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# Chinese Infrastructure Investments in Africa: A Case Study of the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria

Alexa Tovar

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Chinese Infrastructure Investments in Africa: A Case Study of the Addis Ababa-Djibouti Railway  
in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria

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## I. Abstract

In recent years, China has emerged as a large infrastructure investor in the African continent, which has incited controversy among the international community in regards to the impact that these investments could have. A part of the literature on Chinese investments in infrastructure in Africa argues that these investments are adverse to the environment, local employment, and the dissemination of technology. This thesis contributes to this debate by exploring the question: what are some of the effects of Chinese infrastructure investments in Africa in terms of the environment and use of local natural resources, local hiring, and technology transfers? The analysis of the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria as case studies shows that, to this date, these projects (1) do not seem to have had negative effects on the environment, and, in fact, have the potential to make a positive environmental impact by reducing land use and air pollution, (2) do not appear to have exploited local natural resources, (3) employed African workers during their construction, operations, and maintenance, and (4) fostered technology transfers by training local workers and planning to hand back operations to locals. Based on this analysis, this thesis argues for the importance of case-by-case evaluations and a more nuanced understanding of Chinese infrastructure investments in Africa.

## II. Introduction

Over the last decades, China has become a key player in global investment, particularly in African nations. Since 2016, China has been Africa's primary source of investment (Wu and Bai, 2017). Chinese companies have explored investment opportunities in a range of sectors, such as telecommunications, post-war reconstruction efforts, agricultural equipment, and, notably, infrastructure. In recent years, China's investments in infrastructure projects in Africa average about \$5 billion per year. Approximately half of these investments account for transport projects in roads, rails, and ports (Dollar, 2016). China's deep economic engagement in Africa has sparked debate among the international community in terms of the impact that Chinese infrastructure investments could have in the continent. While some scholars argue that these investments have had a negative impact on the environment and the development of local capacity in African countries, others contend that Chinese engagement in African infrastructure represents an important economic opportunity.

This research contributes to the debate over the implications of Chinese infrastructure investments in Africa by exploring the effects of these investments in terms of the environment and use of local natural resources, local hiring, and technology transfers, which refers to the dissemination of new technologies from investor to recipient country. This thesis is informed by the analysis of the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria as case studies, as these projects represent two large-scale Chinese investments in infrastructure in East and West Africa, respectively. On the one hand, the Addis Ababa-Djibouti Railway is the first fully electrified cross-border railway in Africa. On the other hand, the Abuja-Kaduna Rail Line connects the capital city with the commercial center of Nigeria, the most populous country in Africa. To date, these projects do not appear to have had negative effects on the environment or local natural resource extraction. Furthermore, they have

fostered local employment and technology transfers. Given these outcomes, this thesis argues for the importance of nuanced case-by-case evaluations of Chinese infrastructure investments in Africa.

In order to convey this argument, this thesis first describes the methodology and discusses the study's limitations. It then provides a literature review of the implications of Chinese investments for African countries. This is followed by a description of this thesis' variables (environment and use of local natural resources, local hiring, and technology transfers), as well as of China's investment proposition in African countries. The following section offers a historical overview of Chinese investments in Africa from the 1950s until today, and it outlines the political, economic, and demographic factors that are currently motivating these investments. This thesis then presents the case studies of the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria. This is followed by an analysis of these projects in relation to the environment and use of local natural resources, local hiring, and technology transfers variables. Finally, this thesis concludes with recommendations for Chinese investors and African governments, as well as suggestions for further research that is focused on more nuanced case-by-case evaluations of Chinese infrastructure investments in Africa.

### **III. Methodology**

This thesis is informed by the careful analysis of sources, such as local African and Chinese newspaper articles, scholarly articles, and reports focused on Chinese infrastructure investments in Africa and, particularly, on the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line. The analysis of the effects that these projects have had on the environment and use of local natural resources, local hiring, and technology transfers is largely based on qualitative research, as these sources provide insights into locals and experts' perceptions of the projects and their potential positive and negative effects.

A limitation pertaining to this research is that, at the time this thesis was written, the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line had been recently finalized (2018 and 2014, respectively). Thus, this study's findings do not necessarily apply to the long-term effects that these projects may have on the environment and use of local natural resources, local hiring, and technology transfers. Another limitation is this thesis' reliance on qualitative data for analysis. Due to the recentness of the projects and a tendency toward non-transparency on the part of Chinese investors and African governments, it is difficult to find comprehensive data on the projects and their potential consequences. This limitation was addressed through the analysis and comparison of a variety of works written by African, Chinese, and Western scholars and journalists in order to eliminate some level of possible bias.

Some may argue that another limitation of this work exists in terms of the analysis' applicability of the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line to other Chinese investments in Africa more broadly. However, this thesis aims to dispute the generalization of the effects that these investments have in African countries, and argues for more nuanced case-by-case examinations. Therefore, this work contends that the case study is an adequate research method for investigating Chinese investments in Africa. As previously mentioned, half of Chinese infrastructure investments in the continent account for transport projects in roads, rails, and ports (Dollar, 2016). The Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line were selected as case studies due to their significant contributions to the continent's transport infrastructure.

#### **IV. Literature Review**

This section reviews pertinent literature about Chinese investments in Africa in order to situate this thesis within existing scholarship. The first subsection reviews the literature that has supported these investments. The second subsection discusses the scholarship that has critiqued

Chinese investments in the African continent. The third subsection presents the scholarly literature that is focused on a more even-handed analysis of these investments by providing both critique and support. Finally, the fourth subsection discusses the contributions of this thesis to literature on Chinese investments in Africa.

#### **i. Support for Chinese Investments in Africa**

Existing scholarship supporting Chinese investments in Africa has focused on discussing the economic transformation that these investments are bringing to the continent. Thompson Ayodele and Olusegun Sotola (2014) argue that, while Chinese investments have been portrayed as a threat to the African continent, these investments are beneficial to African countries. Ayodele and Sotola emphasize China's role in investing in sectors that Western firms have neglected, such as infrastructure, industry, and agriculture in Africa. Furthermore, the authors observe that, contrary to Western investors, Chinese firms respect the sovereignty of investment recipient countries and do not impose political and economic liberalization conditions on them. Thus, Ayodele and Sotola's work is focused on critiquing Western investments while supporting Chinese ones in Africa.

