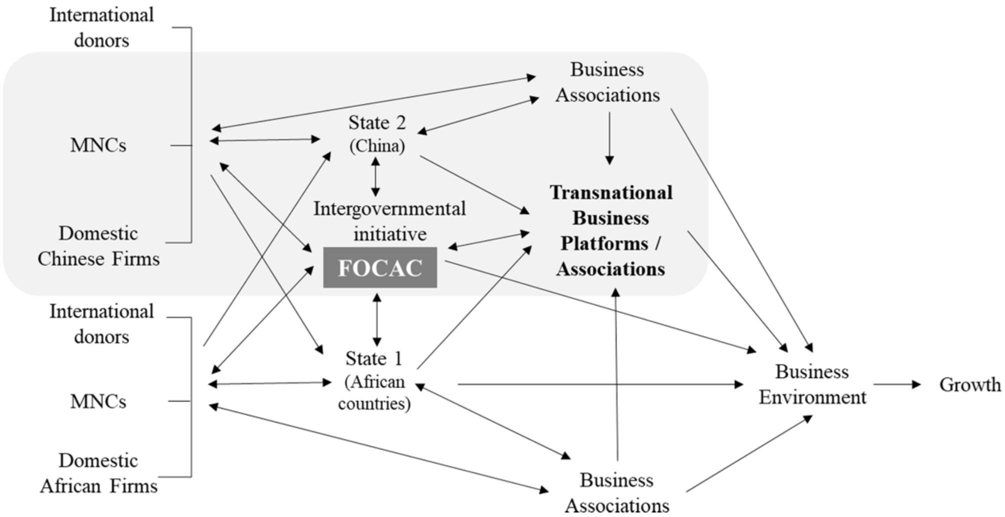

Figure 6. The expanded Taylor framework in the international FOCAC context (Züfle et al., 2024)

To promote its culture, China is also investing in the education of African students, mainly through Confucius Institutes and Confucius Classroom projects. Through these programs, African students become more familiar with Chinese culture, since have to learn Mandarin, and Chinese history and culture (Li, 2022). Bharti (2023) and Tsikudo (2023) further mention thousands of scholarships were awarded to students in Ghana, Ethiopia, and other countries to study in China, over the past years. Tsikudo notes that China ranks second in the number of African students studying there (50,000), right behind France (95,000) due to its colonial history with Northern Africa.

2.3 Geopolitical and Sovereignty Issues

2.3.1 Economic Impact of Public Borrowing in Africa

Public borrowing serves as a central catalyst for any country's development, driving the economic growth of both advanced and emerging economies. With this optic, each development project in Africa financed by debt can be seen as a financial investment. According to Carmody (2022):

> If the rate of return on debt-funded investments is greater than interest repayments, deflated by inflation – what economists call the external rate of return – then it should be a good investment (at least from an investor's perspective, if not necessarily socially or environmentally). It may also make sense for states to fund low-return or even loss-making projects that produce widely shared social and economic benefits that offset losses incurred: ie a high social rate of return may justify direct economic losses.

A good example of this dynamic is Ethiopia. Hurley et al. (2019) report how it has achieved rapid economic growth. From about 5% of GDP in the early 1990s, the public infrastructure investment in Ethiopia rose to 18.6% of GDP in 2011, largely thanks to Chinese loans. Moreover, Bharti (2023) adds how in the past decade, its GDP growth averaged around 8%, making Ethiopia one of the fastest and the most stable economies in Africa. According to his study, by 2021, the Ethiopian government had received approximately \$8.7 billion in loans from China, making it about 32% of its total foreign debt–not alarmingly much compared to other African countries.

An issue arises when the debt-to-GDP ratio gets high, particularly if a significant portion of the foreign debt is to one creditor. This creditor can be an individual country like China or even a transnational institution like the International Monetary Fund or the World Bank. Especially when the excessive debt is not matched with sufficient economic growth and revenue generation, considerable evidence shows it can have detrimental effects on the country and its citizens. Unfortunately, this seems to be more common than the Ethiopia case.

In the leading study on the debt implications of the BRI, Hurley et al. (2019) identified 23 countries at risk of 'debt distress' due to Chinese loans; four were African: Djibouti, Egypt, Ethiopia and Kenya. At that time, the high debt-to-GDP threshold of 60% was surpassed by Djibouti (86.62%) and Egypt (100.10%). However, only Djibouti was identified as of concern due to its high debt to China/external Public and Publicly Guaranteed (PPG) debt ratio of 80.21%.

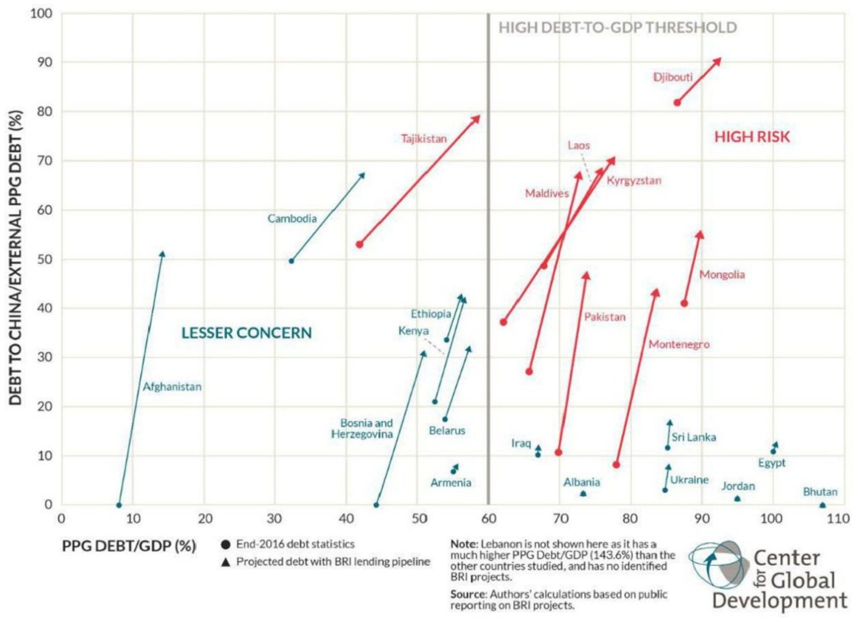

Figure 7. Immediate marginal impact of BRI lending pipeline (Hurley et al., 2019)

In 2017, the International Monetary Fund (IMF) assessed Djibouti's borrowing program as extremely risky, since its public external debt from 2015 to 2017 has increased from 50 to 85% of GDP, mostly owed to China Exim Bank. At that time, China financed Djibouti's investment projects with $1.4 billion, equivalent to 75% of Djibouti's GDP. As Carmody & Wainwright (2022) notably commented: "This is perhaps not coincidentally, given its strategic location and it being the site of China's first overseas military base." Moreover, in 2020, also Zambia's debt-to-GDP ratio increased to over 100%, from 18.9% ten years ago (Zajontz, 2020).

In a newer study, Zajontz (2022) reports that over the 2010s, Sub-Saharan Africa's foreign debt more than doubled, while the region's gross national income (GNI) grew between 2011 and 2019 only by 15.8%. Additionally, Taylor & Zajontz (2020) note that 20% of the African governments' external debt is owed to China. The rest is divided between private lenders (32%) and institutions like IMF (35%). However, he adds that Chinese loans have recently increased substantially, leaving several African countries in serious economic hardship. This is particularly evident in cases where large portions of national budgets are allocated to debt servicing, limiting spending on essential sectors like health, education, and infrastructure maintenance. According to the World Bank and the IMF, loans can help developing nations in a variety of situations, but they become troublesome if they are not invested in assets that can repay them or are undermined by weak governance (Mihalyi et al., 2022). Carmody et al. (2021) present Kenya as an example, which will probably not be able to repay China Exim Bank for the Mombasa-Nairobi Standard Gauge Railway, which the Bank financed by 90%, in the agreed 15-year period. In these cases, the debtors generally still have to pay back the loans with comparatively high interest rates (5% in 2017) even if the BRI-funded projects fail or perform poorly. Needless to say, there are instances of rescheduling debt repayments or even forgiving certain amounts when African countries face difficulties repaying the loans, partially due to the Covid-19 pandemic (Carmody et al., 2022; van Wieringen & Zajontz, 2023).

Given all those nuances between individual cases, there is no consensus within the academic community regarding the extent of the potential debt dependency of African countries on China. Moreover, Carmody (2020) reflects, that this is not helped by the fact that in most loan contracts there are confidentiality clauses, further complicating the issue.

