



Elevating ESG

EMPIRICAL LESSONS ON ENVIRONMENTAL, SOCIAL AND GOVERNANCE IMPLEMENTATION OF CHINESE PROJECTS IN AFRICA

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CONTENTS

EXECUTIVE SUMMARY	5
INTRODUCTION	9
EMPIRICAL OVERVIEW OF CHINESE FINANCE IN AFRICA	11
Data Landscape on Chinese Finance and Construction Contracts in Africa	11
Benefits	15
Risks	17
Current ESG Policies Impacting Chinese Engagement in Africa	19
CASE STUDIES	23
Selection of Case Studies	23
ESG Evaluation Framework	24
Case Studies of Chinese Projects in Africa	26
STAKEHOLDER IDENTIFICATION AND POLICY RECOMMENDATIONS	37
Stakeholder Identification	37
Policy Recommendations	38
REFERENCES	41
APPENDIX	47
Background on the Traffic Light System	47
Biodiversity and Indigenous Lands Risk Mapping	49

Lagos, Nigeria
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EXECUTIVE SUMMARY

This report assesses the environmental, social and governance (ESG) practices of Chinese-financed infrastructure projects in Africa, within the context of substantial investment needs for African nations to achieve the United Nations 2030 Sustainable Development Goals (SDGs). China plays a crucial role in potential achievement of these goals, providing finance and infrastructure development capacity through aid, loans, foreign direct investment, dedicated funds and contracting services. In the larger picture, Chinese financing has been empirically demonstrated as beneficial, contributing to economic growth and local livelihood improvements, but also presents notable risks, including environmental degradation and social and governance concerns.

This study uses a consistent ESG framework to analyze five case studies of Chinese projects in Africa. These projects span three countries receiving large amounts of Chinese financing on the African continent - Egypt, Nigeria and Ethiopia - and two sectors: energy and industrial parks, which are aligned with China's ambitions to enhance energy access and support manufacturing in Africa. These case studies were evaluated based on their compliance with Chinese and local ESG requirements, particularly China's Traffic Light System associated with the Green Development Guidance for Belt and Road Initiative (BRI) projects.

The report shows that the case study projects do not meet the standards of China's recommended Green Development Guidance, signaling significant room for improvement in ESG practices. In Egypt, the TEDA-Suez Special Economic Zone and Sinohydro's Attaqa Hydroelectric Power Plant showed Chinese firms adhering to the host country's minimum ESG standards, while also taking advantage of regulatory gaps around labor conditions and taxation. The projects were rated "red/yellow" and "yellow" under China's Traffic Light System, indicating substantial room for improvement. In Nigeria, the Lekki Free Zone project exhibited notable ESG risks related to community relocation and compensation, but also potential benefits including job creation and infrastructure development. Similarly, in Ethiopia, institutional weaknesses and inadequate regulatory frameworks posed challenges to ESG implementation in the examined projects. Specific issues included delays in land compensation, poor coordination among public servants and deficiencies in human resources and government funding. The lessons learned across these case studies underscore the critical importance of robust, well-enforced ESG standards and regulatory frameworks, as well as the need for transparency, stakeholder engagement and institutional capacity building to ensure sustainable and socially responsible project outcomes.

The report also assessed the case studies' potential risks to biodiversity and Indigenous lands, based on their spatial locations. The TEDA-Suez project was found to have the highest risk to biodiversity compared to other projects and average risks for World Bank and Chinese development-financed projects. On the other hand, the Renaissance-Addis Power Transmission Line and Eastern Industrial Zone were found to be partially or entirely located on Indigenous lands, leading to higher risk scores. The Lekki Free Zone in Nigeria showed negligible risk to Indigenous lands due to its distance from these areas, while the TEDA project in Egypt presented some potential risk, albeit lower than the average for Chinese development-financed projects.

Executive Summary

Introduction

Empirical Overview of Chinese Finance in Africa

Case Studies

Stakeholder Identification and Policy Recommendations

References

Appendix

The report concludes by identifying key stakeholders and providing targeted recommendations to improve ESG practices and compliance for Chinese-financed projects in Africa. For Chinese actors, it recommends maintaining government commitment to ESG compliance, enhancing awareness and adherence to ESG regulations among smaller companies, improving ESG impact assessments and mitigation plans and developing more accessible grievance redress mechanisms. For African host countries, the report urges building internal capacity and legal frameworks to improve ESG implementation, increased coordination among stakeholders and the creation of public awareness programs about ESG benefits. Lastly, international actors are advised to utilize multilateral platforms to raise ESG standards, embed foreign investment plans in broader sustainability strategies and fund public ESG performance reporting. Further research on implementing these policy recommendations is vital for shaping a more sustainable and risk-aware approach to infrastructure development in Africa, aligning with broader global development objectives.

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Addis Ababa, Ethiopia
Photo by Yohannes Ezra via Shutterstock



INTRODUCTION

Many African countries require substantial investment to achieve the United Nations 2030 Sustainable Development Goals (SDGs). In addition, according to the African Development Bank, the African continent is facing an infrastructure financing gap of \$68-108 billion per year (AfDB 2018).

China has, in recent years, been an important partner for providing finance and infrastructure development capacity for African countries. For example, China has provided financial and construction resources to African countries through several channels, including aid, loans, foreign direct investment, dedicated funds and contracting services. Chinese infrastructure engagement bears great opportunities for Africa's economic development. However, with a growing awareness of environmental, social and governance (ESG) risks associated with infrastructure development, Chinese-financed projects have been spotlighted as not only providing potential economic benefits, but also potentially causing ESG-related harm to host countries and communities.

This report examines the current ESG landscape and practices for Chinese financiers in Africa to identify recommendations to maximize the benefits and minimize the risks of Chinese-funded projects in Africa for sustainable growth and development. To this end, we summarize the state of empirical evidence on risks and benefits and analyze five case studies of Chinese projects in Africa. These case studies span three countries and two sectors to identify the ESG profiles of specific projects and draw broader lessons about future implementation. The two sectors are (1) energy - based on China's stated ambitions in working with African economies to expand access to energy (with a stated preference for supporting green energy transition), and (2) industrial parks - based on China's ambition to support manufacturing in overseas markets. The analysis of ESG practices in these case studies is based on stated Chinese and local ESG requirements and recommendations, such as China's Green Development Guidance for Belt and Road Initiative (BRI) projects, published with the support of China's Ministry of Ecology and Environment.

The research is grounded in a broader analysis of Chinese finance to Africa, where we present the latest empirical evidence, with a focus on comparing the effects of Chinese finance in Africa to that of other financial institutions, especially the World Bank. The report advances knowledge on ESG practices of Chinese-financed projects in Africa by applying a consistent ESG framework. We find that the five case studies do not meet the standards of China's recommended Green Development Guidance. The report concludes by identifying key Chinese, African and international stakeholders and making recommendations to each on how to improve ESG practices for Chinese-financed projects in Africa.

Lagos, Nigeria
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EMPIRICAL OVERVIEW OF CHINESE FINANCE IN AFRICA

DATA LANDSCAPE ON CHINESE FINANCE AND CONSTRUCTION CONTRACTS IN AFRICA

China provides financial and construction resources to African countries through several channels, including aid, loans, foreign direct investment, dedicated funds and contracting services. The current data on each of these channels is broken down in the following sub-sections. While this report focuses on finance flows, it is also important to note that China is the largest trading partner for the African continent as a whole, and for many individual African countries (CLBrief 2022).

Aid

The Organization for Economic Co-operation and Development (OECD) defines official development assistance (ODA) as “government aid that promotes and specifically targets the economic development and welfare of developing countries” (OECD 2022). In this definition, foreign aid is concessional and can include both grants and soft loans. In April 2018, China’s first independent aid agency, the China International Development Cooperation Agency (CIDCA), was established to coordinate foreign aid. On August 31, 2021, CIDCA, the Chinese Ministry of Commerce (MOFCOM) and the Chinese Ministry of Foreign Affairs (MOFA) jointly published the Measures for the Administration of Foreign Aid. CIDCA is responsible for centrally managing the scale and direction of the use of foreign aid funds, while MOFCOM is defined as one of the implementing departments (CIDCA 2021).

Chinese aid programs generally finance the following activities: turn-key projects (i.e., infrastructure facilities such as bridges, stadiums and government buildings constructed by Chinese developers using Chinese aid), technical cooperation, material goods, overseas Chinese medical teams, emergency humanitarian aid, training programs and debt relief. These projects are generally funded through grants, interest-free loans or concessional loans (State Council, 2011; Bräutigam, 2011). According to the State Council, grants account for 47.3 percent of the total RMB270.2 billion of China’s foreign aid between 2013-2018 (roughly \$38 billion), mostly funding small and medium-sized social welfare projects, technical cooperation and donation of goods. Interest-free loans account for 4.18 percent, mostly funding public facilities dedicated to citizens’ social activities. The Boston University Global Development Policy Center’s Chinese Loans to Africa (CLA) Database recorded 212 interest-free loan commitments to 38 African countries between 2000-2020, with a total value of \$2.22 billion (Hwang and Moses 2022). Interest-free loans to certain African countries meeting eligibility requirements have largely been forgiven in the past. Lastly, concessional loans represent 48.52 percent of China’s foreign aid. Most of the concessional loans are used to finance medium- to large-sized infrastructure projects. Concessional loans used to be administered by the Export-Import Bank of China (CHEXIM) before the establishment of CIDCA. A summary of the types of Chinese foreign aid is listed in Table 1.

Table 1 China's Aid to Africa by Category and Proportion of Finance

Types of Foreign Aid from China	Proportion of Foreign Aid (2013-2018)	Funded Activities	Example Projects
Grants	47.3%	Small and medium-sized social welfare projects, technical cooperation, material goods, emergency humanitarian aid, training programs	Chinese Medical Teams in Africa. Agricultural Technology Research and Transfer Center in Mozambique; New Parliament Building in Zimbabwe
Interest-Free Loans	4.18%	Public facilities	Tazara Railway; Coted'Or National Sports Complex in Sapint Pierre, Mauritius
Concessional Loans	48.52%	Industrial projects and medium-to-large-scale infrastructure projects	400MW Bui Hydropower Project

Source: State Council of People's Republic of China (2021) and Boston University Global Development Policy Center, Chinese Loans to Africa Database, 2022.