Similarly to Ayodele and Sotola, David Haroz (2011) suggests that African countries can benefit from the increasing stream of Chinese investments. However, in contrast to Ayodele and Sotola, Haroz argues for the complementarity of Chinese investments and Western aid for economic growth in the continent. Through a case study analysis of China in Angola, Haroz observes that Chinese investments have benefited Africa's infrastructure and have facilitated technology transfers, complementing the West's focus on political and economic reforms in the continent. Hence, Haroz's work emphasizes the positive impact of Chinese investments in African countries vis-à-vis Western aid. The studies of Ayodele and Sotola, and Haroz

demonstrate that scholarship supporting Chinese investments often analyze these investments through a comparison with those of Western investors.

## **ii. Concerns About Chinese Investments in Africa**

A great part of the literature has expressed concern about Chinese investments in Africa. Some scholars have suggested that China's engagement in the continent is exploitative and detrimental to the environment. Ian Taylor (2006) examines China's growing investments in Africa's oil markets. Taylor contends that, while China has invested in projects that were much needed by Africa, these investments are frequently motivated by the exploitation of raw materials, particularly of oil. Michelle Chan-Fishel (2007) proposes a similar argument by claiming that Chinese investments have contributed to the economic development of African countries, but have also caused environmental and social problems, such as the extraction of natural resources, unfair treatment of local workers, and loss of livelihoods of local communities. Similarly, Tina Butler (2007) argues for the negative environmental effects of Chinese investments through an analysis of timber extractions in Africa. These works indicate that, while Chinese investments have contributed to better economic performance in the African continent, China's exploitation and depletion of the environment and natural resources often outweigh the economic benefits.

Other works in the literature have depicted China as a neocolonialist power adverse to Africa's economic development. Herbert Jauch (2011) contends that Chinese investments in Africa have been characterized for following a neocolonial pattern through the exploitation of local resources and workers. Furthermore, Jauch asserts that projects financed through Chinese investments often hire Chinese workers and source construction materials from China, which has negatively affected local traders and manufacturers. Mark Klaver and Michael Trebilcock (2011) present a related argument by observing that the projects carried out by Chinese investors in

Africa have few benefits and high costs. Klaver and Trebilcock, along with Kinfu Adisu and Thomas Sharkey (2010), suggest that Chinese investments' transfers of technology, skills, and employment to Africa remain limited. Similarly, Patrick Kennan (2009) argues that the lack of social and political conditions for the countries that are recipients of Chinese investments will not contribute to the improvement of social welfare in African societies. These works indicate that Chinese investments in Africa have negatively affected the economies of local communities and the development of local capacity.

### **iii. The Variable Impact of Chinese Investments in Africa**

In light of the complex and multifaceted effects of Chinese investments in Africa, recent scholarship increasingly focuses on a more balanced analysis of these investments by providing both critique and support. As previously discussed, Chinese investments have been under scrutiny for their negative effects on the environment. As a response, recent literature has focused on further exploring the environmental impact that Chinese investments may have. Tang Xiaoyang and Yuan Sun (2014) argue that the lack of awareness of Chinese investors and loopholes in national and international regulatory frameworks are some of the factors that have contributed to the poor environmental performance of some of the projects that Chinese investments have financed. Xiaoyang and Sun conclude that the environmental impact that Chinese investments have in Africa varies from project to project, and thus it is not appropriate to provide stereotyped and simplistic analyses of Chinese engagements. David Shinn (2016) offers a similar argument by observing that some of the criticism from the media and scholars towards Chinese investments' environmental practices is valid. However, Shinn argues that Chinese firms have taken concrete steps towards improving their operations and impact on the environment. This scholarly literature asserts that while some of the critiques of Chinese investments' effects on the environment are legitimate, these criticisms cannot be generalized.

Other literature has addressed the social and economic impact of Chinese investments, which, along with the environment, has been a subject of critique among scholars. In a Brookings report, David Dollar (2016) analyzes the effect that Chinese investments have had for local economies in Africa. Dollar argues that Chinese investments have employed thousands of African workers, which is important due to the continent's expanding population and workforce. However, according to Dollar, Chinese investments have also disrupted the development of local African construction companies, as Chinese firms propose fast and inexpensive projects, which make them highly competitive. Dollar concludes that Chinese investments have contributed to the economic growth of the continent, but in order to address the investments' pitfalls, Chinese firms and African governments should work towards hiring and training local workers. Similarly, Simplice Asongu and Gilbert Aminkeng (2013) claim that China's engagement with African countries is promising from an economic perspective, but that certain social and environmental issues need to be addressed in order for this partnership to be successful in the long term. Finally, Aliaa Nabil Khodeir (2016) observes through an analysis of Chinese investments in thirty-eight African countries that these investments have had a more positive impact on employment opportunities for local workers and have encouraged greater technology transfers in southern Africa than in northern Africa, which suggests that the impact of Chinese investments is diverse across the continent. These studies maintain that Chinese investments have had varied effects on benefiting local economies and workers but, overall, they have contributed to Africa's economic development.

#### **iv. Contribution to the Literature**

Literature on Chinese investments in Africa shows the divided and generally negative assessments surrounding Chinese investments in the continent. While recent studies have examined China's engagement with Africa through a more even-handed lens, there is still need

for more research that investigates the implications of Chinese investments and assesses both the positive and negative implications of this engagement. As the studies from Xiaoyang and Sun, Shinn, Dollar, Asongu and Aminkeng, and Nabil Khodeir indicate, the impact of Chinese investments in Africa is diverse.<sup>1</sup> Hence, Chinese investments need to be assessed in a case-by-case scenario. This thesis aims to contribute to existing literature on the impact of Chinese infrastructure investments in Africa by exploring the way in which China's investment propositions in the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria influenced the projects' impact on the environment and use of local natural resources, local hiring, and technology transfers.

## **V. Variables and China's Investment Proposition**

This section defines and highlights the significance of the variables that are analyzed in the case studies. The variables are: environment and use of local natural resources, local hiring, and technology transfers. This section also provides an overview of China's general investment proposition abroad in order to provide the background information necessary to understanding the way in which Chinese investments operate and their relation to this thesis' variables.

