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**THESIS**

**HOW DO TRANSPORTATION PROJECTS WITH CHINESE  
FUNDING COMPARE TO TRANSPORTATION PROJECTS  
WITHOUT CHINESE FUNDING IN ETHIOPIA?**

by

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June 2020

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COMPARE TO TRANSPORTATION PROJECTS WITHOUT CHINESE  
FUNDING IN ETHIOPIA?**

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## **ABSTRACT**

This thesis compares large-scale infrastructure projects in Ethiopia that include funding from the Chinese government to similar projects that do not include funding from Chinese sources. This thesis analyzes the construction and upgrade of the Ethiopian road network and compares roadway infrastructure projects with and without Chinese financial assistance on six criteria: (1) project selection (2) project execution and costs, (3) local job creation, including the participation of local construction and consulting firms, (4) expenses for long-term maintenance, (5) deviations in travel times and vehicle operating costs (VOCs), and (6) impacts on local communities and their agricultural sectors. Overall, there is no clear difference between road projects that include Chinese funding and projects that do not include Chinese funding. This result is mostly attributed to the capacity of the Ethiopian government, which had well-defined standard planning procedures prior to the inclusion of Chinese investment. These findings imply that the costs and benefits of Chinese investment for African countries are not simply an outcome of Chinese national policy goals, but instead are an outcome of the capacity of the local African government.

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## LIST OF ACRONYMS AND ABBREVIATIONS

ADF	Africa Development Fund
AfDB or ADB	African Development Bank
ERTTP	Ethiopian Rural Travel and Transport Program
EU	European Union
FDI	Foreign Direct Investment
GOE	Government of Ethiopia
GPC	Great Power Conflict
IDA	International Development Agency
LCCA	Life-Cycle Cost Analysis
LIC	Low Income Country
LMIC	Lower-Middle Income Country
LRT	Light Railway System
ODA	Official Development Assistance
OOF	Other Official Flows
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
SGR	Standard Gauge Railway
SNNPR	Southern Nations, Nationalities, and Peoples Region
RSDP	Road Sector Development Program
URRAP	Universal Rural Road Access Program
VOC	Vehicle Operating Costs

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## I. INTRODUCTION

Ethiopia, a land-locked country located in the Horn of Africa, has set itself apart from other African countries by having one of the fastest growing economies in the world. Ethiopia remains a low-income country, but has aspirations of reaching the status of a lower-middle income country by 2025. Even though the Government of Ethiopia (GOE) invests heavily in the transportation sector, current investment levels are not sufficient to safely and effectively upgrade their existing road network. Due to the GOE's inability to cover all costs associated with roadway improvements, the government also leverages foreign assistance. The GOE often applies for loans from foreign entities such as the World Bank, the African Development Bank (AfDB or ADB), the European Union (EU), and other countries.

Starting in the early 2000s, the Chinese government and related entities began providing significant funding for large-scale infrastructure projects in Ethiopia and across Africa. Most scholarly or governmental studies of Chinese infrastructure investment in Africa focus on disentangling the Chinese government's intent, such as whether they are economically or diplomatically motivated. Studies that focus on the outcomes of Chinese investments focus either on their benefits to the recipient country by creating local jobs and growing the local economy, or on how China exploits African countries to enhance their own economic growth. For example, infrastructure projects that create African jobs and grow the local economy may be motivated by altruistic economic and diplomatic goals. In contrast, infrastructure projects that exploit African countries may be motivated to support and enhance Chinese economic growth.

Due to the focus on Chinese motivations and intent, analysis of Chinese investment in Africa is often compared to projects funded by other foreign donors from Western-backed entities and countries. However, these comparisons often lack systematic analysis of project outcomes, because they do not consider the role that the recipient government plays in project implementation and completion. To better understand the impacts of Chinese infrastructure investments in Africa, this thesis examines the costs

and benefits of Chinese-funded transportation projects compared to transportation projects completed without Chinese funds.

This work focuses on examining roadway infrastructure projects funded by Chinese and non-Chinese sources using several key criteria. First, I evaluate each phase of the Road Sector Development Program (RSDP) by examining the following three categories: (1) execution of phase specific objectives, (2) costs associated with each phase, (3) creation of jobs or training opportunities, including the participation of local constructing and consulting firms associated with each phase. Second, I investigate specific road projects using the following six categories: (1) project selection, (2) project execution and costs, (3) local job creation, including the participation of local constructing and consulting firms (4) expenses for long-term maintenance, (5) deviations in travel times and vehicle operating costs (VOCs), and (6) impacts on local communities and their agricultural sector.

Overall, this thesis finds few differences between projects funded with and without Chinese financial assistance. After examining Ethiopia's major road development program before and after the introduction of significant Chinese funding, I find that the addition of financial assistance from China did not lead to any major changes in the type or location of projects chosen. In addition to the road project selection remaining consistent, the road construction process is largely the same for projects with and without Chinese funding. In both sets of projects, the project execution timeline was often delayed, adding to the project's overall cost.

I also find that projects with and without Chinese funding have both resulted in jobs and training opportunities in the construction sector for the Ethiopian population. The deployment of Ethiopian construction and consulting firms has largely remained limited throughout all five phases of the RSDP, contributing to persistent difficulties in the development of indigenous firms. Projects completed during both periods of time, with and without Chinese funding, have reduced travel times and VOC, and contributed positively to their surrounding communities.

The stability and continuity of road development after the addition of Chinese financial assistance can be attributed to the active role of the Ethiopian government in managing its road construction projects. Through pre-set stipulations regarding road project selection and the government's focused effort on building the capacity of public and private sector organizations to participate in road construction, Ethiopia already had, at the time that Chinese financing was introduced, a well-established road program and mechanisms for ensuring that projects adhered to pre-set terms. The stability of Ethiopia's road development program prior to the introduction of Chinese funding prevented any major shifts in road construction trends in Ethiopia.

#### **A. SIGNIFICANCE OF RESEARCH QUESTION**

The economic impact of Chinese-funded infrastructure projects is important for understanding the benefits and costs of increasing Chinese aid and investment in Africa.<sup>1</sup> This study contributes to research on the impacts of Chinese economic activity. Specifically, it assists the research community in understanding the nuanced ways Chinese investments either support or detract from local economic activity and how the institutional strength of the recipient country affects China's actions with respect to project selection and completion. This study therefore provides nuance on academic discourse relating to the "positive vs. manipulative" debate regarding Chinese activity in Africa and demonstrates the role of the host government in these effects.

With respect to international policy and security studies, revealing the quality of large-scale infrastructure projects with Chinese funding compared to projects without Chinese funding could aid the United States and other western countries with understanding the multi-faceted approach the Chinese have taken in African economies. By understanding the Chinese approach to investment, U.S. policymakers will be able to assess any potential influence gained by Chinese investments, in addition to any possible adverse effects on African countries.

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<sup>1</sup> From here on, I use the term investment to mean any type of financing provided by the Chinese. This could mean aid, concessionary loans or loans at market rates.

## **B. LITERATURE REVIEW**

Literature on Chinese investment in Ethiopia is divided into two schools of thought: one that looks favorably upon the investments due to the many benefits afforded to the country, and one that finds the investments manipulative or exploitative because the investments largely benefit Chinese companies and China's economic growth. This literature review discusses the current debate regarding Chinese investment in Ethiopia, emphasizing the need for in-depth studies comparing infrastructure projects without Chinese funding to infrastructure projects that include Chinese funding. This is especially important as Chinese investment increases in Ethiopia.

### **1. Introduction to Chinese Investment**

Since the early 2000s, the amount of money flowing from China into Africa has increased substantially, much of which finances a growing number of infrastructure projects on the continent. The money provided from China to Africa can be broken down into two forms: Official Development Assistance (ODA) and Other Official Flows (OOF). ODA consists of concessional loans and grants while export credits and private investments are typically considered OOF.<sup>2</sup> China provides an ODA equivalent through grants, zero-interest loans, and concessional loans, all of which are used to finance the construction of large scale infrastructure projects, student scholarships, telecommunication networks, and the agricultural sector. Commercial loans and market-rate buyers credit are classified as OOF.<sup>3</sup>

The entities that provide ODA loans, OOF credits, and investments to African countries include numerous Chinese government, state-owned, and private companies. As Deborah Brautigam notes in *Chinese Development Aid in Africa: What, Where, Why, and How Much?*, analysts do not differentiate between government aid, bank loans or private investments.<sup>4</sup> Due to the strong ties between the Chinese government and infrastructure

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<sup>2</sup> Deborah Brautigam, "Chinese Development Aid in Africa: What, Where, Why, and How Much?" *SSRN Electronic Journal* (June 2011): 203–204, <http://dx.doi.org/10.2139/ssrn.2013609>.

<sup>3</sup> Brautigam, "Chinese Development Aid in Africa," 203.

<sup>4</sup> Brautigam, 204.

investment firms, I consider all Chinese infrastructure funding as state funding. For this reason, this thesis uses the terms “China,” “Chinese-funded,” or “Chinese investments” to refer to the breadth of private, government, and state-owned entities involved in African infrastructure projects.

Some experts argue that Chinese investment in Africa stems from their need for natural resources to support their manufacturing sector. This extractive motivation was evident in Angola, where, “the government has supplied oil to China in exchange for Chinese funding and construction of major infrastructure projects.”<sup>5</sup> However, since Ethiopia does not have natural resources that would benefit China, Ethiopia is instead seen as the, “bridge between the Belt and Road Initiative and Africa’s development.”<sup>6</sup> Even if Chinese investment is meant to extract local resources or further the advancement of a major Chinese undertaking like the Belt and Road Initiative, the infrastructure projects produced with Chinese-backed funds may add enough local value for African countries like Ethiopia to justify the trade. Unfortunately, there is currently limited information on quality and added value of Chinese infrastructure projects in Africa. The following discussion summarizes the state of knowledge on potential benefits and costs of Chinese infrastructure investments in Ethiopia

## **2. The Potential Benefits of Chinese Investment in Ethiopia**

Three common themes emerge from the numerous theorized economic benefits of Chinese investments in Ethiopia: 1) Chinese investment is typically made with a policy of “non-interference,” meaning that it is not subject to the policy conditions typical of loans and aid obtained from Western donors; 2) Chinese investments expand and diversify trade to China and other countries; and, 3) Chinese investment produces large-scale projects that result in more jobs for Ethiopian workers and a more skilled labor force. The following section will review each of these arguments.

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<sup>5</sup> Larry Madowo, “Should Africa Be Wary of Chinese Debt?” BBC News, September 3, 2018, <https://www.bbc.com/news/world-africa-45368092>.

<sup>6</sup> “Xi Proposed Advancing China-Ethiopia Ties,” *Xinhua News Agency*, May 13, 2017, <https://eng.yidaiyilu.gov.cn/home/rolling/12993.htm>.

The first perceived benefit of Chinese infrastructure investment is that ODA and OOF from China tend to arrive free of the policy conditions and stipulations that are often associated with money from Western donors. As Nicolas van de Walle writes of Western aid, “the institutional context of aid has profoundly conditioned both its political and economic impact” on African countries, causing economic reforms to occur slowly, while protecting weak governmental institutions.<sup>7</sup> Aid secured from Western donors for infrastructure projects often comes with normatively motivated stipulations, such as implementing democracy or using the funds for human rights programs such as: education for girls, medical efforts, and other various humanitarian efforts. These stipulations lead to a “planning paradigm” that often results in governments structuring development plans to appease donors, without having the adequate framework or capacity to successfully implement the plans.<sup>8</sup>

With China providing a new source of aid and investment, African countries gain a greater capacity to negotiate the terms of contracts and loans. As Haley Swedlund states, Chinese investment in African infrastructure supports local economic growth and education by privileging “the productive sectors rather than the social sectors,” contributing to physically building the country from the ground up.<sup>9</sup>

In Ethiopia, the structural improvements are hard to ignore with the construction of skyscrapers, hydropower dams, and sports stadiums.<sup>10</sup> As Dambisa Moyo states in her book, *Dead Aid*, many African leaders are drawn to the ODA, OOF, and foreign direct investment (FDI) provided by China because of China’s straight-forward attitude, and policy of “non-interference” when providing financial assistance and “appear less willing

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<sup>7</sup> Nicolas van de Walle, *African Economies and the Politics of Permanent Crisis, 1979–1999* (New York: Cambridge University Press, 2001), 189.

<sup>8</sup> van de Walle, *African Economies and the Politics of Permanent Crisis*, 194.

<sup>9</sup> Haley Swedlund, “Is China eroding the bargaining power of tradition donors in Africa?” *The Royal Institute of International Affairs* Volume 93, issue 02 (March 1, 2017), 393, <https://www.chathamhouse.org/publication/ia/china-eroding-bargaining-power-traditional-donors-africa>.

<sup>10</sup> Simon Marks, “How An African State Learned to Play the West Off China for Billions,” *Politico*, February 7, 2020, <https://www.politico.com/news/2020/02/07/ethiopia-china-west-power-competition-110766>.

to be micro-managed” by Western donors as was done in the past.<sup>11</sup> Moyo also argues that the benefits associated with Chinese investments are often tangible for country leaders, and promise greater employment opportunities, better standards of living, and a growing economy. This contributes to the economic welfare of their constituents in contrast to the Western investments that are typically concentrated on improving the social welfare sectors of the recipient country.<sup>12</sup>

Another perspective emphasizes how Chinese ODA and OOF have increased trading opportunities for Ethiopia and various other African countries by diversifying export commodities as seen in the sharp rise of bilateral trade between China and Ethiopia after 2000.<sup>13</sup> In a report by Malancha Chakrabarty, it was noted that the high economic growth rates experienced in Ethiopia were, “marked by an intensification of Ethiopia-China economic relations.”<sup>14</sup> The intensification of Ethiopian-Chinese economic relations is illustrated in Figures 1 and 2; between the years of 2000–2016, not only did the value of goods traded between Ethiopia and China increase, the variety in the types of goods traded also increased. For example, as shown in Figures 1 and 2, the increase in the value of hides and skins exported from Ethiopia to China grew from 2.87 million USD in 2000, to 34.3 million USD in 2016.<sup>15</sup> Also shown in Figures 1 and 2, the types of good exported expanded from hides and skins, vegetables, and animal products in 2000, to include metals, woods, chemicals, mineral, footwear and more in 2016.

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<sup>11</sup> Dambisa Moyo, *Dead Aid* (New York: Penguin Books, 2009), 108.

<sup>12</sup> Moyo, *Dead Aid*, 111.

<sup>13</sup> Alemayehu Geda, Atenafu G. Meske, “Impact of China-Africa Investment Relations: Case Study of Ethiopia” (Addis Ababa University, Department of Economics, 2009), 13, <https://aercafrica.org/wp-content/uploads/2018/06/china6.pdf>.

<sup>14</sup> Malancha Chakrabarty, “Ethiopia–China Economic Relations: A Classic Win–Win Situation?” *World Review of Political Economy* 7, no.2 (July 2016): 227, file:///Users/cheyenne.harinandan/Downloads/WRPE7.2.pdf.

<sup>15</sup> “Product Exports by Ethiopia (excludes Eritrea) to China 2000,” World Integrated Trade Solution, accessed on May 17, 2020, <https://wits.worldbank.org/CountryProfile/en/Country/ETH/Year/2000/TradeFlow/Export/Partner/CHN/Product/all-groups>; “Product Exports by Ethiopia (excludes Eritrea) to China 2016,” World Integrated Trade Solution, accessed on May 17, 2020, <https://wits.worldbank.org/CountryProfile/en/Country/ETH/Year/2016/TradeFlow/Export/Partner/CHN/Product/all-groups>.

Another instance of the intensification of Ethiopian-Chinese relations is the increased production of sesame seeds in Ethiopia. Even though coffee has historically been the dominant export crop in Ethiopia, the production of sesame seeds has grown 21% annually since 2000 due to the growth in Chinese demand for the product.<sup>16</sup> Between the years of 2004 and 2006, the volume of coffee exports decreased from 161,000 tons to 148,000 while the increase in oil seed exports from Ethiopia to China resulted in the “earnings from oil seed exports [to] increased from \$82.7 million in 2003/04 to \$211 million in 2005/06.”<sup>17</sup>

Furthermore, Chinese investment in large-scale projects is posited to create more jobs for African populations by producing a demand for a large labor force. Although Chinese investors in Ethiopia and companies tend to hire Chinese workers for managerial jobs and jobs requiring more skill and expertise, which are typically the higher paying jobs, they do hire African workers to provide the physical labor and for lower skilled jobs.<sup>18</sup> An article published by the *Financial Times* stated that Chinese companies tend to hire their entire unskilled workforce locally, and Ethiopians account for upwards of 90% of their low-level factory employees.<sup>19</sup> In addition to hiring local workers, the Chinese often commit the time and effort required to train the local workers to eventually operate without Chinese assistance. However, as discussed in the next section, some observers have noted the sluggish manner in which this process takes place in terms of training and jobs generated by the construction of railroads in both Kenya and Ethiopia.<sup>20</sup>

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<sup>16</sup> Chakrabarty, “Ethiopia–China Economic Relations,” 227.

<sup>17</sup> “Ethiopia,” *African Economic Outlook* (2007): 259, <https://doi.org/10.1787/aeo-2007-en>; Chakrabarty, “Ethiopia–China Economic Relations,” 227.

<sup>18</sup> Lydia-Gennet Watchefo, “China in Ethiopia: A Case Study on the Ethio-China Collaborated Light Railway Transit in Addis Ababa, Ethiopia” (bachelor’s thesis, Uppsala University, 2018), 20, <http://www.diva-portal.org/smash/get/diva2:1275479/FULLTEXT01.pdf>.

<sup>19</sup> David Pilling, “It is Wrong to Demonise Chinese Labour Practices in Africa,” *Financial Times*, July 3, 2019, <https://www.ft.com/content/6326dc9a-9cb8-11e9-9c06-a4640c9feebb>.

<sup>20</sup> Watchefo, “China in Ethiopia,” 20.

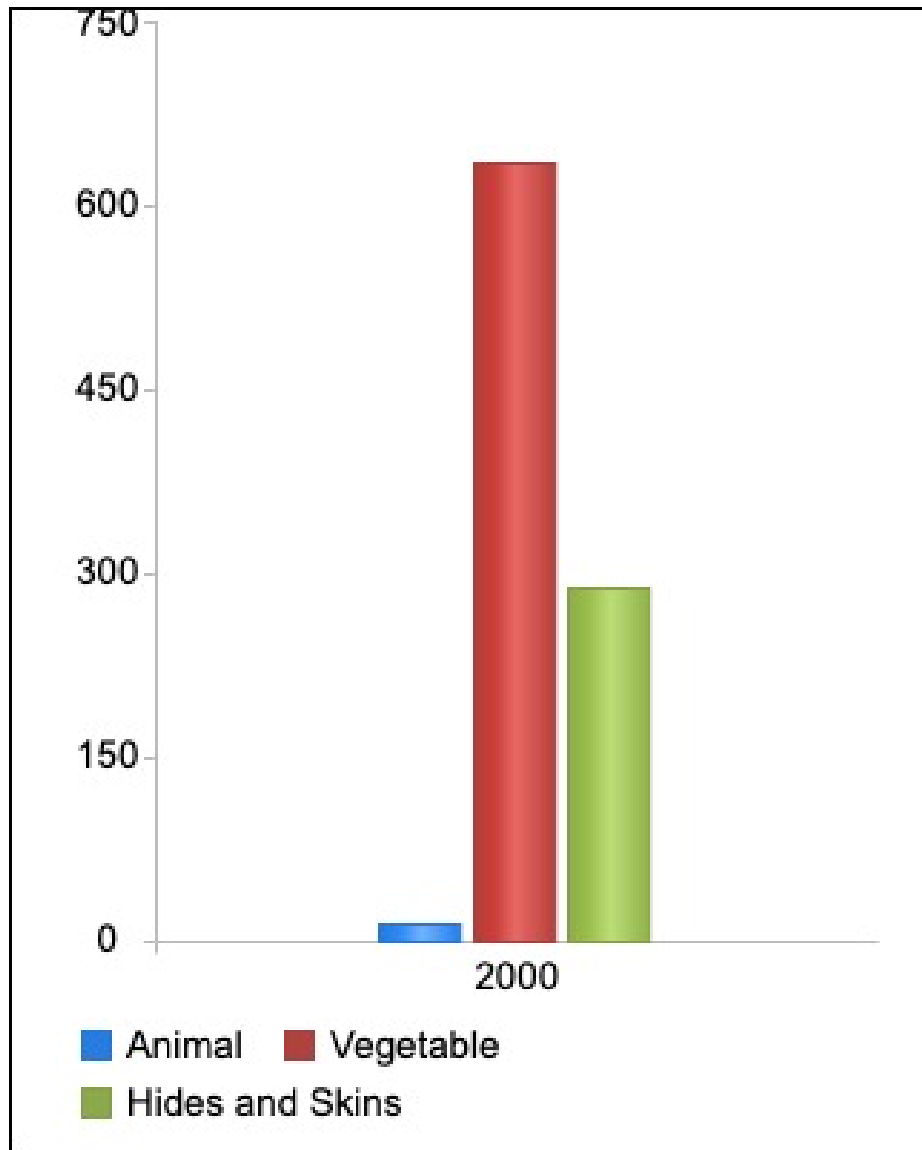


Figure 1. Product Exports by Ethiopia to China 2000 <sup>21</sup>

<sup>21</sup> Source: “Product Exports by Ethiopia (excludes Eritrea) to China 2000,” World Integrated Trade Solution, accessed on May 17, 2020, <https://wits.worldbank.org/CountryProfile/en/Country/ETH/Year/2000/TradeFlow/Export/Partner/CHN/Product/all-groups>.