2.3.2 Neocolonialism and Debt Dependency

Since the end of European colonialism in Africa in the late 1900s, foreign powers have still held a notable influence over African nations. Thomas Sankara, a military officer and later an installed president of Burkina Faso, presented debt as an imperialist tool that forced Africa to become politically and economically dependent on other nations. In 1987, he held a speech at the Organization of African Unity summit in Addis Ababa:

> I would like for us to speak about another pressing issue: the issue of debt, the question of the economic situation in Africa. It is an important condition of our survival, as much as peace. [...] We think that debt has to be seen from the perspective of its origins. Debt's origins come from colonialism's origins. Those who lend us money are those who colonized us. [...] Debt is neo-colonialism, in which colonizers have transformed themselves into 'technical assistants'. We should rather say 'technical assassins'. [...] We have been indebted for 50, 60 years and even longer. That means we have been forced to compromise our people for over 50 years. Under its current form, controlled and dominated by imperialism, debt is a skilfully managed reconquest of Africa, intended to subjugate its growth and development through foreign rules. Thus, each one of us becomes the financial slave, which is to say a true slave, of those who had been treacherous enough to put money in our countries with obligations for us to repay. (Sankara, 2019 [1987])

Almost four decades later, Africa is still grappling with the issue of debt. With China's many investments in developing projects, African sovereignty is questioned, and serious accusations are being raised.

Su (2017) mentions a familiar pattern from the African colonial times of Europeans building infrastructure in poor countries with the objective of natural resource extraction. He classifies as such the predecessors of the Addis Ababa-Djibouti and Nairobi-Mombasa railways. Both link mineral-rich landlocked nations with important ports in the Indian Ocean, and comparable projects are now largely funded by Chinese loans.

Moreover, the notion of Chinese 'debt-trap diplomacy' emerged, portraying China's long-term intention as one designed to entrap emerging economies in a web of debt. In practice, when the debtor country is not able to repay unsustainable loans, China would seize the assets its development financed, for example, railways or ports. This way China would gain control over strategic infrastructure, possibly extracting natural resources and building military bases (Zajontz, 2022).

Many academics, however, believe that the discussion of Africa's significant debt to China has been exaggerated. According to Brautigam (2019), we can trace its origins to 2017, when the idea of the 'debt-trap diplomacy' became popular thanks to an article by two students at Harvard University. Later cited in the New York Times and the Guardian, it became academic proof of China's neo-colonialism intention in Africa. Brautigam attributed this to the negativity bias and Western concerns about China's overseas engagement. As with many others, he identified only one actual instance of debt-trap diplomacy–the Hambantota port in Sri Lanka, leased for 99 years to a Chinese company due to the highly indebted Sri Lanka situation, in exchange for elevating some of that debt. Needless to say, there is no proof of

China's long-term intention to seize the Hambantota port. Carmody & Wainwright (2022) later endorsed Brautigam, claiming that recipient states typically request Chinese overseas projects for their own purposes and that the developing projects have numerous positive aspects on their economies.

The extent of geopolitical implications of China's investment projects in Africa is difficult to evaluate. Lee (2017) points out that, unlike traditional colonialism which often involved military occupation, exclusive trading rights by chartered companies, and religious proselytizing, none of these elements are present in China's activities. Additionally, in the past years, China has mitigated the possible effects of defaults by using third-party repayment assurances, credit insurance, and collateral (Gelpern et al., 2021) and is shifting to more sustainable investment practices as the PPPs (van Wieringen & Zajontz, 2023).

This discussion of debt as a tool of neocolonial influence provides the foundation for analysing which sectors in Africa are most impacted by Chinese loans and the specific economic implications of these major development projects, addressing RQ2.

2.3.3 Geopolitical Implications of BRI

When a country, especially a large one, becomes rich, it starts to look outwards. Not just for economic opportunities but also for geopolitical partnerships. China is no different. Some compare China's initiatives to the American Marshall Plan after the Second World War (Feng & Liang, 2019) which provided financial aid to Western Europe to boost the local economy and start transatlantic political cooperations.

Therefore, apart from infrastructure projects, mostly unregulated and with high-profit margins, China is providing many 'gifts' and 'no strings attached' funding to African countries–sometimes called the 'soft power'. Since the BRI started, China has constructed over 15 governmental buildings like parliaments in African countries, including the new African Union headquarters in Addis Ababa, all without any direct reciprocity (Ncube, 2023). This way, China is building its presence over the continent, fostering trust among African people towards it, and creating political partnerships. There has been an accusation of China bugging the African Union headquarters, but Bejing denies it and it was never confirmed (Aglionby, 2018).

Furthermore, Brautigam (2019) mentions, how, in Djibouti, China built its first overseas military base. Djibouti occupies a strategic location at the Gulf of Eden, leading to the Suez Canal, with the majority of the trade from Asia and the Middle East to Europe going through there. For that reason, many other countries also have their military bases at that place.

The main debate is whether the African governments can balance the short-term and long-term implications of China's local presence. Especially in politically unstable and non-democratic countries, a large amount of foreign, often unregulated investments can foster corruption and question policy autonomy (Taylor & Zajontz, 2020). Nevertheless, China's geopolitical endeavours in Africa are not atypical for a country of its position as a global superpower.

2.4 Conceptual Framework

This literature review investigated the economic and geopolitical issues associated with the BRI in Africa that can be partially understood through the lens of Dependency Theory. However, due to unique aspects like the reciprocal benefits seen in some sectors and the emphasis on infrastructural investments beyond the traditional extractive industries, which diverges from traditional Dependency Theory, a thematic framework is used for this study. This review reached several key conclusions.

First, research converges on significant trends such as infrastructure finance, foreign direct investment, debt distress, and challenges to geopolitical sovereignty, suggesting that economic growth and development are influenced by the dependency dynamics established through such investments. Second, out of all forms of the BRI, the infrastructure projects affect the economic growth and development of African nations the most. Third, Chinese loans to Africa peaked in 2016 and are now decreasing. Fourth, despite a high influx of loans to Africa, there is not much outflux back to China and the trade between the countries is limited. Fifth, concerning high-volume loans, many raise concerns about the debt dependency of African nations on Chinese capital, some even mentioning terms like neocolonialism and debt-trap diplomacy. Lastly, there is a need for new complex quantitative studies on the economic implications of China's investments in Africa. While existing research includes various qualitative case studies, there is a notable lack of comprehensive quantitative analysis in this area. As emphasized previously, a clear research gap exists in measuring the impact on the debt dependency of African nations. This claim is supported by the high volume of Chinese investments in the African economy and the lack of consensus regarding the long-term impacts of BRI in Africa within the academic community. More specifically, this is illustrated in the original conceptual framework alongside the corresponding research questions in Figure 8.

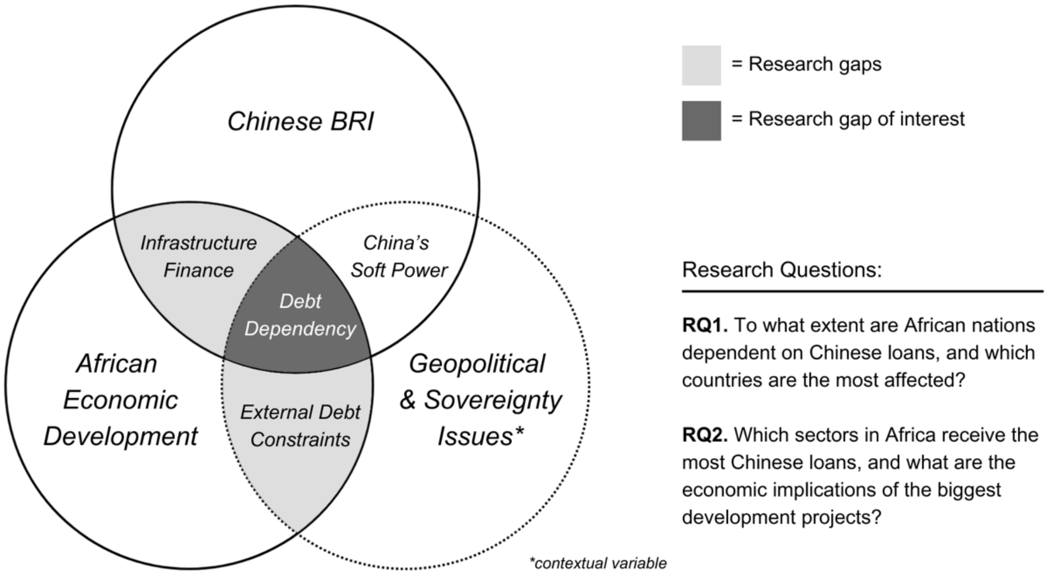

Figure 8. Conceptual Framework Illustrating Research Gaps and Research Questions

3 Methodology

3.1 Methodology Introduction

This research adopts a mixed-methods approach, combining quantitative debt data with qualitative case insights to assess the extent and implications of Chinese lending to African countries under the BRI. The methodology is adapted from Hurley et al. (2019), who developed a three-stage pipeline for evaluating debt distress in BRI-affected countries. The adapted framework includes the use of key debt ratios, creditor composition analysis, and sectoral trends in lending. To ensure analytical rigour, the study draws on two primary datasets–the World Bank's (2023) International Debt Report and the China-Africa Research Initiative (CARI) database (BU Global Development Policy Center, 2024)–alongside select qualitative sources. It is important to note that this study focuses specifically on projects labelled as part of the BRI. While there are other forms of Chinese lending and investment in Africa, these are not included in this analysis. The analysis focuses on identifying countries most at risk of debt dependency, understanding the structure of their external debt, and evaluating the distribution and economic impact of Chinese financing across regions and sectors. This approach aims to provide a comprehensive overview of both the scale and strategic implications of Chinese lending in Africa.