### **i. Terminology and Relevance of Variables**

#### **a. Environment**

The environment variable looks at the effects that human activities have on the environment. This thesis will examine the potential adverse and positive environmental impact of the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line. As exemplified by the works of Taylor, Chan-Fishel, and Butler,<sup>2</sup> projects that are financed through Chinese investments are commonly critiqued for their lack of environmental assessments. Furthermore,

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<sup>1</sup> For a discussion of these studies, please refer to section IV, iii.

<sup>2</sup> See section IV, ii for a discussion of the works of Chan-Fishel and Butler.

analyses of the impact of Chinese investments for the environment are usually focused on the negative effects, and little is discussed about the positive contributions to the environment that these investments could have (Shinn, 2016). The recurrent criticism of Chinese investments' environmental practices, as well as the lack of research that considers the positive effects demonstrates the importance of including the environment as a variable in the analysis of the Addis-Ababa Railway and the Abuja-Kaduna Rail Line.

The use of local natural resources refers to the employment of materials such as minerals, forests, water, and fertile land from the investment recipient country during the construction of the project. It is commonly assumed that Chinese firms misuse local natural resources during the construction of infrastructure projects in Africa (Taylor, 2006; Chan-Fishel, 2007). This thesis analyzes the sourcing of materials for the construction of the Addis Ababa-Djibouti Railway and Abuja-Kaduna Rail Line in order to determine whether the exploitation of local natural resources holds true in these projects.

#### **b. Local hiring**

Local hiring refers to the practice of hiring people who originate from the investment recipient country. In this thesis, local hiring refers to the employment of Ethiopians and/or Djiboutians in the case of the Addis Ababa-Djibouti Railway, and Nigerians in the Abuja-Kaduna Rail Line. According to the World Bank report "Increasing Local Procurement By the Mining Industry in West Africa," the employment of local citizens is a relevant factor when assessing investments, as local hiring exposes local workers to skills required to establish their own businesses, which contributes to local enterprise development.

African countries' working-age (15-64) population is on the rise, which makes local hiring an important variable to be considered in the assessment of Chinese investments. It is estimated that by 2035, Sub-Saharan Africa's working age population will be greater than that of

the rest of the world combined. This poses a great challenge for African countries, as they will have to create an average of 18 million jobs per year until 2035 to absorb the new entrants in their expanding workforce (International Monetary Fund, 2015). While Chinese investments have been praised for contributing to job creation in Africa, Chinese companies are also often accused of hiring Chinese workers instead of local ones on contracted projects, especially on those related to infrastructure and mining (Dollar, 2016, p. 74). Therefore, it is important to analyze local hiring to determine whether Chinese investments have contributed to the creation of jobs in the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line.

### **c. Technology transfers**

Technology transfers provide investment recipient countries the capacity to “install, operate, maintain and repair imported technologies, produce lower-cost versions of imported technologies, adapt imported technologies to domestic markets and circumstances, and develop new technologies” (United Nations Framework Convention on Climate Change, 2009, p.12). Technology transfers through investments can be beneficial to recipient countries’ economic growth, as they have the potential to encourage local workers and investors to start their own ventures using the technology acquired (Chia, 1997). Thus, it is relevant to analyze technology transfers to determine whether locals obtained knowledge and expertise through the Addis Ababa-Djibouti Railway and Abuja-Kaduna Rail Line that could help them to generate and manage technological change.

### **ii. China’s investment proposition**

The following paragraphs explain China’s investment proposition in Africa in order to understand the links between this thesis’ variables and the way in which Chinese firms operate. China’s investment proposition typically offers fully integrated projects in which Chinese firms participate from design to operation. China’s investment proposition can be divided into five

stages. In the first stage, Chinese or local firms conduct the project design and engineering in cooperation with international partners. In the second stage, Chinese banks, notably the Export-Import Bank of China (EXIM), provide financing for the projects in the form of zero-interest, commercial, subsidized, and concessional loans. The third stage pertains to the project construction. Chinese firms often act as main contractors, as Chinese banks typically require Chinese companies to be in charge of the construction phase of the project as a prerequisite to financing. During the fourth stage, building materials are imported from China or obtained from the recipient country, and Chinese or local workers are hired. Finally, in the fifth stage, Chinese or local firms sign operation and maintenance contracts (De Laubier et al., 2018).

This thesis is primarily concerned with the third, fourth, and fifth stages of China's investment proposition, as they relate to this research's variables, which will be analyzed in the Case Studies section. The third stage, in which the construction of the project takes place, is related to the environmental impact variable, as this thesis examines the potential environmental effects that the construction of the Addis Ababa-Djibouti Railway and Abuja-Kaduna Rail Line have had. The fourth stage, which consists of the acquisition of building materials and workers, pertains to the use of local natural resources and local hiring variables, since this research analyses the sourcing and hiring practices of the case study projects. Lastly, the fifth stage, in which operations and maintenance contracts are signed, relates to the technology transfers variable, as this work is concerned with examining whether technology transfers have taken place as a result of the previously mentioned projects.

## **VI. Historical Overview: Chinese Investments in Africa**

While Chinese investments in Africa have increased and sparked controversy since the beginning of the twenty-first century, these investments are not a new phenomenon. This section provides a brief historical overview of Chinese investments in Africa from the 1950s until today.

It also discusses some of the political, economic, and demographic factors that are currently motivating Chinese investments in the continent in order to contextualize this thesis' case studies: the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria.

In the 1950s, China started to provide aid to other countries in Asia, and later expanded its foreign aid to nations in Africa, which marked the beginning of the economic relations between China and Africa.<sup>3</sup> Chinese engagement with the continent was limited to foreign aid until the 1960s and 70s, when China started funding infrastructure projects and supporting African countries' independence movements. The relationship between China and Africa weakened during the 1980s, as China's main focus was on domestic economic development, but it revitalized in the 1990s (Ayodele and Sotola, 2014, p. 3-4). During this period, China and Africa broadened their relationship to include trade, development assistance, and investments.

The unprecedented involvement of China in African countries in the 1990s can be explained by China's growth strategy during this period, which was focused on the acquisition of natural resources like energy and minerals from abroad. At the time of this change, China had a rapidly growing population, but it lacked natural resources. Compared to China, Africa is richer in natural resources, which made the continent an attractive trading partner. For this reason, China started importing raw materials from Africa and exporting manufactured goods to the continent (Dollar, 2016, p. 13).