Loans

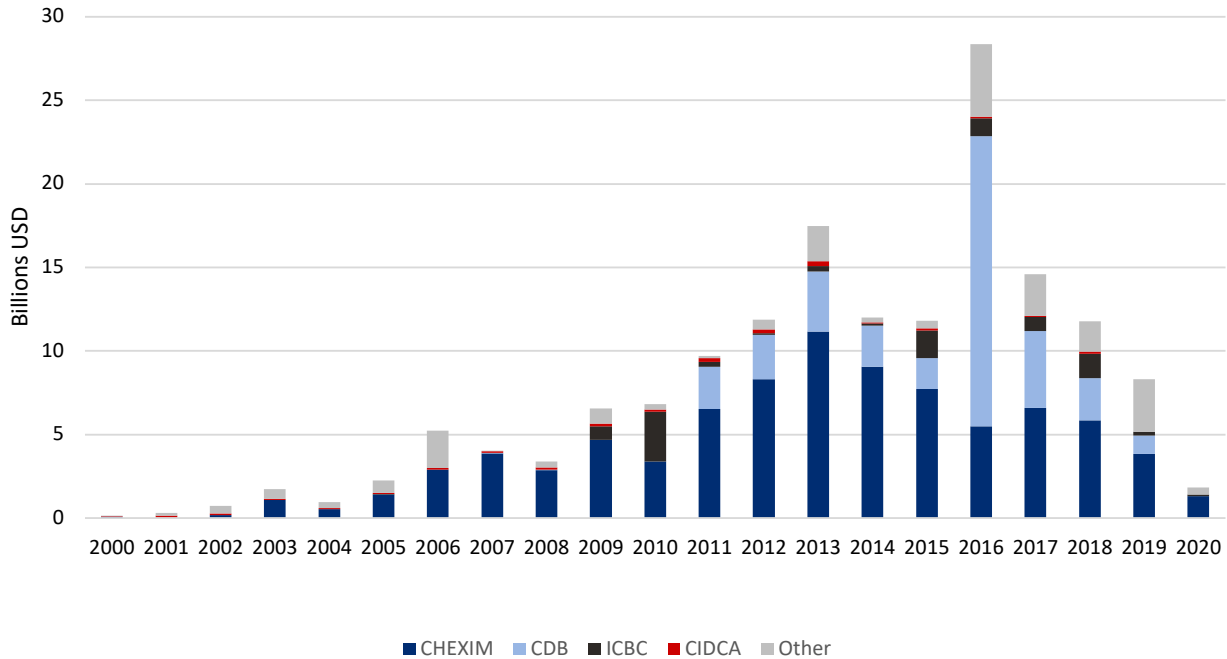
Several types of Chinese institutions provide loans to African borrowers. Based on the CLA Database, which tracks public and publicly-guaranteed loans, the two biggest Chinese development finance institutions (DFIs), CHEXIM and the China Development Bank (CDB), respectively committed \$87 billion and \$39 billion to Africa between 2000-2020.¹ Together the two DFIs contributed about 79 percent of total Chinese loan commitments to Africa (Hwang et al., 2022). Other state-owned commercial banks and Chinese contractors also made lending commitments worth \$30.14 billion during the same period, as shown in Figure 1. However, the data also demonstrates a continuously declining trend of Chinese loan commitments to Africa since 2016, partially due to debt distress in many African countries, slowed growth of the Chinese economy and the COVID-19 pandemic.

The majority of Chinese loans to Africa are concentrated in the transportation, power, mining and information and communication technologies (ICT) sectors, with the transport and power sector alone contributing 29 percent and 25 percent, respectively, to the total amount of Chinese loan commitments between 2000-2020 (Hwang et al., 2022). The mining and ICT sector accounted for 11 percent and 8 percent, respectively, as shown in Figure 2.

There are six different types of Chinese loans to Africa: interest-free loans, concessional loans, preferential export buyer's credits, export buyer's credits, suppliers' credits and commercial loans. Interest-free loans and concessional loans, given their concessional interest rates, fit in the OECD Development Assistance Committee (DAC)'s definition of foreign aid, and were discussed in the previous section in more detail. Preferential export buyer's credits, export buyer's credit and any suppliers' credits or commercial loans insured by China Export and Credit Insurance Corporation (Sinosure) fit in the OECD definition of other official flows, which includes official bilateral financial instruments that are export-facilitating in purpose. Sinosure is China's export credit insurance agency. Table 2 provides a summary of the characteristics and creditors of each of these four types of loans. While concessional loans are usually set at a

¹ The Boston University Global Development Policy Center uses the DFI Definition from Finance in Commons, a global network of global development banks. DFIs are stand-alone entities that primarily issue financial instruments, such as loans, for project-specific purposes with a public policy mandate, under a government-led strategy (Xu, Maradon and Ru 2021). This definition is also substantiated with China's self-identification of CHEXIM and CDB as DFIs.

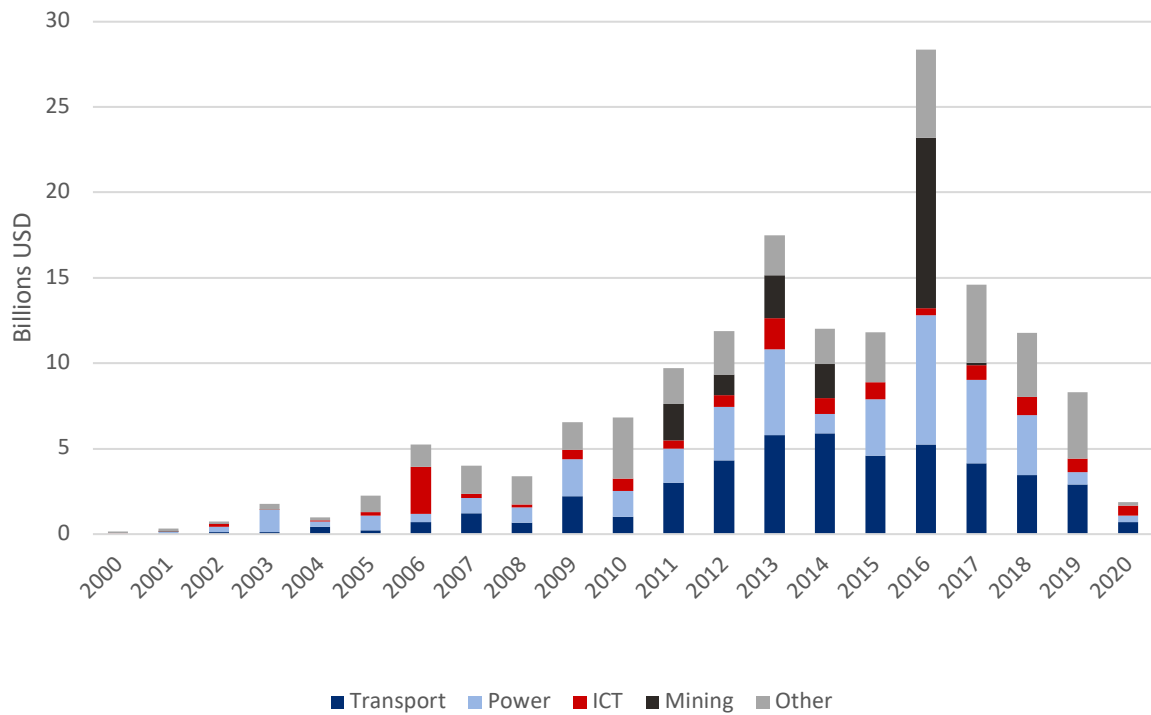
Figure 1 Annual Chinese Loans to Africa, by Lender, USD billions, 2000-2020



Source: Boston University Global Development Policy Center, Chinese Loans to Africa Database, 2022.

Note: Other Chinese lenders include Bank of China, China Construction Bank and a host of Chinese companies offering loans to African governments.

Figure 2 Annual Chinese Loans to Africa by Sector, USD billions, 2000-2020



Source: Boston University Global Development Policy Center, Chinese Loans to Africa Database, 2022.

Table 2 Types of Chinese Loans

Type of Loan	Characteristics	Chinese Creditors
Interest-free loans	No interest rate. 10-30-year maturities (5-10-year grace periods and 10-20 year repayment periods)	Formerly given by MOFCOM, CIDCA
Concessional loans	RMB-denominated, 20-year maturities (5-7-year grace periods and 13-15-year repayment terms) and 2-3 percent interest rates.	CHEXIM
Preferential export buyer's credits	USD-denominated, 20-year maturity (generally with 5-year grace periods, 15-year repayment terms) and 2-3 percent interest rate. Used to support exports of goods and services from China.	CHEXIM
Export buyer's credit	Used to support exports of goods and services from China. The interest rate can be commercial, or between that of commercial and concessional loans (3-6 percent).	CHEXIM, CDB
Suppliers' credits	Used to support a good or service from the company.	Chinese companies/contractors
Commercial loans	Provide project finance to Chinese companies and participate in consortium loans to African banks.	CDB, State-owned commercial banks

Source: Hwang and Moses 2022, Chen 2020.

fixed interest rate, non-concessional commercial Chinese loans are often set at floating rates, using the London Inter-Bank Offered Rate (LIBOR) as a benchmark.