3.2 Countries Debt Distress Metrics and Pipeline

To evaluate debt distress and potential debt dependency, this methodology freely adapts the one of Hurley et al. (2019) who, through a 3-staged pipeline evaluated the scope of debt distress of individual countries affected by the BRI.

First, two ratios are used: the Public and Publicly Guaranteed (PPG) debt-to-GDP ratio, and second, the debt-to-China-to-PPG debt ratio, calculated from the International Monetary Fund (IMF) databases from 2023 and later mentioned databases for the Chinese loans. There has been extensive research on debt thresholds that examines the tipping point where high public debt hinders growth, risking default or restructuring. However, findings vary–some nations struggle with low debt, while others sustain high debt with continued growth. A debt-to-GDP threshold of 60 percent is used, based on research indicating a statistically significant threshold effect when debt-to-GDP ratios exceed 50–60 percent (Arezki et al., 2019).

Secondly, the countries identified as debt-risky are examined more closely concerning the types of creditors they rely on, contrasting the debt to China with support from the IMF, World Bank, and other creditors, both official and private.

Hurley et al.'s third stage of the pipeline–the evaluation of credit agencies rating of the individual countries–is not used due to unavailable data for the African continent. Given the regional volatility in GDP growth and the overall economy, this research opted for other, mostly local, evaluation methods like identifying regional and sectoral trends in Chinese funding.

3.3 Data Collection Procedures

3.3.1 Quantitative Data

The research mainly relies on quantitative data. Two datasets are used, the International Debt Report 2023 (World Bank) and The Chinese Loans to Africa (CLA) Database (SAIS-CARI). The World Bank data includes official reports submitted through the Debtor Reporting System (DRS), which means it likely underestimates the true extent of Chinese lending, especially loans issued to state-owned enterprises or via unofficial channels. Conversely, the CLA database is more comprehensive, as it compiles data from a wide range of sources such as ministry websites, Chinese contractor reports, fieldwork, and media coverage, particularly where project transparency is limited.

Despite China has longer history of public lending to African governments, only data after 2013–when the BRI started–are taken into research. Moreover, especially concerning the CLA data, only active loans are included, eliminating cancelled or postponed ones.

3.3.2 Qualitative Data

While the nature of this research is mainly quantitative, several qualitative data are used. They mostly consist of case studies of some prominent authors mentioned in the literature review like Hurley et al. (2019), Brautigam (2019), and Bharti (2023), and give insights into the most affected countries and sectors. Also, along with news reports and IMF and World Bank publications, they form a source for the chapter *4.3.2 Economic Impact Analysis per Sector*.

3.4 Methodology Limitations

While this study employs a structured and data-driven approach, several methodological limitations must be acknowledged. These primarily relate to data reliability, scope constraints, and the complexity of debt classification. First, this study draws mainly on two of the most widely cited and credible datasets from the World Bank and SAIS-CARI but does not incorporate alternative sources such as AidData (2021) or the U.S. EXIM Bank (2024), which sometimes rely on investigative journalism or private information.

Second, the study does not account for the detailed structure of loans from private creditors, which form a significant portion of debt in countries like Angola and Zambia. Information such as creditor identities, loan conditions, interest rates, and grace periods–particularly concerning Chinese private or semi-private lenders–remains outside the scope of this analysis due to data unavailability. These omissions may limit the depth of insight into debt sustainability and risk exposure, especially where private financing plays a central role.

4 Findings

4.1 Findings Introduction

The findings of this research present the extent of African countries' financial exposure to Chinese lending and the broader economic implications. The analysis is divided into two main parts based on the Research Questions (RQs).

First, the extent of African nations' dependency on Chinese loans (RQ1) is assessed through a comparative evaluation of public debt levels and Chinese loan exposure, using data from both the World Bank and the CARI. This helps identify countries most vulnerable to debt-related risks and potential dependency on Chinese financing, as can be seen from Table 1.

High	Significant	Low
Djibouti	Senegal	Remaining other*
Angola		
Zambia		

**Equatorial Guinea, Libya, Namibia, Seychelles, and South Sudan are not included in the analysis due to unavailable statistics.*

Table 1. Debt-Related Risk Category by Country

While some entries in the list may appear surprising, they are justified by country-specific factors. For example, Djibouti hosts a Chinese military base, significantly influencing its financial ties with China, and Angola's heavy reliance on its oil industry makes it particularly susceptible to external financial influences.

Second, the geographic and sectoral trends in Chinese lending across the continent and the biggest development projects (RQ2). It evaluates how loan distribution shapes economic outcomes, highlighting sectoral concentration and its implications for long-term development.

Together, these findings provide insight into the financial patterns and developmental impact of the BRI in Africa. A total of 49 African countries are included in the analysis. All data are from the end of 2023 and include data from loans issued since 2013.

4.2 Debt Dependence Analysis of African Countries (RQ1)

This sub-chapter focuses on the debt distress experienced by African countries due to BRI investments, addressing the first research question regarding the economic impacts of these investments on recipient countries' debt levels. The analysis indicates that only for a select few countries there has been identified a possible debt dependency on Chinese loans, particularly in nations with less robust economic management systems.

4.2.1 Assessing Public and Chinese Loan Exposure

To assess the debt distress of individual African countries, two ratios are used: first, the PPG debt-to-GDP ratio; and second, the debt-to-China-to-PPG debt ratio. Given the significance of IMF support, IMF credit is included in the PPG debt calculation. Moreover, the ratios of countries evaluated as high and significantly risky are compared with the year 2012 (before the BRI inception).

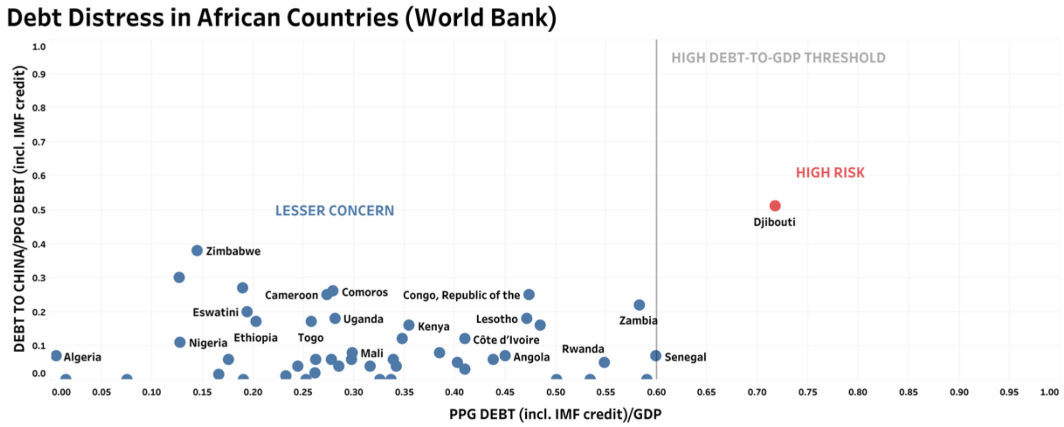

Figure 9. Debt Distress in African Countries (World Bank, 2023)

Figure 9 shows data from the International Debt Report 2023 (World Bank). These statistics are based on official reports submitted by governments under the DRS. Since many Chinese loans (especially to state-owned enterprises and private entities) are not officially reported by borrowing governments, the scope of Chinese loans is most likely underestimated. The high debt-to-GDP threshold of 60% was surpassed only by Djibouti (71.78%).