2006 marked an important phase in China-Africa relations, as they pledged cooperation in the political, economic, and cultural spheres, and adopted The Beijing Action Plan for 2007-2009. Through this plan, China and Africa agreed to the continuation of development assistance

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<sup>3</sup> According to Ayodele and Sotola (2014), China's foreign aid during the 1950s was largely politically motivated, as China was looking for allies in Africa and other regions to build a counter balance weight to Soviet and Western hegemony, and to obtain diplomatic support in its struggle with Taiwan (p. 4).

to African countries, the encouragement of Chinese companies to invest in the continent, and the establishment of trade zones in Africa (Davies, Edinger, Tay, and Naidu, 2009, p. 9). Since the creation of The Beijing Action Plan, China has increased investments in service, manufacturing, and infrastructure sectors in the continent. Chinese investments in infrastructure in African countries have risen from close to zero in 2000 to 8 billion in 2010 (Dollar, 2016, p. 56). These investments currently average about 5 billion per year and are projected to continue to rise, as in the 2018 Forum on China-Africa Cooperation summit (FOCAC) China promised to offer African countries 60 billion dollars in aid, investments, and loans<sup>4</sup> (Marsh, 2018).

Besides The Beijing Action Plan, a combination of political, economic, and demographic factors have sparked the surge of Chinese investments in Africa. In the political realm, China's One Belt, One Road (OBOR) initiative has been one of the incentives for Chinese investments in Africa. Through the OBOR, China seeks to strengthen its trade routes and foreign investments in Asia, Africa, and Europe.<sup>5</sup> As a result, China has increased its investments in the developing world, which are expected to increase to one trillion over the next decade (De Laubier et al., 2018). Thus, the OBOR has been key in the Chinese government's strong political support for investments in Africa.

In the economic and demographic dimension, economic growth in China is slowing down, as the gross domestic product (GDP) growth in the country is currently around 6 percent, compared to the early 2000s when it was between 10 and 15 percent. Simultaneously, average salaries in China are increasing, making production costs higher, and there is a large overcapacity in numerous industries, such as infrastructure and manufacturing (Zilibotti, 2017, p. 944). These

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<sup>4</sup> In the 2015 FOCAC, Chinese President Xi Jinping pledged a similar package offering 60 billion dollars in areas such as infrastructural investments, industrialization, and agricultural modernization (Wu and Bai, 2017, p.17).

<sup>5</sup> According to De Laubier et al. (2018), China's OBOR has four main objectives: "asserting geopolitical influence, gaining geo-economic power, increasing access to raw materials, and accessing innovative technology."

factors are changing China's growth strategy from the resource-intensive and export-oriented model that characterized the country in the 1990s to a foreign investment strategy.

As discussed in the Variables section, Africa's working-age population is on the rise, which has created a challenge for African countries to generate enough jobs for their expanding workforce. These demographic shifts in Africa offer an opportunity for China's overcapacities in industries to find new markets in the continent (De Laubier et al., 2018). To sum up, China's OBOR, and China and Africa's changing economies and demographics have contributed to the growth of Chinese investments in the continent. The next section will analyze two of the projects that have been a result of this investment surge, the Addis Ababa-Djibouti Railway in Ethiopia and Djibouti and the Abuja-Kaduna Rail Line in Nigeria.

## **VII. Case Studies**

This section presents the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line. Each subsection provides background information, discusses China's investment proposition for the project, and analyzes the environment and use of local natural resources, local hiring, and technology transfers variables vis-à-vis the projects. As previously discussed, the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line were selected as case studies as they are some of the major transport infrastructure projects that China has invested in Africa and have contributed to revitalizing the continent's transport infrastructure.

### **i. Addis Ababa-Djibouti Railway, Ethiopia and Djibouti**

#### **a. Background information**

Before China's investment in the railway, there was a corridor between Ethiopia and Djibouti built in 1917 during the colonial period.<sup>6</sup> However, the previous railway deteriorated

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<sup>6</sup> Since its independence from Eritrea, Ethiopia became a landlocked country, which constrained the country's trade. Due to this reason, Djibouti became Ethiopia's main port in the early 2000s.

due to lack of maintenance and management, and became old and inefficiently run (Tadesse, 2006, p.68). According to the Ethiopian Minister of Transport, Ahmed Shide, and the Chinese Ambassador to Ethiopia, Tan Jian, the Addis Ababa-Djibouti Railway is an important project for the revitalization of Ethiopia's economy and infrastructure (Xinhua, 2018). The railway connects landlocked Ethiopia to the maritime trade routes in the Gulf of Aden and the Red Sea, and it is the first fully electrified cross-border railway in Africa. Thus, China's investment modernized the corridor that provides Ethiopia with a port for foreign trade, which has the potential to contribute to Ethiopia's industrialization and the diversification of their economy.

The construction of the Addis Ababa-Djibouti Railway started in 2011. While the railway was inaugurated in 2016, trains transporting goods and passengers did not start to operate until January 2018. The railway has a length of approximately 756 kilometers (470 miles), and it links Ethiopia's capital, Addis Ababa, with the Port of Doraleh in Djibouti. The total cost of the project was 4.5 billion dollars. The China's Export-Import Bank (EXIM), China Development Bank, and Industrial and Commercial Bank of China partially funded the project through concessional loans of nearly 3.3 billion dollars (Dreher et al., 2017). The Ethiopian and Djibouti governments financed the rest of the project and currently own the railway.

The China Railway Group (CREC) and the China Civil Engineering Construction Corporation (CCECC) were in charge of the construction of the project, the acquisition of building materials and workers, and the operations and maintenance of the railway.<sup>7</sup> The CREC and CCECC were awarded an engineering, procurement, and construction (EPC) contract for the construction of the Addis Ababa-Djibouti Railway after submitting a feasibility and design plan to the Ethiopian Railway Company (Rucal, 2017). The CREC is a Chinese construction group

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<sup>7</sup> Stages three, four, and five, respectively, of China's investment proposition. Please refer to section V, ii for a detailed discussion of these stages.

funded in 2007 focused on infrastructural development projects, including bridges, tunnels, highways, and railway lines. The CREC was in charge of the construction, as well as the acquisition of materials and workers from the city of Sebeta to Mieso in Ethiopia with a contract of 1.4 billion dollars. The CCECC is a state-owned contractor funded in 1979. The company was formerly China's Foreign Aid Bureau of the Ministry of Railways, and its business scope is project contracting, construction, engineering, and consultancy. The CCECC carried out the construction and procurement of materials and workers for the rest of the railway from Mieso to Ethiopia's border with Djibouti with a contract of 579 million dollars (Dreher et al., 2017).