Foreign Direct Investment

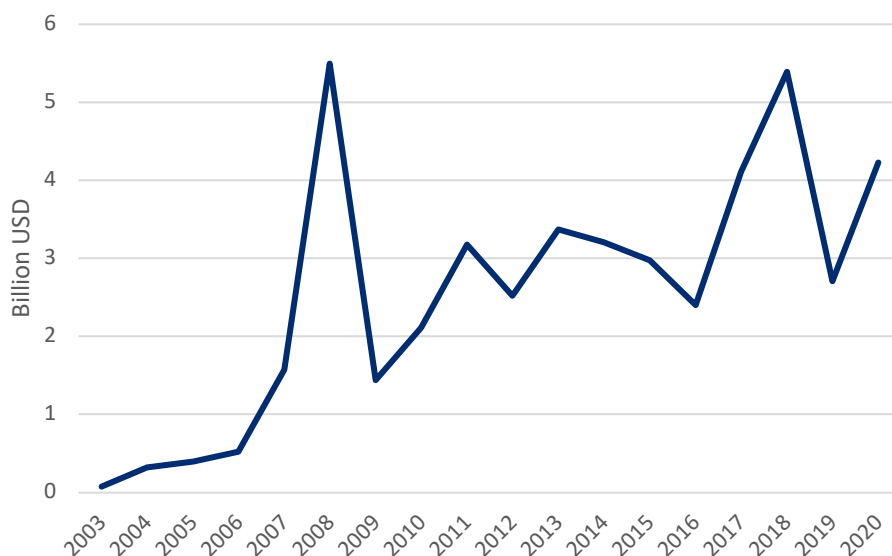
It is challenging to estimate the true scale of China's foreign direct investment (FDI) in Africa, given that nearly 60 percent of China's outbound FDI is commissioned through offshore financial centers like Hong Kong, the British Virgin Islands and the Cayman Islands (Johns Hopkins University SAIS China-Africa Research Initiative, 2022). The most official records of China's investment to Africa can be found in MOFCOM's yearly statistical bulletin of China's FDI flows and stocks by regions and sectors. Figure 3 shows that China's FDI to Africa has grown from \$0.1 billion in 2003 to \$4.2 billion in 2020. The top five African countries with the highest amount of Chinese overseas FDI stocks are South Africa, Democratic Republic of Congo (DRC), Zambia, Ethiopia and Angola.

MOFCOM data shows that the construction sector attracts the most Chinese investment. By the end of 2020, 34.9 percent of Chinese FDI stock in Africa was concentrated in the construction sector, 20.6 percent in mining, 14.1 percent in manufacturing and 9.6 percent in financial intermediation (MOFCOM 2022).

Funds

China has established several dedicated funds for overseas development projects, many utilizing equity investment instruments. Shareholders of these funds include Chinese DFIs (CDB and CHEXIM), commercial banks (Bank of China), FOREX managers (e.g. China's State Administration of Foreign Exchange, or SAFE), as well as foreign shareholders including the International Finance Corporation, several Russian funds and the Hungarian Export-Import Bank. Among 21 overseas development investment funds with a total capital endowment of \$155 billion, the China-Africa Development Fund specifically focuses on investing in Africa and as of 2022 has \$10 billion in available capital (Moses et al., 2022). There are other dedicated

Figure 3 China's FDI Flows to Africa, 2003-2020, USD billion



Source: MOFCOM 2022. Note: dollar amount unadjusted.

funds for Africa that utilize non-equity instruments, such as the Africa Growing Together Fund, established in 2014 with a capitalization of around \$2 billion, which provides joint loans from the African Development Bank and the People's Bank of China. Other global funds also invest in the African continent, such as the China-Portuguese Speaking Countries Cooperation and Development Fund.

Most of these funds have limited focus on ESG consideration with often lacking or contradicting information (e.g., between their English and Chinese publicly available information) on ESG policies and implementation (Larsen et al. 2023).

Contracting

Chinese contractors play an important role in China-financed infrastructure projects in Africa, but also in projects financed by financial institutions from OECD countries, as well as multilateral financial institutions. China's contractors are working on the African continent in a variety of sectors, including in energy and transport infrastructure, as well as in providing manufacturing capacity. Based on the China Investment Tracker (American Enterprise Institute, 2022), the volume of China's construction contracts in Africa is about \$20-\$35 billion per year. These construction contracts are often implemented by Chinese state-owned enterprises, and often directly or indirectly (e.g., through sovereign-to-sovereign loans) funded through Chinese financing mechanisms.

BENEFITS

In countries with a lack of domestic capital and development capacity, Chinese financing can add to the benefits of development that may be brought by other development actors. Several studies have demonstrated empirical evidence of the benefits of China's overseas finance, including in African countries. For low-income countries, these benefits include an improvement in household access to basic services like roads and electricity. More broadly, China's

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

overseas finance has brought benefits to macroeconomic performance through the stimulation of employment, technology and policy transfer, provision of capital and addressing infrastructure bottlenecks for structural transformation.

Chinese infrastructure projects have in some cases addressed the lack of access to basic public goods and services in Africa. For example, the China-financed Bui Dam in Ghana increased the electricity access for Ghanaian households living in the regions receiving the Bui Dam's power by 4.16 percent five years after the Bui Dam's completion. When only considering urban households, which generally have better access to electricity transmission facilities, their likelihood to have access to electricity increased by 7.78 percent due to the dam. In addition, households using electricity from the Bui Dam also witnessed faster increase in their ownership of various electric appliances in comparison with regions that did not receive Bui Dam electricity (Tang and Shen, 2020).

Chinese economic engagement in Africa has contributed to macroeconomic growth. One important channel for doing so is through the stimulation of employment. Empirical evidence based on Chinese development projects in 18 African countries from 2000-2012 shows that Chinese development projects stimulate employment (Isaksson and Kotsadam 2018a). A case study of the China-financed Bui Dam also shows that the hydropower project directly created 3,000 jobs for the local population during its construction and operation (Han, 2018). In-depth case studies in Nigeria, Ethiopia, Kenya and Lesotho also indicate that Chinese entrepreneurs provided hundreds of thousands of jobs for local people (Sun, 2017). According to figures provided by the *Financial Times*, China's investments in Africa created over 170,000 jobs between 2016-2020. This exceeds the combined contributions of France, Germany, the United Kingdom and the United States (EY 2019).

Third, Chinese FDI and loans also provide much-needed capital to address Africa's ongoing structural economic transformation. Based on empirical analysis of transaction-level data from MOFCOM on registered small- and medium-sized Chinese private firms investing in Africa between 1998-2012, Chinese investment is more prevalent in the more skill-abundant countries and more concentrated in capital-intensive sectors in the more capital-scarce countries. This suggests that the aim of Chinese investment in Africa is to leverage local comparative advantages (Chen et al. 2018). Moreover, like the domestic economic systems of other East Asian countries, China's finance to Africa and the greater Global South is an internationalization of China's "patient capital," a type of long-term finance (Mihalyi and Trebesch 2023) underpinned by China's risk-tolerant domestic banking system which absorbs short-run financial losses, channels credit to strategically important industries and omits policy conditionality for recipients (Kaplan 2021). This patient capital model is important for development, because in the short-run, large-scale infrastructure projects may generate economic benefits but not enough return on capital investment. In comparison with Western creditors that focus on short-run capital gain, Chinese development finance in the Global South may have a unique ability to finance much-needed infrastructure and manufacturing to benefit the long-run structural transformation of developing countries (Lin and Wang, 2017; Wang and Lin, 2017).

Fourth, China's economic activities could potentially improve the productivity of local managers and employees through technology and policy transfer. Ghanaian employees working at the China-financed Bui Dam were provided a three-stage training course (Han, 2018). For the manufacturing sector, there is also empirical evidence indicating small but significant cases of potential technology transfer, particularly through the technical diffusion and learning between Chinese suppliers and Nigerian firms (Chen et al., 2016). However, such linkages

and technology transfers were often highly informal and rudimentary, requiring the initiative of Nigerian actors and agencies to direct Chinese FDI to improve the skills of local workers. In addition to technology, the Chinese government, state capital and private firms have provided financial and technological resources for policy transfer to African countries, particularly industrial policies such as the promotion of Special Economic Zones (SEZs). For example, Chinese firms played a significant role in providing lessons for the Ethiopian government to set up the initial administrative and legislative institutions for SEZ development (Tang, 2022).

Last, cross-country analysis has indicated that Chinese economic engagement can facilitate macroeconomic growth at both the regional and global scales. If fully implemented, new transport infrastructure projects along China's BRI are estimated to increase world trade by up to 6.2 percent and global real income by up to 2.9 percent (Ruta et al., 2019). Additionally, Chinese development finance spurs short-term economic growth in recipient countries between one and three years after project commitment through improvements in investment and consumption (Dreher et al. 2021).

RISKS

While Chinese-financed projects abroad have demonstrated contributions to economic growth and the improvement of local livelihoods in some cases, infrastructure projects, including those financed and developed by Chinese entities, also pose significant risks to the local environment, including social and governance risks. Empirical evidence of these risks and their subsequent impacts is detailed in the following sections.

Environmental Risks

Infrastructure projects bear inherent risks to the environment. Accordingly, Chinese projects are generating environmental risks, including in African countries. According to the Green Development Guidance published by the Belt and Road Initiative International Green Development Coalition (BRIGC) and backed by China's MEE, environmental risks are categorized into pollution, biodiversity and climate emissions (i.e., carbon dioxide and other greenhouse gases). On the climate side, studies have found that business-as-usual scenarios for Chinese overseas engagement in developing countries, especially in the energy and transport sector, could lead to a three-fold increase of climate emissions (Ma and Zadek, 2019). Although the carbon dioxide emissions intensity of Chinese overseas coal plants is lower than their non-Chinese counterparts, absolute emissions over the lifetime of the Chinese coal plants could be significant due to the large capacity of the plants, their relatively young age and the large number of plants (Springer et al., 2021). Based on data from Chinese economic engagement with 50 African countries, China's construction activities and exports negatively impact African countries' environment and carbon dioxide emissions (Tawiah et al. 2021). The construction process of large-scale infrastructure projects like roads, railways and airports may result in pollution brought by dust, water and use of fossil fuels to power the construction machines. Additionally, given that African countries mostly export natural resources to China, the process of resource extraction may lead to a degradation of the environment.