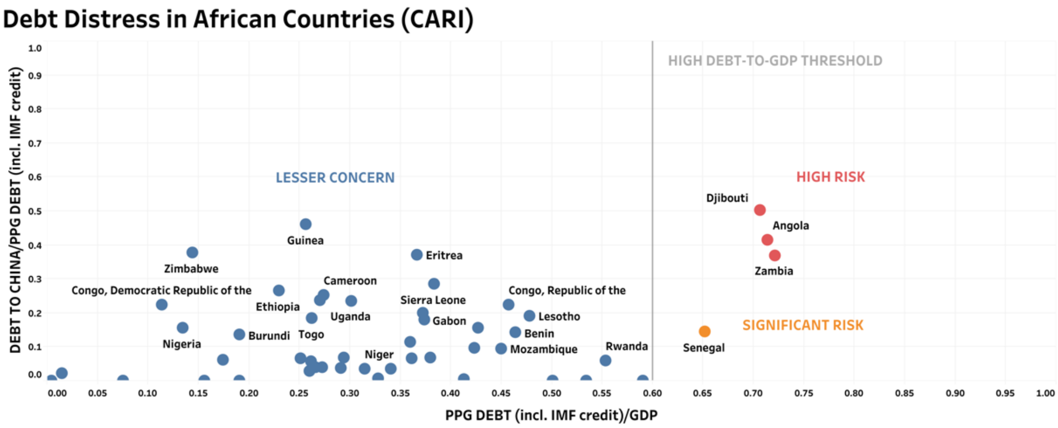

Figure 10. Debt Distress in African Countries (BU Global Development Policy Center, 2024)

Figure 10 shows data from the CARI. Their data sources include official government documents, contractor websites, fieldwork, interviews, and media sources–making it more comprehensive and potentially more reflective of the actual scope of Chinese lending compared to official reports. With this data, the 60% threshold was surpassed again by Djibouti (70.66%), but also by Zambia (72.16%), Angola (71.38%), and Senegal (65.18%). While the CARI still can be subject to limitations in data availability and verification, in combination with the World Bank data, it shows a clear trend of some countries in significantly higher debt distress than others. With also a high debt-to-China ratio, Djibouti (50.23%), Angola (41.38%), and Zambia (36.93) are identified as debt-risky and potentially debt-dependent on China. Their PPG debt is further analysed. Senegal is identified as significantly but not highly risky due to its less concerning debt to China-to-PPG debt ratio (14.44%).

To assess the impact the BRI had on the most affected countries, the measured ratios are compared with those from 2012, before significant BRI engagement. While the analysis shows a significant increase in the PPG debt-to-GDP ratio for all four mentioned countries, the change in debt-to-China-to-PPG debt ratio varies: for Djibouti and Senegal it increased while for Angola and Zambia, it decreased, since 2012. This shows two cases. For the first two countries, their government debt level rose largely due to the BRI, underscoring the countries' growing financial obligation to China and debt dependency. For the second two countries, it shows that while their debt levels rose close to 70% of their GDP over the decade, suggesting fiscal risk and limited governance capacity, their debt dependence on China is decreasing.

Key country-specific cases can be found in the Discussion (5.2.2 Country-Level Analysis of Loan Dependence).

CARI DATA	PPG DEBT (incl. IMF credit)/GDP		DEBT TO CHINA/PPG DEBT (incl. IMF credit)	
Country	2012	2023	2012	2023
Djibouti	44.08	70.66	18.39	50.23
Angola	19.00	71.38	50.02	41.38
Zambia	19.28	72.16	41.09	36.93
Senegal	25.60	65.18	7.37	14.44

Table 2. Comparison of Measured Ratios Between 2012 and 2023 (in %) (World Bank, 2014 & 2024)

4.2.2 Chinese Loans vs. IMF and World Bank

Given the notable financial support from the IMF and the World Bank, which many African countries benefit from, further analysis compares these loans and credit with Chinese loans and debt from other creditors. This comparison focuses on Djibouti, Angola, and Zambia–three countries identified as being in debt distress–and includes both official debt (bilateral and multilateral) and private lending.

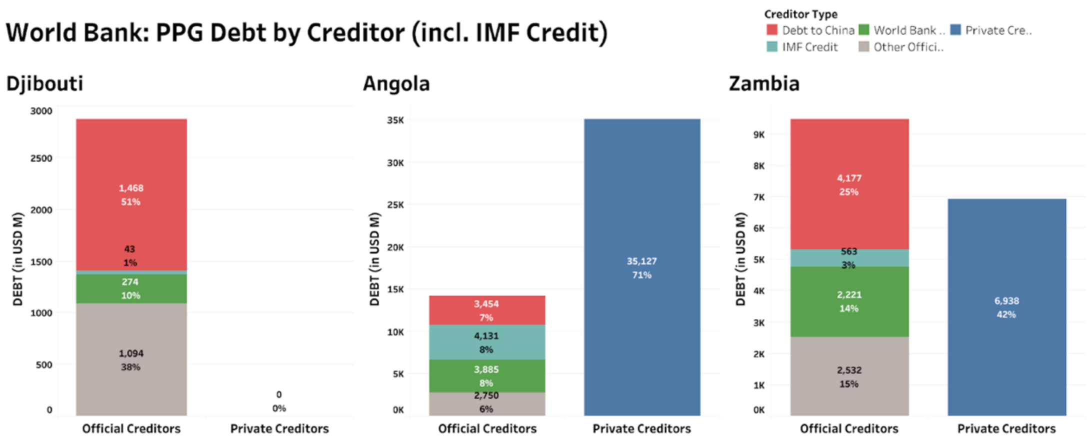

Figure 11. PPG Debt by Creditor Among Selected Countries (World Bank, 2023)

Figure 11 shows the World Bank data: Djibouti's PPG debt seems heavily reliant on Chinese loans, which account for 1.47 billion USD (51%), while the remaining debt comes from other official creditors, including the World Bank. Notably, IMF support is minimal, at just 0.04 billion USD (1%), and Djibouti depends solely on official lenders. In contrast, Angola primarily relies on private creditors, holding 35.13 billion USD (71%) of its debt, while Chinese loans make up only 3.45 billion (7%). Zambia's PPG debt is the most balanced among the three. It has the highest share from private creditors at 6.94 billion USD (42%), while Chinese loans total 4.18 billion USD (25%).

Debt from the World Bank (10%) and IMF (5%) is relatively low compared to other creditors.

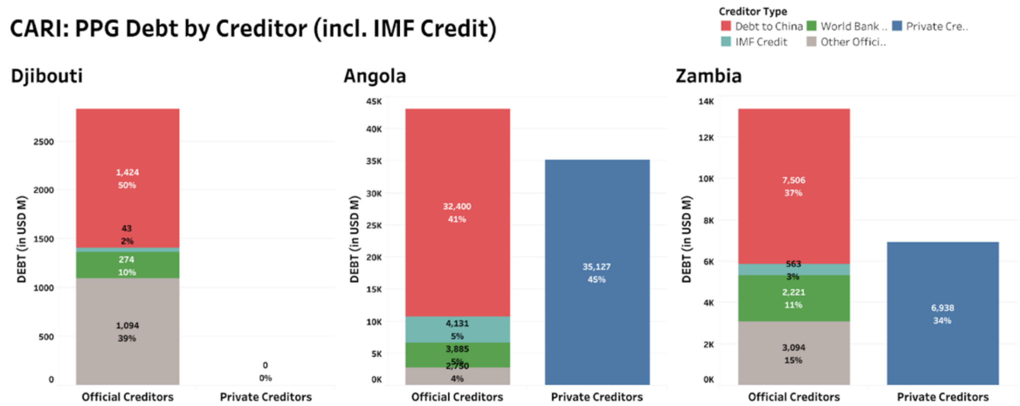

Figure 12. PPG Debt by Creditor Among Selected Countries (BU Global Development Policy Center, 2024)

Figure 12 shows the CARI data: They contrast with the World Bank primarily by reporting higher overall PPG debt, it generally maintains similar debt ratio distributions. However, it suggests a significantly larger share of debt owed to China for both Angola and Zambia. According to CARI, Angola's debt to China stands at 32.40 billion USD (41% of its PPG debt)–a substantial increase compared to the World Bank's figures. Similarly, Zambia's debt to China is reported at 7.51 billion (37% of its PPG debt), higher than the World Bank estimate. This discrepancy arises largely due to CARI's more comprehensive tracking of BRI projects, incorporating data beyond official government reports, which the World Bank primarily relies on.