#### **b. Environment and use of local natural resources**

The CREC and CCECC do not seem to have offered a clear investment proposition on their environmental regulations and standards for the Addis Ababa-Djibouti Railway. Instead, the CREC and CCECC followed the environmental protection protocol that the Ethiopian government set to preserve the country's wildlife during the construction of the railway. In order to comply with Ethiopia's environmental standards, the CREC and CCECC focused on maintaining the original landscape along the railway, and spent 4 million dollars in the construction of wildlife crossings to ensure animal safety (Huaxia, 2016). This indicates that local environmental regulations helped to shape the CREC and CCECC's investment propositions in the railway.

The analysis of reports, scholarly and news articles conducted for this thesis suggests that the CREC and CCECC complied with the environmental regulations and standards in Ethiopia and Djibouti. Moreover, the project has contributed to the reduction of traffic-related air pollution that originates from the road linking Ethiopia to Djibouti, as the railway provides an alternative mode of transport for cargo and passengers (Construction Intelligence Center, 2016). In summary, the Addis Ababa-Djibouti Railway does not appear to have had an adverse impact on

the environment until now, and, on the contrary, has the potential to have a positive impact for the environment by reducing air pollution.

As in the case of the environment, the CREC and CCECC did not include a specific provision on the use of local natural resources in their investment propositions for the Addis Ababa-Djibouti Railway. According to the CCECC's website, the Addis Ababa-Djibouti Railway fully utilized Chinese materials and equipment (CCECC, 2016; Huaxia, 2016). This suggests that no local natural resources were exploited for the construction of the railway and that building materials were imported from abroad.

While no local materials were used during the construction of the project, locals' farmlands were a required component. For each station of the railway, approximately 300 hectares of land, primarily farmland, were required. The locals who lost their farmlands were remunerated, but there were accusations of unfair compensations, to which the CREC and CCECC responded that local authorities were responsible for conducting such land valuations (Gardner, 2018).

### **c. Local hiring**

In terms of local hiring in the investment propositions of the CREC and CCECC for the Addis Ababa-Djibouti Railway, the CREC included an employee localization strategy, which consisted of prioritizing local hiring for the construction of the project. According to Zhang Zongyan, President of the CREC, this strategy promotes the creation of local jobs and reduces the company's costs by avoiding the import of Chinese labor (Xia, 2018). The CCECC does not have information available on their proposition regarding local hiring. However, during the construction of the railway, the CREC and CCECC combined hired more than 20,000 local workers in Ethiopia and 5,000 in Djibouti. Upon completion of the project, approximately 2,000 local workers were hired for infrastructure and locomotive maintenance (Rucui, 2017). This

indicates that, although the CCECC did not have a specific proposition on local hiring as the CREC did, both companies contributed to local hiring in Ethiopia and Djibouti. While the project promoted the employment of local workers, there have been allegations against the companies for low wages and the poor treatment of Chinese managers (Gardner, 2018). These claims could put into question the sustainability of the contributions of the CREC and CCECC to local hiring.

#### **d. Technology transfers**

Due to a shortage of skilled railway personnel, the CREC and CCECC were contracted to manage the operations of the Addis Ababa-Djibouti Railway until 2023. As part of the investment propositions of the CREC and CCECC, the companies committed to training local personnel through a program that aimed to send employees from the Ethiopian Railway Company to technical universities in Beijing, Tianjin, and Chengdu in order to further their professional knowledge on railway maintenance and operation (Rucai, 2017).

According to the Construction Intelligence Center (2016), after the CREC and CCECC's contract for operation and maintenance is over in 2023, the railway operations will be transferred to local operators. The program for training local workers that the CREC and CCECC claim to have implemented, as well as the plan to hand back the operations and maintenance of the Addis Ababa-Djibouti Railway to locals suggest that locals have obtained knowledge and expertise through the project, and that technology transfers have taken place.

### **ii. Abuja-Kaduna Rail Line, Nigeria**

#### **a. Background information**

The Abuja-Kaduna Rail Line project is part of Nigeria's rail modernization program. This is an initiative from the Nigerian government to rehabilitate the country's railway network, which was built during the British colonial rule. China's investment in the rail line's modernization reduced the travel time between Abuja, Nigeria's capital, and Kaduna, the country's commercial

center. Passengers can now travel from one city to the other in one hour and cargo in one and a half hours. According to Chen Yunnan (2018), cutting down travel times for cargo is important to promote trade and improve the competitiveness of Nigerian firms vis-à-vis foreign companies (p. 4). Furthermore, low-cost transportation and shorter distances facilitate passengers' mobility and provide a safe alternative to driving on roads. Thus, China's investment in the Abuja-Kaduna Rail Line contributed to renovating a line that is important for the country's commerce and passenger mobility.

The construction of the project started in February 2011 and was completed in December 2014. The rail line has a length of 186 kilometers (116 miles), and is designed to enable the transport of cargo and people. The total estimated investment into the project was 874 million dollars (Railway Technology, 2018). China's EXIM Bank provided 500 million dollars as a concessionary loan, and the Nigerian government financed the rest of the project. As in the case of the Addis Ababa-Djibouti Railway, the state-owned contractor China Civil Engineering Construction Company (CCECC) was responsible for the construction of the Abuja-Kaduna Rail Line.<sup>8</sup> The CCECC was in charge of the construction of the project, the procurement of building materials and workers, and the operations and maintenance of the line upon completion.<sup>9</sup>

#### **b. Environment and use of local natural resources**

The CCECC did not seem to have had an investment proposition in terms of the environment for the Abuja-Kaduna Rail Line. Although the Nigerian government's Environmental Impact Assessment Decree requires all projects to conduct environmental impact assessments along with feasibility studies before projects are awarded to contractors, the construction of the Abuja-Kaduna Line was "allowed to proceed without a feasibility study being

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<sup>8</sup> Please refer to section VII, i for more information on the CCECC.