Similarly, biodiversity risks must be managed well: many Chinese-supported infrastructure projects pass through ecologically sensitive areas. A 2017 report published by the World Wildlife Fund (WWF) noted that there will be considerable overlap between BRI projects and sensitive environments. As many as 1,739 Important Bird Areas and Key Biodiversity Areas at risk of harm were identified using data from international organizations. Over 265 threatened species

Executive Summary

Introduction

**Empirical Overview of
Chinese Finance in Africa**

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

could be adversely affected—including endangered tiger species and the critically endangered saiga antelope. Increasing access to undeveloped areas of forest will increase the likelihood of poaching and deforestation in those areas. Researchers have found that in comparison with traditional donors, Chinese overseas projects may pose more risks to Indigenous land and biodiversity. For example, due to the large-scale nature of the BRI road and rail projects, these projects may create more barriers to wildlife by disrupting their migration or splitting populations (Losos et al., 2019). The lack of policies to mitigate the potential environmental and social risks associated with Chinese overseas development finance contributes to the increased risks facing BRI projects versus more mature DFIs, such as the World Bank and the International Finance Corporation (IFC). Similarly, in comparison with World Bank’s development finance, Chinese DFI loans have many more project sites overlapping with Indigenous peoples’ lands, protected areas or critical habitats. This intersection is greatest in Central Africa and Southeast Asia, posing risks to biodiversity and displacement of Indigenous people (Yang et al., 2021). Another example is the construction of the China-financed Bui Dam in Ghana, which led to inundation of 21 percent of the Bui National Park with water due to the reservoir, causing a loss of natural habitats (Environmental Justice Organisations, Liabilities and Trade, 2015).

Other researchers have also shown that the recipient countries’ domestic politics play a critical role in moderating the environmental impacts of Chinese economic activities. Based on a comparative study of Chinese projects in Cambodia and Tanzania, the weak enforcement of environmental regulations in Cambodia leads to more deforestation, while Tanzania’s more stringent environmental protection actions guarantee little or no deforestation around China-financed projects (BenYishay et al., 2016). During the construction of Ghana’s Bui Dam, both the Ghanaian government and the Chinese contractor Sinohydro were crucial in determining the environmental protection measures of the local habitat, and the Ghanaian government was the sole entity responsible for the resettlement and compensation of the affected households (Hensengerth, 2013; Urban et al., 2015), indicating the important role of host country regulations and their governance systems in managing environmental risks.

Social and Governance Risks

China’s engagement in Africa bears various social risks, including displacement of communities without compensation, loss of income due to changes in natural capital endowment and other types of shifts for labor markets. China’s own poor labor practices may impede labor union mobilization in African countries. For example, empirical evidence based on Chinese development projects in 18 African countries from 2000-2012 shows that Chinese development projects discourage trade union involvement. In contrast, development projects financed by the World Bank in these countries do not show a similar pattern (Isaksson and Kotsadam 2018a).

Similarly, a case study found that Chinese firms in Ethiopia experience exceptionally high labor conflicts, and the key reason to explain such conflicts is the relative lack of acknowledgement of formal labor laws from the Chinese managers in comparison with their Ethiopian employees (Chu and Fafchamps 2022).

Many researchers have pointed out that Chinese economic activities may pose a risk to governance in African countries, particularly on the issue of corruption. Based on data matching Chinese project sites with the Afrobarometer survey’s perception of corruption, Chinese development projects fuel local-level corruption, whereas World Bank finance does not have the same effect (Isaksson and Kotsadam 2018b). The economic incentives of corruption and

the lax attitudes of Chinese actors towards corruption may have encouraged corruption activities in certain instances of project implementation. In addition, empirical evidence has shown that Chinese development assistance projects are significantly distributed to the birth region of local African leaders because of the demand-driven nature and fewer conditionalities of Chinese finance (Dreher et al. 2019). Such regional favoritism using Chinese development finance may make ethnic identity more salient and exacerbate ethnic mobilization in the localities near Chinese projects (Isaksson, 2020).

However, researchers also show that the corruption issue has widely existed among African countries before Chinese investment entered. The impacts of African countries' domestic corruption on different types of China's financial engagement have been shown to vary. While corruption impedes China's FDI, it is positively correlated with China's engagement in Africa's trade and construction (Tawiah et al. 2022). There is also some evidence that while Western investment tends to stay away from poor governance environments, Chinese investment doesn't discriminate (Chen et al. 2018).

Studies looking at the impact of Chinese investment in resource-rich African countries generally find that Chinese investment in mining reinforces the dependence of resource-rich countries on the export of raw materials. For example, a case study of China's investment and trade flows in the DRC shows that the majority of China's economic engagement there is concentrated on resource seeking, which strengthens the DRC's dependence on natural resource export and makes the country's economy more vulnerable to commodity price fluctuations in the long run (Chakrabarty 2016). Comparing China with OECD donors in their development finance flows to 106 countries, some have argued that Chinese development finance may undermine the incentives for recipient countries to undergo economic reforms because of the fewer economic reform conditionalities attached to Chinese finance (Brazys and Vadlmannati 2021). While both China and Western countries' economic engagement with African countries may seek natural resource extraction and expansion of export markets for manufactured goods, Africa's domestic manufacturing sector might be more fragile, as it faces competition from Chinese goods, in particular. Moreover, dependence on resource exports would further hamper structural transformation and diversification in the African economy (Martuscelli 2018).

CURRENT ESG POLICIES IMPACTING CHINESE ENGAGEMENT IN AFRICA

Given the empirical evidence demonstrating the benefits and risks from Chinese finance in Africa, ESG policies are critical for minimizing the risks of Chinese-financed projects in Africa. These projects and their sponsors may be subject to ESG policies from African countries and/or from Chinese government regulators. The following sections summarize the current landscape of ESG policies governing Chinese finance in Africa.

ESG Regulations in African Countries

For some African countries with larger economies, ESG and sustainability reporting frameworks are mandatory for investors (International Labour Organization, 2022). Some countries have strong ESG requirements for investors, such as the Code for Responsible Investing in South Africa (CRISA 2022). In a survey of 26 African countries, 17 were found to have ESG-related financial policies, in the form of incentives for ESG market standards, incentives for

Executive Summary

Introduction

Empirical Overview of Chinese Finance in Africa

Case Studies

Stakeholder Identification and Policy Recommendations

References

Appendix

issuing ESG assets and/or climate stress testing. Only four countries were found to have all three of these policies: Egypt, Kenya, Mauritius and South Africa (Sanghani et al. 2022).

However, across countries, there is a general lack of legislative regulations. In addition to the need for stronger legislation, the local capacity of African countries to enforce existing regulations is an important part of ESG practices. For example, as this report's case study of Ethiopia shows in a following section, the 1995 Ethiopian Constitution contains provisions stipulating that the design and implementation of development programs and projects should not damage or destroy the environment. The constitution also recognizes the right of the people to be consulted and express their views on the planning and implementation of environmental policies and projects that affect them. However, less than half of the local interviewees for the case study indicated that there was an ESG impact assessment during the project planning phases for the selected projects.

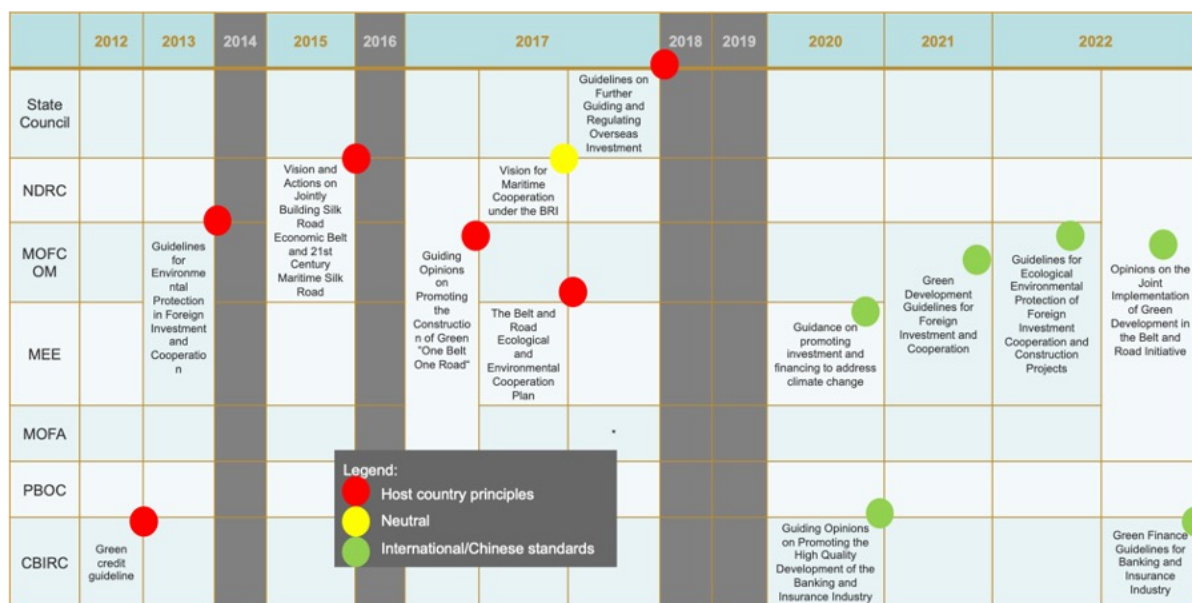
China's ESG Regulations for Overseas Finance

Chinese leaders have verbally confirmed that the BRI and overseas investments more broadly should be "open, green and clean" while avoiding the "pollute now, clean-up later" approach (FOCAC 2021; Xi 2019). In practice, however, China's green overseas finance policies and its green finance practice have been characterized as largely rhetorical (Nedopil, 2021) due to a dominance of fossil fuel investments and a focus until 2020 on "host country principles" in applying environmental standards (Voituriez et al., 2019). This host country approach did not require international best practices for sustainable finance, such as using the Equator Principles, which strongly encourage the application of the IFC's environmental and social performance standards in countries with weaker institutional environments.

In 2020, however, China's approach to greening BRI finance changed, possibly due to increasing stranded asset risks, for example in coal-fired power plant investments (Myllyvirta et al. 2020). Through various international partnerships, such as the Green Investment Principles for the BRI (GIP) and the Belt and Road Initiative International Green Development Coalition (BRIGC) under the MEE, China issued the Green Development Guidance Baseline Study with the "Traffic Light System" labeling all fossil fuel-related engagement as "red" (Wang and Nedopil, 2020). The Traffic Light System has been promoted since then by various entities, and the BRIGC, together with Chinese and international partners, has developed an implementation guide (Wang et al. 2021) and a joint report with the GIP for the Belt and Road (Nedopil et al. 2022) and continues to improve its application (Wang and Liu, 2021).