The relatively low involvement of the IMF and World Bank could be due to their stricter lending conditions, which focus on debt sustainability and economic reforms, potentially making Chinese loans, with fewer conditions, more attractive for quick infrastructure funding.

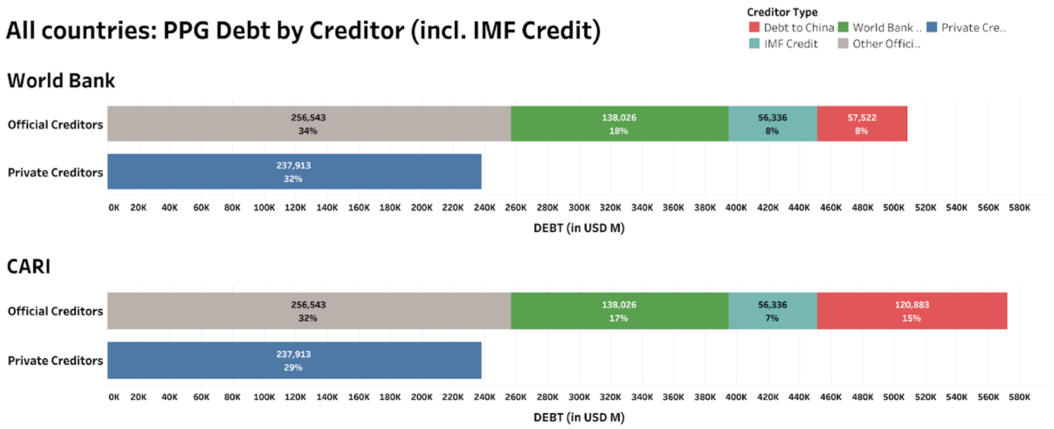

Figure 13: PPG Debt by Creditor Among All African Countries (49) (World Bank, 2023; BU Global Development Policy Center, 2024)

Figure 13 shows the comparison of World Bank and CARI data on the composition of PPG debt in the region. Official creditors account for over 68% of total regional PPG debt, with the World Bank and the IMF contributing approximately 18% and 8%, respectively. A notable discrepancy emerges when comparing the number of Chinese loans reported by different sources: the World Bank identifies Chinese loans valued at USD 57.52 billion (8% of total regional PPG debt), whereas the CARI reports a significantly higher figure of USD 120.88 billion (15%). Meanwhile, private creditors account for around 30% of the total PPG debt, although this share varies slightly depending on the dataset used.

This analysis directly addresses RQ1 by exploring the creditor composition of the overall debt held by African governments. While individual countries exhibit varying degrees of indebtedness to China, the broader continental perspective presents a different scenario. Here, although China's loans represent a significant fraction of Africa's total debt, they are surpassed by the combined debts owed to international institutions like the World Bank and the IMF, as well as to private creditors. This underscores the complexity of Africa's borrowing with multiple sources of funding, each with a distinct role in the region's economic development.

4.3 Sectoral Trends in Chinese Lending in Africa (RQ2)

This sub-chapter examines the geographic distribution and sector-specific focus of Chinese investments under the BRI, addressing the second research question on the strategic deployment of these investments across different regions and sectors. The findings reveal a concentrated investment in transportation and energy sectors, predominantly in East and West Africa, as a result of several giant development projects. This has significantly boosted local economies but also led to increased dependency on Chinese expertise and materials.

4.3.1 Sectoral and Geographic Distribution of Chinese Loans

Chinese lending in Africa is unevenly distributed, as illustrated in Figure 12. Although the total value of Chinese loans to African nations amounts to 120.88 billion USD, a significant share is concentrated among just a few recipients.

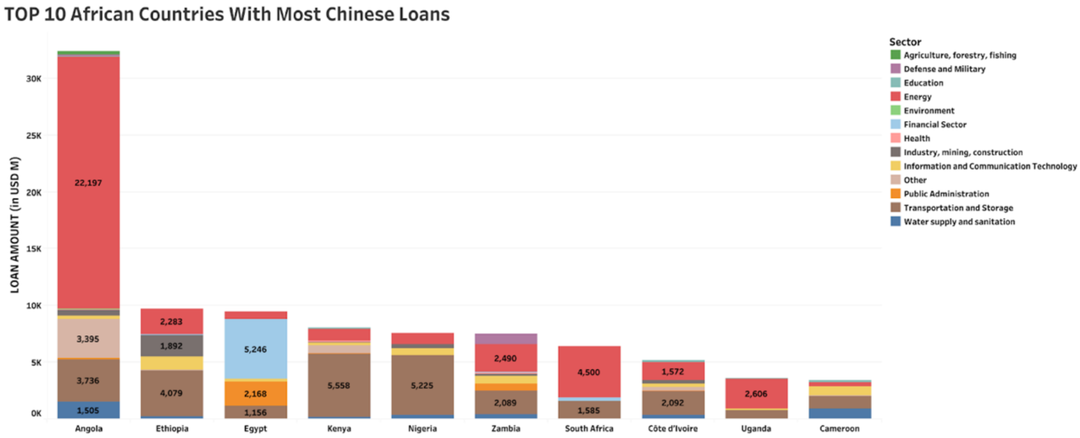

Figure 14. TOP 10 African Countries With Most Chinese Loans (BU Global Development Policy Center, 2024)

Figure 14 depicts that the top 10 borrowing countries alone receive approximately 93.37 billion USD, which represents nearly 75% of all Chinese financing on the continent. Angola stands out, securing 32.4 billion USD, or over 25% of the total. It is followed by Ethiopia with 9.71 billion USD (7.78%), and Egypt with 9.46 billion USD (7.56%). Beyond the uneven distribution across countries, Chinese loans in Africa also show significant disparities across sectors. In Angola, for example, 22.2 billion USD–representing 69% of its total borrowing from China–is concentrated in a single sector: Energy. A similar pattern is observed in Kenya and Nigeria, where the Transportation and Storage sector absorbs the majority of Chinese funding, accounting for 68.83% and 68.91%, respectively.

This trend might be seen as a snowball effect by some, but qualitative case studies suggest that China strategically invests in the most prospective sectors within each country. While these sectors vary, Transportation and Storage consistently emerges as a common area of investment across most nations (Komakech & Ombati, 2023).

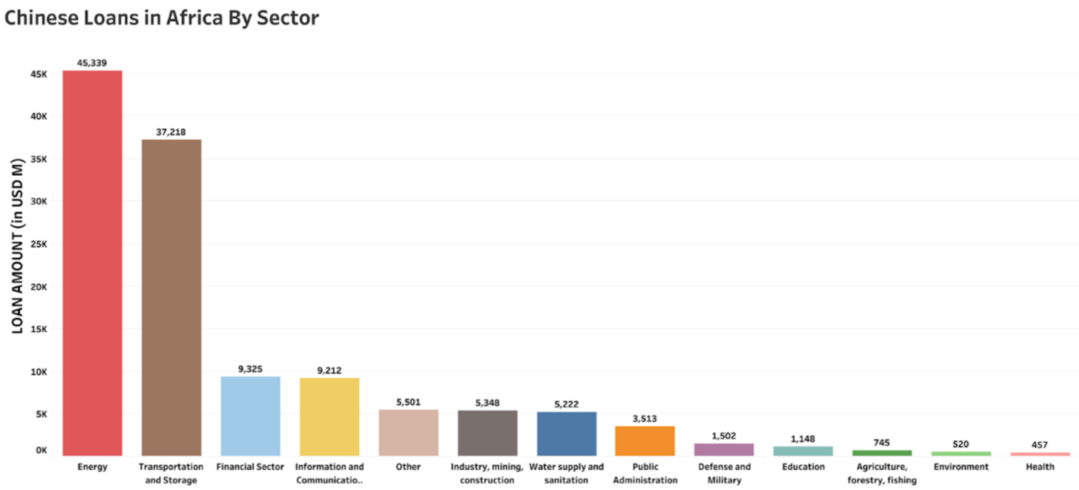

Figure 15: Chinese Loans in Africa By Sector (BU Global Development Policy Center, 2024)

Figure 15 illustrates that overall, the Energy and Transportation and Storage sectors dominate Chinese lending in Africa, together accounting for approximately 82.56 billion USD, or 66% of the total. Of this, the Energy sector receives 45.34 billion USD (36%), while Transportation and Storage attracts 37.22 billion USD (30%). These investments align closely with China's strategic interests and economic policies, particularly under the BRI, which aims to enhance trading routes and energy security.