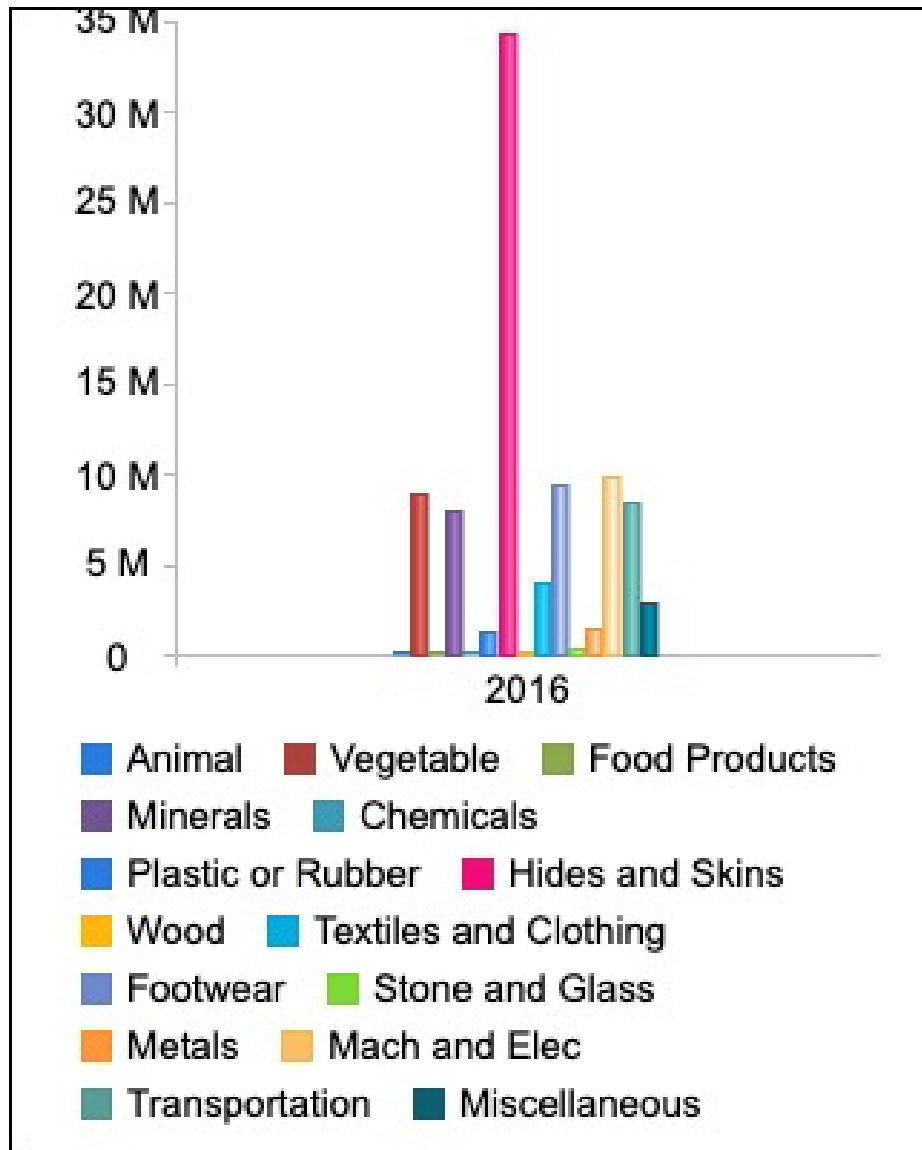


Figure 2. Product Exports by Ethiopia to China 2016 <sup>22</sup>

### 3. The Potential Cost of Chinese Investments for African Countries

In contrast to the potential benefits of Chinese investment in terms of their “non-interference” approach, increased and diverse trade, and improving the local labor force, another perspective holds that Chinese investments are more extractive and damaging to

<sup>22</sup> Source: “Product Exports by Ethiopia (excludes Eritrea) to China 2016,” World Integrated Trade Solution, accessed on May 17, 2020, <https://wits.worldbank.org/CountryProfile/en/Country/ETH/Year/2016/TradeFlow/Export/Partner/CHN/Product/all-groups>.

Ethiopia than if there were no Chinese investment at all. Three types of costs are: 1) the lack of investment in a variety of sectors; 2) the lack of technology transfer from China to Ethiopia; and, 3) post-construction infrastructure maintenance costs and their contribution to national debt. This section reviews these perspectives.

First, China chooses not to focus its investments on improvements to the agricultural sector, thus limiting potential benefits of their infrastructure investments to Ethiopia, but instead focuses on sectors like telecommunications and large-scale construction projects such as roads, airports, and buildings. In Ethiopia, “nearly 85% of the population is dependent on agriculture, and agriculture accounts for about 41% of [the] gross domestic product.”<sup>23</sup> In a study conducted by the Department of Economics at Addis Ababa University, it was revealed that between the years of 2000 and 2007, the focus of Chinese FDI was in the manufacturing, construction, and real estate sectors, with trivial amounts of investment in the agricultural sector during the seven year span as shown in the first three rows of Table 1.<sup>24</sup> In 2006 alone, China only contributed 0.35% of the total investment in Ethiopia’s agriculture sector, but contributed 99.02% to the transportation sector and 35% to the telecommunication sector, with a dramatic increase of telecommunication investment to 97.99% in 2007.<sup>25</sup> Thus, although Ethiopia’s trade of agricultural products benefit China, as discussed in the previous section, the lack of investments in the agricultural sector has been marginal when compared to the amount of FDI in sectors such as manufacturing, constructions and real estate.

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<sup>23</sup> Malancha Chakrabarty, “Ethiopia–China Economics,” 226; Seifuden Adem, “China in Ethiopia: Diplomacy and Economics of Sino-optimism” *African Studies Review* 55, no 1 (April 2012): 150, [https://www.researchgate.net/publication/236806080\\_China\\_in\\_Ethiopia\\_Diplomacy\\_and\\_Economics\\_of\\_Sino-Optimism](https://www.researchgate.net/publication/236806080_China_in_Ethiopia_Diplomacy_and_Economics_of_Sino-Optimism).

<sup>24</sup> Alemayehu Geda and Atenafu G. Meske, “Impact of China-Africa Investment Relations: Case Study of Ethiopia,” (Addis Ababa University, Department of Economics, 2009), 15, <https://aercafrica.org/wp-content/uploads/2018/06/china6.pdf>.

<sup>25</sup> Geda and Meske, “Impact of China-Africa Investment Relations,” 17.

Table 1. China's Share of Ethiopia's FDI (in Millions of USD) <sup>26</sup>

		2000	2001	2002	2003	2004	2005	2006	2007
Agriculture	Under Implementation & in Operation	0	0	0	0.23	0	0	0	0
	Pre-Implementation	0	0	0	0	1.59	0	1.26	2.52
Manufacturing	Under Implementation & in Operation	1.46	5.56	0.79	15.04	55.32	6.49	1.81	0.09
	Pre-Implementation	0	0.9	0	3.07	4.03	20.34	16.36	122.08
Construction	Under Implementation & in Operation	0.53	0	0	1.31	39.89	6	0.26	0
	Pre-Implementation	0	0	0	0	0	0.4	34.24	15.36
Education and Health	Under Implementation & in Operation	0	0	0	0	0.05	0.2	0.09	0
	Pre-Implementation	0	0	0	0	0	0.3	0.49	0.7
Hotel and Restaurant	Under Implementation & in Operation	0	0	0	0.56	0.1	0.31	0.1	0
	Pre-Implementation	0	0	0	0	2.15	0.3	0.9	10.75
Mining	Under Implementation & in Operation	0	0	0	0	6	0.09	0	0
	Pre-Implementation	0	0	0	0	0	0	4.68	2.2
Real estate, renting and business activities	Under Implementation & in Operation	0	0	0	0	6	1.98	2.84	0.09
	Pre-Implementation	0	0	0	0.14	0	0.59	6.1	10.66
Total FDI from China	Under Implementation & in Operation	2	5.56	0.79	17.14	107.36	15.07	5.1	0.18
	Pre-Implementation	0	0.9	0	3.2	7.77	21.92	64.03	164.26
Total FDI to Ethiopia	Under Implementation & in Operation	130.65	221.91	76.03	245.26	481.73	236.97	207.8	1.14
	Pre-Implementation	44.21	80.3	146.8	186.57	470.65	1731.89	4236.41	3875.59
China's Share of Total FDI to Ethiopia	Under Implementation & in Operation	1.5	2.5	1.0	7.0	22.3	6.4	2.5	15.7
	Pre-Implementation	0.0	1.1	0.0	1.7	1.7	1.3	1.5	4.2

Second, there is often a delay in the transfer of knowledge from Chinese workers to Ethiopian workers. Even though there is no doubt that Chinese investment has opened the door for new construction projects and job opportunities as mentioned above, the knowledge needed to improve the skill level of the Ethiopian workforce is often transmitted at a much slower rate. For instance, the construction of the Light Railway System (LRT) that runs through Ethiopia's capital city began in 2011 and was completed in 2015. During that four year span about 4,800 local workers were contracted for low level and unskilled construction jobs.<sup>27</sup> Since the LRT's completion in 2015, only 250 Ethiopians have received formal training in the day to day operations required for the safe operation of the railway, and only 10 members of the LRT management team received training on the management and supervisory roles required for the eventual handoff of the railway from the Chinese group involved in the operation of the railway to

<sup>26</sup> Geda and Meske, 15.

<sup>27</sup> Jacey Fortin, "Ethiopia on Track for New Light Rail Transit System," *Equal Times*, March 16, 2015, <https://www.equaltimes.org/ethiopia-on-track-for-new-light#.Xr4CdxNKjVp>.

Ethiopia.<sup>28</sup> The lack of skills-transfer pertaining to the construction of railroads and highways leaves African countries like Ethiopia dependent on Chinese firms for the completion of such projects. This dependency cements China's position in countries like Ethiopia for the future development of local economies.

Lastly, many of the projects funded by China come with high costs related to the maintenance of the completed infrastructure. Typically, Chinese-funded projects like transportation infrastructure are burdened by the high maintenance costs associated with upkeep and operation. Although Chinese firms often fund the construction of infrastructure, the cost to maintain the finished projects fall onto the African countries. Since the completion of the LRT in 2015, it has been flanked by post-construction operational costs. After three years of operation, the LRT only has 20 functioning trains out of 42 due to the Ethiopia Railways Corporation's (ERC) inability to afford the parts to repair the trains.<sup>29</sup>

The issue of maintenance costs has plagued Chinese funded projects elsewhere, as noted by Howard French regarding the TAZARA line connecting Zambia and Tanzania. Built by China in the 1970s, it is currently burdened by maintenance costs estimated to be as high as \$700 million, that prevent the train from operating at its full capacity of 2,000 cars, but instead only makes use of 300 cars.<sup>30</sup> The inability to operate these systems to their full extent results in the host countries losing money, reducing their ability to repay China in a timely manner, leading to large amounts of debt accrual, and the prevention of African countries from financing large scale projects without the assistance of China.<sup>31</sup>

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<sup>28</sup> Carlos Sabatino, "Light Rail Transportation Systems Are Built in Ethiopia," Global Delivery Initiative, accessed on May 14, 2020, <http://www.globaldeliveryinitiative.org/library/case-studies/light-rail-transportation-systems-are-built-ethiopia>.

<sup>29</sup> Watchefo, "China in Ethiopia," 36.

<sup>30</sup> Howard French, "The Next Empire," *The Atlantic*, May 2010, <https://www.theatlantic.com/magazine/archive/2010/05/the-next-empire/308018/>.

<sup>31</sup> Yunnan Chen, "Ethiopia and Kenya Are Struggling to Manage Debt for Their Chinese Built Railways" *Quartz Africa*, June 4, 2019 <https://qz.com/africa/1634659/ethiopia-kenya-struggle-with-chinese-debt-over-sgr-railways/>.

#### **4. Reflecting on the Debate**

Chinese infrastructure investments come with benefits and costs. The benefits of Chinese investment serve to strengthen established economies, connect countries together, diversify strong industries, and increase the labor force. In contrast, Chinese investments also come with costs including restrictions to only improve supporting infrastructure systems that do not directly advance key industries, increased reliance on Chinese technology and labor, and increased long-term maintenance liability without the means to fund or manage them.

The debates regarding Chinese investment in Ethiopia and other African countries have largely taken place without adequate attention to the counterfactual, that is: how do the cost and benefits compare to similar projects funded by local investors? Would the characterization of beneficial and extractive policies be different in terms of job opportunities, economic improvements, or the quality of the infrastructure provided? Moreover, most of the literature on Chinese investment in Ethiopia only quantifies the impact of Chinese investments but does not consider the quality and sustainability of Chinese projects. Without this baseline data, it is difficult to accurately capture the costs and benefits of Chinese investments for African countries.

Additionally, much of the work done by scholars such as Deborah Brautigam, has sought to portray China's investments on a polar spectrum as either a beneficial or exploitative. However, there are likely to be a mix of economic benefits and drawbacks associated with Chinese investment that depend on the roles played by the African governments involved in the projects. By examining different dimensions of economic impact—jobs, productivity, maintenance costs, and change in domestic economy—this thesis will provide a more nuanced analysis of how African countries either benefit or lose from the Chinese investment.

#### **C. THE CONTEXT: INFRASTRUCTURE PROJECTS IN ETHIOPIA**

To assess the benefits and costs of Chinese-funded infrastructure, this thesis investigates two different periods of road construction in Ethiopia. The first period takes place prior to 2007, before China began to invest in infrastructure projects in Ethiopia.

The second period is from 2007 to present day, when China began to invest in roadway infrastructure projects in Ethiopia.

## 1. The Road Sector in Ethiopia

Ethiopia is home to over 113.3 million people, with approximately 79% of the population living in rural areas.<sup>32</sup> As a part of the GOE's plan to reach the status of a Low Middle Income Country (LMIC) by 2025, the country has been aggressively working to improve its road network by investing billions of dollars into the transportation sector, and remaining engaged in road construction over the past twenty years.<sup>33</sup> In a study released by the United States' Department of Commerce, "as of the end of FY 2017/18, Ethiopia had 120,171 kilometers of all-weather roads—about 32% of the required road network in the country," for the success of Ethiopia's Growth and Transformation Plan.<sup>34</sup> Although the U.S. Department of Commerce does not directly specify if the present amount of road network in Ethiopia is an accomplishment or shortfall, it does note that the GOE has remained engaged in road construction over the past years, and the overall road network improves annually.<sup>35</sup>

During the reign of Haile Selassie from 1930 to 1974, the road networks in Ethiopia were centered around the capital of Addis Ababa for both economic and political reasons.<sup>36</sup> During the brief period from 1935 to 1941 when Italy occupied Ethiopia, the focus of road construction shifted to allow for faster movement of troops and supplies through the country, in addition to exploiting Ethiopia economically by linking it to the world market to facilitate trade; upon Haile Selassie's return to power,

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<sup>32</sup> "Ethiopia-Rural Population" *Trading Economics*, accessed May 18, 2020, <https://tradingeconomics.com/ethiopia/rural-population-percent-of-total-population-wb-data.html>.

<sup>33</sup> "Ethiopia-Road and Railways," *Ethiopia Country Commercial Guide* (October 2019), <https://www.trade.gov/knowledge-product/ethiopia-road-and-railways>.

<sup>34</sup> "Ethiopia-Road and Railways."

<sup>35</sup> "Ethiopia-Road and Railways."

<sup>36</sup> Momona Belay, "Assessment of Ethiopian Road Constructions in Rainy Seasons," (master's Thesis, Addis Ababa University, 2015), 12, <https://pdfs.semanticscholar.org/3a99/9e4dc5a13dadfcc89593a6fbebfb0c76a118.pdf>; Britannica, s.v. "the rise and reign of Haile Selassie I," accessed May 18, 2020, <https://www.britannica.com/place/Ethiopia/The-rise-and-reign-of-Haile-Selassie-I-1916-74>.

the method of road construction was reverted to centering on the capital.<sup>37</sup> After the coup that removed Haile Selassie in 1974, the Derg came to power and an effort was made to increase focus on the improvement and modernization of the roadways.<sup>38</sup> The Derg concentrated on improving roadways specifically in regions that were considered a “bottleneck for agricultural development.”<sup>39</sup> It is important to note however, that while the roadway restoration and improvement allowed citizens living in rural areas to travel more efficiently, the Derg did it primarily for the state’s economic benefit.

The Ethiopian Roads Authority (ERA) was established during Ethiopia’s Derg government in 1978 to be the organization responsible for the entire road network in Ethiopia.<sup>40</sup> Throughout the tenure of the ERA, the responsibility and focus of the organization shifted to accommodate the transformations taking place in Ethiopia. Accordingly, the ERA underwent a major transformation in the late 1990s when the GOE identified the area limiting economic development within Ethiopia as the transportation sector.<sup>41</sup> The road network in Ethiopia was grossly underperforming, leading the GOE (in concert with the World Bank, the EU, and others) to undertake a study, revealing the following issues associated with the road network: low road density, inadequate management and inadequate autonomy in the ERA, a shortage of professional and skilled labor in regard to manpower, widespread poverty directly linked to the road network, and ineffective planning and budgeting in regard to road maintenance.<sup>42</sup>

In 1991, the shift to a market based economy placed the focus back on improving roads that would be economically beneficial, shifting funding from rural road upgrades to

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<sup>37</sup> Belay, “Assessment of Ethiopian Road Constructions in Rainy Seasons,” 13.

<sup>38</sup> Britannica, s.v. “The Rise and Reign of Haile Selassie I,” accessed May 18, 2020, <http://www.ethiopiantreasures.co.uk/pages/derg.htm>.

<sup>39</sup> Belay, “Assessment of Ethiopian Road Constructions in Rainy Seasons,” 14.

<sup>40</sup> “Ethiopian Roads Authority,” DEVEX, accessed on December 16, 2019, <https://www.devex.com/organizations/ethiopian-roads-authority-era-126655>.

<sup>41</sup> The World Bank. Implementation Completion and Results Report (IDA-45610) on a Credit in the Amount of SDR 166 Million (US\$245 Million Equivalent) to the Federal Democratic Republic of Ethiopia for a Ethiopia-Road Sector Development Program, Report No. ICR00004205 (Africa: 2018), 41, <http://documents.worldbank.org/curated/en/183691528124593286/pdf/ICR00004205-06012018.pdf>.

<sup>42</sup> The World Bank. Implementation Completion and Results Report (IDA-45610), 41.

upgrading road networks that were critical to the exportation of goods.<sup>43</sup> This change came when the Ethiopian People’s Revolutionary Democratic Front (EPRDF) came to power in 1991. The EPRDF put an ethnic-based federalism system in place that gave more autonomy to the regional governments, including the construction, expansion and maintenance of rural roads.<sup>44</sup> The EPRDF party, a coalition of the Tigray People’s Liberation Front, the Amhara Democratic Party, the Oromo Democratic Party, and the Southern Ethiopian People’s Democratic Movement, had a direct effect on the construction and location of all-weather roads in Ethiopia. Today’s road infrastructure is structured to match the decentralization of the EPRDF government as shown in Figure 3. The concentration of all-weather roads in the Tigray, Amhara, Oromo, and Southern regions of Ethiopia is a direct result of the EPRDF’s position of power.



Figure 3. Map of Ethiopia’s Highway Network.<sup>45</sup>

<sup>43</sup> Belay, “Assessment of Ethiopian Road Constructions in Rainy Seasons,” 15.