The Green Development Guidance also served as a basis for three new policy documents issued in 2021 and 2022 that explicitly encouraged the integration of biodiversity, climate and pollution control throughout all investment phases based on Chinese or international standards rather than host country standards: the Green Development Guidelines for Foreign Investment and Cooperation, issued jointly by MOFCOM and MEE in July 2021, the Guidelines for Ecological Environmental Protection of Foreign Investment Cooperation and Construction Projects, also issued by MOFCOM and MEE in January 2022, and the Opinions on the Joint Implementation of Green Development in the BRI, issued by China's National Development and Reform Commission (NDRC), MOFCOM, MEE and Ministry of Foreign Affairs in March 2022. In June 2022, the Chinese Banking and Insurance Regulatory Commission (CBIRC) issued the updated Green Finance Guidelines ("2022 Guidelines") that require banking and insurance institutions to effectively identify, monitor and prevent ESG risks, and to strengthen information disclosure and interaction with stakeholders along international standards. Particularly for financing in

Figure 4 Chinese Government-issued Guidance and Opinions Relevant for Greening BRI Finance



Source: Nedopil and Larsen, forthcoming.

BRI and overseas projects, the 2022 Guidelines require banks and insurance companies to ensure that the management of a project is substantially consistent with international good practices and introduced the establishment of a grievance mechanism. Figure 4 shows how these policies moved from a “host country principles” to an “international standards approach” regarding environmental risk management when financing overseas projects.

Aswan, Egypt.
Photo by Abdullah Omar via Unsplash



CASE STUDIES

To examine the state of application of ESG standards in Chinese projects in Africa and draw relevant lessons for further improvement, we selected five case studies of Chinese-financed projects in Africa. Field researchers collected data through desk research, as well as interviews and surveys, around the sites of the case studies between April-October 2022.

SELECTION OF CASE STUDIES

Based on the data presented earlier in this report, we identified the countries and sectors in Africa with the greatest amount of Chinese financial support. The top five countries by amount of finance across datasets were Angola, Egypt, Nigeria, Ethiopia and Zambia. Chinese involvement in Angola is largely driven by a small number of large loans for oil-related activities, while Chinese involvement in Zambia is currently fraught due to the country's ongoing debt restructuring process (Bräutigam and Wang 2021). Based on the concentration of Chinese financial support across these countries and a subjective assessment of the relative potential for improving ESG regulations of Chinese-financed projects in each country, we selected three focus countries: Egypt, Nigeria and Ethiopia.

Regarding sectors, the top five destination sectors for Chinese finance are manufacturing, power, transport, extraction and pipelines and construction. We selected not only cases in the two largest sectors, manufacturing and electric power, but also subsectors with strategic relevance and high ESG risks, according to the Traffic Light System, such as:

- SEZs provide an important pathway to expand the manufacturing subsector providing employment and an opportunity for broadening both exports and domestic production. SEZs can be implemented with varying degrees of ESG risks - providing more or less employment, with a lower or higher environmental footprint.
- Within the electric power sector, we focused on transmission and distribution systems linked to electric power generation, as well as power generation due to the much-needed energy transition and the expansion of the power sector to provide electricity to more communities in Africa. At the same time, due to the characteristics of linear infrastructure, environmental risks and in particular biodiversity risks, are prevalent based on cutting through landscapes for the construction of transmission lines.

Within these countries, sectors and subsectors, we selected large Chinese projects that have already been partly implemented to evaluate ESG practices rather than ESG promises via fieldwork. The final set of cases are presented in Table 3.

Table 3 Projects Selected as Case Studies

Country	Manufacturing Case Study	Electric Power Case Study
Egypt	Tianjin Economic-Technological Development Area (TEDA) – Suez Special Economic Zone	Attaqa Turbin hydroelectric power plant*
Ethiopia	Eastern Industrial Zone (EIZ)	Grand Ethiopian Renaissance Dam (GERD) and Renaissance-Addis transmission line
Nigeria	Lekki Free Zone (LFZ)	NA*

Source: Authors' elaboration.

Note: Chinese-financed transmission and distribution projects in Egypt or Nigeria that had reached the construction or implementation stage could not be verified.

ESG EVALUATION FRAMEWORK

We used the Traffic Light System as a guide for evaluating the ESG performance of the case studies. As mentioned, various Chinese ministries have expressed support for the Traffic Light System since its introduction in December 2020, and it has also received endorsement at the global level due to its innovative classification system. While the Traffic Light System was introduced after some of our selected case studies began construction, we believe it is applicable to all projects for their use phase, as well those that are still undergoing planning, construction and/or expansion.

Summary of the Traffic Light System

The Traffic Light System examines BRI projects as they pertain to three major environmental objectives: pollution prevention, climate change mitigation and biodiversity conservation. Projects are divided in a two-step evaluation. In the first step, projects are categorized into three categories based on the sector's inherent risks: Green projects (encouraged projects), Yellow projects (environmentally neutral projects with moderate impacts) and Red projects (projects requiring stricter supervision and regulation). Red projects can be upgraded to "red/yellow" or "red/green" depending on project implementation, taking into account local considerations and applying measures to mitigate or compensate for potential environmental risks. Further information on the Traffic Light System and these categories can be found in the Appendix.

We applied this categorization to the subsectors studied. Transmission lines are initially rated as "red" due to their high risk to biodiversity as linear infrastructure and their potential to transport carbon-intensive electricity (e.g., from coal); however, by applying relevant biodiversity safeguards (e.g., IFC Performance Standard 6, avoiding any key biodiversity areas), and by transporting only green energy, transmission lines can be counted as "red/green" projects.

Similarly, industrial parks (or SEZs) are rated "red" due to their potential risks through pollution and emissions, but can become "red/yellow" if significant risks can be reduced. Green industrial parks are supported and can be rated as "green" if all criteria for yellow are met and all electricity is either from green sources, or relevant emissions are offset.

Development of Sector-Specific ESG Evaluation Frameworks

To develop ESG evaluation frameworks specific to transmission and distribution infrastructure, and industrial parks, we first define these terms.

- An industrial park consists of a piece of land explicitly designed to promote industrial activities through integration with transportation facilities and other supporting infrastructure. Firms are attracted to industrial parks to derive and create economic benefits from localization economies, such as increased ease of communication, access to a suitable labor pool and facilities designed to fit their needs. An industrial park's environmental and social impact can vary greatly depending on the specific industries operating within its boundary. Industrial activities within the parks can range from heavy manufacturing (such as steel and cement) to light manufacturing (consumer goods). Industrial parks come with many opportunities for an economy, but they also present many risks for their development and have an essential social and environmental responsibility to carry. Industrial parks may be referenced under different appellations: Eco-Industrial Parks (EIPs), Special Economic Zones (SEZs), Border Economic Zones, Export Processing Zones (EPZs), Free Trade Zones (FTZs) / Free Zones (FZs), Bonded Areas / Bonded Zones, High-Tech Parks (HTPs) and Agro-Industrial Parks (AIPs).
- Transmission projects are infrastructure projects that support the distribution of electricity from power sources (including both fossil fuel-based power plants and renewable energy generation facilities) to end-users (such as manufacturing facilities, residential units and commercial operations). The project may involve the construction, upgrading and operation of overhead lines (conductors and insulators) and pylons; transformers, reactors and substations; underground cables; circuit breakers and switchgear; and sub-stations, buildings, fences and busbars. A transmission project can typically be divided into three phases: construction, operation and maintenance.

Environmental risks

Applying the Traffic Light System to SEZs and transmission lines enables understanding of their environmental impact and ESG management requirements. In general, the Traffic Light System states that industrial parks and transmission lines are both considered "red projects", both with a possibility to upgrade to "red/yellow" and even "red/green":

- For industrial parks, strict management of waste, energy efficiency in accordance with local best practices would allow parks to be upgraded to "red/yellow", while industrial parks that source the majority of their electricity from green sources (wind, solar) and have a clear pathway for 100 percent renewable energy, recycling of waste and wastewater would be considered "green" projects.
- For transmission lines, the Traffic Light System labels them as "red" if they transmit electricity produced by coal-fired power plants, "red/yellow" if they support transmission of electricity produced by gas-fired power plants with carbon capture, utilization and storage (CCUS) that brings emissions down to less than 100g CO₂/kWh, while micro-grids are considered "green". By utilizing the Traffic Light System evaluation, electricity grids that transmit electricity generated by "green" energy sources, such as solar and wind, could be considered "red" due to their high biodiversity risk in the construction of linear

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

infrastructure with the possibility to upgrade to “red/green” if key biodiversity areas are not touched or relevant mitigation measures have been taken in line with international standards (e.g., IFC standards).

The Traffic Light System also proposes that projects that significantly and irreversibly impact key biodiversity areas (KBA) should be labelled as “red” with little ability to compensate.

Social risks

As the Traffic Light System focuses on environmental risks, social risk considerations have been adapted for this project based on international best practices. These considerations focus on the following dimensions in the different project phases:

- Working conditions, including occupational safety and health (OSH), working hours.
- Equal opportunities, including diversity of employees.
- Work-related rights, including participation of local workers in all levels of management positions, employment security, income and representation and other fundamental principles and rights at work, as well as training measures.
- Workers in the value chain.
- Affected communities, including workers’ habitation facilities, consultation with communities, Indigenous peoples’ rights to land.
- Consumer and end user satisfaction.

In addition, during our fieldwork, we raised questions around how findings on impact assessments and resettlement processes were communicated to affected communities and more broadly, and whether mitigation plans were suggested for different phases of the project life cycle. We also assessed whether grievance mechanisms were set up for local stakeholders, if financing and project contracts were made public and the overall effectiveness on communication around project governance.