The Financial sector, although much lesser in focus, receives 9.33 billion USD (7%), with a substantial portion concentrated in Egypt. This investment strategically positions China in a country that controls the Suez Canal, a critical hub in global maritime trade routes. Such targeted investments reflect China's broader strategy to not only secure essential resources and infrastructural dominance but also to strengthen its influence across geopolitically significant economic regions.

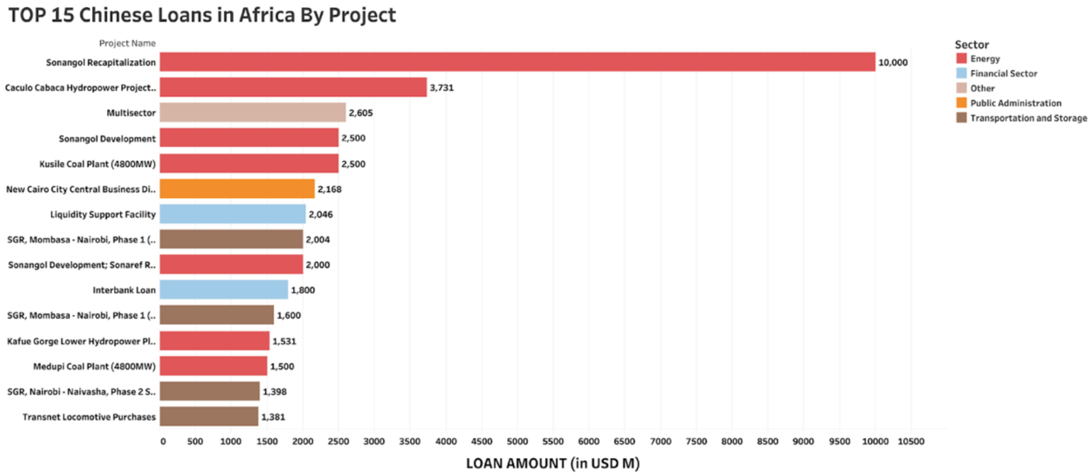

Figure 16. TOP 15 Chinese Loans in Africa By Project (BU Global Development Policy Center, 2024)

Figure 16 shows that since 2013, China has financed over 600 projects across the African continent. However, a key finding reveals that a small number of large-scale projects receive a disproportionate share of total financing. The top 15 largest loans account for $38.76 billion, representing 31% of total Chinese financing in Africa. Considering that many of these loans cover only parts of larger projects, the actual investment associated with these top 15 projects is likely even higher. This concentration of funding indicates China's strategic focus on several key projects that offer significant geopolitical or economic returns, and serve as flagship initiatives, showcasing China's influence.

Among the largest projects, the most notable is a loan to the Angolan government to recapitalize Sonangol, the state-owned oil company, support debt repayment to the China Development Bank (CDB), and fund public investment initiatives (AidData, 2021). Other major projects include the Caculo Cabaça Hydroelectric Power Station in Angola and the Standard Gauge Railway (SGR) connecting Mombasa and Nairobi in Kenya.

4.3.2 Economic Impact Analysis per Sector

The concentration of Chinese lending in a narrow range of sectors–primarily energy and transportation–significantly shaped the economic impact of BRI in Africa. In many cases, these investments have helped close infrastructure gaps and contribute to long-term productivity growth (Bharti, 2023), they also raise concerns about fiscal sustainability, sectoral overexposure, and missed opportunities in other areas of development.

A well-known example is Kenya's SGR. It was launched to boost trade and cut transport times between Mombasa and Nairobi, and while to some extent that happened, at the same time, however, it has struggled financially. Operating costs remain high, and revenues have not matched expectations (World

Bank, 2023). Another example is the Addis Ababa-Djibouti railway in Ethiopia, financed to enhance trade links. Despite reducing transport times and opening economic opportunities, it faces high operational costs with revenue not meeting expectations, adding to Ethiopia's financial strain (Bharti, 2023). This kind of mismatch between long-term benefits and short-term repayment obligations seems to be a recurring theme among the projects.

When large sums of foreign debt are tied up in a single sector, countries can become exposed to risks they can not easily control. In Angola, for instance, with the majority of Chinese loans going into the oil sector, this creates a fragile dependence on a market that is commonly volatile. Similar concerns have risen in countries like Nigeria and Ethiopia, where Chinese financing has largely gone into transportation but despite their scale, the economies did not grow in parallel.

Another frequently noted limitation of Chinese engagement in Africa concerns the relatively low levels of investment in sectors that promote inclusive and long-term development, such as health, education, and agriculture. While institutions like the World Bank and the IMF have traditionally prioritized these areas, Chinese lending has remained predominantly focused on infrastructure and energy. This sectoral imbalance places considerable pressure on African governments, which are often required to service substantial infrastructure-related debt while simultaneously facing persistent underfunding in critical social sectors.

While the findings show how these loans have helped transform Africa's physical landscape, there is not a clear causality with the economic growth of the individual countries. This is not helped by the fact that not all loans are official, and the processes are untransparent, as can be seen by the inconsistency between the World Bank and CARI data.

5 Discussion

5.1 Introduction to Discussion

In this discussion, the research findings are interpreted based on the contents of the literature review. By linking the empirical data on African debt exposure and sectoral loan distribution with the theoretical frameworks and prior studies reviewed earlier, this section reinforces and contextualizes the answers to RQ1 and RQ2.

5.2 African Dependence on Chinese Loans by Country (RQ1)

5.2.1 Overview of Chinese Lending Trends in Africa

To evaluate the extent of African countries' dependence on Chinese loans, it is important to understand the broader context of Chinese lending in the region. Chinese lending in Africa has followed a clear trajectory–starting with the first large loans in the 2000s with rapid growth in the mid-2010s followed by a gradual slowdown.

As highlighted by Lee (2018) and Carmody et al. (2022), China's lending practices have been shaped first by the spatial fix coming from excess capital and industrial overcapacity, and second by external ambitions tied to the BRI. The BRI serves both as a mega project to foster the world's connectivity to China, enhancing the trade routes, as well as China's model to expand its geopolitical influence through soft power.

For African governments, Chinese finance is often appealing due to its speed and lack of conditionalities compared to Western lenders. This comes with trade-offs, as the majority of the financing targets capital-intensive sectors, which will be analysed further in section 5.3. These projects often prioritize long-term growth over short-term fiscal returns, creating potential mismatches with repayment timelines. In contrast, in non-capital-intensive sectors like healthcare and education, African countries have generally aimed to address more immediate societal needs, which can lead to more directly observable impacts on local communities.

Loan distribution across the continent is also uneven. A few countries like Angola, Ethiopia, and Egypt have received a disproportionately larger share of Chinese loans compared to other countries in the region. These states are not only economically significant but strategically positioned. This reflects geopolitical realism, the idea that states pursue their interests primarily in terms of power and strategic positioning, which drives China's clustered and largely geopolitically led engagement in Africa.

In this context, African countries' dependence on Chinese loans is best understood not simply through debt ratios but as a layered issue involving financial needs, political choices, and China's evolving global strategy.

5.2.2 Country-Level Analysis of Loan Dependence

Based on relatively significant loan volumes, high debt-to-GDP ratios, and more importantly, the large proportion of their PPG debt owed specifically to China, this research identified three countries in high debt distress concerning Chinese loans: Djibouti, Angola, and Zambia. While they differ in population and land area, GDP, and geographical location, they share unsustainable debt practices.

Country	Population (in millions)	Land area (in thousands km²)	GDP (in $B)	Geographical Location	PPG debt-to-GDP (in %)
Djibouti	1.15	23	4.10	Horn of Africa	70.66
Angola	36.75	1,250	84.82	Southwest Africa	71.38
Zambia	20.72	743	27.58	Southern Africa	72.16

Table 3. Key Countries' Demographics and Debt Data (World Bank, 2023 & 2024; Ritchie, & Roser, 2019)

Djibouti represents the most pronounced case. Despite having a relatively small economy, over half of its PPG debt is owed to China, and its overall debt levels remain well above the sustainability threshold. This financial exposure, combined with its strategic location at the Gulf of Aden, and hosting China's first overseas military base, has led some academicians to frame it as a textbook case of debt-trap diplomacy (Hurley et al., 2019; Su, 2017). Some scholars argue that such narratives are often overstated and politically motivated (Brautigam, 2019; Carmody & Wainwright, 2022), but the fact that Djibouti's repayment capacity is so tightly linked to one creditor limits its fiscal autonomy.