<sup>44</sup> Rony Emmenegger, “The Roads to Decentralization. The History of Rural Road Construction in Ethiopia,” NCCR North-South Dialogue 39, No 2 (2012): 9–10, [https://www.zora.uzh.ch/id/eprint/69095/1/2012\\_EmmeneggerR\\_Emmenegger\\_NCCR\\_Dialogue\\_39\(2\)\\_Kopie\\_.pdf](https://www.zora.uzh.ch/id/eprint/69095/1/2012_EmmeneggerR_Emmenegger_NCCR_Dialogue_39(2)_Kopie_.pdf).

<sup>45</sup> Source: Alicia Stafford, “Ethiopia Road Network,” Logistics Capacity Assessment, last modified January 04, 2019, <https://dlca.logcluster.org/display/public/DLCA/2.3+Ethiopia+Road+Network>.

Thus, since the late 19<sup>th</sup> century, the distribution and design of many road projects in Ethiopia were tied to various goals and ambitions of the regime in power. The result, by the early 1990s, was a piecemeal layout of road networks throughout the country, with many regions in Ethiopia having no access to all-weather roads, and a majority of the rural portions of the country with no access to any roads at all.<sup>46</sup> The past construction of the road network spanning from the reign of Haile Selassie to the EPRDF in Ethiopia led to uneven economic development and created small and fragmented markets in Ethiopia; the disproportionate rural road upgrades in Ethiopia's past handicapped a large proportion of the agricultural producing rural population.<sup>47</sup> In response to the past flaws associated with road construction, the GOE has deemed road infrastructure construction an important part of Ethiopia's economic development strategy.

To sustain the necessary road construction required to reverse the uneven economic development and market fragmentation, the GOE reformed the ERA and created the RSDP. The RSDP was created in 1997 as a 10-year development plan in an effort to consolidate the road rehabilitation programs in Ethiopia, and improve the road planning and management in the country.<sup>48</sup> The RSDP's objectives included: alleviating poverty and increasing food security in Ethiopia, improving the internal connectivity in country, and strengthening the import-export corridors. Though introduced as a 10-year program, the RSDP was extended to include a second portion to continue through 2025 to accomplish the country's goals of reaching the designation of a Low Middle Income Country by 2025.

## **2. The Road Sector Development Program**

Since the start of the RSDP, a majority of the financing remained internal to Ethiopia, with the 81% of funding coming from the GOE (73.3%), the office of the Road

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<sup>46</sup> The World Bank. Implementation Completion and Results Report (IDA-45610), 52.

<sup>47</sup> Crelis Rammelt, "Infrastructures as Catalysts: Precipitating Uneven Patterns of Development from Large-Scale Infrastructure Investments," *Sustainability* 10, no. 4 (April 2018): 8, <https://doi.org/10.3390/su10041286>; "Transportation," UN Emergencies Unit, accessed May 19, 2020, [http://www.africa.upenn.edu/eue\\_web/faoinfra.htm](http://www.africa.upenn.edu/eue_web/faoinfra.htm).

<sup>48</sup> The World Bank. Implementation Completion and Results Report (IDA-45610), 41.

Fund financing (6.1%), and the Ethiopian community financing (1.6%); the remaining 19% of funding was provided by development partners including the International Development Agency (IDA) and more recently China.<sup>49</sup> Due to the finite amount of funds available for road upgrades, projects are selected based on the following criteria: traffic level, network connectivity, road condition, investment potential, and import/export corridor and regional integration roads.<sup>50</sup> Although all five factors are carefully considered in the selection of road projects that receive funding, import/export corridors and regional integration roads are more critical to the competitiveness of Ethiopia's trade markets. The specifics of the various phases of the RSDP will be discussed in the following chapters.

The Office of the Road Fund (ORF) was established parallel to the RSDP in 1997 by the ERA in response to the issues surrounding the inadequate financial resources available for road transportation and the road networks in Ethiopia. The Road Fund's objective at conception "was to finance the maintenance of roads and road safety measures," gaining financial sources from the GOE's budget, fuel levies, licenses renewal fees, traffic violation fines, and various other road tariffs that have existed through the years.<sup>51</sup> As of 2001, the Road Fund has allocated financial support to road agencies, including the ERA, the regional road administrators (RRA), and selected municipalities, as decided by the Road Fund's board members. The funds allocated to the ERA are used for the maintenance and upkeep of road networks throughout Ethiopia, such as the all-weather roads discussed in later chapters.

Currently, the ORF is unable to maintain a stable and secure budget, which negatively affects the balance between the cost of maintenance for existing roads and roads that are in the construction process. The number of vehicles that are registered and

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<sup>49</sup> Ethiopian Roads Authority, "Road Sector Development Program 19 Years Performance Assessment" (Addis Ababa: Ministry of Transport, 2016), 7, <https://www.scribd.com/document/406121531/19-Years-Assessment-Reportl>.

<sup>50</sup> Ethiopian Roads Authority, "Road Sector Development Program 19 Years Performance Assessment," 8.

<sup>51</sup> Workie Tegen Gorfu, "Life Cycle Cost Analysis for Road Maintenance Interventions: A Case Study for Alemgena District" (master's thesis, Addis Ababa University, 2017), 19, <http://etd.aau.edu.et/bitstream/handle/123456789/9751/Workie%20Tegen.pdf?sequence=1&isAllowed=y>.

purchase fuel in Ethiopia, contributing to the fuel levy that funds the ORF is insufficient to the amount necessary for proper upkeep on road projects.<sup>52</sup> The issue regarding ORF funding sources has not been appropriately addressed at a national or regional level as of 2020.

Though China has been involved in Africa over the past two decades it was not until 2007 that substantial Chinese investment was used for Ethiopian roadway projects.<sup>53</sup> This increased presence is a result of the decision of Chinese-state owned institutions, like the prominent Export-Import (EXIM) bank, to allow select countries to acquire soft loans, Ethiopia being one of the select countries.<sup>54</sup>

Since China has a vested interest in the condition and reliability of the road networks in Ethiopia, many of the loans and grants taken for road infrastructure have extended repayment options, often double the repayment period of loans taken for other projects.<sup>55</sup> The Chinese presence is also evident in the increase of Chinese involvement in the construction and completion of road projects. From 2007 to 2011 the number of Chinese firms that were in charge of road projects in Ethiopia rose from 50% to 80%, highlighting China's control over contracts and construction within the transportation sector in Ethiopia.<sup>56</sup> The relationship between China and Ethiopia can best be described as symbiotic in respect to the transportation sector. By assisting Ethiopia in the completion of road networks, China is ensuring its access to Ethiopia's large consumer market, keeping the Chinese industrial market high by using Chinese materials, and providing jobs for the Chinese population. The overall effects of Chinese involvement in the Ethiopian transportation sector will be addressed in greater detail in Chapter III.

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<sup>52</sup> Kaleab W. Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies: The Case of RSDP" (master's thesis, Addis Ababa University, 2014), 5, <http://213.55.95.56/bitstream/handle/123456789/15308/Kaleab%20Woldeyohannes.pdf?sequence=1&isAllowed=y>.

<sup>53</sup> Brautigam, "Chinese Development Aid in Africa," 206.

<sup>54</sup> Jean-Pierre Cabestan, "China and Ethiopia: Authoritarian Affinities and Economic Cooperation," *China Perspectives* 2012, no 4 (2012): 58, <https://doi.org/10.4000/chinaperspectives.6041>.

<sup>55</sup> Jenni Marsh, "Employed by China," CNN, accessed on April 18, 2020, <https://www.cnn.com/interactive/2018/08/world/china-africa-ethiopia-manufacturing-jobs-intl/>.

<sup>56</sup> Cabestan, "China and Ethiopia: Authoritarian Affinities and Economic Cooperation," 58.

## **D. RESEARCH DESIGN**

### **1. Comparative Approach**

This thesis compares road construction projects with and without significant Chinese funding by analyzing successive phases of the RSDP. To measure the benefits or costs associated with Chinese funding, I compare the available data for rural road construction projects funded without Chinese financial assistance during Phases I and II of the RSDP to projects (1997-2007) with Chinese financial assistance in Phases III, IV, and V of the program (2007-present). The analysis highlights similarities in the costs and benefits associated with project implementation and both short-term and long-term impacts of the completed projects on Ethiopia and its residents. More specifically, I compare the different phases of the program and the four road projects selected as case studies.

Within each period—Phases I and II without Chinese funding and Phases III, IV and V with Chinese funding—I analyze the impacts of specific rural road projects. In locating projects to compare, it was important to find projects that are of similar age, size and type, to ensure the comparison is valid and remains unbiased.

In comparing specific road projects, I use data from the World Bank and the Africa Development Fund (ADF), with additional information from international and domestic newspapers and journals. In order to observe the impact on the domestic economy and potential effects on transportation costs, I use data from the World Bank, the UN, and IMF to note any significant economic change that correlated to the construction and completion of each highway.

### **2. Project Comparison Criteria**

For each period of the RSDP, I compare the benefits and costs of the overall road program as well as similar specific road projects. I evaluate each phase of the RSDP by examining the following three categories: (1) execution of phase specific objectives, (2) costs associated with each phase, (3) creation of jobs or training opportunities, including the participation of local constructing and consulting firms associated with each phase. I consider the objectives accomplished in each phase, and the execution of each phase by

assessing the total amount of road construction and road upgrades that occurred, the associated costs, and analyze any available information regarding job creation or training opportunities that directly relate to each individual phase of the RSDP. I compare the findings from each phase to determine if there are any major differences in roadwork accomplishments during the two periods: prior to Chinese investment and after the inclusion of Chinese investment.

To further compare the two periods, I analyze four separate rural road projects, two from the period prior to Chinese investment and two from the period that includes Chinese investment. Comparing the data for these specific rural road projects is complex, therefore the information is broken down into the following six categories appearing in the Project Completion Report (PCR) from the ADF:

- **Project Selection:** I provide information on what criteria and reasoning was used during the selection process for the specific road project.
- **Project Execution and Costs:** I analyze project schedule execution and the costs for the selected rural road projects. I report the length and reason for project delay. For continuity and ease of comparison, the funding will be tracked using Ethiopia's national currency, the Birr (ETB). I use the following exchange change throughout this thesis: 8.32 Birr to 1 U.S. dollar.<sup>57</sup>
- **Job Creation and Training:** I report the number of permanent and temporary jobs created during the selected rural road projects. I examine the type of training conducted and the number of personnel trained in different project positions.
- **Post Maintenance Costs:** I provide information regarding post maintenance plans and costs and the parties responsible for costs coverage.

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<sup>57</sup> African Development Fund, Wacha-Maji Road Upgrading Project, appraisal report (Federal Democratic Republic of Ethiopia: Infrastructure Department Central and West Regions, 2002), III, [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Ethiopia\\_-\\_Wacha-Maji\\_Road\\_Upgrading\\_Project\\_-\\_Appraisal\\_Report.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Ethiopia_-_Wacha-Maji_Road_Upgrading_Project_-_Appraisal_Report.pdf).

- Deviations in Travel Time: I analyze any changes in travel time and/or VOCs experienced after road completion.
- Direct Regional Impact: I analyze the direct regional impacts in the immediate area of the rural road projects, specifically in regard to agricultural sector. I report if there are any advances introduced within the local farming community.

### **3. Research Limitations**

Due to the technical nature of these projects and the somewhat constrained media environment in Ethiopia, the research conducted for this thesis is largely reliant on reports from The World Bank, Africa Development Fund, and the ERA, or secondary data such as published theses. In addition to the absence of diverse information sources, much of the available research studies were conducted by agencies with a vested interest in the overall project, namely domestic investors, government agencies, and international donors leading to a deficiency in objective information generated at the national level in Ethiopia.

## **E. THESIS OVERVIEW AND CHAPTER OUTLINE**

The next chapter “Road Construction in Ethiopia 1997–2007” details road upgrades commenced and completed during Phases I and II of the RSDP. This chapter gives an overview of the RSDP, its accomplishments and failures since the inception of the program until the commencement of Phase III of the RSDP. This chapter analyzes two rural road projects in an effort to provide both quantitative and qualitative data related to road projects prior to Chinese financial involvement in Ethiopia’s transportation sector.

The third chapter “Road Construction in Ethiopia, 2007 to Present” pulls projects from Phases III and V of the RSDP for analysis, while also analyzing Phases III, IV, and V of the RSDP to highlight any successes or downfalls of the program after the addition of Chinese financial assistance. This chapter examines two rural road projects in an effort to provide both quantitative and qualitative data related to road projects with Chinese

financial involvement in Ethiopia's transportation sector, but also includes projected data due to the extremely recent completion of rural road projects.

The final chapter concludes with a comparison of the data gathered and assessed, as well as suggestions for future research relating to the construction and upgrading of both rural road and urban road projects funded by Chinese investors in other countries.

## **F. CONCLUSION**

This chapter has provided a brief review of the current literature regarding Chinese investment in Ethiopia and an overview of both the historical and contemporary road network and administration in Ethiopia. The completion of many road projects in Ethiopia were a direct result of the regime in power which resulted in a piecemeal layout of road networks throughout the country, with many regions in Ethiopia having no access to all weather roads, and a majority of the rural portions of the country with no access to any roads at all. The uneven access to road networks has resulted in the uneven economic development of Ethiopia as a country, slowing the overall progress of reaching the status of a LMIC. It is in this context that I investigate the extent to which the RSDP, which began in 1997, has contributed to further enhancement of the road network and whether Chinese funding in particular has helped to accelerate progress.

As I will show in the following chapters, the road network and overall transportation sector in Ethiopia has improved significantly as a result of the RSDP, both with and without Chinese funding. The developments implemented by the RSDP and its roadwork projects has created employment opportunities for the local Ethiopian population, reduced travel time and VOCs, and introduced varying agricultural improvements in Ethiopia. The success in both phases can be attributed to the strong role of the Ethiopian government. There is no clear indication that Chinese funding has enhanced or diminished the outcomes of these projects.

## **II. ROAD CONSTRUCTION IN ETHIOPIA, 1997–2007**

This chapter provides a baseline against which to assess the benefits and costs of Chinese funded infrastructure projects. It focuses on Phases I and II of the RSDP—the period prior to significant Chinese funding. The chapter begins by providing an overall examination of Phases I and II of the RSDP, highlighting both the overall benefits and costs the program created for the Ethiopian population, chiefly the population living in the vicinity of the program’s project sites. I then analyze two road upgrade projects, the Wachi-Maji road and the Alemgena-Butajira road, that were initiated during these phases I and II of the RSDP, located in the Oromia region and the Southern Nations, Nationalities, and Peoples Region (SNNPR).

For the overall evaluation of the first two Phases of the RSDP, I first detail the project selection standards created during Phase I; these standards are still used by the ERA for the selection of road upgrade and construction projects. I then examine the overall execution of phase specific objectives, the cost of Phases I and II, and the impact Phases I and II of the RSDP had on job creation and training opportunities in Ethiopia’s public and private construction organizations. For the Wacha-Maji and Alemgena-Butajira road projects, I evaluate both projects in term of project selection, project execution and costs, local job creation including the participation of local constructing and consulting firms if there is available data, expenses associated with post-construction maintenance in Ethiopia, deviations in travel times and VOCs, and the direct impact the selected rural road projects have on the region in which they are located, specifically any changes in the agricultural sector.

Phase I of the RSDP developed the needed capacity for organized road construction in Ethiopia. This resulted in the standardization of methods for the selection of road upgrade projects and road construction projects, as well as the development of 8,709 km of road infrastructure throughout the country without going over the allotted

budget.<sup>58</sup> During Phase II of the RSDP, the Ethiopian Rural Travel and Transport Program (ERTTP) was introduced. The ERTTP stressed the importance of upgrading and constructing roads within rural communities and provided the local population opportunities for training in the road construction sector. Phase II also led to the development of 8,252 km of road network in Ethiopia.<sup>59</sup> The GOE and ERA failed to execute Phase II as planned, and an additional amount of work was accomplished, resulting in the Phase to be overbudget. Together, Phases I and II of the RSDP ushered in a new era for road construction in Ethiopia, even though the relative inexperience of the Ethiopian construction sector caused a slow start to the program. Overall, Phases I and II created job and training opportunities for Ethiopians working in the transportation sector, increased the road network in Ethiopia, and improved access to rural regions in the country.

The ability of the ERA to accurately plan, design and complete a project according to the proposed timeline during Phases I and II of the RSDP was poor. This is reflected in the completion delays of both the Wacha-Maji road project and the Alemgena-Butajira road project. Despite the delays associated with project completion, the upgrade of the Wacha-Maji road and the Alemgena-Butajira road ushered in many benefits for the people living in the Oromia region and the SNNPR. Both projects created job and training opportunities for the population in the vicinity of the project site, decreased VOCs and travel times in both the Oromia region and the SNNPR, and led to improvements to the agriculture sector. In addition, the completion of both roads also helped to attract private and governmental investments in the Oromia region and the SNNPR, which will be discussed in the following sections, further improving the local economy as well as improving the overall trade networks in Ethiopia.

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<sup>58</sup> Ethiopian Roads Authority, “Road Sector Development Program 19 Years Performance Assessment,” 11.

<sup>59</sup> Ethiopian Roads Authority, “Road Sector Development Program 19 Years Performance Assessment,” 13.

## **A. ROAD SECTOR DEVELOPMENT PROGRAM PHASES I AND II**

During Phases I and II of the RSDP, the program concentrated on enhancing the institutional development of the various entities associated with road development and construction, as well as improving transportation efficiency and reducing VOCs in an effort to provide access to rural areas for the support of food production and distribution throughout the country. The following sections will discuss the key objectives and overall completion statistics of Phases I and II of the RSDP to provide a holistic overview of the program prior to Chinese financial involvement.

### **1. RSDP Phase I Objectives and Results**

Phase I of the RSDP began in 1997, after the GOE realized the subpar road network that existed in Ethiopia was hindering the country's potential for economic growth. Phase I lasted for five years, ending in June 2002, one month before the commencement of Phase II of the RSDP. This phase standardized the selection method for road projects in Ethiopia, created job positions in the ERA and ORF, provided training for Ethiopian consulting and construction firms and began the methodical process of improving the road network throughout Ethiopia.

#### ***a. Phase I Objectives***

Two objectives of Phase I were to provide a standardized method for selecting road upgrade and road construction projects to be used for all follow-on RSDP phases, and develop the capability of both public and private sector organizations involved in road construction.

The first objective of standardizing the project selection all RSDP phases allowed the ERA to select and complete roads in a systematic approach that minimized preferentialism towards resource rich regions but instead concentrated road

improvements efforts within regions that would promote food security and trade.<sup>60</sup> The standardization of project selection during the beginning of the RSDP set the requirements for all RSDP projects from 1997 to present. The categories considered for all RSDP upgrade projects were: traffic level, network capacity, road condition, investment potential and regional integration roads; the categories considered for all RSDP construction projects were: economic development potential, regions with surplus food crops or cash crops, missing link roads, increasing access to population centers, and access to isolated areas.<sup>61</sup> These categories are still used by the ERA for the selection of all RSDP projects. By setting the selection standards for road projects early on, Ethiopia put itself in the position to ensure that the development of its road network would favor market integration and act as a catalyst for economic growth in Ethiopia by facilitating the flow of agricultural inputs and outputs while preventing donor bias in project selection.<sup>62</sup>

The second objective of Phase I was to develop the capability and capacity of both the public and private sector organizations involved in road construction. This objective was important because it enhanced the impact of Ethiopian firms in the construction sector, and created jobs in Ethiopia.<sup>63</sup> This task involved the strengthening of the ORF, the ERA, and Ethiopian construction and consulting firms involved in road construction.

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<sup>60</sup> Kaleab W. Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies: The Case of RSDP" (master's thesis, Addis Ababa University, 2014), 16, <http://213.55.95.56/bitstream/handle/123456789/15308/Kaleab%20Woldeyohannes.pdf?sequence=1&isAllowed=y>.

<sup>61</sup> Ethiopian Roads Authority, "Road Sector Development Program 19 Years Performance Assessment," 9.

<sup>62</sup> Crelis Rammelt, "Infrastructures as Catalysts: Precipitating Uneven Patterns of Development from Large-Scale Infrastructure Investments," *Sustainability* 10, no. 4 (April 2018): 11, <https://doi.org/10.3390/su10041286>; "Transportation," UN Emergencies Unit, accessed May 19, 2020, [http://www.africa.upenn.edu/eue\\_web/faoinfra.htm](http://www.africa.upenn.edu/eue_web/faoinfra.htm).