CASE STUDIES OF CHINESE PROJECTS IN AFRICA

Egypt

Special Economic Zone

BACKGROUND The Tianjin Economic-Technological Development Area (TEDA) - Suez Special Economic Zone (TEDA-Suez) is an industrial park located in the Suez Canal and encompasses dozens of Chinese manufacturing enterprises. Located below the southern entrance of the Suez Canal, TEDA-Suez is one of Egypt’s most significant industrial hubs. It was established by a partnership between the Egyptian and Chinese governments for the purpose of reproducing China’s successful experience of SEZ development (Bräutigam & Tang, 2011). In 1998, the two governments signed a memorandum of understanding (MoU) to construct a joint industrial zone. As the developer of one of China’s top-performing SEZs, TEDA Investment Holdings, a Chinese SOE based in Tianjin, was chosen by the Chinese government to carry out the project after the MoU was signed. The project was further expanded after Chinese leader Xi Jinping’s 2016 visit to Egypt (Xinhua, 2021). By the end of December 2021, TEDA-Suez spanned over 7.34 km² and had attracted Chinese enterprises

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

in various sectors such as passenger car construction, textiles, building materials and the chemical industry.

Like other free zones in Egypt, TEDA-Suez falls under a special investment system entailed in the Investment Law No. 72 of 2017 and its Executive Regulations. The zone is overseen by the General Authority for the Suez Canal Economic Zone (SCZone), an autonomous body concentrating both executive and regulatory powers. The authority is entitled to approve decrees, propose additional incentives and has the full authority to oversee all areas of operation, from staffing, and control over budget, to ESG compliance. Besides the SCZone and Egyptian laws and regulations, TEDA-Suez, and the Chinese companies inside the zone, work under the guidance of the China-TEDA Investment Company, the Chinese Ministry of Foreign Affairs and the Ministry of Commerce, the Tianjin Municipal Government and the China Africa Development Fund. The CDB-owned China-Africa Development Fund is a shareholder in the China-TEDA Investment Company, which acquired TEDA Investment Holdings and now operates the zone.

MAIN FINDINGS Chinese firms largely comply with the existing regulations within Egypt. However, based on these case studies, Chinese financiers and firms appear to abide only by the minimum standards within Egypt. Chinese firms adapted to the minimum environmental standards applied in Egypt and took advantage of the weak regulations governing labor conditions and tax payment obligations.

Both TEDA-Suez and the Attaqa hydroelectric power plant present relatively basic levels of environmental compliance (in the case of the Attaqa plant, this assessment is for the early phases of the project as it has not yet reached an operational stage). Any firm wishing to build a factory in TEDA-Suez must obtain an environmental permit before it can start construction. The environmental permit is delivered by the Egyptian Environmental Affairs Agency (EAA), which assesses several factors, including water use, land use and impact on biodiversity, energy consumption, etc. Only after the full environmental assessment is conducted and approved can construction begin. Moreover, firms in the zone are subject to annual audits and inspections from local authorities and are required to reapply for environmental permits on a regular basis. Chinese companies in the SEZ met these minimum requirements, which are not up to the level of international best practices as defined in the Traffic Light System evaluation framework.

However, there is some promising anecdotal evidence regarding environmental regulation. While an incident did occur in 2015, when a paper production factory in the SEZ was found to be dumping contaminated water and hazardous chemicals in the Suez Canal, an internal investigation led the factory to commit to ending this behavior, and the board of TEDA-Suez introduced more frequent inspections and raised the wastewater treatment capacity of the zone. In addition, the TEDA-Suez management have deliberately opted for maintaining the zone's focus on export-oriented small and medium-sized enterprises (SMEs) in light manufacturing and services, rather than allowing in more polluting manufacturing activities, such as steel, leather and cement manufacturing.

Egypt's weak labor laws have opened the door to poor workers' conditions in the TEDA-Suez zone. Interviewed local workers and managers complained about low wages, long working hours and in some cases, lack of social insurance. However, it is important to evaluate first the prevailing policy and labor market environment for foreign investors before drawing conclusions on the impact of Chinese firms on social standards. TEDA-Suez was set up after decades

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

of neoliberal reforms in Egypt, starting with the 1970s Infitah (opening) reforms, which were followed by structural adjustment programs and waves of liberalization and privatization (Roccu, 2013). These reforms have led to a systematic weakening of labor institutions and mass informalization and casualization of labor (Meagher, 2016; Lee, 2017). More broadly, empirical research has indicated that working conditions in African industrial parks, particularly those integrated into global production networks, may be driven by the cost pressures and tight margins intrinsic to such networks, aggravated in environments with loose labor regulations (Gereffi, 2018). Low wages resulted in high-turnover rates in the Chinese factories based in TEDA-Suez, with workers taking up better-paid positions when they had the opportunity. This finding corroborates evidence in existing empirical studies, which suggest that Chinese multinationals abroad tend to comply with national minimum wage legislation, fixed at 2700 EGP (\$137) in Egypt, but are more likely to pay lower wages than their competitors (Oya & Schaefer, 2019).

Despite adopting texts that pledge broad consultations with civil society groups, evidence from the ground in Egypt shows that local stakeholders have been marginalized from discussions surrounding these large infrastructural projects. The November 2022 United Nations Climate Change Conference or Conference of the Parties (COP27) hosted in Sharm El Sheikh have been described as a sensitive moment by climate activists and rights groups amid the country's crackdown on civil liberties. It is estimated that at least 65,000 political prisoners are in Egypt's jails, including civil society actors, community leaders, activists and journalists (Michaelson, 2022). This situation significantly hinders the capacity of local advocacy groups to investigate the adverse effects of large infrastructural projects and mobilize against corporate actions.

Finally, a significant governance issue in TEDA-Suez is the accusation of undue tax breaks for the zone. The Suez Canal Special Economic Zone is classified as a Category A zone and is entitled to the preferential policy of a 50 percent reduction of investment cost and significant tax rebates (GAFI, 2017). Several parliamentary discussions addressed the question of removing what was deemed by some as undue tax breaks given to foreign firms in free zones, including Chinese ones. According to interviewed managers, TEDA-Suez has contributed over \$190 million in taxes since its creation and over 4,000 direct and indirect job opportunities. However, these numbers are contested by local politicians, researchers and activists who argue that TEDA-Suez, like other free zones in the country, has paid very little taxes while creating no meaningful developmental opportunities.

Power Sector

BACKGROUND The Attaqa Turbin-pumped hydroelectric power plant stands out as China's most significant energy investment in Egypt. Funded with a \$2.6 billion CHEXIM loan and built by Chinese state-owned enterprise (SOE) Sinohydro via an engineering, procurement and construction (EPC) contract, the 2.4 GW hydroelectric project is set to become Egypt's first power plant to generate electricity using water storage and pumping during peak times (Takouleu, 2019). This massive-scale infrastructural project is currently under construction, with an expected completion date of 2024. While plans to develop the power plants were stalled for years, President Abdel Fattah Sisi's visit to China in 2019 helped move negotiations forward. According to interviews, this visit also resulted in a Chinese pledge for \$450 million in new assistance to help improve Egypt's electricity grid, although this part of the project is not yet advanced enough for evaluation under our ESG framework.

MAIN FINDINGS As the company in charge of the engineering, procurement and construction of the Attaqa power plant, Sinohydro conducted the Environmental Impact Assessment (EIA) in collaboration with Egypt's Hydro Power Projects Executive Authority (HPPEA). The EIA for the Attaqa pumped storage power plant received approval from Egyptian authorities in September 2019. Similarly, CHEXIM requires that the borrower deliver the EIA documentation and the environmental approval before the loan agreement can be implemented. However, to meet the standard of international best practices, Sinohydro and/or Egyptian regulators would need to require an independent environmental and social impact assessment (ESIA).

While the Attaqa power plant is still under construction, issues have arisen around land usage. Initially, the construction of the power plant was supposed to take up 84,000 m² of land, which was approved by the National Centre for Planning State Lands Usage (NCPSLU) (Takouleu, 2019). However, Sinohydro estimated that the project needed twice as much space. This led the Egyptian Ministry of Electricity to put forward an authorization request to the NCPSLU for extra land usage. The request was approved, allowing the power plant to take up a surface area of 168,000 m² in the Suez Governorate. The project's expansion generated criticism among non-governmental organizations and civil society actors. Interviews revealed that public consultations were limited and that the concerns of people affected by the power plant from neighboring villages were side-lined.

Lessons Learned

The assessment of the two cases, the TEDA-Suez SEZ and Sinohydro's Attaqa hydroelectric power plant, indicate that Chinese firms largely comply with the existing regulations of the host country. That is, Chinese external infrastructure investments, including those financed by loans from its DFIs, appear to abide only by the minimum Egyptian standards. Chinese firms adjusted to the minimum environmental standards applied in Egypt and took advantage of the weak regulations governing labor conditions and tax payment obligations. Accordingly, the hydro-power project would be considered "red" or "red/yellow", while the SEZ would be considered "yellow" under the standards of China's Green Development Guidance. It is important to note that the SEZ was planned and constructed before the development of the Traffic Light System.

The autonomy given to multinational corporations in free zones makes it unlikely that Chinese firms, like their foreign competitors, will voluntarily commit to a high level of ESG standards without coercive measures or potential gains for the business. This is especially true for smaller- and medium-sized Chinese multinationals, as they often slip through the net of advocacy groups and, unlike Western competitors, are not subject to similar levels of pressure from their home country to adopt international ESG standards.

From these case studies, it is evident that several specific policies have improved ESG outcomes. The Egyptian environmental authority's introduction of environmental permits as a pre-requisite to the start of infrastructure construction and the mandatory annual renewal of these permits have limited the potential for environmental damage. However, contrary to the recommendations by the Chinese government to conduct independent environmental and social impact assessments, the reliance on environmental laws and regulations is not up to international standards.

Improved Egyptian labor regulations have helped improve social standards, while Chinese firms have also become more attuned to the reputational damage associated with low social standards. TEDA-Suez has a steadily growing proportion of local workers, and training local

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

workers is required in instances when Chinese workers exceed a certain threshold. These approaches should be strengthened and expanded, especially to improve governance standards for Chinese projects in Egypt.

As Egypt moves forward to improve the quality of the investments it receives, policy-setting and public awareness programs are powerful tools to attract foreign capital while protecting the environment, improving citizen wellbeing and promoting social cohesion.