Angola presents a different example. While the World Bank (2023) identified Chinese loans as only a small percentage of its official debt, other sources like CARI (BU Global Development Policy Center, 2024) suggest a much larger share–one of the biggest among the recipient countries. This highlights the World Bank's limits of relying solely on official statistics. Moreover, in Angola, most of these loans go into the energy industry, specifically to oil production, further illustrated in more detail later.

Zambia's debt is more diversified, however, Chinese loans still make up a significant and growing portion of it. The country faces difficulties in meeting repayment schedules for projects like the Uhuru Railway (similar to the SGR in Kenya), and combined with challenges in restructuring its external debt, this has led to rising concerns about its long-term financial stability.

Taken together, these cases suggest that dependency is shaped not just by the volume of Chinese loans, but also by local economic conditions, governance capacity, project performance, and strategic positioning. Moreover, countries with heavy reliance on a single sector appear especially at risk due to their vulnerability to global market fluctuations and limited economic diversification.

5.3 Sectoral Distribution and Impact of Chinese Loans (RQ2)

5.3.1 Key Sectors Targeted by Chinese Financing

A notable characteristic of Chinese financial engagement in Africa under the BRI is its clear sectoral concentration. According to the data, a significant majority of these loans–close to two-thirds–are allocated to just two areas: transportation and energy (Züfle et al., 2024). Large-scale infrastructure projects such as roads, railways, and power generation receive the most attention, also due to aligning with China's domestic development model and leveraging the global reach of its state-owned enterprises (Lee, 2018). These ventures not only address Africa's infrastructure needs but also allow Chinese firms to operate at a considerable scale.

For many African governments, prioritizing these sectors also makes economic sense. Reliable energy and transport systems are seen as fundamental to boosting trade, attracting investment, and stimulating productivity (Bharti, 2023). Yet, the emphasis on physical infrastructure often sidelines other development areas–particularly health, education, and agriculture–which, while less visible, are essential for long-term social and economic resilience (Taylor & Zajontz, 2020). These sectors tend to be oftentimes supported more by Western lenders and organizations like the World Bank or IMF.

China's implementation model plays an important part. Chinese loans are frequently tied to Chinese contractors and technology, limiting local involvement (Chiyemura et al., 2023). Although the immediate outcomes–roads built, power stations operational–can be impressive, the broader developmental benefits are uneven and sometimes fail to materialize. Governments may be left with significant debt obligations attached to projects that underperform or fail to spur the intended transformation.

In this way, China's sectoral focus has contributed to a skewed investment landscape with a heavy reliance on capital-intensive infrastructure. Consequential increases in fiscal exposure, particularly in cases where project returns are uncertain or when external conditions, such as commodity price shifts, question the long-term impact of the investments (Carmody et al., 2022).

5.3.2 Economic Implications of the Biggest Development Projects

Beyond sectoral allocation, the real impact of Chinese financing in Africa becomes clearer when looking at the outcomes of its biggest development projects. These large-scale initiatives–often promoted as symbols of African progress–reveal a more complicated reality when judged on economic viability and long-term sustainability.

Kenya's SGR is perhaps the clearest example. Designed to improve regional trade and cut freight costs, it did succeed in strengthening the connection between Nairobi and Mombasa. Yet, operational costs remain high, and freight volumes have not met projections. As Carmody et al. (2021) and Lesutis (2022) note, the railway's financial underperformance has left the Kenyan government facing major repayment challenges to China Exim Bank. This points to a broader issue: projects that are politically significant or strategically attractive are not always financially sound.

In Angola, the dynamics are slightly different but still raise concern. A large share of Chinese loans has gone into recapitalizing the national oil company, Sonangol, and into projects like the Caculo Cabaça Hydropower Station (AidData, 2021). While aligned with Angola's economic structure, these investments depend heavily on oil revenue–a notoriously volatile source. As highlighted by Mwakideu (2024), such reliance makes Angola especially vulnerable to price shocks, which in turn complicates loan servicing and budget planning.

Ethiopia's Addis Ababa-Djibouti Railway shows a more mixed picture. On one hand, it has greatly improved trade logistics for a landlocked country, with relatively strong usage rates. On the other hand, Bharti (2023) and Gu & Carey (2019) point to lingering concerns over profitability and repayment capacity, particularly as Ethiopia continues to face foreign exchange shortages and fiscal pressure.

Together, these examples suggest a recurring pattern: even where physical infrastructure is delivered, the expected economic returns frequently do not materialize. This disconnect lies at the centre of the debt sustainability debate surrounding the BRI. The core issue is not whether China is helping build infrastructure–it clearly is–but whether that infrastructure creates enough value to pay for itself over time.

As such, the implications of these mega-projects reach beyond what gets built. They force a closer look at how projects are selected, whether they are economically justified, and whether borrowing countries have the internal factors to manage them effectively over the long term.

6 Conclusion

In this conclusion, the research results are summarised, thus providing answers to the research questions: 1) To what extent are African nations dependent on Chinese loans, and which countries are the most affected, and 2) Which sectors in Africa receive the most Chinese loans, and what are the economic implications for the most affected countries? Moreover, this section identifies the broader implications for international business and global geopolitics of the BRI in Africa.

6.1 Research Summary

The purpose of this research was to investigate the economic impact of Chinese lending under the BRI in Africa, with a specific focus on debt dependency and the sectoral distribution of major development projects. The motivation behind this study was the growing debate surrounding the financial risks and a missing quantitative studies to understand the scale of the issue. The research was conducted through a literature review, data analysis, and critical discussion. Based on the results, the following interpretations are offered.

In the context of research question 1, findings indicate that African dependence on Chinese loans is not evenly distributed but concentrated in a few countries, most notably Angola, Djibouti, and Zambia. In these cases, high debt-to-GDP ratios, untransparent loan structures, and sector-specific vulnerability highlight the risks of financial overexposure and limited creditor diversification. On one hand, Chinese loans provided the region with much-needed infrastructure, but its scale and untransparent practices have raised concerns about the long-term benefits of such a cooperation.

In response to research question 2, the findings identify Chinese loans to be heavily concentrated in the transport and energy sectors. This very well aligns with China's own development experience and the capabilities of its state-owned enterprises. However, while these sectors delivered physical infrastructure, flagship projects such as Kenya's Standard Gauge Railway or Angola's Caculo Cabaça Hydropower Project show uneven economic outcomes and recurring repayment challenges. Ultimately, this research suggests that while BRI lending facilitates large-scale development, its long-term success depends on economic conditions, governance capacity, project performance, and strategic positioning.

6.2 Implications for International Business and Global Geopolitics

The interpretations of this research have several valuable implications for the broader international business context and global geopolitics. Specifically, this research provides insights into large-scale state-led financing and the extent of large development projects on the economic development of the recipient countries.

As established previously, BRI loans are heavily concentrated in capital-intensive sectors like energy and transportation, creating significant competition for both local and bilateral firms operating in the region. Understanding where and how China finances development projects brings insights into its strategic positioning, partnership decisions, and risk assessment for multinational enterprises. In terms of geopolitics, this research highlights how China projects its power through the BRI over the African continent, and how infrastructure finance intersects with broader questions of sovereignty and bilateral influence. Evoking a historical parallel, this approach is reminiscent of the Soviet emphasis on infrastructure as a tool for ideological influence, akin to the notion that 'Communism is Soviet power plus the electrification of the whole country' (Lenin, 1964).

6.3 Suggestions for Future Research

This research has implicitly highlighted several areas for future research that would enhance the academic understanding of Chinese development finance under the BRI. First, future studies could benefit from larger datasets on Chinese loans beyond the scope of this research to evaluate the exact inconsistencies between the loan reporting. Second, incorporating primary data–such as interviews or field research–would provide valuable insights into the loan processes, which remain underexplored due to limited transparency. Lastly, future work could examine the social and environmental impacts of the projects in Africa, offering a broader perspective beyond economic and geopolitical metrics.

Postscript

Recent shifts in U.S. foreign policy under the Trump administration, including significant tariffs and the potential withdrawal from the African Growth and Opportunity Act (AGOA), coupled with a reduction in foreign aid, may prompt African nations to increasingly consider Chinese loans as more stable alternatives to unpredictable Western financing (Dludla, & Acharya, 2025). This possible realignment highlights the urgent need to closely monitor geopolitical shifts that could further strengthen China's financial influence across Africa. Some might compare this to the Cold War era, where African nations often shifted allegiances between the Soviet Union and the West as global tensions dictated their access to developmental aid and military support.