<sup>63</sup> The World Bank, Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I), Report No. 42868, (Ethiopia: Transport Sector, 2008), XI, [https://ieg.worldbankgroup.org/sites/default/files/Data/reports/PPAR-42868-P000755-Ethiopia\\_Road\\_Sector.pdf](https://ieg.worldbankgroup.org/sites/default/files/Data/reports/PPAR-42868-P000755-Ethiopia_Road_Sector.pdf).

***b. Phase I Project Results***

Overall, Phase I was successful in meeting the proposed objectives. Phase I accomplished the objective of creating a standard method for project selection; the same process has been used since 1997. Phase I also accomplished the objective of developing the capability and capacity of road construction organizations. The execution of Phase I resulted in the completion of 8,709 km of the planned road maintenance, roughly 98% of the planned 8,908 km of road maintenance; of which 2,709 km were federal roads and 6,000 km were regional rural roads.<sup>64</sup> The completion of road work during Phase I increased the total road network from 26,5550 km in 1997 to 33,297 km.<sup>65</sup> Phase I cost 7.3 billion ETB, sourced locally and internationally, 60.9% and 39.1%, respectively.<sup>66</sup> Phase I utilized 74% of its planned budget of 9.8 billion ETB; the relatively low cost of Phase I is attributed to the low amount of federal roads that were completed during this phase allowing for the use of the cheaper, less experienced construction and consulting firms.<sup>67</sup> However, the ERA was unable to complete 100% of its planned roadwork on time as a result of the relative inexperience of the firms, delays associated with poor project design and planning, and miscommunication between the contractors and client.

The creation of jobs and training opportunities during Phase I directly corresponded to the program's objective of improving the construction sector. The creation of jobs and training opportunities in the ERA and ORF was one sign of expanding capacity in Ethiopia's public sector road construction organizations.<sup>68</sup> The

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<sup>64</sup> Ethiopian Roads Authority, "Road Sector Development Program 19 Years Performance Assessment," 12.

<sup>65</sup> Ethiopian Roads Authority, 13.

<sup>66</sup> Ethiopian Roads Authority, 7.

<sup>67</sup> Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 24, 28.

<sup>68</sup> The World Bank, Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I), Report No. 42868, (Ethiopia: Transport Sector, 2008), 9, [https://ieg.worldbankgroup.org/sites/default/files/Data/reports/PPAR-42868-P000755-Ethiopia\\_Road\\_Sector.pdf](https://ieg.worldbankgroup.org/sites/default/files/Data/reports/PPAR-42868-P000755-Ethiopia_Road_Sector.pdf).

ERA also implemented salary increases and other employment benefits to recruit and retain core staff members, an issue that prevented the ERA from achieving high levels of success in previous road construction projects. The ERA also provided training to improve contract administration, project planning, and financial management of road projects.<sup>69</sup> In addition to the changes in the ERA, Phase I created an official Road Fund Administration and Board of Members that consisted of federal, regional, and private sector representatives for the ORF, which led to more effectiveness in the operation of the ORF. These reforms are still in effect today.<sup>70</sup>

In contrast to the public sector, the private sector did not see the same level of success in terms of capacity building. Due to the vagueness of the specific outcomes desired for building capacity in the private sector, international and Ethiopian contractors had only a loose set of guidelines for training topics and goals. Most of the training that international firms provided to local contractors was in the form of “on-the-job-training,” allowing the local contractors to assist in various stages of road construction such as feasibility studies, project design review, and environmental impact assessments.<sup>71</sup>

As far as direct regional impacts, Phase I ended with no community roads within the Ethiopian *woredas* selected for upgrade or construction—a *woreda* is the third-level administrative unit in Ethiopia, much like a city within a state. The ERA’s and GOE’s lack of focus on community roads resulted in many Ethiopian rural towns remaining inaccessible by cars and buses, continuing to isolate these regions from the rest of Ethiopia.

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<sup>69</sup> The World Bank, Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I), Report No. 42868, 9.

<sup>70</sup> The World Bank, Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I), Report No. 42868, 9.

<sup>71</sup> The World Bank, Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I), Report No. 42868, 5

## **2. RSDP Phase II Objectives and Results**

The second phase of the RSDP began in July 2002 and lasted until June 2007, a total of five years. This phase ended one month before the commencement of Phase III of the RSDP. This phase saw the introduction of a concentrated focus on improving Ethiopia's rural and community roads.

### ***a. Phase II Objectives***

Phase II of the RSDP, much like the first, focused primarily on federal and regional road upgrade and construction projects. Phase II continued the objective of building the capability and capacity of the private and public sector organizations related to road construction. Phase II also included a second objective, a new focus on community-level road maintenance. These objectives were completed in a similar manner to Phase I, with Ethiopian construction and consulting agencies assisting and shadowing international firms.

The Phase II objective to focus on community-level projects led to the creation of the ERTTP, a program specifically designed to empower *woreda* leadership to take ownership of the upgrades and construction of community roads. The ERTTP concentrated on connecting disconnected rural areas that were previously inaccessible. The empowering of *woreda* leadership contributed to the capacity building of Ethiopia's public sector, further advancing Phase II's primary objective. Although the ERTTP was introduced during Phase II of the RSDP, the ERTTP did not have all the same benefits as other RSDP projects; the program did not receive funding or institutional support directly from the RSDP. The objectives of the ERTTP were as follows:

- The construction and expansion of the rural infrastructure at the community level to include low cost roads, footpaths and trails.
- The provision and increase of secondary means of transport and transport services, i.e., buses.
- The expansion and provision of socio-economic facilities such as schools, water points, etc.<sup>72</sup>

For unknown reasons, the ERA and the GOE chose not to implement the ERTTP as an official project of the RSDP. As a result of this decision, the full potential of the program was not realized by many regions in Ethiopia; only eight *woredas* saw the construction stage of the program.<sup>73</sup> In addition to the few number of communities that were touched by the ERTTP, because the ERTTP execution and responsibilities was left *woreda* leadership instead of the ERA, disputes over the accountability for construction costs at the community level occurred. The lack of program ownership and the absence of community road construction standards led to the ERTTP's end during Phase III of the RSDP.<sup>74</sup>

***b. Phase II Project Results***

Phase II accomplished its objectives of continuing to develop the capacity and capability of the private and public road construction organizations and the effective launch of the ERTTP. The execution of Phase II resulted in completion of 811,598 km of road, roughly 140% of the 8,285 km of planned road maintenance; of which 7,483 km were federal roads, and 4,106 km were regional roads.<sup>75</sup> The completion of road work during Phase II increased the total road network from 33,297 km in 2007 to 42,429 km at the completion of Phase II in 2007.<sup>76</sup> Due to the start of the ERTTP during Phase II, the 58,114 km of community roads were competed under the authority of *woreda* leadership. Phase II saw the highest amount of work completed of all RSDP phases. The cost of

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<sup>72</sup> Emmenegger, "The Roads of Decentralization," 19.

<sup>73</sup> Emmenegger, 20.

<sup>74</sup> Emmenegger, 20.

<sup>75</sup> Ethiopian Roads Authority, "Road Sector Development Program 19 Years Performance Assessment," 12.

<sup>76</sup> Ethiopian Roads Authority, 12.

Phase II was 18.1 billion ETB, sourced locally and internationally, 63.5% and 36.5%, respectively.<sup>77</sup> This phase utilized 113% of its planned budget of 15.9 billion ETB; the cost overrun is attributed to the amount of work that was completed versus the amount of work that was planned for Phase II; the cost overrun increase the overall debt in Ethiopia, but did not slow or stop the country's infrastructure building.<sup>78</sup>

In terms of job creation, the implementation of the ERTTP increased job opportunities for Ethiopia's private sector construction firms. In addition to the increased number of jobs created by the ERTTP, Ethiopian firms also experienced a steady increase in construction and consulting awarded. Table 2 shows the steady increase in contracts awarded to Ethiopian contractors beginning in 2002.

The direct regional impact of the completion of 58,114 km of community roads during Phase II led to improved access to rural regions in Ethiopia; access to rural regions increased from 13% in 1997 to 21% in 2007 on the Rural Access Index (RAI).<sup>79</sup> The RAI measures the number of people living within 2 km of the nearest all-weather road in rural regions and is one of the indicators recognized by the World Bank and the African Ministers of Transport to measure rural regions access.<sup>80</sup>

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<sup>77</sup> Ethiopian Roads Authority, 7.

<sup>78</sup> Ethiopian Roads Authority, 7.

<sup>79</sup> Ethiopian Roads Authority, 46.

<sup>80</sup> Ethiopian Roads Authority, 45.

Table 2. Number and Value of Projects Awarded to Local and International Contractors over the RSDP <sup>81</sup>

Year	Number of Projects Awarded to Local Contractors	Number of Projects Awarded to International Contractors	Local Contractors' Project Worth (million ETB)	Foreign Contractors' Project Worth (million ETB)	Total Amount (million ETB)
1998	0	1	-	310.98	310.98
1999	6	12	180.25	3,350.66	3,530.92
2000	4	0	93.46	-	93.46
2001	4	2	531.30	513.49	1,044.79
2002	11	1	252.21	395.58	647.79
2003	18	1	659.25	172.53	831.79
2004	17	2	514.12	286.37	800.49
2005	19	6	1,052.96	1,460.62	2,513.58
2006	19	7	3,773.91	3,356.40	7,130.31
2007	21	11	3,266.81	4,751.42	8,018.22
2008	29	10	7,527.30	4,952.53	12,479.83
2009	15	10	3,088.32	12,660.08	15,748.40
2010	29	2	6,428.22	745.40	7,173.61
2011	32	7	8,607.15	4,798.36	13,405.51
2012	32	3	8,470.92	4,676.23	13,147.15
2013	23	18	5,593.86	17,815.45	23,409.32
2014	58	13	4,941.05	17,248.95	22,190.00
2015	39	11	10,039.34	13,233.02	23,272.36
2016	80	6	17,719.64	12,035.56	29,755.20
Total	456	123	18,848.63	24,935.02	43,783.66
%	78.76	21.24	43.05	56.95	100.00

<sup>81</sup> Adapted from Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 139.

### 3. Benefits and Costs of Phases I and II

RSDP Phases I and II had many benefits for Ethiopia. First Phases I and II generated a standard method for the selection of road upgrade and construction projects. Second, Phases I and II improved the overall capacity of Ethiopia's public sector as the ERA was able to train and retain core staff members, and the ORF obtained an official Road Fund Administrator and a Board of Members, resulting in the creation of jobs in both the ERA and ORF. Phases I and II of the RSDP saw the beginning stages of an increase in skill level for road construction laborers and local employment opportunities, an outcome of the ERTTP. As shown in Table 3, from 2002 to 2007 the ratio of skilled laborers within the labor force increased from 0.25 to 0.30, and the ratio of the unskilled laborers with the labor force decreased from 0.75 to 0.70 for personnel involved in the construction of local community roads.<sup>82</sup> Thus, a key outcome of the RSDP during this period was the GOE's increased capacity to manage road projects and an increase in training and skills development.

Third, the road network in Ethiopia was greatly expanded, with a total of 20,298 km of federal and regional road maintenance completed in addition to the completion of 58,114 km of community roads under the umbrella of the ERTTP. In total during Phases I and II of the RSDP, 43 trunk roads received road maintenance, 32 link roads were upgraded and 73 link roads were constructed resulting in the completion of 119% of roadwork compared to the 73% of roadwork completed during Phases III, IV, and V as I will discuss in the next chapter.<sup>83</sup>

In contrast to the benefits discussed above, Phases I and II failed to build capacity in the private sector. First, the training provided to indigenous firms by international

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<sup>82</sup> Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 85.

<sup>83</sup> Admasu Shiferaw, Måns Söderbom, Eyerusalem Siba, and Getnet Alemul "Road Infrastructure and Enterprise Dynamics in Ethiopia," *The Journal of Development Studies* 51, no 11 (September 2015) ,1544, DOI: 10.1080/00220388.2015.1056785, <https://www.tandfonline.com/doi/full/10.1080/00220388.2015.1056785?scroll=top&needAccess=true>.

firms was often informal and deficient.<sup>84</sup> Second, as a result of the weak capacity building of the private sector, Phases I and II saw a disproportionate amount of valuable project contracts awarded to international firms. According to Table 2, between the years of 1998 and 2002, Ethiopian firms were awarded 98 contracting jobs compared to the 32 contracts awards to international firms, but only earned 70.50 billion ETB compared to the 98.46 billion ETB earned by international firms.<sup>85</sup> This is due to types of contracts won; contracts of less value, such as gravel and dirt roads, were won by Ethiopian firms, while valuable asphalt road contracts were won by international contracts.<sup>86</sup> In addition to the costs associated with Phases I and II discussed above, the exclusion of the ERTTP from the RSDP's project list led to program's eventual downfall during Phase III of the RSDP.

Overall, the capacity development of Ethiopia's public and private sector during Phases I and II laid the foundation needed to ensure all road projects completed during the entirety of the RSDP were designed and implemented according to a strict set of standards. The success seen in the capacity building efforts for the public and private sector lessened the chance that future donors would attempt to make major changes to the operation of the RSDP. In contrast to the road sector capacity building success, Phases I and II demonstrated the inability to properly execute the proposed schedule resulting in budgetary variations. Both phases led to job creation and chances for training at all levels, from the unskilled workers involved in road construction to the high ranking positions at the ERA. The completion of Phases I and II contributed to improvements and increases in the road network in Ethiopia, as well as improvements to the access of rural regions in the country.

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<sup>84</sup> The World Bank, Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I), Report No. 42868, 5.

<sup>85</sup> Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 139.

<sup>86</sup> Getachew Debela, Gurmel Ghataora, and M. Burrow, "A Case Study on the Problems and Prospects of Output and Performance Based Road Contracting (OPRC) in Ethiopia," *International Journal of Construction Engineering and Management* 8, no 1 (March 2019): 11, 10.5923/j.ijcem.20190801.02.

Table 3. Title Employment of the Local Community in Road Constructions by level of skill<sup>87</sup>

Year	Ratio of Skilled to Total Labor	Ratio of Unskilled to Total Labor
2001/2 (Baseline)	0.25	0.75
2002/3	0.25	0.75
2003/4	0.25	0.75
2004/5	0.3	0.7
2005/6	0.3	0.7
2006/7	0.3	0.7
2009/10	0.43	0.57
2010/11	0.42	0.58
2011/12	0.4	0.6
2012/13	0.4	0.6
2013/14	0.39	0.61
2014/15	0.38	0.62
2015/16	0.33	0.67
Average	0.35	0.65

## B. CASE STUDIES

I analyze two specific road projects completed during Phases I and II: the Wachi-Maji Road and the Alemgena-Butajira Road. The Wachi-Maji road is located in SNNPR, the Alemgena-Butajira road in the Oromia region. Both regions were considered rural areas with untapped agricultural potential that lacked road networks linking them to the capital. Both roads were selected to be upgraded by the GOE to connect the previously isolated rural region to Addis Ababa based on Life-Cycle Cost Analysis (LCCA), an economic analysis tool that evaluates road construction and upgrades on the basis of

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<sup>87</sup> Adapted from Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 85.

“design expenses, material extraction, construction equipment, maintenance and rehabilitation strategies and operations over the entire service life.”<sup>88</sup> By linking these regions to the capital city of Addis Ababa, it was anticipated that both roads would expand its market base, and take full advantage of the fertile and arable land present in the SNNPR and Oromia region. Both road projects were funded by the ADB and the GOE, though they did use Chinese firms during the planning, construction, and completion stages, as was the norm during the late 1990s and early 2000s. For each road, I examine the project’s benefits and costs in terms of construction costs, job creation and training, post-maintenance costs, and the broader socio-economic impacts to the region.

### **1. Wacha-Maji Road**

The Wachi-Maji Road upgrade project was considered the core project of the RSDP Phase II, as stated in a report by the World Bank.<sup>89</sup> This project was chosen for completion during the first portion of the RSDP because the GOE and ADF identified the SNNPR region to contain key roads that would directly improve Ethiopia’s economy by providing the link between the rich agricultural area of the SNNPR and the expansive market base in Addis Ababa.<sup>90</sup> The project commenced in 2003 and was officially completed in 2012.<sup>91</sup> The completion of the Wacha-Maji Road project resulted in the upgrade of 175 km of rural road to all-weather roads; an estimated 329,000 people living in the area potentially benefited from the road upgrade.<sup>92</sup>

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<sup>88</sup> Gorfu, “Life Cycle Cost Analysis for Road Maintenance Interventions,” 5.

<sup>89</sup> African Development Fund, Wacha-Maji Road Upgrading Project, appraisal report (Federal Democratic Republic of Ethiopia: Infrastructure Department Central and West Regions, 2002), VII, [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Ethiopia\\_-\\_Wacha-Maji\\_Road\\_Upgrading\\_Project\\_-\\_Appraisal\\_Report.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Ethiopia_-_Wacha-Maji_Road_Upgrading_Project_-_Appraisal_Report.pdf).

<sup>90</sup> “The Road to Prosperity: Building Road Networks in Ethiopia’s Remote Southern Region. Wacha-Maji Road Upgrading Project,” African Development Bank Group, accessed February 15, 2020, <https://mapafrica.afdb.org/stories/legacy/P-ET-D00-002.html#>.

<sup>91</sup> “The Road to Prosperity: Building Road Networks in Ethiopia’s Remote Southern Region. Wacha-Maji Road Upgrading Project.”

<sup>92</sup> “The Road to Prosperity: Building Road Networks in Ethiopia’s Remote Southern Region. Wacha-Maji Road Upgrading Project.”

The Wacha-Maji road project was conceived and constructed with the goal of improving access and mobility to the population living in the rural areas of Chena, Meint, and Dizi districts of the Bench-Maji zone located in the SNNPR. As a result of the completed Wacha-Maji road, the increased mobility allowed the population located in the Bench-Maji zone to progress its social and economic facilities by increasing market access and diversification. The completion of the Wacha-Maji road formed the strategic link between the towns of Wacha and Maji, as well as the link from the SNNPR to the capital, Addis Ababa in the north.

The ADF approval of the loan for the Wacha-Maji road project was fueled by the GOE's goal of improving the capacity and efficiency of the existing road network in the SNNPR to support Ethiopia's overall plan to improve road transport throughout the country.<sup>93</sup> The Wacha-Maji road project was also consistent with the GOE's commitment to support and improve the economic and social programs in Ethiopia's rural regions. The GOE approved the project because it would guarantee an increase in accessibility to the agriculturally rich rural areas in Ethiopia, improving food security in the country.<sup>94</sup> In addition to the reduction in food insecurity in Ethiopia, the Wacha-Maji project was also considered to be technically and socially feasible with little environmental impact to the local population in construction areas.<sup>95</sup> The following sections will detail project costs, job creation and training surrounding the project, and the impact the completed project had on the Bench-Maji zone of the SNNPR.

*a. Project Execution and Costs*

The cost of the Wacha-Maji road project totaled ETB 1,166.28 million, roughly 135.4 million USD, at completion financed jointly by the GOE and the ADF.<sup>96</sup> The ADF was responsible for 100% of the foreign exchange cost and approximately 28% of the

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<sup>93</sup> African Development Bank Group. "The Road to Prosperity: Building Road Networks in Ethiopia's Remote Southern Region. Wacha-Maji Road Upgrading Project."

<sup>94</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 13.

<sup>95</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 33.

<sup>96</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, (Ethiopia: PCR, 2013), 12, [https://evrd.afdb.org/documents/docs/EN\\_PN10552.pdf](https://evrd.afdb.org/documents/docs/EN_PN10552.pdf).

local costs, to prevent untenable budgetary strains on Ethiopia.<sup>97</sup> The GOE was responsible for covering the remaining 72% of local costs and all the taxes, duties, royalties, levies, and other costs that were not eligible for ADF financing. The costs of technical assistance for the project was provided by the ADF and GOE, 94% and 6%, respectively.<sup>98</sup>

The Wacha-Maji project exceeded the proposed construction costs by 49.4%, shouldered by the ADF in the form of an additional loan, which will be repaid by Ethiopia in the future, contributing to the amount of infrastructure debt present in Ethiopia.<sup>99</sup> One of the main factors for cost overrun was the time it took to complete the project; the project was proposed to take 42 months, and all material and labor prices were based on the projected price influx over the span of 42 months.<sup>100</sup> The Wacha-Maji road project took a total of 86 months to complete due to modifications during the planning stage and additional work required during the building stage; project modifications were common in Ethiopian led projects at the time due to the relative inexperience of many Ethiopian consulting and construction firms.<sup>101</sup> During the 86 months required to complete the Wacha-Maji road, materials crucial for project completion such as cement, steel, and fuel, increased in price causing the project to almost double in costs. Though the completion of the Wacha-Maji road project was extremely delayed, and subject to unexpected price increases, there were no reports of the projects cost overages affecting the start of other projects in Ethiopia. There were also no reports of funding reallocation documented. Ultimately, the costs overruns associated with the Wacha-Maji road project were factored into the project's final cost and repayment plan. The project delay demonstrated to Ethiopia, the ADF and the

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<sup>97</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 22.