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

Nigeria

Special Economic Zone

BACKGROUND The Lekki Free Zone (LFZ) is in the Ibeju-Lekki neighborhood of Lagos. It is 60 kilometers east of Lagos and has 16,500 hectares of land. The Lekki Free Zone Development Company brought Lagos companies and Chinese investment companies together. The China-Africa Lekki Investment Company owns 60 percent of this joint venture, and the Lagos State Government and Lekki Worldwide Investments Limited, a local private investment firm set up by the Lagos State Government, each own 20 percent. China Railway Construction Corporation, China Civil Engineering Construction Company, Nanjing Jiangning Economic and Technology Development Company, Nanjing Beyond International Investment and Development Company and the China Africa Development Fund are all part of the Chinese conglomerate. The LFZ master plan was designed around the idea of “one axis, six parks”, namely, one economic zone with six industrial activities: light manufacturing, textile production, storage, logistics, automotive assembly and real estate development. As of July 2022, the zone’s website states that there are 132 enterprises operating in the zone (LFTZA, 2022), although previous surveys in 2015 and 2018 indicated that there were discrepancies between the claimed and actual number of operating enterprises, as well as slow expansion.

MAIN FINDINGS There is no single agency or unit responsible for ESG in Nigeria, however, the constitution generally serves as the base for ESG regulations in the country. On environmental issues, the Environment Impact Assessment Act, the EIA Act, Cap E12, Laws of the Federation of Nigeria, 2004, requires an EIA to be conducted for any project that is likely to impact the environment. Such EIA reports are to be submitted to the National Environmental Standards and Regulations Environmental Agency (NESREA). NESREA issues different categories of environmental permits such as air quality permits; waste and toxic substance permits; biodiversity and conservation permits and others. Other relevant laws and regulations include the Companies and Allied Matters Act, 2020, which mandates directors of Nigerian companies to consider the impact of their companies’ operations in the various communities where the companies carry out their operations; the Nigerian Stock Exchange’s (NSE) Sustainability Disclosure Guidelines; the Nigerian Code of Corporate Governance (NCCG) as approved by the Financial Reporting Council of Nigeria and the Nigeria Sustainable Finance Principles (NSFP). The LFZ is regulated by the Nigeria Export Processing Zones Authority (NEPZA), though the Securities and Exchange Commission is the principal regulator for public companies for ESG in Nigeria. Despite these various regulations, information on ESG performance was generally hard to come by in our fieldwork in the LFZ.

Based on the LFZ’s environmental and social impact assessment, several environmental issues were reported for the planning stage, including loss of biodiversity as well as crops that provided food, medicine and income. Identified risks during the implementation stage include threats to biodiversity through industrial waste, water and air pollution, and population influx.

These risks are meant to be addressed through development of an Effluent Treatment Plant (ETP). Based on our survey, roughly two-thirds of respondents were aware that identified risks had a mitigation plan. However, we were not able to assess the effectiveness of the ETP or other mitigation measures for environmental risks due to lack of information.

The most serious issues raised around ESG regulation of the LFZ were social issues related to lack of local consultation. While the LFZ was purported to have done a collaborative impact assessment between Chinese companies and the Lagos state government Ministry of Lands, in fact the Master Land Use Plan was developed in 2010 in China by the Shanghai Tongji Urban Planning and Design Institute with little or no input from Nigerians (Adunbi and Stein, 2019). There was recognition of the impacts the projects would have on the host communities and their original livelihoods, fishing, farming, timber/saw-milling, mat/raffia weaving, oil-palm processing and tourism around the Lekki beach. A mitigation plan was developed through a MoU in 2007 that involved the consensus of the state government, local government, Lekki Worldwide Investment Limited and the affected communities. The MoU outlined procedures for compensation and resettlement of the affected communities. This was communicated to the people by the government through various stakeholders' meetings and town hall meetings. However, the local community has had a mixed response as to the effectiveness of the mitigation plan. Compensation started in 2007 with payments for lost value of farm crops, but some claimed that they did not benefit from the compensation. More than half of the community has not been paid for loss of land and agricultural output as of 2015, and the pay rates were claimed to be low - nearly half of those rewarded got less than \$67, based on survey data. Evicted people were also allotted land that was already held by others, causing friction in the community (Lawanson and Agunblade, 2018). Drivers of success in the mitigation plans included involvement of the people through consultation at the beginning of the projects and the town hall meetings for the disbursement of compensations. Failure in the mitigation plans can be attributed to factors such as lack of trust by the communities in the Nigerian government and the Chinese companies; gaps in communication; corruption in the process of compensation and allocation of lands and the unscrupulous activities of land speculators in Lekki. The climax of this failure was the crisis that led to the death of the Managing Director of Lekki Worldwide Investment Limited (a major LFZ investor), on October 12, 2015. The director's death resulted from violence that followed the protests of the Lekki communities over the expropriation of their lands and other welfare issues.

In addition, the LFZ does not seem to incentivize local labor, such as by providing good jobs or training opportunities for Nigerians and Lekki locals. The LGZ is a gated community with designated dwelling sections. While other flats are still under construction, Chinese expatriates have moved into some of the completed homes. However, there was no local housing or transit to the zone for Nigerian workers, which posed a significant barrier to their employment. Companies had to transport workers in or provide dorms, which significantly increased costs. There were no close training facilities or connections to any vocational training schools. There were also reported communication problems between Chinese companies and Nigerian workers (UNDP, 2015).

Power Sector

In August 2013, CHEXIM signed an MoU with the Government of Nigeria for a \$500 million concessional loan to expand the country's power transmission networks. At the same time, the Federal Government of Nigeria also entered into an agreement with Xi'an Electric

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

Company Limited to execute a \$500 million electricity transmission project aimed at expanding and upgrading Nigeria's weak transmission network within two years. This project was to be designed and supervised by Manitoba Hydro International (MHI), the Federal Government of Nigeria's appointed management contractor for the Transmission Company of Nigeria (TCN). CHEXIM's loan pledge was part of a larger \$1.6 billion financial package from the African Development Bank, the World Bank and a Euro Bond Issue. However, from available data, including personal interviews and surveys of stakeholders and government documents, it appeared the 2013 electricity transmission upgrade has not yet materialized into a concrete project, and the Nigeria evaluation focuses on the LFTZ.

Lessons Learned

Given the social issues raised in our fieldwork assessment of the LFZ, adequate stakeholders' involvement is necessary for sustainability of projects. Key ESG risks for the cases in Nigeria are relocation and compensation, while potential benefits include job opportunities, the provision of better infrastructure and spillover benefits from economic development in the LFZ. Regarding environmental performance and under the standards of China's Green Development Guidance, the LFZ would be considered "yellow".

In Nigeria's power sector, social dimensions of ESG centered around the negative impacts of community relocation. However, the LFZ included some components to re-settle communities as residents, who could have access to social welfare programs and community projects. Clearly, given the conflict discussed, these efforts were applied unevenly. It is important to have effective coordination between the federal government of Nigeria, the Lagos state government, the local government and the Chinese government. This coordination can be channeled through the operations of agencies such as NEPZA, the Ministry of Lands and Housing, the Ministry of Finance, other agencies of Lagos state, Ibeju-Lekki local government officers and Chinese contractors and operators of the LFZ. This coordination can be improved upon, especially in the area of provision of funds to settle outstanding compensations.

The implementation phase of project development underscores the need for adequate stakeholders' involvement for project sustainability. The local communities who live where projects are sited must be adequately protected. ESG must not be seen as one-off event carried out while a project is being planned, but rather a long, continuous and sustainable process to mitigate the loss of communities' means of livelihood and existence. Given the significant social impacts of the LFZ, conscious efforts must be made by both the Chinese investors and the Lagos state government to ensure that various mitigation plans, especially long-term components, are enforced.

Ethiopia

Special Economic Zone

BACKGROUND The Eastern Industrial Zone (EIZ) is Ethiopia's first industrial zone, with operations commencing back to 2010. The EIZ, located about 40 kilometers south of Addis Ababa and created and operated by Chinese businesses, is widely regarded as the model for the development of industrial parks in Ethiopia. The EIZ was built on former agricultural land and now hosts manufacturing facilities in sectors such as pharmaceuticals, pulp and textiles. In addition to FDI on the part of individual Chinese companies, CHEXIM provided a \$36 million export credit for the Qiyuan Group, the main contractor for the zone.

MAIN FINDINGS Similar to Nigeria, the ESG environment in Ethiopia is primarily underpinned by the constitution, which stipulates that the design and implementation of development programs and projects in the country should not damage or destroy the environment, and recognizes the right of the people to be consulted and express their views on the planning and implementation of environmental policies and projects that affect them. EIAs are also required in order to obtain approval from the Ethiopian Environmental Protection Authority. Following the EIA, developers are required to conduct a social consultation with the community, develop a resettlement plan and conduct a follow-up assessment. Beyond these basic policies, there are several environmental and social proclamations in Ethiopian law that may add additional ESG stipulations, but their rigor and effect are unclear.

The government has a significant role in the ESG implementation of China's projects in Ethiopia. The major public sector stakeholders for the EIZ and the Grand Ethiopian Renaissance Dam (see next section) are the Industrial Parks Development Corporation (IPDC) under the Ethiopian Investment Commission, Ministry of Labor and Social Affairs, Dukam city land administration, Ministry of Environment, Forest and Climate Change, Oromia Energy and Environment Bureau, Ministry of Water, Irrigation and Energy, Ethiopian Electric Power and Environmental Protection Authority. They are responsible for coordinating and overseeing the institutional and regulatory framework of the manufacturing and infrastructure projects via Chinese engagement in the country.

Comparing the EIA process for the EIZ and the Renaissance-Addis transmission line, survey respondents indicated that the transmission line EIA was relatively less comprehensive in considering ESG aspects of potential impacts. Survey data on environmental impacts across different phases of both projects was highly mixed, making it difficult to draw conclusions about impacts on biodiversity, the use of harmful materials for construction, waste management, the effectiveness of mitigation plans, etc.

Regarding social impacts, resettlement was necessary for both projects, but the impacts of resettlement appeared to be a more significant issue for the transmission line than the EIZ. Survey data indicated that the transmission line planning process included relatively fewer local consultations, and potential impacts were less well-communicated to local stakeholders. There was also a much more positive perception of the EIZ creating local employment opportunities, relative to the transmission line (though this is expected, based on the nature of these very different types of projects).