<sup>9</sup> Stages three, four, and five, respectively, of China's investment proposition. See section V, ii for a description of these stages.

conducted” (Japan International Cooperation Agency, 2014, p. 3-15). This claim indicates that the Nigerian government did not establish specific environmental standards for the construction of the project. In spite of the fact that neither the CCECC nor the Nigerian government set environmental requirements for the Abuja-Kaduna rail line, the research and analysis of documents conducted in this thesis indicate that there were no complaints for the CCECC’s environmental practices during the project.

While the negative environmental impact that the Abuja-Kaduna Rail Line may have had remains unclear, the project has the potential for positively contributing to the environment. The development of a rail line from Abuja to Kaduna has reduced traffic in the cities, as the line provides an alternative to automobile transportation powered by electricity. This makes the rail line more energy efficient and a sustainable mode of transportation. As a result, the rail line has contributed to the decline of the pollution generated by vehicle traffic in both cities (Wojuade, 2016, p. 275). Hence, the Abuja-Kaduna line offers an environmentally friendly transportation system for cargo and passengers.

In terms of the use of local natural resources, the CCECC did not specify in its investment proposition its materials’ sourcing plan for the construction of the Abuja-Kaduna Rail Line. Thus, it is not clear whether the CCECC imported building materials or sourced them locally. The rail line required access to government-owned land between Abuja and Kaduna. According to Yunnan (2018), the government’s ownership of the land used for the project was a key factor in the successful completion of the rail line, as there were no issues with land grabbing and appropriate monetary compensations for locals (p. 6).

### **c. Local hiring**

Regarding local hiring, the CCECC’s investment proposition consisted of a localized strategy. The CCECC policy mandated a ten-to-one ratio of local employees to Chinese workers,

which favored the hiring of local workers in Nigeria (Yunnan, 2018, p. 4). During the construction of the Abuja-Kaduna Rail Line, approximately 4,000 locals were hired. After the project was completed, 500 Nigerians were employed to manage the rail line's operations and maintenance, which suggests that the project contributed to hiring local workers during and after the construction of the line.

#### **d. Technology transfers**

The CCECC obtained the contract for handling the operations and maintenance of the Abuja-Kaduna Rail Line until 2017. An important part of the CCECC's investment proposition was the training for local employees. The CCECC established a training center in Abuja and implemented training activities for local engineers, which included courses on railway maintenance, signals, and communications systems (Chen, 2018, p. 4). Nigerian employees were also sent to China in order to receive training on the latest technology in the industry (Sino-Swedish Corporate Social Responsibility, 2015). In 2017, the CCECC handed back the maintenance and operations of the line to the Nigerian Railway Corporation (NRC) (Alqali, 2018). The CCECC's strategy of training local personnel and the recent relocation of the line's operations and maintenance to a local company indicate the successful transfers of technology during and after the construction of the Abuja-Kaduna Rail Line.

### **VIII. Analysis**

This section summarizes and analyzes the findings on the effects that the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line have had on the environment, use of local natural resources, local hiring, and technology transfers variables. Each of the subsections of this section provides a table summarizing the findings presented in the Case Studies section in terms of the investment proposition of the construction companies, some of the local factors that shaped the project, and the effect that each of the projects have had on this thesis' variables.

### i. Environment and Use of Local Natural Resources

As discussed in the Case Studies section, neither the CREC and CCECC in the Addis Ababa-Djibouti Railway nor the CCECC in the Abuja-Kaduna Rail Line offered a set of guidelines on environmental protection in their investment propositions. However, the Ethiopian government established specific criteria for the CREC and CCECC to follow during the construction of the Addis Ababa-Djibouti Railway, while the Nigerian authorities did not set an environmental protocol for the CCECC. Although there were no complaints about the environmental practices of either of the companies, the lack of specific government regulations in the Abuja-Kaduna project suggests the possibility for low environmental compliance expectations, which is an issue that requires further inquiry.

Table 1: Effects on the environment

<b>Analysis</b>	<b>Addis Ababa-Djibouti Railway</b>	<b>Abuja-Kaduna Rail Line</b>
<b>Companies' investment proposition for the environment</b>	<ul style="list-style-type: none"> <li>The CREC and CCECC did not have clear environmental guidelines in their investment proposition.</li> </ul>	<ul style="list-style-type: none"> <li>The CCECC did not have clear environmental guidelines in their investment proposition.</li> </ul>
<b>Local factors that shaped the project</b>	<ul style="list-style-type: none"> <li>The Ethiopian government set an environmental protection protocol for the companies to follow.</li> </ul>	<ul style="list-style-type: none"> <li>The Nigerian government did not set environmental standards for the company to follow.</li> </ul>
<b>Effect on the environment</b>	<ul style="list-style-type: none"> <li>Companies met local environmental standards and did not seem to have had a negative impact.</li> <li>The project has the potential to positively impact the environment.</li> </ul>	<ul style="list-style-type: none"> <li>The rail line did not seem to have had a negative impact.</li> <li>The project has the potential to positively impact the environment.</li> </ul>

Much of the literature on Chinese investments in Africa has critiqued Chinese companies for the lack of environmental standards in their projects in African countries. However, the

findings in the Case Studies section imply that the construction of the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line have not had, as of now, an adverse effect on the environment, and, in fact, have the potential to positively impact it.<sup>10</sup> According to a report from the European Railway and Infrastructure Companies (2015), railways produce 3 to 10 times less carbon dioxide than road or air transport, and they use 3.5 less land per passenger-km than cars (p. 23-27). These findings indicate that railways, such as the Addis Ababa-Djibouti and the Abuja-Kaduna, can have a positive effect on the environment in terms of air pollution and land use reduction. The compliance of the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line with environmental regulations and the potential positive effect that these projects can have on the environment supports Yuan Sun and Xiaoyang's research. As previously noted, these authors argue that the impact of Chinese investments on the environment is diverse and varies by factors such as industry and company.<sup>11</sup>