<sup>98</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 22.

<sup>99</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 27.

<sup>100</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 11.

<sup>101</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 11.

constructions firms involved in the project the importance of factoring in inflation rates prior to committing to the disbursement of project fees.<sup>102</sup>

***b. Job Creation and Training***

The Wacha-Maji upgrading project created 1360 temporary jobs and 72 long-term jobs for the local Ethiopian residents.<sup>103</sup> The 1360 temporary jobs ranged from day laborers directly involved in the physical road construction to local residents involved in food production for construction workers at various project sites. The road project provided an opportunity to train the local population in multiple aspects of road construction by hiring and training unskilled workers to assist in all stages of the construction of the road. By allowing the local population to hone their construction skills, this project not only offered a source of income, but also provided a source of knowledge outside of the agriculture sector for the residents living in the SNNPR region.

Of the 72 long-term jobs created by the Wacha-Maji upgrading project, 54 were positions in the ERA, that required a higher level of skill to obtain.<sup>104</sup> The skilled jobs included: Senior Highway Road Design Engineer, Senior Civil/Hydraulics Engineer, and Senior Structural/Bridge Engineer, furthering the experience level of domestic Civil Engineers.<sup>105</sup> Along with the 54 skilled long-term jobs at the ERA, a total of 18 ERA staff were trained within the first five years of the Wacha-Maji project, intended to provide the necessary training for employment on future road projects.<sup>106</sup> The training provided during the Wacha-Maji project ranged from onsite software design training to offsite engineering design training. In addition to the design training provided, the opportunity for post-graduate civil engineer training in Highway/Transport and Material

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<sup>102</sup> “The Road to Prosperity: Building Road Networks in Ethiopia’s Remote Southern Region. Wacha-Maji Road Upgrading Project.”

<sup>103</sup> African Development Fund, Wacha-Maji Road Upgrading Project, A-1; African Development Bank Group, Ethiopia-Wacha-Maji Upgrading Project, report No.46002-P-ET-D00-002, (Ethiopia: African Development Fund, 2020), <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-D00-002>.

<sup>104</sup> African Development Fund, Wacha-Maji Road Upgrading Project, A-1.

<sup>105</sup> African Development Fund, Wacha-Maji Road Upgrading Project, A-1.

<sup>106</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 28.

engineering training was also made available for two personnel involved in the Wacha-Maji road project.<sup>107</sup>

***c. Post Maintenance Costs***

As with other projects completed during the RSDP, the post maintenance costs for the Wacha-Maji road project will be financed through the ERA's road fund. The specific firm that was selected for project construction (either domestic or international) is also responsible for the road and its maintenance during the construction stage and the one-year maintenance period immediately following the completion of the project.

The ORF will provide the funding for the costs associated with the road maintenance and upkeep for the life-span of the completed road; estimated at project completion in 2012 to be 511.81 million ETB for a 20-year period.<sup>108</sup> The upkeep contract from the ERA includes routine maintenance of the road side, the filling of potholes, re-graveling every five years, and resealing the asphalt sections of the road every eight years. The ERA's road maintenance plan for the Wacha-Maji road currently extends through 2028, the estimated service life of the road in its current state of gravel and asphalt.<sup>109</sup> There is currently no further research on the state of the Wacha-Maji road as of 2020.

***d. Impact to SNNPR***

Upon completion of the Wacha-Maji road project, the residents located in the Chena, Meint, and Dizi districts in the Bench-Maji zone were able to potentially benefit from the 175 km of upgraded road.<sup>110</sup> Traveling in the SNNPR region became more cost-efficient and less time consuming due to the expansion of the road network from less than 40 km of motorable road to over 175 km of motorable road. The large farming

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<sup>107</sup> African Development Fund, Wacha-Maji Road Upgrading Project, A-1.

<sup>108</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 29.

<sup>109</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 29.

<sup>110</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 2.

population located in the SNNPR was encouraged to expand the region's agricultural sector as a result of the transportation improvements.<sup>111</sup>

Prior to the completion of the Wacha-Maji road, the local population was faced with social limitations, largely due to the lack of a reliable method for goods transportation; the population residing in the SNNPR adopted the use of pack animals in an effort to lessen the burden of the transportation shortfalls that were common in the region.<sup>112</sup> The amount and type of goods that could be transferred in and out of the SNNPR was hampered by the deficiency in dependable transportation. Even though the use of pack animals reduced the overall time required to travel to the closest market setting from three days to as little as three hours the animals were still not as reliable as a motor vehicle.<sup>113</sup> The poor economic situation in the region was exacerbated by the low survival rates of the pack animals; environmental adversities in the SNNPR such as high altitude and humidity levels negatively affected animal survival rates. Transportation costs were reduced by approximately 33% after the completion of the Wacha-Maji road; this significant decrease in transportation costs can be attributed to the use of public transport buses which were not previously available for use in the town of Maji.<sup>114</sup>

In addition to the reduction in transportation costs and travel times, the average distance to an all-weather road was reduced from 21km in 1997 to 8.7 km in 2012, reducing the time required to travel to the nearest all-weather road from 4 days to 5 hours.<sup>115</sup> The percentage of the population living more than 5 km from an all-weather road was reduced from 79% in 1997 to 5.6% in 2012.<sup>116</sup> The completion of the Wacha-

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<sup>111</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 8.

<sup>112</sup> African Development Fund, Wacha-Maji Road Upgrading Project, 11.

<sup>113</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 2.

<sup>114</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 8.

<sup>115</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 19; "The Road to Prosperity: Building Road Networks in Ethiopia's Remote Southern Region. Wacha-Maji Road Upgrading Project."

<sup>116</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 19.

Maji road reduced transportation costs for farmers in the SNNPR, which effectively raised the income and wages of the rural population.<sup>117</sup>

As a result of the completion of the Wacha-Maji road, about 100,000 hectares of arable land was identified and the region has been opened to agricultural investors; along with the increase in investors, the access to agricultural inputs such as fertilizer has also increased substantially.<sup>118</sup> The completion of the road has also ushered in private and governmental investments in the region, such as a possible sugar factory in the Maji area, the investment in coffee plantations in the region, and the establishments of organizations associated with rural electrification.<sup>119</sup>

Though the road ushered in improvements for the residents of the SNNPR such as reductions in travel times and cost, the introduction of agricultural investors to the region, and access to farming tools like fertilizer, the project accrued a considerable amount of debt for Ethiopia. Other than the vast amount of debt that resulted from the Wacha-Maji road project, no other significant impacts related to the project were reported by the World Bank, the ADF, or the GOE.

## **2. Alemgena-Butajira Road**

The Alemgena-Butajira road upgrade project was considered one of the core projects of the Phase II of the RSDP after a study conducted in 1997 by the GOE identified the road as a high priority link road. The decision to undertake the upgrade project during Phase II was influenced by the desire to improve access and mobility for the population living in the rural areas of the SNNPR and the Oromia region, as well as the desire to provide a link between Kenya and Ethiopia in an effort to promote regional

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<sup>117</sup> World Bank, International Monetary Fund, Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change (Washington, DC: World Bank Publications, 2015), 253.

<sup>118</sup> Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, 8.

<sup>119</sup> “The Triumphant Journey of Omo-Kuraz Sugar Development Project,” *Sugar Corporation*, January 22, 2019, <https://www.ethiopiansugar.com/402/>; Public Sector Operations, Wacha-Maji Road Project, Report No. P-ET-D00-002, (Ethiopia: PCR, 2013), 8, 16, [https://evrd.afdb.org/documents/docs/EN\\_PN10552.pdf](https://evrd.afdb.org/documents/docs/EN_PN10552.pdf)

trade and integration.<sup>120</sup> The project commenced in 2003 and was officially completed in 2012. The completion of the Alemgena-Butajira road project resulted in the upgrade of 120 km of rural road to all-weather roads; an estimated 1,300,000 people living in the region potentially benefited from the completed road.<sup>121</sup>

The GOE's goal of regional integration in the Horn of Africa positively contributed to the approval of the loan for the Alemgena-Butajira road project in addition to the goal of reducing road maintenance and VOCs by improving the road networks located in rural regions.<sup>122</sup> The upgrade project was also in line with the GOE's pledge to support economic and social development programs throughout Ethiopia by making a concerted effort to remove transportation bottlenecks that prohibited or hindered the free flow of vehicle movement both internal and external to Ethiopia; by improving the mobility and accessibility of these rural areas, the Ethiopian population would be able to gain economically as a result of an increased awareness of market trends and a diversification of crop output.<sup>123</sup> The project's approval was also influenced by the guaranteed increase in accessibility to the agriculturally rich rural areas in Ethiopia, improving food security in the country. The following sections will detail project costs, job creation and training surrounding the project, and the impact the completed project had on the Mirab Shewa zone of the Oromia region and the Gurage zone of the SNNPR. The information in the following sections draws primarily from the Project Completion Report provided by the African Development Fund.

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<sup>120</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, (Ethiopia: Transport Division 2, 2007), V, <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ADF-BD-IF-2007-140-EN-ETHIOPIA-FINAL-PCR-ALEMGENA-BUTAJIRA-PROJECT-20607-KIGGUNDU-JUNE-21.PDF>.

<sup>121</sup> African Development Bank Group, Ethiopia-Alemgena-Butajira Road Upgrading Project, Report No.46002-P-ET-DB0-008 (Ethiopia: African Development Fund, 2020), <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-DB0-008>.

<sup>122</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, V.

<sup>123</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 11.

*a. Project Execution and Costs*

The cost of the Alemgena-Butajira road project totaled ETB 295.15 million, \$34.28 million USD at completion, financed jointly by the GOE and the ADF.<sup>124</sup> At project completion, the ADF financed 100% of the foreign exchange cost and approximately 79.9% of total project costs, an increase from the original estimated contribution of 74%, due to the design modifications necessary for project completion; the increase in funding from the ADF resulted from the requirement that at least 80% of the civil works contract be paid in foreign currency.<sup>125</sup> The GOE was responsible for covering the remaining 20.1% of project costs which included the entirety of local project costs, taxes, duties, royalties, levies, and any other residual costs that were ineligible for ADF financing.<sup>126</sup> The completed project cost 10.6% less than the originally appraised value, credited to the competitive bids for the consulting services and the civil works contracts, won by an Indian company and a Chinese company, respectively.<sup>127</sup> The competitive bidding process drove the international contract prices down, decreasing the overall loan Ethiopia obtained from the ADF.

The Alemgena-Butajira project did exceed the proposed construction timeline by a total of 27 months; 16 months due to the inability of the ERA to assign a Civil Engineer that met the requirements of the ADF and 11 months due to design modifications required for safe transit of the road corridor.<sup>128</sup> The 27 month delay, coupled with the work stoppage during the rainy season, resulted in the Alemgena-Butajira road project taking 57 months to complete. The Alemgena-Butajira project delay did not have any recorded impacts on the start time of other road projects in Ethiopia.

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<sup>124</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, V.

<sup>125</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, V-VI.

<sup>126</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 10.

<sup>127</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 4–5.

<sup>128</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 7.

***b. Job Creation and Training***

The Alemgena-Butajira project created job opportunities for both skilled and unskilled laborers in the SNNPR and Oromia region. The ADF reported that the Alemgena-Butajira upgrading project created over 7,545 temporary jobs for the local Ethiopian population and approximately 5,454 permanent jobs for Ethiopians within the ERA during the project's construction stage.<sup>129</sup> The 7,545 temporary jobs ranged from day laborers directly involved in the road construction to local residents involved in food production for construction workers at various project sites. There is no amplifying information regarding the specifics of the 5,454 permanent jobs created during the Alemgena-Butajira upgrading project. Separate from the job creation during the construction stage, the routine maintenance and upkeep of the Alemgena-Butajira road is anticipated to generate upwards of 120,000 jobs for unskilled workers.<sup>130</sup>

***c. Post Maintenance Costs***

The post maintenance costs for the Alemgena-Butajira road project will be financed through the ERA's road fund, as with other projects completed during the RSDP.<sup>131</sup> Although there were no specific maintenance plans scheduled at project completion, and no further plan regarding maintenance and upkeep of the finished road has been released to the general public, as of 2001 the GOE launched the District Maintenance Organization (DMO) intended to control the maintenance of select projects post completion.<sup>132</sup>

***d. Impact to SNNPR and Oromia Region***

The completion of the Alemgena-Butajira road project, created the opportunity for over 1,300,000 residents living in the Mirab Shewa zone of the Oromia region and the Gurage zone of the SNNPR and Kenya to potentially benefit from the 120 km of

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<sup>129</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 8.

<sup>130</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 12.

<sup>131</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 16.

<sup>132</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 14.

upgraded road.<sup>133</sup> The Alemgena-Butajira contributed to vehicle travel that was more time efficient and less costly by increasing the capacity of the road network in both rural regions, and providing the integral link from Ethiopia to Kenya. As a result of the improvements in transportation, the large farming population located in the SNNPR was encouraged to expand the region's agricultural sector.<sup>134</sup>

Prior to the completion of the Alemgena-Butajira road, the local population was faced with transport and travel limitations that made vehicle operation difficult during the wet seasons and contributed to high VOCs; the deficiency in dependable transportation hampered both the amount and type of goods that could be transferred in and out of the regions.<sup>135</sup> The completion of the Alemgena-Butajira road reduced average transportation times from 4.46 hours to 0.36 hours, decreased the distance necessary to travel for the purchase of household goods from 5.23 km to 3.90 km and increased the total number of vehicles to travel the road corridor by 25% annually.<sup>136</sup> After the completion of the Alemgena-Butajira road, VOCs were cut by 48% which led to an increase in public transportation in the regions.<sup>137</sup> Significant decrease in transportation costs can be attributed to the use of public transport buses which were not previously available for use on the rural road networks present in the SNNPR and Oromia region. At project start, “only 7 small bus trips and 63 large bus trips per day were observed,” this

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<sup>133</sup> African Development Bank Group, Ethiopia-Alemgena-Butajira Road Upgrading Project, Report No.46002-P-ET-DB0-008.

<sup>134</sup> African Development Fund, Ethiopia Country Assistance Evaluation 1996–2007, (Ethiopia: Operations Evaluation Department (OPEV), 2008),21, <https://www.oecd.org/countries/ethiopia/42245063.pdf>

<sup>135</sup> African Development Bank Group, “Upgrading Vital Roads: Connecting Ethiopia’s farmers with markets,” Accessed February 19, 2020, <https://mapafrica.afdb.org/en/stories/P-ET-D00-004.html>.

<sup>136</sup> The World Bank, Implementation Completion and Results Report (IDA-56516) on a Grant in the Amount of SDR 93 Million (US\$ 126.8 Million Equivalent) to the Federal Democratic Republic of Ethiopia for a Ethiopia-Road Sector Development Program, Report No. ICR00001221, (Africa: 2010), 68, <http://documents.shihang.org/curated/zh/176301468030351422/pdf/ICR12210P044611C0disclosed081161101.pdf>; African Development Fund, Project Completion Report Alemgena-Butajira Road, 11.

<sup>137</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 11.

number increased to 95 small bus trips and 88 large bus trips daily after project completion.<sup>138</sup>

The improvements made to the Alemgena-Butajira road reduced overall expenses and costs for farmers in the affected rural regions by easing the transportation of agriculture products into the urban regions of Ethiopia and Kenya; the higher volume of goods transported and sold in the larger market increased trade by 0.38% during the first seven years of road construction.<sup>139</sup> The average wage for the rural farmer population was raised by 2.64% due to the boost in trade.<sup>140</sup> The farmers in the regions also experienced an increased awareness of market trends that empowered their bargaining ability; the newly empowered farmers have since formed associations and are able to negotiate better prices for their products in major markets, enabling them to access better farming technology such as seed and fertilizers.<sup>141</sup>

The upgrades to the Alemgena-Butajira road led to improvements in the lives of the residents in the regions, as seen by the 10% increase in tin roofs on homes in the vicinity of the completed road project; according to the World Bank, a household with a tin roof is considered a sign of wealth, the difference in money and technology available to the local population.<sup>142</sup> The completion of the road also ushered in private and governmental investments in the region, such as hotels, shopping centers, private schools, health centers, and petrol stations.<sup>143</sup> Though the road resulted in advancements for the residents of the SNNPR and the Oromia region such as reductions in travel times and cost, better access to public transit and the introduction of farming networks and associations, the project accrued a considerable amount of debt for Ethiopia. Other than the vast amount of debt that resulted from the Alemgena-Butajira road project, no

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<sup>138</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 11.

<sup>139</sup> The World Bank, Implementation Completion and Results Report (IDA-56516), 67.

<sup>140</sup> The World Bank, Implementation Completion and Results Report (IDA-56516), 67.

<sup>141</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 12.

<sup>142</sup> The World Bank, Implementation Completion and Results Report (IDA-56516), 64–67.

<sup>143</sup> African Development Fund, Project Completion Report Alemgena-Butajira Road, 12.

significant impacts to the well-being of residents in the vicinity of the project were reported by the World Bank, the ADF, or the GOE.

### **C. CONCLUSION**

Overall, the road construction and upgrades that occurred in Ethiopia prior to the inclusion of Chinese funding were beneficial. First, Phases I and II of the RSDP laid the foundation for the future phases of the program. Phase I of the RSDP set the standard for the selection process for road upgrade and construction. This standard selection process ensured the ERA would be able to select and complete roads in a systematic approach that minimized preferentialism towards resource rich regions. Phase II launched the ERTTP, a program specifically designed to empower *woreda* leadership to take ownership of the upgrades and construction of community roads, concentrating on disconnected rural areas that were previously inaccessible. Both Phases I and II concentrated on making improvements to Ethiopia's public and private road construction organizations. The successes made in the public sector organizations were apparent early on, but the private sector still suffered from the lack of skill necessary to obtain the same high value contracts as international firms at the end of Phase II. As I describe in the next chapter, the strong foundations of the RSDP and the improvements made in the public and private sector during Phases I and II were important because they prevented any interjection from Chinese donors regarding the location, design and construction of road projects during Phases III, IV and V.

The completion of the Wacha-Maji and Alemgena-Butajira roads contributed a number of important benefits, with few visible costs associated to the projects. Table 4 summarizes the two roads on the project criteria analyzed. As presented in both case studies, the ability of the GOE and ERA to properly execute the road projects on schedule was deficient, and led to an increase in project price, which necessitated loan increases from the ADF increasing the total amount of GOE debt. Encouragingly, both the Wacha-Maji and Alemgena-Butajira road projects had a positive impact on the daily life of the residents living in the SNNPR, Oromia region, and Kenya. The projects created over 10,000 short-term jobs and hundreds of long-term jobs directly associated with the

projects, reduced travel times and costs associated with transportation, introduced improvements like the use of fertilizer and farming associations to the farming communities, and paved the road for external investments in the regions. The accomplishments of RSDP Phases I and II cemented Ethiopia's place as an LIC (Low Income Country), and maintained the country's goal of reaching the status of an LMIC by 2025.

As the next chapter explains, the period of road construction sector prior to the introduction of Chinese funding did not differ significantly from the period after the introduction of Chinese funding. As will be described in the following chapter, both periods were plagued with project delays, and budget overages. Both periods ushered in job and chances to train the local population in various aspects of road construction. The period prior to Chinese funding also improved road connectivity within Ethiopia while decreasing travel time and VOCs much like projects completed with Chinese funding are anticipated to do.

Table 4. Road Project Comparison: Wacha-Maji Road and Alemgena-Butajira Road

Category	Project Length	Project Selection	Project Execution/Cost		Jobs Created		Deviations in TT/VOCs		Impact to Local Community
			Delay	Budget	Temp.	Long-Term	Travel Time Reduction	VOCs	
Wacha-Maji Road	175 km	Link from Agri. Area to Market	44 Month	49.9% Over	1,360	72	4 Days→5 Hours	↓33%	Increased Access to Fertilizer/ Introduced Private Investment to Region
Alemgena-Butajira Road	120 km	Link between Kenya and Ethiopia	27 Month	10.6% Under	7,545	5,454	4.46 Hours→0.36 Hours	↓48%	Farmers Increased Knowledge of Market Trends/ Introduced Private Investment to Region

Adapted from ADF and World Bank Documents, Author's Own Compilation

### III. ROAD CONSTRUCTION IN ETHIOPIA, 2007 TO PRESENT

This chapter assesses the benefits and costs of Chinese funding for infrastructure projects. During this period of road construction, Chinese funding became available to the GOE and was utilized by the ERA to complete various road projects. This chapter focuses on Phases III, IV, and VI of the RSDP—the period after the introduction of significant Chinese funding. The chapter begins by providing a detailed examination of Phases III, IV, and V, highlighting the overall benefits and costs the program created for the Ethiopian population, chiefly to the population living in the vicinity of the program’s project sites. Due to the ongoing nature of Phase V, I only analyze information from the first three years of the phase. I then analyze two road upgrade projects, the Jima-Mizan road and the Bedele-Metu road, that were initiated during these latter phases of the RSDP, located in the Oromia region and the SNNPR.