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Appendices

Appendix A. Debt Figures by Country–World Bank Dataset (2023)

Country Name	GDP	Debt to China (part of OC)	PPG DEBT (incl. IMF Credit)	PPG DEBT (incl. IMF Credit)/GDP	DEBT TO CHINA/PPG DEBT (incl. IMF Credit)
Algeria	240,064	70	993	0.00	0.07
Angola	109,678	3,454	49,346	0.45	0.07
Benin	19,679	242	8,075	0.41	0.03
Botswana	19,396	-	1,458	0.08	0.00
Burkina Faso	20,283	106	5,300	0.26	0.02
Burundi	4,241	45	745	0.18	0.06
Cabo Verde	2,588	-	2,002	0.77	0.00
Cameroon	49,287	3,372	13,488	0.27	0.25
Central African Republic	2,631	44	732	0.28	0.06
Chad	17,605	44	2,927	0.17	0.02
Comoros	1,340	97	375	0.28	0.26
Congo, Democratic Republic of the	66,340	2,523	8,409	0.13	0.30
Congo, Republic of the	15,320	1,814	7,256	0.47	0.25
Côte d’Ivoire	77,880	3,830	31,918	0.41	0.12
Djibouti	4,011	1,468	2,879	0.72	0.51
Egypt	393,828	-	132,874	0.34	0.00
Equatorial Guinea	11,975	no data	no data	no data	no data
Eritrea	2,700	6	628	0.23	0.01
Eswatini	4,443	173	865	0.19	0.20
Ethiopia	159,747	5,528	32,517	0.20	0.17
Gabon	20,059	839	6,989	0.35	0.12
Gambia	76,402	-	1,114	0.01	0.00
Ghana	76,370	1,537	30,744	0.40	0.05
Guinea	23,005	1,178	4,363	0.19	0.27
Guinea-Bissau	2,005	-	1,072	0.53	0.00
Kenya	108,747	6,179	38,617	0.36	0.16
Lesotho	2,211	188	1,042	0.47	0.18
Liberia	4,390	60	1,502	0.34	0.04
Libya	43,958	no data	no data	no data	no data
Madagascar	15,790	321	5,354	0.34	0.06
Malawi	12,674	199	3,323	0.26	0.06
Mali	20,210	483	6,032	0.30	0.08
Mauritania	10,649	328	4,097	0.38	0.08
Mauritius	14,557	-	3,675	0.25	0.00
Morocco	144,438	-	47,129	0.33	0.00
Mozambique	20,958	1,625	10,157	0.48	0.16
Namibia	12,345	no data	no data	no data	no data

Niger	16,809	213	5,316	0.32	0.04
Nigeria	363,816	5,120	46,544	0.13	0.11
Rwanda	14,097	387	7,735	0.55	0.05
Sao Tome and Prin-cipe	684	-	404	0.59	0.00
Senegal	30,937	1,299	18,550	0.60	0.07
Seychelles	2,141	no data	no data	no data	no data
Sierra Leone	6,397	73	1,825	0.29	0.04
Somalia	10,969	-	2,094	0.19	0.00
South Africa	380,592	3,722	93,055	0.24	0.04
South Sudan	7,180	no data	no data	no data	no data
Sudan	38,109	1,002	16,695	0.44	0.06
Tanzania	79,138	1,414	23,568	0.30	0.06
Togo	9,081	398	2,342	0.26	0.17
Tunisia	48,541	-	24,307	0.50	0.00
Uganda	51,093	2,586	14,369	0.28	0.18
Zambia	28,163	3,615	16,431	0.58	0.22
Zimbabwe	35,231	1,941	5,109	0.15	0.38
All countries	2,954,782	57,522	746,341	irrelevant	irrelevant

PPG = Public and Publicly Guaranteed; IMF = International Monetary Fund
Notes: Debt to China statistics reflect 2013–2023 values; all other values are at 2023; GDP data is from IMF (2024); all values except the ratios are in the millions of U.S. dollars

Appendix B. Debt Figures by Country–CARI Dataset (2023)

Country Name	GDP	Debt to China (part of OC)	PPG DEBT (incl. IMF Credit)	PPG DEBT (incl. IMF Credit)/GDP	DEBT TO CHINA/PPG DEBT (incl. IMF Credit)
Algeria	240,064	-	923	0.00	0.00
Angola	109,678	32,400	78,291	0.71	0.41
Benin	19,679	1,301	9,134	0.46	0.14
Botswana	19,396	-	1,458	0.08	0.00
Burkina Faso	20,283	207	5,401	0.27	0.04
Burundi	4,241	110	810	0.19	0.14
Cabo Verde	2,588	13	2,015	0.78	0.01
Cameroon	49,287	3,406	13,522	0.27	0.25
Central African Re-public	2,631	29	717	0.27	0.04
Chad	17,605	188	3,072	0.17	0.06
Comoros	1,340	86	363	0.27	0.24
Congo, Democratic Republic of the	66,340	1,689	7,575	0.11	0.22
Congo, Republic of the	15,320	1,564	7,006	0.46	0.22
Côte d'Ivoire	77,880	5,198	33,286	0.43	0.16
Djibouti	4,011	1,424	2,834	0.71	0.50
Egypt	393,828	9,460	142,334	0.36	0.07
Equatorial Guinea	11,975	no data	no data	no data	no data
Eritrea	2,700	367	989	0.37	0.37
Eswatini	4,443	-	692	0.16	0.00
Ethiopia	159,747	9,709	36,698	0.23	0.26
Gabon	20,059	1,345	7,495	0.37	0.18
Gambia	76,402	26	1,140	0.01	0.02
Ghana	76,370	3,134	32,341	0.42	0.10
Guinea	23,005	2,720	5,905	0.26	0.46
Guinea-Bissau	2,005	-	1,072	0.53	0.00
Kenya	108,747	8,075	40,513	0.37	0.20
Lesotho	2,211	203	1,057	0.48	0.19
Liberia	4,390	53	1,495	0.34	0.04
Libya	43,958	no data	no data	no data	no data
Madagascar	15,790	654	5,687	0.36	0.12
Malawi	12,674	188	3,312	0.26	0.06
Mali	20,210	401	5,950	0.29	0.07
Mauritania	10,649	273	4,043	0.38	0.07
Mauritius	14,557	108	3,783	0.26	0.03
Morocco	144,438	305	47,434	0.33	0.01
Mozambique	20,958	896	9,428	0.45	0.10
Namibia	12,345	no data	no data	no data	no data
Niger	16,809	191	5,295	0.31	0.04
Nigeria	363,816	7,582	49,006	0.13	0.15
Rwanda	14,097	460	7,808	0.55	0.06

Sao Tome and Prin-cipe	684	-	404	0.59	0.00
Senegal	30,937	2,912	20,164	0.65	0.14
Seychelles	2,141	no data	no data	no data	no data
Sierra Leone	6,397	701	2,453	0.38	0.29
Somalia	10,969	-	2,094	0.19	0.00
South Africa	380,592	6,402	95,734	0.25	0.07
South Sudan	7,180	399	399	0.06	1.00
Sudan	38,109	60	15,753	0.41	0.00
Tanzania	79,138	879	23,033	0.29	0.04
Togo	9,081	440	2,384	0.26	0.18
Tunisia	48,541	-	24,307	0.50	0.00
Uganda	51,093	3,631	15,414	0.30	0.24
Zambia	28,163	7,506	20,322	0.72	0.37
Zimbabwe	35,231	1,911	5,079	0.14	0.38
All countries	2,954,782	120,883	809,702	irrelevant	irrelevant

PPG = Public and Publicly Guaranteed; IMF = International Monetary Fund
Notes: Debt to China statistics reflect 2013–2023 values; all other values are at 2023; GDP data is from IMF (2024); all values except the ratios are in the millions of U.S. dollars

Appendix C. Debt Figures by Country–CARI Dataset (2012)

Country Name	GDP	Debt to China (part of OC)	PPG DEBT (incl. IMF Credit)	PPG DEBT (incl. IMF Credit)/GDP	DEBT TO CHINA/PPG DEBT (incl. IMF Credit)
Djibouti	1901	154.06	837.88	0.44	0.18
Angola	143573	13647.45	27284.48	0.19	0.50
Zambia	25502	2020.24	4916.56	0.19	0.41
Senegal	17672	333.58	4524.84	0.26	0.07

PPG = Public and Publicly Guaranteed; IMF = International Monetary Fund
Notes: Debt to China statistics reflect 2000–2012 values; all other values are at 2022; GDP data is from IMF (2024); all values except the ratios are in the millions of U.S. dollars