Similarly to their proposition on the environment, the companies in charge of the construction of the Addis Ababa-Djibouti Railway and the Abuja-Kaduna line did not include guidelines on their use of local natural resources. The materials required for the construction of the Addis Ababa-Djibouti project were imported from China, and in the case of the Abuja-Kaduna line, it is not clear whether the materials were imported from abroad or were sourced locally. The apparent use of Chinese-imported building materials in these projects supports the work of Romain De Laubier et al. (2018), which found that Chinese firms import materials from China for the construction of various projects in Africa. In terms of the use of land, both projects

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<sup>10</sup> While the Addis Ababa-Djibouti Railway and Abuja-Kaduna Rail Line do not seem to have had negative repercussions on the environment to this date, other railway projects in Africa financed through Chinese investments have raised controversy for their environmental impact. For example, the Mombasa-Nairobi Standard Gauge Railway in Kenya received backlash from environmentalists in March 2018 for its plan to build a railway bridge across Nairobi National Park. See Ombuor, R. (2018). Environmentalists in Kenya Protest China-Backed Railway Construction. *Voa*. Retrieved from <https://www.voanews.com/a/environmentalists-in-kenya-protest-china-backed-railway-construction/4275964.html>

<sup>11</sup> Please see section IV, subsection iii for further discussion of Yuan Sun and Xioyang's work.

required access to portions of land to build the railways. However, land in Ethiopia and Djibouti for the Addis Ababa-Djibouti Railway was privately owned, which prompted issues with compensating locals for their lost land. In contrast, there were no complications with remunerations in the Abuja-Kaduna line, as the Nigerian government owned the land used for project's construction. This highlights the importance of creating guidelines on the use of local resources, such as land, in order to avoid complications with local communities.

Table 2: Effects on the use of local natural resources

<b>Analysis</b>	<b>Addis Ababa-Djibouti Railway</b>	<b>Abuja-Kaduna Rail Line</b>
<b>Companies' investment proposition for local sourcing</b>	<ul style="list-style-type: none"> <li>The CREC and CCECC did not have clear guidelines on local sourcing in their investment proposition.</li> </ul>	<ul style="list-style-type: none"> <li>The CCECC did not have clear guidelines on local sourcing in its investment proposition.</li> </ul>
<b>Local factors that shaped the project</b>	<ul style="list-style-type: none"> <li>The project required access to privately owned farmlands.</li> </ul>	<ul style="list-style-type: none"> <li>The project required access to government-owned land.</li> </ul>
<b>Effect on local sourcing</b>	<ul style="list-style-type: none"> <li>Building materials were imported from China.</li> <li>Local complaints for unfair compensations for lost land.</li> </ul>	<ul style="list-style-type: none"> <li>Not clear where materials came from.</li> <li>No local complaints for unfair compensations for land.</li> </ul>

Besides critiquing Chinese companies' impact on the environment, existing literature has scrutinized the extraction of local natural resources and has deemed these investments as exploitative. However, the research conducted in this thesis indicates that the Addis Ababa-Djibouti did not misuse natural resources in Ethiopia and Djibouti during the construction of the project, as the building materials for the project were imported from China. While the source of the building materials used in the Abuja-Kaduna Rail Line is unclear, there is no indication that would suggest that local resources were exploited during the project's construction phase. These railways demonstrate that, contrary to what is commonly portrayed on the literature of Chinese

investments in Africa, not all projects engage in the extraction and exploitation of local natural resources.

## ii. Local hiring

The CREC in the Addis Ababa-Djibouti Railway as well as the CCECC in the Abuja-Kaduna line offered an employee localization strategy in their investment propositions, which favored the employment of local personnel during and after the construction of the projects. Although the CCECC did not offer the same localization strategy in the Addis-Ababa project, the company also appears to have focused on providing jobs to locals in its segment of the construction. The Ethiopian, Djiboutian, and Nigerian governments did not seem to have established any regulations for the companies to incentivize local hiring.

Table 3: Effects on local hiring

<b>Analysis</b>	<b>Addis Ababa-Djibouti Railway</b>	<b>Abuja-Kaduna Rail Line</b>
<b>Companies' investment proposition for local hiring</b>	<ul style="list-style-type: none"> <li>The CREC included an employee localization strategy in their investment proposition.</li> <li>The CCECC did not have a proposition on local hiring.</li> </ul>	<ul style="list-style-type: none"> <li>The CCECC included an employee localization strategy in their investment proposition.</li> </ul>
<b>Local factors that shaped the project</b>	-	-
<b>Effect on local hiring</b>	<ul style="list-style-type: none"> <li>Local workers were hired during and after the construction of the project.</li> <li>Local allegations for low wages and poor treatment from Chinese managers.</li> </ul>	<ul style="list-style-type: none"> <li>Local workers were hired during and after the construction of the project.</li> </ul>

Scholarship on Chinese investments in the African continent typically claims that Chinese companies bring workers from China instead of employing local people. Nonetheless, the

findings in this thesis show that the CREC and CCECC in Ethiopia and Djibouti, and the CCECC in Nigeria contributed to job creation during the construction of the project, and the operations and maintenance. As discussed in the Variables section, Chinese companies' contributions to local hiring are significant due to Africa's challenge to generate enough jobs for the continent's expanding workforce. It is important to note that, although the CREC and CCECC hired local personnel for the Addis Ababa-Djibouti Railway, locals allege that they received unfair wages and treatment from their Chinese managers. These accusations indicate that the companies' localization strategies were focused on providing jobs and not necessarily on the conditions of these jobs, which is an issue that needs further consideration.<sup>12</sup>

### iii. Technology transfers

As with local hiring, the CREC and CCECC in the Addis Ababa-Djibouti Railway and the CCECC in the Abuja-Kaduna line specified in their investment proposition their plan to train locals and to transfer the projects' operations and maintenance to local companies upon completion of their contracts. In both cases, the local governments awarded the companies with operations and maintenance contracts after the projects were concluded due to a lack of local trained staff.