Phases III, IV, and V of the RSDP received significant amounts of Chinese funding. The first two phases of the RSDP contained no documented financial assistance from China. China financed 12.6 billion ETB for the final three phases of the RSDP, approximately 3.7% of the 335.8 billion ETB disbursed for the RSDP budget.<sup>144</sup> Phase III received 1.25 of its 34.9 billion ETB from China, approximately 3.5%; Phase IV received 8.56 of its 158.3 billion ETB budget from China, approximately 5.4%; the first three years of Phase V has received 2.78 of its 117.1 billion ETB budget from China, approximately 2.37%.<sup>145</sup> Both road projects discussed in this chapter used Chinese firms during the planning, construction, and completion phases, enlisting the assistance of Ethiopian construction firms as necessary.

For the evaluation of the Phases III, IV, and V of the RSDP, I examine the overall execution of phase-specific objectives, the cost of these phases, and the impacts these phases had on the creation of jobs and training opportunities for the Ethiopian population,

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<sup>144</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 28.

<sup>145</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 28.

including the continued capacity building efforts of the Ethiopian organizations connected to the construction sector. For the Jima-Mizan road and the Bedele-Metu road projects, I evaluate both projects in terms of project execution and costs, local job creation including the participation of local constructing and consulting firms if there is available data, expenses associated with post-construction maintenance in Ethiopia, deviations in travel times and VOCs, and the direct impact the selected rural road projects have on the region in which they are located, specifically any changes in the agricultural sector.

As detailed in the following sections, Phase III of the RSDP saw benefits in training as shown by the increase of the ratio of skilled laborers in the labor force by 0.12%. This phase also saw the development of 54,655 km of road.<sup>146</sup> Phase IV of the RSDP created jobs through the introduction of the Universal Rural Road Access Program (URRAP), a program dedicated to providing greater road connectivity and rural region access and the completion of 85,860 km of roadwork. Startup complications associated with URRAP during Phase IV resulted in a 26% budget overrun.<sup>147</sup> Phase V is still being completed and is predicted to be the most costly phase of the RSDP: the first three years utilized 69% of its budget only completing 39% of its planned maintenance.<sup>148</sup> Overall, Phases III, IV and V continued to develop the capacity and capability of Ethiopia's private sector organizations connected to road construction, increased the ratio of skilled workers, and provided support to the community leaders charged with the task of improving local community roads. These phases also continued to highlight the shortfalls associated with the construction of transportation infrastructure in Ethiopia.

In many ways, the addition of Chinese funding did not alter the trajectory of costs and benefits observed during Phases I and II. The costs involved in the completion delays

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<sup>146</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 14.

<sup>147</sup> Ethiopian Roads Authority, 16, 21.

<sup>148</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 2.

of both the Jima-Mizan road project and the Bedele-Metu road project are similar to the delays for the Wachi-Maja and Alemgena-Butajira projects. Even though the Bedele-Metu project resulted in the disturbance a protected forest area, triggering a reforestation project, both the Jima-Mizan and Bedele-Metu road projects brought many benefits for the people living in the Oromia region and the SNNPR. Both projects created opportunities for long-term and short-term jobs and training opportunities for the population in the vicinity of the project site, led to improvements to the agriculture sector, the expansion of the market-base for the farming community, and a decrease in vehicle travel times in both the Oromia region and the SNNPR. In addition, the completion of both roads also helped to attract private and governmental investments in the Oromia region and the SNNPR, thus further improving the local economy.

Due to the very recent completion of one project, and the ongoing construction of the other, the amount of statistical information available for these projects is significantly reduced compared to the information available for the projects discussed in Chapter II. For this reason, both projects chosen for analysis will be examined to the greatest extent possible, but do not provide a complete analysis. In the following sections, any reference to GOE funding is understood to include funding from Chinese donors.

#### **A. ROAD SECTOR DEVELOPMENT PROGRAM PHASES III, IV, AND V**

Like Phases I and II, Phases III, IV and V also focused on developing the capacity of the various entities associated with road development and construction, improving transportation effectiveness, reducing VOCs, and providing access to rural areas to support food production and distribution throughout the country. The difference between the first two phases and the last three phases was the introduction of Chinese funding. The financial involvement of Chinese donors during Phases III, IV, and V did not result in any substantial changes within the organization or operation of the RSDP. The following sections will discuss the key objectives and overall completion statistics of the final three phases of the RSDP to provide a holistic overview of the program after the introduction of Chinese funding. Because Phase V of the RSDP is ongoing, only information from the first three years will be assessed.

## **1. RSDP Phase III Objectives and Results:**

Phase III of the RSDP began in July 2007 and lasted until June 2010, a total of three years. It was during this phase that China began providing significant financial assistance.

### ***a. Phase III Objectives***

Phase III of the RSDP did not specify any specific objectives to be accomplished within the three-year period other than the continuation of the ERTTP and capacity building efforts from the previous two phases. In regard to the ERTTP, the program saw its final stages during Phase III due to the program's continued exclusion from the RSDP's official project ledger and funding.

### ***b. Phase III Project Results***

The execution of Phase III of the RSDP resulted in the completion of 12,395 km of road, roughly 84% of the 14,686 km of planned road maintenance; of which 7,996 km were federal roads, and 4,399 km were regional roads.<sup>149</sup> The completion of road work during Phase III increased the total road network from 42,429 km in 2007 to 48,793 km in 2010.<sup>150</sup> As a result of the ERTTP, 42,260 km of community roadwork was accomplished under the authority of the *woredas* leadership.<sup>151</sup> The cost of Phase III was 34.9 billion ETB, sourced both locally and internationally, 75.2% and 24.8%, respectively, of which 1.2 million ETB—approximately 3.5%—was sourced directly from China.<sup>152</sup> Phase III utilized 101% of its planned budget of 34.9 billion ETB; the cost increase from Phase II to Phase III resulted from the increase in the amount of

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<sup>149</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 13.

<sup>150</sup> Ethiopian Roads Authority, 14.

<sup>151</sup> Ethiopian Roads Authority, 14.

<sup>152</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 28.

federal roads that were completed; federal roads are more expensive because they are constructed using asphalt, not gravel.<sup>153</sup>

The increased amount of jobs and training opportunities during Phase III directly corresponded to the continuation of the ERTTP. At the end of Phase II, some of the *woredas* involved in the ERTTP were still in the planning and design stage, limiting the number of people involved in the projects. Once the construction stage began in all eight *woredas*, there were increases in the jobs and training opportunities available to local laborers.<sup>154</sup> As shown in Table 3, the ratio of skilled laborers in the labor force increased from 0.30 to 0.42 and the ratio of unskilled laborers in the labor force decreased from 0.70 to 0.58 between the years of 2007 and 2010.<sup>155</sup> The direct regional impact of the completion of 42,260 km of community roads during Phase III led to improved access to rural regions in Ethiopia; access to rural regions increased from 21% in 2007 to 25% in 2010 according to the RAI.<sup>156</sup>

## **2. RSDP Phase IV Objectives and Results**

The fourth phase of the RSDP began in July 2010 and ended in June 2015, lasting a total of five years. This phase saw the official conclusion of ERTTP and the introduction of URRAP.

### ***a. Phase IV Objectives***

The primary objective of Phase IV remained consistent with the previous phases: a focus on federal and regional road upgrade and construction projects, and capacity building of the organizations associated with road construction. Phase IV's secondary objective was the successful launch of URRAP. URRAP is dedicated to providing greater

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<sup>153</sup> Debela, et al, "A Case Study on the Problems and Prospects of Output and Performance Based Road Contracting (OPRC) in Ethiopia," 11.

<sup>154</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 14.

<sup>155</sup> Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 85.

<sup>156</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 46.

road connectivity and rural region access. Unlike the ERTTP, URRAP is fully integrated into the RSDP, ensuring the program receives the financial and institutional support essential for sustained success. The objectives of URRAP at its inception during Phase IV were as follows:

- Distribute over 7,461 Low Volume Roads Design Manuals were distributed to all regions, *woredas*, and consultant involved in URRAP.
- The supply and distribution of 8000 small and medium capacity construction equipment, tractors, fuel tankers, towed rollers, etc.
- Provide a standard design and construction process for community level roadwork.
- The training and development of over 1220 Ethiopian consultant and contractors for involvement in URRAP.<sup>157</sup>

The success of the URRAP during Phase IV and follow-on phases were a result of the inclusion of URRAP into the RSDP. The integration of URRAP into the RSDP ensured the construction of community roads were fully financed, designed, and constructed with the same vigor and standards as federal and regional roads, unlike the community roads constructed under the ERTTP.<sup>158</sup>

***b. Phase IV Project Results***

The execution of Phase IV resulted in the completion of 85,860 km of roadwork, roughly 88% of the planned maintenance; of the roadwork completed 13,633 km were federal roads, 9,814 km were regional roads, and 46,810 km were URRAP projects.<sup>159</sup> The completion of roadwork during Phase IV increased the total road network from 48,793 km in 2010, to 110,414 km in 2015<sup>160</sup> The introductory period of URRAP accomplished approximately 65% of the planned 62,413 km of roadwork.<sup>161</sup> Though the amount of community roadwork completed during Phase IV was lower than the amount

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<sup>157</sup> Ethiopian Roads Authority, 21.

<sup>158</sup> Ethiopian Roads Authority, 23.

<sup>159</sup> Ethiopian Roads Authority, 15.

<sup>160</sup> Ethiopian Roads Authority, 15.

<sup>161</sup> Ethiopian Roads Authority, 21,

of work completed during the ERTTP, the work accomplished was done according to a universal standard recognized and used throughout all of Ethiopia. The standardization process for community roadwork contributed to project delays as a result of design changes made during the construction process; the construction of the roads were planned to have 4.5m of surfacing, but were changed to 6m of surfacing during the construction process leading to project delays and cost overages.<sup>162</sup> The cost of Phase IV was 158.3 billion ETB, sourced both locally and internationally, 83% and 17%, respectively, of which 8.56 million ETB, approximately 5.4% was sourced directly from China.<sup>163</sup> Phase IV utilized 126% of its planned budget of 125.4 billion ETB; the primary reason for the costs overrun experienced during Phase IV was the essential design and structural changes associated with the URRAP roadwork discussed above. The secondary reason for cost overruns was the increased amount of federal roadwork completed; federal roads are more expensive because they are constructed using asphalt, not gravel.<sup>164</sup>

In regard to job creation, the initial implementation of the URRAP during Phase IV brought 1,494,140 jobs, both permanent and temporary, to the various regions of Ethiopia as shown in Table 5. These jobs included construction and consulting services as shown in Table 6. The completion of 46,810 km of community roads during this phase led to improved access to rural regions in Ethiopia; access to rural regions increased from 25% in 2010 to 55% in 2015 on the Rural Access Index (RAI).<sup>165</sup>

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<sup>162</sup> Ethiopian Roads Authority, 21.

<sup>163</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 28.

<sup>164</sup> Debela, et al, “A Case Study on the Problems and Prospects of Output and Performance Based Road Contracting (OPRC) in Ethiopia,” 11.

<sup>165</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 46.

Table 5. URRAP Performance under RSDP IV<sup>166</sup>

No.	Regions	5 Years Plan (Km)	Accomplishment (by 6m wide surfacing)		Accomplishment (by 4.5m wide surfacing)		Community Participation (in man-days)	Number of Employment Opportunities
			In Km	In Percent	In Km	In Percent		
1	SNNPR	14003	7185	51	9580	68	5082233	522978
2	Amhara	18003	9415	52	12553	70	4611630	165728
3	Oromia	30007	27158	91	36211	100	18339648	663903
4	Tigray	2500	2283	91	3044	100	2517294	133818
5	B/Gumuz	1800	366	20	488	27	2360	2543
6	D/Dawa	159	214	~100	285	100	645	3326
7	Harari	50	144	~100	192	100	280	1416
8	Gambella	200	45	23	60	30	573	428
9	Somali	3001	0	0	0	0	-	-
10	Afar	1800	0	0	0	0	-	-
	Total	71523	46810	65	62413	87	30604653	1494140

<sup>166</sup> Adapted from Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 22.

Table 6. SME Development, Training, and Manual Distribution<sup>167</sup>

No.	Regions	SME Development		Training Provided by ERA		No. of LVR Design Manuals
		Consultants	Contractors	RSDP IV	RSDP V (First Year)	Distributed
1	SNNPR	98	254	686	201	1546
2	Amhara	35	151	920	198	1345
3	Oromia	120	470	1436	301	2946
4	Tigray	11	34	1150	59	400
5	B/Gumuz	6	17	58	16	245
6	D/Dawa	2	11	34	47	95
7	Harari	1	2	34	33	112
8	Gambella	2	6	72	22	154
9	Somali	-	-	40	39	382
10	Afar	-	-	22	13	216
	Total	275	945	4452	929	7461

### 3. RSDP Phase V Year One Results

Due to the ongoing nature of Phase V of the RSDP, the information included in this section only covers its first three years. Phase V began in July 2015 and is scheduled to end in June 2020. As of April 2020, Phase V is predicted to have the largest economic costs. The first-year expenditures have reached 117.1 billion ETB with a financial contribution from China of 12.58 million ETB, equating to 2.37%.<sup>168</sup> This phase, like previous RSDP phases, continues to focus on federal and regional road upgrade and construction projects.

<sup>167</sup> Adapted from Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 21.

<sup>168</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 28.

Phase V has thus far accomplished 39% of the planned 69,302 km of road work.<sup>169</sup> Within the first three years of Phase V 27,210 km of roadwork had been completed: 8,597 km of federal roads, 6,463 km of regional roads and 12,150 km of URRAP projects.<sup>170</sup> In terms of project costs, Phase V has already utilized 69% of its 107,751 million ETB budget proving to be the costliest phase of the program.<sup>171</sup> The ERA has acknowledged the disproportionate amount of work completed compared to planned budget, placing the low productivity on the overall low performance of the URRAP under *woreda* leadership, a result of the hasty transfer of responsibility of URRAP projects to *woreda* leadership.

URRAP has already shown signs of breakdown in Phase V even though it initially had tremendous success during its introduction in Phase IV. Even though URRAP is controlled by the ERA, an outcome of its integration with the RSDP, *woreda* leadership prematurely assumed total responsibility of all URRAP projects for Phase V without the proper and necessary training needed to continue the amount of URRAP success experienced in Phase IV of the RSDP.<sup>172</sup> The early handoff of URRAP responsibilities from ERA leadership to *woreda* leadership has led to low production numbers. During the first year of Phase V of the RSDP, URRAP only completed 6% of the planned 90,000 km of roadwork, using 48% of its projected budget.<sup>173</sup> The low levels of productivity highlight the capacity gap at *woreda* level leadership in regard to project design, contract management, and project management skills. Below are the challenges present in URRAP during Phase V of the RSDP, as recognized by the ERA in its report, *Road Sector Development Program: 19 Years Assessment*:

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<sup>169</sup> Ethiopian Roads Authority, Road Sector Development Program 21 Years Performance Assessment, 18.

<sup>170</sup> Ethiopian Roads Authority, 17.

<sup>171</sup> Ethiopian Roads Authority, 18.

<sup>172</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 25.

<sup>173</sup> Ethiopian Roads Authority, 24.

- **Capacity Gap:** typically reflected in areas of project design, project and contract management, financial management, and project schedule.
- **Frequent Staff Turnover:** knowledgeable staff members to include consultants, contractors, and office staff are being trained, then departing from current position. The high rate of turnover causes project delays due to constant re-training for new staff members.
- **Delay and Quality Issues of Locally Assembled Construction Equipment:** The small and medium capacity construction equipment provided by the state is often delayed in provision, and of low quality, creating difficulties in overall project completion.
- **Community Participation/Contribution:** Community involvement is often low and individual project contribution is minimal, negatively effecting overall project quality.<sup>174</sup>

In addition to the challenges faced by the URRAP, research shows that various Ethiopian consulting agencies are underperforming during Phase V as a result of irregular pay and problems with transportation to various job sites. In some cases, project supervisors are expected to work past their contractual obligations; in one case a supervisor was expected to fulfill their role for 24 months, having only received pay for ten months.<sup>175</sup> The inconsistency in the treatment of Ethiopian consulting and construction firms, especially compared to international firms, hinders the progress of the local firms. The inconsistent treatment widens the overall experience gap between Ethiopian and international firms.

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<sup>174</sup> Ethiopian Roads Authority, Road Sector Development Program 19 Years Performance Assessment, 25-27.

<sup>175</sup> Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies: The Case of RSDP," 103.

#### **4. Benefits and Costs of Phases III, IV and V**

RSDP Phases III, IV and V had many benefits for Ethiopia. First, all three phases continued to progress the aims and benefits of Phases I and II by sustaining and using the existing standard methods for road upgrade and construction project selection, and continuing to develop and build the capacity of Ethiopia's public and private sector transportation construction organizations.

Second, the period after the introduction of Chinese funding similarly resulted in the creation of jobs and training as shown in Tables 5 and 6. Table 5 details employment opportunities created under URRAP, Table 6 highlights development and training given to Ethiopian construction and consulting firms.

Third, the road network in Ethiopia was expanded as a result of the completion of 39,356 km of federal and regional road maintenance, and 110,305 km of community roads under the guise of URRAP. Phases III, IV, and V had an average of 73% of roadwork completed compared to the 119% of roadwork that was completed during Phases I and II. The reduction in roadwork completion during these phases is a result of the initial design and construction failings associated with URRAP.

In contrast to the benefits discussed above, after the addition of Chinese funding, there was no distinct difference noted between the value of consulting and construction contracts won by Ethiopian firms during the period prior to Chinese funding and the period after Chinese funding. Ethiopian firms continued to secure less valuable project contracts during the final three phases of the RSDP. As shown in Table 7, the value of an Ethiopian contract at the end of Phase II in 2007 was worth 155.56 million ETB compared to the 431.95 million ETB an International contract was worth; at the end of Phase IV in 2015, an Ethiopian contractor's contract was worth 257.42 million ETB compared to the 1.2 billion ETB an International contractor's contract was worth.

Overall Phases III, IV, and V were subject to budgetary overruns due to the inability of the ERA to properly execute the proposed schedule accordingly. All three phases led to job creation and increased opportunities for training at all levels of road construction, especially after the start of URRAP. The completion of Phases III, IV and V contributed to growth in Ethiopia's road network, as well as improvements to the access of rural regions in the country.

The similarities in the outcomes of the RSDP phases with Chinese funds and without Chinese funds show that the addition of Chinese funding does not have a significant impact on road construction projects in Ethiopia. The addition of financial assistance from China after 2007 did not lead to any changes in the type or location of projects chosen. The stability and continuity of the road development after the addition of Chinese financial assistance can be attributed to the pre-set stipulations regarding road project selection that were present in Ethiopia, as discussed in Chapter II. In addition to the road project selection remaining consistent even after the introduction of Chinese funding, road construction also remained largely the same for projects with and without Chinese funding. For both time periods, the project execution timeline was often delayed, adding to the project's overall cost. Jobs were created for the local population, and improvements were made to the connectivity of Ethiopia's road network.

Table 7. Average Value of Contracts for Local and International Contractors throughout the RSDP<sup>176</sup>

Year	Number of projects awarded to Local Contractors	Number of Projects Awarded to International Contractors	Local Contractors' Project Worth (million ETB)	Foreign Contractor's Project Worth (million ETB)	Local Contractor's Average Value per Contract (million ETB)	International Contractors' Average Value per Contract (million ETB)
1998	0	1	-	310.98	-	310.98
1999	6	12	180.25	3,350.66	30.04	279.22
2000	4	0	93.46	-	23.37	-
2001	4	2	531.3	513.49	132.83	256.75
2002	11	1	252.21	395.58	22.93	395.58
2003	18	1	695.25	172.53	36.63	172.53
2004	17	2	514.12	286.37	30.24	143.19
2005	19	6	1,052.96	1,460.62	55.42	243.44
2006	19	7	3,773.91	3,356.40	198.63	479.49
2007	21	11	3,266.81	4,751.42	155.56	431.95
2008	29	10	7,527.30	4,952.53	259.56	495.25
2009	15	10	3,088.32	12,660.08	205.89	1,266.01
2010	29	2	6,428.22	745.4	221.66	372.7
2011	32	7	8,607.15	4,798.36	268.97	685.48
2012	32	3	8,470.92	4,676.23	264.72	1,558.74
2013	23	18	5,593.86	17,815.45	243.21	989.75
2014	58	13	4,941.05	17,248.95	85.19	1,326.84
2015	39	11	10,039.34	13,233.02	257.42	1,203.00
2016	80	6	17,719.64	12,035.56	221.5	2,005.93

## B. CASE STUDIES

I analyze two road projects: the Jima-Mizan road and the Bedele-Metu road. The Jima-Mizan road traverses the SNNPR and the Oromia region. It was completed in 2016. The Bedele-Metu road is located in the Oromia region. It is still under construction, and

<sup>176</sup> Adapted from Yirgu, "Performance Evaluation of Ethiopia's Road Network Development Planning Policies and Strategies," 141.

is intended to provide a link between Addis Ababa and South Sudan and the Port of Djibouti. Similar to the two road projects discussed in the previous chapter, the two case studies I analyze were elected for upgrade by the GOE to connect the previously isolated rural regions of Oromia and the SNNPR to the capital city of Addis Ababa based on the Life-Cycle Cost Analysis (LCCA) presented in Chapter II. By linking both the SNNPR and the Oromia regions to the capital city of Addis Ababa and the Port of Djibouti, these projects provide Ethiopia with the potential expand its markets and increase its agricultural exports.

Even though both the Jima-Mizan road and the Bedele-Metu road upgrade projects are new and the GOE and ADF have not conducted much research or surveys regarding the post construction impacts the roads have in their respective regions, I examine the projects' benefits and costs in terms of project execution and costs, job creation and training, post-maintenance costs, and the broader socio-economic impacts to the region.

### **1. Jima-Mizan Road**

The Jima-Mizan road project was one of the first projects commenced during Phase III of the RSDP. This project was chosen for completion during Phase III of the RSDP to become a part of a larger span of roadway that will ultimately connect Addis Ababa to South Sudan.<sup>177</sup> The Jima-Mizan road spans both the Oromia region and the SNNPR; both regions have significant agricultural potential and are fertile coffee-growing areas.<sup>178</sup> The Jima-Mizan road project construction began in 2008 and was

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<sup>177</sup> The World Bank, Project Appraisal Document on A Proposed Credit in the Amount of SDR 273.5 Million (US \$415 Million Equivalent) to the Federal Democratic Republic of Ethiopia for a Transport Sector Project in Support of RSDP4, Report No. 70817-ET, (Ethiopia: Transport Sector, 2012), 83, <http://documents.worldbank.org/curated/en/331891468024610709/pdf/708170PAD0P1170Official0Use0Only090.pdf>.

<sup>178</sup> African Development Bank Group, Ethiopia-Jima-Mizan Road Upgrading Project, Report No.46002-P-ET-DB0-011, (Ethiopia: African Development Fund, 2020), <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-DB0-011>.

completed in 2016 during Phase V of the RSDP.<sup>179</sup> The completion of the Jima-Mizan road project resulted in the upgrade of 230 km of rural road to all-weather roads.<sup>180</sup>

The Jima-Mizan road project was given priority for completion after traffic, road conditions, and access to roads were all assessed by the GOE as negatively impacting the coffee-producing region. The Oromia region and SNNPR account for 90% of coffee production and 25% of livestock found in Ethiopia.<sup>181</sup> The approval of the loan for the Jima-Mizan road project was based on the GOE's Plan for Accelerated and Sustained Development to End Poverty (PASDEP), which was consistent with the ADB's strategy to assist Ethiopia in alleviating poverty throughout the country.<sup>182</sup> The Jima-Mizan road project loan approval was also influenced by the potential benefits associated with the completion of the road against the costs associated with the road; by easing the transportation of goods out of the Oromia region and the SNNPR, the country would be able to link this highly fertile area with the rest of the country.<sup>183</sup> The following sections detail project costs, job creation and training surrounding the project, and the projects' impacts on the regions the Jima-Mizan road project traverses.

*a. Project Execution and Costs*

The cost of the Jima-Mizan road project totaled ETB 2,285 million, approximately 265 million USD, financed jointly by the GOE and the ADF.<sup>184</sup> The ADF financed approximately 64% of the project, with the remaining 36% was financed by the

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<sup>179</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project. Report No. P-ET-DBO-011, (Ethiopia: Transport Division, 2018), XV <https://www.afdb.org/en/documents/document/ethiopia-jima-mizan-road-upgrading-project-project-completion-report-104068>.

<sup>180</sup> African Development Bank Group, Ethiopia-Jima-Mizan Road Upgrading Project, Report No.46002-P-ET-DB0-011.

<sup>181</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, 4.

<sup>182</sup> African Development Fund, Jima-Mizan Road Upgrading Project, appraisal report, (Federal Democratic Republic of Ethiopia: Infrastructure Department Transport Division 2, 2006), 16, <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ET-2006-141-EN-ADF-BD-WP-ETHIOPIA-AR-JIMA-MIZAN-ROAD.PDF>.

<sup>183</sup> African Development Fund, Jima-Mizan Road Upgrading Project, 13.

<sup>184</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, 9.

GOE. Additional taxes, duties, royalties, and other costs not eligible for ADF financing were funded by the GOE.<sup>185</sup> The GOE and ERA shared the financial obligation associated to the technical assistance for the road project.

The Jima-Mizan project exceeded the proposed construction costs by 60%.<sup>186</sup> One of the main factors for cost overrun was project delay; the project was supposed to take 36 months, and all material and labor prices were based on the projected price influx over the span of 36 months.<sup>187</sup> The Jima-Mizan road project took a total of 82 months to complete, due to necessary design modifications to ensure the safety of civil workers, as well as delays associated with loan dispersal.<sup>188</sup> The modifications in road design to account for the steep slopes in various portions of the Jima-Mizan road site coupled with the heavy rainfall of the Oromia and SNNPR caused project delays. The delay in funding from the ADF for the Jima-Mizan road project also attributed to the late project completion; the loan amount was originally to be disbursed from 2007–2011, but was disbursed from 2008–2015.<sup>189</sup>

Though the overall project was delayed by 46 months and the project exceeded the proposed loan amount by 60%, similarly to the road projects discussed in Chapter II, there were no reports of the delay affecting other road construction in Ethiopia at the time. The cost overage was factored into the final loan amount from the ADF and China.<sup>190</sup>

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<sup>185</sup>African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, 9.

<sup>186</sup> African Development Fund, 3.

<sup>187</sup> African Development Fund, XV.

<sup>188</sup> African Development Fund, 8.

<sup>189</sup> African Development Fund, 8.

<sup>190</sup> African Development Fund, 9.

***b. Job Creation and Training***

The Jima-Mizan road project created an estimated 2,580 temporary jobs and an unrecorded number of long-term jobs for the local Ethiopian residents.<sup>191</sup> The specifics regarding employment associated with the Jima-Mizan project have not yet been released to the public. While this project created a training opportunity for the local population in construction techniques and road building, as of 2020, no further information regarding formal job creation or training has been released to the public.

***c. Post Maintenance Costs***

As with other projects completed during the RSDP, the post maintenance costs for the Jima-Mizan road project will be financed through the ERA's road fund. At project completion, it was estimated that the costs for routine maintenance would increase from \$440.70 per km for gravel road to \$4,126 per km for asphalt road, increasing the costs associated with the maintenance of the 230 km of roadway from \$101,361 to \$948,980; the high upkeep costs are related to the asphalt overlay that is required every eight years for the duration of the projects service life.<sup>192</sup> There is currently no further research on the physical state of the Jima-Mizan road as of 2020.

***d. Impact to the Oromia Region and SNNPR***

Upon completion of the Jima-Mizan road project, the residents located in the Oromia region and the SNNPR have potentially benefitted from the upgrade of 230 km of rural roads to all-weather roads. The completion of the Jima-Mizan road serves as the vital link between the large coffee producing region and the export ports used by the country. Coffee has historically been one of Ethiopia's largest export commodities. Farmers in the Oromia region and the SNNPR produce 90% of the coffee grown in Ethiopia; the upgrade project incentivizes the farming population to expand its market

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<sup>191</sup> African Development Bank Group, Ethiopia-Jima-Mizan Road Upgrading Project, Report No.46002-P-ET-DB0-011.

<sup>192</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project. Report No. P-ET-DBO-011.

base and encourages substantial growth in the agricultural sector which has the potential to stimulate market growth in the SNNPR and Oromia regions.<sup>193</sup>

The Jima-Mizan road project also reduced the overall costs and time associated with road transportation. Prior to the completion of the Jima-Mizan road, the local population was faced with long travel times and high travel costs that resulted in low vehicular traffic. Since the completion of the road upgrade, travel times have been reduced by 2 hours; a direct result of the ability of motor vehicles to maintain a consistent speed on the improved roads.<sup>194</sup> The improved road also reduced travel costs by 84% and introduced a 242% increase in traffic volume.<sup>195</sup> Along with the increase in vehicular travel associated with the Jima-Mizan road, the composition of vehicles traveling in the regions transformed, permitting more residents to travel in and out of the region. As a result of the road upgrade, passenger vehicles increased by 12%, small buses traffic doubled, but freight traffic was reduced by 9%.<sup>196</sup> The reduction in freight traffic has been associated with the increase in passenger vehicles and small bus travel, which has allowed the residents to use passenger transportation, instead of freight vehicles for transportation. The completion of the Jima-Mizan road project, has reduced the percentage of people living more than 5 km from the nearest all-weather road from 79% to 33.5%.<sup>197</sup>

Even though the completion of the Jima-Mizan road presented benefits such as the link from the large coffee producing SNNPR and Oromia regions to the ports used for product exports, reduced travel times and boosted vehicular traffic throughout the region, the project was delayed by 46 months which resulted in a 60% increase for project cost.

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<sup>193</sup> The World Bank, Project Appraisal Document Report No. 70817-ET, 96.

<sup>194</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, XVI.

<sup>195</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, XVI.

<sup>196</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, XIV.

<sup>197</sup> African Development Fund. Project Completion Report Jima- Mizan Road Upgrading Project, VII.

As a result of the recent completion of the Jima-Mizan Road project in 2017, no further research on regional improvements resulting from the road has been published.

## **2. Bedele-Metu Road**

The Bedele-Metu road project was one of the first projects commenced during Phase IV. This project spans the Illu Aba Bobra zone located in the Oromia region, connecting the towns of Bedele, Metu, Chora, Yayu, and Hurumu to the capital city of Addis Ababa.<sup>198</sup> The Illu Aba Bobra zone encompasses 25% of the forest area in the Oromia region, and the road project traverses the Geba-Dogi Natural Forrest Conservation Area, famous for its wild coffee resources.<sup>199</sup> Due to the road traversing the Geba-Dogi Forrest and its impact on the environment, this project includes a reforestation portion with the guarantee by the GOE to replant approximately 500,000 seedlings in the area of the new road.<sup>200</sup>

The approval of the loan for the Bedele-Metu road project was based on the GOE's and ADF's plan to "connect Ethiopia with South Sudan as well as improve the local road network," and ease the transportation of goods to the Port of Djibouti.<sup>201</sup> By easing the transportation of goods to the Port of Djibouti, both South Sudan and Ethiopia would be able to boost the amount of trade exports; the completion of the Bedele-Metu road would allow Ethiopia to take advantage of coffee and chat production in Bedele and Metu zones.<sup>202</sup>

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<sup>198</sup> African Development Fund, Bedele-Metu Road Upgrading Project, environmental and social impact assessment summary, (Federal Democratic Republic of Ethiopia: ESIA, 2011), 1, <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/Ethiopia%20Bedele%20Metu%20Road%20Upgrading%20Project%20ESIA%20RAP%20Summary.pdf>.

<sup>199</sup> African Development Fund, Bedele-Metu Road Upgrading Project, 4.

<sup>200</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report (Federal Democratic Republic of Ethiopia: Ethiopian Roads Authority, 2011), 9, [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ETHIOPIA\\_-\\_AR\\_-Bedele-Metu\\_Upgrading\\_Project\\_.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ETHIOPIA_-_AR_-Bedele-Metu_Upgrading_Project_.pdf).

<sup>201</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, 1, 5.

<sup>202</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, III.

The Bedele-Metu road construction began in October 2012, with an intended completion date in 2016; the project has been extended through December 2020.<sup>203</sup> The road project is anticipated to upgrade 112 km of rural road to asphalt concrete to match the roadways the Bedele-Metu road will link.<sup>204</sup> The following sections detail project costs, job creation and training surrounding the project, and the impact the project has had on the Illu Aba Bobra zone within the Oromia region thus far.

**a. *Project Execution and Costs***

The approved loan amount for the Bedele-Metu road project totaled ETB 11.16 billion, roughly 81.55 million USD, at appraisal, intended to be financed by the GOE and the ADF.<sup>205</sup> The ADF has agreed to finance approximately 82% of the project, the remaining 18% will be financed by the GOE. The GOE is anticipated to finance the taxes, duties, royalties, and other costs that are not eligible for ADF financing.<sup>206</sup>

Currently the Bedele-Metu road project has been delayed 36 months based on the original project appraisal report, officially beginning construction in 2013 instead of the proposed date in 2012.<sup>207</sup> The costs associated with this delay have not yet been calculated, but based on similar delays with previous projects, the completed road upgrade will likely be over the originally appraised loan amount.

**b. *Job Creation and Training***

The Bedele-Metu road project is projected to create over 500 temporary jobs and an unrecorded number of long-term jobs.<sup>208</sup> The numbers regarding the official amount

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<sup>203</sup> African Development Bank Group, Ethiopia-Bedele-Metu Upgrading Project, Report No.46002-P-ET-DB0-014, (Ethiopia: African Development Fund, 2020), <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-DB0-014>.

<sup>204</sup> African Development Bank Group, Ethiopia-Bedele-Metu Upgrading Project, Report No.46002-P-ET-DB0-014.

<sup>205</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, 5.

<sup>206</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, 6.

<sup>207</sup> “Bedele-Metu Road Upgrading Project Officially Commenced,” China International Water and Electric Corporation, March 19, 2013, <http://english.cwe.cn/contents/88/6795.html>.

<sup>208</sup> African Development Bank Group, Ethiopia-Bedele-Metu Upgrading Project, Report No.46002-P-ET-DB0-014.

of jobs created have not been released due to the ongoing nature of the project. The Bedele-Metu road project is also expected to create numerous job opportunities at all of the construction sites along the 112 km of road that as it is being constructed.<sup>209</sup> As of 2020, no further information regarding formal job creation and training has been released to the public, but it is estimated that dozens of long-term jobs were created within the ERA, as well as training opportunities for domestic Civil Engineers.

***c. Post Maintenance Costs***

Currently, there is no information regarding post maintenance costs, other than the decision to use asphalt concrete for road completion, which is more expensive as earlier discussed. The use of asphalt concrete for this project is to prevent water damage to the finished road during the region's annual rainy season.<sup>210</sup>

***d. Impact to the Oromia Region***

Upon completion of the Bedele-Metu road project, the 1.3 million residents located in the Illu Aba Bobra zone and the people living in South Sudan will have the opportunity and potential to benefit from the upgrading of 112 km of rural road that will provide the connection to the Port of Djibouti.<sup>211</sup> The link provided by the Bedele-Metu road is expected to assist farmers, coffee producers and encourage agro-based industries like sugar factories.<sup>212</sup>

The completed road project is anticipated to reduce VOCs by 37% and travel time by 33%, both factors will encourage travel in and out of the region, enhancing to the integration of Ethiopia and its neighboring country of South Sudan, boosting the amount

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<sup>209</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, 11.

<sup>210</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, 5.

<sup>211</sup> African Development Bank Group, Ethiopia-Bedele-Metu Upgrading Project, Report No.46002-P-ET-DB0-014.

<sup>212</sup> "AfDB Fund Ethiopian Road Project," *Road Traffic Technology*, November 15, 2011, <https://www.roadtraffic-technology.com/news/newsafdb-funds-ethiopian-road-project/>.

of trade exports from both countries.<sup>213</sup> Due to the incomplete status of the Bedele-Metu road Project, there is no further information regarding the impact to the affected regions.

### **C. CONCLUSION**

Overall, the RSDP phases that included Chinese financial assistance did not show any major differences from the phases that occurred prior to Chinese financial assistance. The road construction and upgrades that occurred during the period with Chinese financial assistance continued to provide benefits throughout Ethiopia. First, Phases III, IV, and V of the RSDP continued to progress the initiatives set in place during Phases I and II such as the development of Ethiopia's private road construction organizations and the improvements made to the accessibility of rural regions. During Phase III, the ratio of skilled laborers involved in roadwork rose by 0.12% showing a continued improvement to all parties involved in road construction, an objective that existed throughout all five phases of the RSDP. Similar to Phases I and II, the capacity of the Ethiopian firms continued to improve during Phases III, IV and V as shown by the consistent increase in the number of contracts awarded to local firms; the value of the contracts awarded to Ethiopian firms still remain behind that of international firms.

Secondly, as presented in both the Jima-Mizan and Bedele-Metu case studies, the ability of the GOE and ERA to properly plan, design and complete road projects on schedule remained deficient, even with the financial assistance from China. Despite these issues, both the Jima-Mizan and Bedele-Metu road projects have already begun to have a positive impact on the daily life of the residents living in the SNNPR, Oromia region, and South Sudan. Table 8 summarizes the two roads on the project criteria analyzed.

As shown in the sections above, the road projects completed during Phases III, IV, and V exhibit no significant difference when compared to projects completed during Phases I and II. Projects completed during the second period of the RSDP have created over 3,000 short-term jobs and many long-term jobs thus far, reduced travel times and

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<sup>213</sup> African Development Fund, Bedele-Metu Road Upgrading Project, appraisal report, 8.

costs associated with transportation, and both projects are anticipated to provide the needed link from the rural areas of the SNNPR and Oromia regions, to the export ports used by Ethiopia to boost trade. The accomplishments made during RSDP Phases III, IV, and V keep the country on track to reach its goal of becoming an LMIC by 2025.

As explained in this chapter, the period of road construction prior to the introduction of Chinese funding did not differ significantly from the period after the introduction of Chinese funding. Both periods were plagued with project delays, and budget overages. Both periods ushered in jobs and chances to train the local population in various aspects of road construction, improved road connectivity within Ethiopia, and decreased travel time and VOCs. The source of funding did not contribute or discourage any accomplishments during either period of road construction.

Table 8. Road Project Comparison: Jima-Mizan Road and Bedele-Metu Road

Category	Project Length	Project Selection	Project Execution/Cost		Jobs Created		Deviations in TT/VOCs		Impact to Local Community
			Delay	Budget	Temp.	Long-Term	Travel Time Reduction	VOCs	
Jima-Mizan Road	230km	Link from South Sudan and Agri. Areas to Addis Ababa	46 Month	60% Over	2,580	NA	↓2 Hours	↓84%	No Further Research Available
Bedele-Metu Road (Still Under Construction)	112 km (Est.)	Link from South Sudan and Agri. Areas to Port of Djibouti	36 Month (Current Delay)	NA	500 (Est.)	NA	↓33% (Est.)	↓37% (Est.)	No Further Research Available

Adapted from ADF and World Bank Documents, Author's Own Compilation

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## **IV. CONCLUSIONS**

### **A. SUMMARY OF ARGUMENTS**

This thesis examined the costs and benefits of Chinese-funded transportation projects by comparing them to projects completed without financial assistance from China. In order to compare the two types of projects, I analyzed two periods of the RSDP, the period from 1997–2007 that did not include significant levels of Chinese funding and the period from 2007 to present day when China began to invest in roadway infrastructure projects in Ethiopia. In order to compare these two RSDP periods, I evaluated each phase of the RSDP by examining the execution of phase specific objectives, costs associated with each phase, and the creation of jobs or training opportunities, including the participation of local constructing and consulting firms associated with each phase. Table 9 summarizes the overall assessment of all five phases of the RSDP. I also investigated benefits and costs associated with four specific road projects, two from each RSDP period. I compared these projects on the basis of project selection, project execution and costs, local job creation, including the participation of local constructing and consulting firms expenses for long-term maintenance, deviations in travel times and VOCs, and impacts on local communities and their agricultural sector

Table 9. Summary of RSDP Phases

Category	RSDP Prior to Chinese Funding		RSDP With Chinese Funding		
	Phase I	Phase II	Phase III	Phase IV	Phase V (3-years)
Execution	Completion 98%	Completion 140%	Completion 84%	Completion 88%	Completion 39%
	Amount: 8,709 km	Amount: 811,598 km	Amount: 12,395 km	Amount: 85,860 km	Amount: 27,210 km
		ERTTP: 58,114 km	ERTTP: 42,260 km	URRAP: 46,810 km	URRAP: 12,150km
Costs	Total Cost: 7.3 billion ETB	Total Cost: 18.1 billion ETB	Total Cost: 34.9 billion ETB	Total Cost: 158.3 billion ETB	Total Cost: 117.1 billion ETB
			China: 1.2 million ETB	China: 8.56 million ETB	China: 12.58 million ETB
	Budget Used: 74%	Budget Used: 113%	Budget Used: 101%	Budget Used: 126%	Budget Used: 69%

Adapted from ERA Documents, Author's Own Compilation

The findings suggest that the differences between projects with Chinese funding and projects without Chinese funding are limited. Projects completed during both time periods utilized the same project selection technique and often suffered from timeline delays which resulted in costs overages. Moreover, projects completed during both periods created jobs and training opportunities, but as shown by the research, local firms continue to lose contract bids for higher value projects due to their lack of capacity compared to international firms. Projects completed during both periods of road construction resulted in decreases in travel times and VOCs. Both sets of projects have positively contributed to the agricultural sector and overall food security throughout Ethiopia.