Table 4: Effects on technology transfers

Analysis	Addis Ababa-Djibouti Railway	Abuja-Kaduna Rail Line
<b>Companies' investment proposition for technology transfers</b>	<ul style="list-style-type: none"> <li>The CREC and CCECC proposed to train locals to operate and maintain the railway.</li> </ul>	<ul style="list-style-type: none"> <li>The CCECC proposed to train locals to operate and maintain the rail line.</li> </ul>
<b>Local factors that shaped</b>	<ul style="list-style-type: none"> <li>The Ethiopian and</li> </ul>	<ul style="list-style-type: none"> <li>The Nigerian</li> </ul>

<sup>12</sup> Complaints over wages and working conditions have also arisen in other railway projects financed through Chinese investments, such as in the Mombasa-Nairobi railway in Kenya, where locals protested during the construction of the project in August 2016. See Kuo, L. (2016). Kenyan rail workers are protesting against their Chinese employer for a raise—to \$5 a day. *Quartz Africa*. Retrieved from <https://qz.com/africa/749177/kenyan-rail-workers-are-protesting-against-their-chinese-employer-for-a-raise-to-5-a-day/>

<b>the project</b>	Djiboutian governments contracted the CREC and CCECC for operations and maintenance.	government contracted the CCECC for operations and maintenance.
<b>Effect on technology transfers</b>	<ul style="list-style-type: none"> <li>• Locals have been trained and the companies agreed to hand back the operations and maintenance by 2023.</li> <li>• Technology transfers have taken place.</li> </ul>	<ul style="list-style-type: none"> <li>• Locals have been trained and the company handed back the operations and maintenance in 2017.</li> <li>• Technology transfers have taken place.</li> </ul>

As exemplified by the works of Klaver and Trebilcock, and Kinfu Adisu and Thomas Sharkey in the Literature Review section, scholarship on Chinese investments argues that these investments have not promoted technology transfers to recipient countries. However, the Addis Ababa-Djibouti and Abuja-Kaduna projects prove otherwise, as the companies claim to have followed their investment proposition. They seem to have established diverse programs for local training, and had concrete dates for transferring the projects' operations and maintenance to locals. These technology transfers may ultimately contribute to foster locals' expertise on railways, which, as discussed in the Variables section, can promote the development of local businesses.

### **IX. Conclusions, Recommendations, and Suggestions for Further Research**

A significant part of scholarly literature on Chinese investments in infrastructure in Africa argues that these investments are detrimental to the environment and use of local natural resources, local employment, and the dissemination of technology in the continent. This thesis contributes to the conversation surrounding the implications of Chinese infrastructure investments in African countries through the examination of the Addis Ababa-Djibouti Railway and the Abuja-Kaduna Rail Line as case studies. This inquiry shows that, until now, these

projects (1) did not seem to have had negative effects on the environment and, in fact, have the potential to make a positive environmental impact by reducing land use and air pollution, (2) did not appear to have exploited local natural resources, (3) employed African workers during their construction, operations, and maintenance, and (4) fostered technology transfers by training local workers and planning to hand back operations to locals. Based on this analysis, this thesis argues for the importance of case-by-case and nuanced evaluations of Chinese investments in infrastructure in Africa.

While the Addis Ababa-Djibouti and Abuja-Kaduna projects are important contributions to infrastructure investments in African countries, they also illustrate areas for improvement. As seen in the analysis of the Addis Ababa-Djibouti Railway and Abuja-Kaduna Line, the CREC and CCECC did not specify the steps that they would follow to protect the environment in their investment propositions. With the purpose of increasing the transparency of Chinese companies' operations and facilitating the monitoring of their compliance with environmental laws and regulations, Chinese investors should explicitly outline in their investment propositions the environmental guidelines that their projects will follow, as well as the ways in which their investments positively affect the environment. Additionally, investment recipient countries in Africa should enhance their environmental regulatory systems as a means to establish precise environmental standards for investors, as the Ethiopian government did for the Addis Ababa-Djibouti Railway.

In regards to the use of local natural resources, the Addis Ababa-Djibouti and Abuja-Kaduna railways did not seem to have exploited local natural resources. However, they also did not appear to have contributed to the local economy through the acquisition of local materials for the construction of the projects. According to the World Bank report "Increasing Local Procurement By the Mining Industry in West Africa," (2012) local sourcing encourages local

manufacturing and service activities, which promote locals' employment and skill development (p. 32). This indicates the importance for Chinese companies to find a balance between importing materials from China and utilizing local resources in a non-exploitative way that contributes to local traders and manufacturers. In order to promote this balance, African governments could set a cap on the use of Chinese-imported and local resources. Another issue that arose during the construction of the Addis Ababa-Djibouti Railway was with regards to land grabbing and locals' complaints for unjust compensations. As previously discussed, the Chinese companies in charge of the construction of the project argue that the Ethiopian and Djiboutian authorities were in charge of carrying out land valuations. This suggests the need for local governments to listen to the demands of local communities and adequately compensate them in the event of land loss.

In terms of local hiring, local authorities should set guidelines to ensure Chinese companies favor the employment of African workers and contribute to job creation in the continent. Furthermore, as allegations of unfair wages and treatment of managers were an issue in the Addis Ababa-Djibouti project, investors and African governments could focus on making sure that local workers are not only employed, but also work under appropriate salaries and conditions.

Last but not least, for the purpose of bolstering the dissemination of technology through Chinese investments in Africa, local authorities should ensure that investors include local training in their investment propositions, and award contracts for operation and maintenance to Chinese companies on a temporary basis to guarantee the eventual control of the projects by local companies. These recommendations emphasize that the efforts from local governments and Chinese companies are equally important for improving the effects of Chinese investments in Africa's infrastructure on the environment and use of local natural resources, local hiring, and technology transfers.

This research overall highlights the relevance of case-by-case evaluations of Chinese investments as opposed to making broad generalizations on their impact in African countries. Thus, further research on this topic could examine other Chinese investments in Africa, as this would provide further insights into the impact of specific projects across the continent. Future research could also explore the effects of Chinese investments in other realms that have been critiqued in the literature, for instance, the implications of these investments for African countries' economic development.<sup>13</sup> Lastly, further research could explore the implications of other stages of China's investment proposition in Africa, such as project financing through Chinese financial institutions. As Chinese investments in Africa continue to grow, so does the need for more research that investigates the implications of these investments for African countries. Research should move towards more nuanced analyses of Chinese investments that contribute to understanding the ways in which China is shaping investments in Africa.

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<sup>13</sup> Please refer to Jauch (2011), and Klaver and Treblicock (2011) for a critique of Chinese investments' impact on Africa's economic development.

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