Based on the research conducted, I attribute the aforementioned similarities in costs and benefits associated with Chinese-funded and non-Chinese-funded projects to the strong role of the Ethiopian state and the goal of the GOE to reach the status of an LMIC by 2025. The strength and stability of the GOE at the inception of the RSDP resulted in the establishment of a viable road program that was effective and successful. The continued strength and stability of the GOE throughout the period from 1997 to the present has prevented the introduction of donor influence in the realm of road construction, and guaranteed the projects would remain beneficial to Ethiopia and not the donor country.

As discussed throughout the thesis, the projects selected were intended to increase Ethiopia's economy and possibility of becoming an LMIC. The decision to upgrade and construct roads with the focus of connecting large agriculture producing regions to regions with larger markets and the ability to export large quantities of goods highlight the effort the Ethiopian government is putting into expanding and growing the economic opportunities available for its population. In addition to the decisive decisions made by the GOE regarding project selection and location, the execution of the road projects introduced many opportunities for Ethiopian firms and individual citizens to not only hone their professional road building skills, but also various organizational skills as exemplified by the progress within the ERA and ORF. The overall development of skills obtained from the projects discussed further contribute to the building of Ethiopia's

professional sector, lessening Ethiopia's dependency on external assistance in various sectors including construction and administration.

The completion of the road projects also reduced the burdens associated with vehicular transportation, ushering in more opportunities for public transportation and shorter transportation times. The ease of vehicular transportation also contributed to the introduction of private investment in rural regions presenting the potential of modernization and urbanization within these regions.

## **B. LIMITATIONS AND FUTURE RESEARCH**

One significant limitation of this research is the amount of general information available on the broader impacts of road construction in Ethiopia. Much of the available information comes from sources such as the GOE, the ADF, and the World Bank, all entities that benefit from positive reporting regarding the various project outcomes. Moreover, the constrained media environment in Ethiopia makes it difficult to gain further insight into the impacts of these projects. In addition to the lack of information available for the projects evaluated, the lack of consistent record keeping significantly slowed the research process.

In light of these data limitations, one way to improve the study would be to conduct site visits, interviews, and surveys of the completed roads to compare the overall quality of projects completed during the different periods. If information sourced directly from interviews and site visits were available, a more in-depth analysis of the costs and benefits associated with projects from the two periods could be conducted without any bias from the entities that have vested interests in the project outcomes. By surveying the completed roads for a specific period of time, the quality of the completed roads could be compared to further examine the costs and benefits associated with projects with different sources of funding. With the information gained from site visits, interviews, and road surveys, recipient countries would be able to make an informed decision prior to continuing a financial relationship with China.

Additionally, the information regarding the affect recipient country involvement has on project outcome is limited. This topic has not been fully explored or documented, lending

to the lack of scholarly material available regarding the importance of a strong governmental presence for projects funded by outside donors. Based on the successful integration and involvement of Chinese funding in Ethiopian road construction projects, the GOE's presence directly contributed to the conservation of Ethiopian project standards, but due to the gap in research, the project outcome in Ethiopia cannot be compared to the outcomes of projects in other African countries.

Finally, current academic literature does not devote research to the comparison of projects financed with and without Chinese assistance. With the increased Chinese donor presence in Africa, such research is necessary to properly examine China's influence in African countries. The amount of scholarship devoted to the processes and outcomes of projects containing financial assistance from China compared to projects without Chinese financial assistance is severely lacking. Thus, focused attention on this topic could potentially improve the understanding of the differences and similarities that exist between funding obtained from China and other donors. By effectively comparing projects with and without Chinese funding, the strength, role and influence of the recipient state can be monitored and tailored by the state and/or an outside entity to prevent any undue donor influence during project implementation

### **C. POLICY IMPLICATIONS**

This thesis contributes to knowledge for international development programs by highlighting the role of recipient countries in determining the success or failure of infrastructure investments. In this sense, it emphasizes the importance of agency and capacity of African countries in their relationships with investors, including China. The relationship between Ethiopia and China surrounding road construction projects in Ethiopia can serve as an example of how recipient countries can influence donors to ensure mutual benefit of infrastructure projects. The ERA provides a potential template for other aid-receiving countries in how to manage a major infrastructure program over an extended period of time. This template could help other countries maintain control of project implementation to ensure the maximum benefit at project conclusion.

As far as impact to U.S. foreign policy, the decision of Ethiopia to continue welcoming financial assistance from China counters the narrative of discontent surrounding Chinese investments in Ethiopia. Unless the U.S. intends to compete with China financially in Ethiopia, the U.S. protests regarding China's involvement in Ethiopia are likely to be ignored or disregarded by the GOE. The U.S. should appreciate the physical improvements that are taking place and the many lives impacted in Ethiopia as a result of Chinese investment in the country's infrastructure sector, and consider tailoring its policies toward Ethiopia to complement, rather than compete with, Chinese infrastructure investments.

## LIST OF REFERENCES

- African Development Bank Group. *Ethiopia-Alemgena-Butajira Road Upgrading Project*. Report No.46002-P-ET-DB0-008. Ethiopia: African Development Fund, 2020. <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-DB0-008>.
- . *Ethiopia-Bedele-Metu Upgrading Project*. Report No.46002-P-ET-DB0-014. Ethiopia: African Development Fund, 2020. <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-DB0-014>.
- . *Ethiopia-Jima-Mizan Road Upgrading Project*. Report No.46002-P-ET-DB0-011. Ethiopia: African Development Fund, 2020. <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-DB0-011>.
- . *Ethiopia-Wacha-Maji Upgrading Project*. Report No.46002-P-ET-D00-002. Ethiopia: African Development Fund, 2020. <https://projectsportal.afdb.org/dataportal/VProject/show/P-ET-D00-002>.
- . “The Road to Prosperity: Building Road Networks in Ethiopia’s Remote Southern Region. Wacha-Maji Road Upgrading Project.” Accessed February 15, 2020. <https://mapafrica.afdb.org/stories/legacy/P-ET-D00-002.html#>.
- . “Upgrading Vital Roads: Connecting Ethiopia’s farmers with markets.” Accessed February 19, 2020. <https://mapafrica.afdb.org/en/stories/P-ET-D00-004.html>.
- African Development Fund. *Bedele-Metu Road Upgrading Project. Appraisal Report*. Federal Democratic Republic of Ethiopia: Ethiopian Roads Authority, 2011. [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ETHIOPIA\\_-\\_AR\\_-Bedele-Metu\\_Upgrading\\_Project\\_.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ETHIOPIA_-_AR_-Bedele-Metu_Upgrading_Project_.pdf).
- . *Bedele-Metu Road Upgrading Project. Environmental and Social Impact Assessment Summary*. Federal Democratic Republic of Ethiopia: ESIA, 2011. <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/Ethiopia%20Bedele%20Metu%20Road%20Ugrading%20Project%20ESIA%20RAP%20Summary.pdf>.
- . *Ethiopia Country Assistance Evaluation 1996–2007*. Ethiopia: Operations Evaluation Department (OPEV), 2008. <https://www.oecd.org/countries/ethiopia/42245063.pdf>.

- . *Jima-Mizan Road Upgrading Project*. Appraisal Report. Federal Democratic Republic of Ethiopia: Infrastructure Department Transport Division 2, 2006. <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ET-2006-141-EN-ADF-BD-WP-ETHIOPIA-AR-JIMA-MIZAN-ROAD.PDF>.
- . *Project Completion Report Alemgena-Butajira Road*. Ethiopia: Transport Division 2, 2007. <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ADF-BD-IF-2007-140-EN-ETHIOPIA-FINAL-PCR-ALEMGENA-BUTAJIRA-PROJECT-20607-KIGGUNDU-JUNE-21.PDF>.
- . *Project Completion Report Jima- Mizan Road Upgrading Project*. Report No. P-ET-DBO-011. Ethiopia: Transport Division, 2018. <https://www.afdb.org/en/documents/document/ethiopia-jima-mizan-road-upgrading-project-project-completion-report-104068>.
- . *Wacha-Maji Road Upgrading Project*. Appraisal Report. Federal Democratic Republic of Ethiopia: Infrastructure Department Central and West Regions, 2002. [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Ethiopia\\_-\\_Wacha-Maji\\_Road\\_Upgrading\\_Project\\_-\\_Appraisal\\_Report.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Ethiopia_-_Wacha-Maji_Road_Upgrading_Project_-_Appraisal_Report.pdf).
- Belay Momona. “Assessment of Ethiopian Road Constructions in Rainy Seasons.” Master’s Thesis, Addis Ababa University, 2015. <https://pdfs.semanticscholar.org/3a99/9e4dc5a13dadfcc89593a6fbefb0c76a118.pdf>.
- Bräutigam, Deborah. “Chinese Development Aid in Africa: What, Where, Why, and How Much?” *SSRN Electronic Journal* (June 2011): 203–222. <http://dx.doi.org/10.2139/ssrn.2013609>.
- Cabestan, Jean-Pierre. “China and Ethiopia: Authoritarian affinities and economic cooperation.” *China Perspectives* 2012, no 4 (2012): 53–62. <https://doi.org/10.4000/chinaperspectives.6041>.
- Chakrabarty, Malancha. “Ethiopia–China Economic Relations: A Classic Win–Win Situation?” *World Review of Political Economy* 7, no.2 (July 2016): 226–248. <file:///Users/cheyenne.harinandan/Downloads/WRPE7.2.pdf>.
- China International Water and Electric Corporation. “Bedele-Metu Road Upgrading Project Officially Commenced.” March 19, 2013. <http://english.cwe.cn/contents/88/6795.html>.
- Debela, Getachew, Gurmel Ghataora, and M. Burrow. “A Case Study on the Problems and Prospects of Output and Performance Based Road Contracting (OPRC) in Ethiopia.” *International Journal of Construction Engineering and Management* 8, no 1 (March 2019): 7–18. 10.5923/j.ijcem.20190801.02.

- Emmenegger, Rony. "The Roads of decentralization. The History of Rural Road Construction in Ethiopia." *NCCR North-South Dialogue* no 39 (2012). [https://www.zora.uzh.ch/id/eprint/69095/1/2012\\_EmmeneggerR\\_Emmenegger\\_NCCR\\_Dialogue\\_39%282%29\\_Kopie\\_.pdf](https://www.zora.uzh.ch/id/eprint/69095/1/2012_EmmeneggerR_Emmenegger_NCCR_Dialogue_39%282%29_Kopie_.pdf).
- "Ethiopia." *African Economic Outlook* (2007): 253-268. <https://doi.org/10.1787/aeo-2007-en>.
- Ethiopian Roads Authority. "Road Sector Development Program 19 Years Performance Assessment. Addis Ababa: Ministry of Transport, 2016. <https://www.scribd.com/document/406121531/19-Years-Assessment-Reportl>.
- . "Road Sector Development Program 21 Years Performance Assessment." Addis Ababa: Ministry of Transport, 2019. <http://www.era.gov.et/documents/10157/26166/21+Years+Assessment+Report+final.pdf?version=1.0>.
- Fortin, Jacey. "Ethiopia on Track for New Light Rail Transit System." *Equal Times*. March 16, 2015. <https://www.equaltimes.org/ethiopia-on-track-for-new-light#.Xr4CdxNKjVp>.
- French, Howard. "The Next Empire." *The Atlantic*, May 2010. <https://www.theatlantic.com/magazine/archive/2010/05/the-next-empire/308018/>.
- Geda, Alemayehu, Atenafu G. Meskel. "Impact of China-Africa Investment Relations: Case Study of Ethiopia." Addis Ababa University, Department of Economics, 2009. <https://aercafrica.org/wp-content/uploads/2018/06/china6.pdf>.
- Gorfu, Workie Tegen. "Life Cycle Cost Analysis for Road Maintenance Interventions: A Case Study for Alemgena District." Master's thesis, Addis Ababa University, 2017. <http://etd.aau.edu.et/bitstream/handle/123456789/9751/Workie%20Tegen.pdf?sequence=1&isAllowed=y>.
- Madowo, Larry. "Should Africa Be Wary of Chinese debt?" *BBC News*, September 3, 2018. <https://www.bbc.com/news/world-africa-45368092>.
- Marks, Simon. "How an African State Learned to Play the West Off China for Billions." *Politico*. February 7, 2020. <https://www.politico.com/news/2020/02/07/ethiopia-china-west-power-competition-110766>.
- Marsh, Jenni. "Employed by China." *CNN*. Accessed on April 18, 2020. <https://www.cnn.com/interactive/2018/08/world/china-africa-ethiopia-manufacturing-jobs-intl/>.
- Moyo, Dambisa. *Dead Aid*. New York: Penguin Books, 2009.

- OECD/AfDB. "Ethiopia." *African Economic Outlook 2007*. Paris: OECD Publishing, 253–268. <https://doi.org/10.1787/aeo-2007-en>.
- Pilling, David. "It is Wrong to Demonise Chinese Labour Practices in Africa." *Financial Times*, July 3, 2019. <https://www.ft.com/content/6326dc9a-9cb8-11e9-9c06-a4640c9feebb>.
- Public Sector Operations. Wacha-Maji Road Project. Report No. P-ET-D00-002. Ethiopia: PCR, 2013. [https://evrd.afdb.org/documents/docs/EN\\_PN10552.pdf](https://evrd.afdb.org/documents/docs/EN_PN10552.pdf).
- Rammelt, Crellis. "Infrastructures as Catalysts: Precipitating Uneven Patterns of Development from Large-Scale Infrastructure Investments." *Sustainability* 10, no. 4 (April 2018): 1286. <https://doi.org/10.3390/su10041286>.
- Road Traffic Technology. "AfDB fund Ethiopian road project." November 15, 2011. <https://www.roadtraffic-technology.com/news/newsafdb-funds-ethiopian-road-project/>.
- Sabatino, Carlos. "Light Rail Transportation Systems Are Built in Ethiopia." Global Delivery Initiative. Accessed on May 14, 2020. <http://www.globaldeliveryinitiative.org/library/case-studies/light-rail-transportation-systems-are-built-ethiopia>.
- Shiferaw Admasu, Måns Söderbom, Eyerusalem Siba & Getnet Alemu. "Road Infrastructure and Enterprise Dynamics in Ethiopia." *The Journal of Development Studies* 51, no 11 (September 2015): 1541–1558, DOI: 10.1080/00220388.2015.1056785. <https://www.tandfonline.com/doi/full/10.1080/00220388.2015.1056785?scroll=top&needAccess=true>.
- Sugar Corporation. "The Triumphant Journey of Omo-Kuraz Sugar Development Project." January 22, 2019. <https://www.ethiopiansugar.com/402/>.
- Swedlund, Haley, J. "Is China eroding the bargaining power of tradition donors in Africa?" *The Royal Institute of International Affairs* 93, no 02 (March 1, 2017): 393. <https://www.chathamhouse.org/publication/ia/china-eroding-bargaining-power-traditional-donors-africa>.
- Trading Economics. "Ethiopia-Rural Population." Accessed May 18, 2020. <https://tradingeconomics.com/ethiopia/rural-population-percent-of-total-population-wb-data.html>.
- UN Emergencies Unit. "Transportation." Accessed May 19, 2020. [http://www.africa.upenn.edu/eue\\_web/faoinfra.htm](http://www.africa.upenn.edu/eue_web/faoinfra.htm).
- U.S. Department of State (accessed September 13, 2019). <https://www.state.gov/u-s-relations-with-ethiopia/>

- van de Walle, Nicolas. *African Economies and the Politics of Permanent Crisis, 1979–1999*. New York: Cambridge University Press, 2001.
- Wachefo, Lydia-Gennet. “China in Ethiopia: A Case Study on the Ethio-China Collaborated Light Railway Transit in Addis Ababa, Ethiopia.” Bachelor’s thesis, Uppsala University, 2018. <http://www.diva-portal.org/smash/get/diva2:1275479/FULLTEXT01.pdf>.
- Worku, Ibrahim. “Road Sector Development and Economic Growth in Ethiopia.” *Ethiopian Journal of Economics* 19, no 2 (October 2010): 101–146. <https://pdfs.semanticscholar.org/5f33/da07d22db2ce57b91e6ea3e29de1908e0b3a.pdf>.
- The World Bank, International Monetary Fund. *Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change*. Washington, DC: World Bank Publications, 2015.
- . *Implementation Completion and Results Report (IDA-45610) on a Credit in the Amount of SDR 166 Million (US\$245 Million Equivalent) to the Federal Democratic Republic of Ethiopia for a Ethiopia-Road Sector Development Program*. Report No. ICR00004205. Africa: 2018. <http://documents.worldbank.org/curated/en/183691528124593286/pdf/ICR00004205-06012018.pdf>.
- . *Implementation Completion and Results Report (IDA-56516) on a Grant in the Amount of SDR 93 Million (US\$ 126.8 Million Equivalent) to the Federal Democratic Republic of Ethiopia for a Ethiopia-Road Sector Development Program*. Report No. ICR00001221. Africa: 2010. <http://documents.shihang.org/curated/zh/176301468030351422/pdf/ICR12210P044611C0disclosed081161101.pdf>.
- . *Project Appraisal Document on A Proposed Credit in the Amount of SDR 273.5 Million (US \$415 Million Equivalent) to the Federal Democratic Republic of Ethiopia for a Transport Sector Project in Support of RSDP4*. Report No. 70817-ET. Ethiopia: Transport Sector, 2012. <http://documents.worldbank.org/curated/en/331891468024610709/pdf/708170PADOP1170Official0Use0Only090.pdf>.
- . *Project Performance Assessment Report Ethiopia Road Sector Development Program Support Project (RSDP Phase I)*. Report No. 42868. Ethiopia: Transport Sector, 2008. [https://ieg.worldbankgroup.org/sites/default/files/Data/reports/PPAR-42868-P000755-Ethiopia\\_Road\\_Sector.pdf](https://ieg.worldbankgroup.org/sites/default/files/Data/reports/PPAR-42868-P000755-Ethiopia_Road_Sector.pdf).

World Integrated Trade Solution. “Product Exports by Ethiopia (excludes Eritrea) to China 2000” Accessed on May 17, 2020.  
<https://wits.worldbank.org/CountryProfile/en/Country/ETH/Year/2000/TradeFlow/Export/Partner/CHN/Product/all-groups>.

———. “Product Exports by Ethiopia (excludes Eritrea) to China 2016” Accessed on May 17, 2020.  
<https://wits.worldbank.org/CountryProfile/en/Country/ETH/Year/2016/TradeFlow/Export/Partner/CHN/Product/all-groups>.

Xinhua News Agency. “Xi Proposed Advancing China-Ethiopia Ties.” May 13, 2017.  
<https://eng.yidaiyilu.gov.cn/home/rolling/12993.htm>.

Yirgu, Kaleab W. “Performance Evaluation of Ethiopia’s Road Network Development Planning Policies and Strategies: The Case of RSDP.” Master’s thesis, Addis Ababa University, 2014.  
<http://213.55.95.56/bitstream/handle/123456789/15308/Kaleab%20Woldeyohannes.pdf?sequence=1&isAllowed=y>.

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