Power Sector

BACKGROUND In 2013, the State Grid Corporation of China committed to provide a \$1 billion loan for construction of a 1,400 km transmission line that would connect the Grand Ethiopian Renaissance Dam (GERD) to Addis Ababa (Boston University Global Development Policy Center 2022). The Grand Ethiopian Renaissance Dam (GERD) is a 5.25 GW hydro-power project approaching completion on Ethiopia's Blue Nile, some 30 kilometers upstream of the Sudanese border. It will be Africa's largest hydroelectric project. In the next few years, Ethiopia hopes to complete the GERD. Multiple Chinese companies have been contracted for construction of the dam and hydropower plant, including the Gezhouba Group and Voith Hydro Shanghai (Klaassen 2021).

MAIN FINDINGS Governance of the cross-border impacts of GERD have become an existential issue for the project, and one that is particularly difficult to resolve, even with optimal

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

ESG implementation. Egypt and Sudan oppose the construction of GERD based on long-running colonial legal arguments over which nation owns the Nile's resources. The Nile supplies 90 percent of Egypt's water demand, and opponents of GERD argue that Egypt's access to water would depend on the whims of the Ethiopian government. Sudanese leaders hold similar opposition to the GERD. According to Sudanese leaders, the dam might imperil their development plans by posing safety risks and impeding the creation of their own dams. Early in 2021, there was an attempt to reopen negotiations, but they failed due to the continued disagreements between Egypt, Sudan and Ethiopia. China has emerged as a potential mediator and Chinese diplomats have issued statements in support of the dam proceeding (*China-Global South Project* 2021). Over 70 percent of the dam's construction was finished as of 2020, and 84 percent was finished by July 2022. As of the time of writing, it seems inevitable that the GERD will eventually be finished.

Lessons Learned

During the project planning phase, many of the challenges facing ESG implementation in the EIZ were related to the weakness of the institutions and working systems within Ethiopia. This implies that strengthening the institutions and building the legal framework will enhance the country's ESG implementation. Specific challenges included issues with land compensation (delayed relocation and/or compensation to owners) and regulatory capacity (weak monitoring and evaluation mechanisms, issues with coordination and commitment of public servants, general lack of human resources and financing in government). One major recommendation to minimize environmental health and safety problems is to build a waste treatment plant for the zone. Other recommendations for the EIZ include improving the resettlement compensation process, creating employment opportunities for the resettled and establishing an afforestation program.

Challenges facing ESG implementation in the electricity transmission infrastructure are similar, with the additional issues of lack of transparency (communities unaware of activities of Chinese companies, lack of data and poor data quality, little disclosure) and environmental health and safety.

Accordingly, the transmission line would be considered "red" or "red/yellow", while the EIZ would be considered "yellow" under the standards of China's Green Development Guidance.

The differences in the efficacy of ESG implementation between projects came from the skill and level of know-how about ESG issues by the project owners. Essentially, the type of project matters. In addition, creating favorable environmental conditions, building infrastructure for the community and increasing the socioeconomic stability of the community, will increase the effectiveness of ESG implementation of projects, organizing capacity building activities and implementing the government's regulatory framework will narrow the gap.

Spatial Overlap Analysis for Risks to Biodiversity Areas and Indigenous Lands

We further conducted an assessment of selected projects' risks to biodiversity and Indigenous lands based on their spatial location, in order to provide a baseline understanding of potential ESG risks. We identified the geolocation of selected projects using OpenInfraMap for the Renaissance-Addis Power Transmission Line and project documents and maps of the special economic zones. Maps are available in the Appendix.

Risk to biodiversity risk to Indigenous lands are derived from the methodology laid out by Yang et al., 2021. These risks are given a risk index that ranges from 0 (lowest risk) to 1 (greatest

risk). The biodiversity risk index measures risk at a relative scale. It attributes greater relative risk to locations that contain multiple sensitive ecological features. The Indigenous lands risk index incorporates the proximity to Indigenous lands and is weighted by the human footprint index, where risk is greatest inside Indigenous lands (Indigenous risk index = 1), and risks outside of Indigenous lands (Indigenous risk index < 1) are dependent upon proximity and existing human modification. If the Indigenous lands risk index is 0, either the site is more than 100 km away from indigenous lands, or its distance to Indigenous lands is less than 100km, but the Human Footprint Index equals 0.

Based on our methodology for assessing a biodiversity risk and index and Indigenous lands risk index, we found large differences across the case studies. For biodiversity risks, we found that TEDA-Suez had the highest risk to biodiversity, relative to other projects. As shown in Table 4, its risk score is also higher than average World Bank and Chinese development-financed projects across sites, while the other projects had lower biodiversity risks than World Bank and Chinese development-financed projects.

For Indigenous lands, the Renaissance-Addis Power Transmission Line is partially sited on Indigenous lands, while the EIZ is entirely located on Indigenous lands, leading to risk scores that are higher than average for World Bank and Chinese development-financed projects across sites. The distance between the Lekki Free Zone and the closest Indigenous lands is 213.85 km, indicating a negligible risk index. For TEDA, the minimum distance to Indigenous lands is 30.81 km, indicating some amount of potential risk but still lower than the average Chinese development-financed project.

Table 4 Risks to Biodiversity and Indigenous Lands from Selected Case Studies

Project Name	Risk to Biodiversity				Risk to Indigenous Lands			
	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.
Renaissance-Addis Power Transmission Line (Ethiopia)	0.020	0.643	0.093	0.130	0	1	0.689	0.437
Lekki Free Zone (Nigeria)	0.018	0.057	0.044	0.011	0	0	0	0
Eastern Industrial Park/ Zone (Ethiopia)	0.015	0.016	0.016	0.0006	1	1	1	0
China-Egypt Suez Economic and Trade Cooperation Zone (with TEDA) (Egypt)	0.343	0.343	0.343	0	0.031	0.031	0.031	0
World Bank projects, site average	0	0.904	0.093	0.152	0	1	0.231	0.392
China's overseas development finance projects, site average	0	0.871	0.115	0.155	0	1	0.331	0.421

Source: Author's elaboration, Yang et al. 2021 (for World Bank and Chinese average)

Note: Risk to Biodiversity layer and Risk to Indigenous Lands layer (Yang et al., 2021) are used for the calculation. They range from 0 (lowest risk) to 1 (greatest risk). The biodiversity risk index measures risk at a relative scale. It attributes greater relative risk to locations that contain multiple sensitive ecological features, rather than just a single ecological feature. Indigenous risk index incorporates the proximity to Indigenous lands and is weighted by the human footprint index, where risk is greatest inside Indigenous lands (Indigenous risk=1), and risks outside of Indigenous lands (Indigenous risk<1) are dependent upon proximity and existing human modification. If the Indigenous risk index is 0, either the site is more than 100 km away from indigenous lands, or its distance to indigenous lands is less than 100km, but the Human Footprint Index equals 0.

Suez, Egypt
Photo by Somayah Talat via Shutterstock



STAKEHOLDER IDENTIFICATION AND POLICY RECOMMENDATIONS

STAKEHOLDER IDENTIFICATION

In this section, we draw from the case studies to summarize the key stakeholders involved in the ESG of Chinese finance in Africa: Chinese actors, African actors and international platforms.

Chinese Actors

Chinese multilateral enterprises, both private and state-owned, play a key role in the impacts of Chinese overseas economic activities on local environment and society.

For SEZs, the Chinese SEZ managing company and the manufacturing enterprises within the SEZs are the main actors regarding ESG. These manufacturing companies and SEZ managing companies are mostly privately-owned, profit-driven and face less regulation than state-owned Chinese companies on their ESG practices. As a result, the implementation of ESG may not be of high priority for many Chinese private investors when they first enter an African country with relatively little ESG regulations on foreign investment.

In contrast, given that electricity grid and hydropower projects require intensive capital investment and technological specialty, Chinese state-owned companies are the main actors delivering projects and implementing ESG measures. These large multinational state-owned enterprises, such as Sinohydro in the Egyptian Attaqa hydropower case, tend to provide patient capital, in comparison with private Chinese business owners. They face more scrutiny on their ESG practices and learn from their past experiences on projects financed not only by China but also by international financial institutions, whose stricter ESG standards helped improve their capacity to comply with ESG guidelines. Additionally, for state-owned enterprises, particularly those owned by China's central government rather than by local Chinese governments, they also face pressure to adopt international standards.

Although in the past, Chinese government played little role in regulating the ESG practice of Chinese companies' overseas activities, it has been taking lessons from the past decade to safeguard China's economic engagement in Africa. Recent policies may increase the standard for China's ESG practices. However, current standards do not exceed host country requirements, and generally focus on meeting legal due diligence rather than environmental due diligence.

African Actors

The main entities for ESG regulation of Chinese investment are the African governments, which may involve multiple agencies both at the central and local level. For example, in the case of Ethiopia's SEZ development and electricity transmission projects, there are at least nine Ethiopian agencies involved in the ESG management, including Ethiopian Investment Commission, Ministry of Labor and Social Affairs, Dukam city land administration, Ministry of Environment, Forest and Climate Change, Oromia Energy and Environment Bureau, Ministry of Water, Irrigation and Energy, Ethiopian Electric Power and Environmental Protection Authority. With different government agencies having different goals, the institutional fragmentation

of ESG management increased the difficulty of coordination, surveillance and implementation of ESG standards. In countries where the incentives of the state and local governments have conflicting interests and incentives, such as Ethiopia, the effective implementation of ESG becomes even harder.

Outside government entities, other African stakeholders include local communities, civil society, media and vulnerable groups. In all three cases, local communities, particularly those in vulnerable groups, seem to have generally little participation in the development of projects. Local communities may both benefit and lose from Chinese economic engagement. Taking the case of Nigeria's LFZ for example, the local communities may benefit from the projects thanks to employment opportunities, the spillover effects of investment and trade and improved access to public goods and services. They may also lose due to a lack of effective compensation and allocation of lands. In general, the voices against Chinese economic activities in Africa may mostly come from local communities.

International Actors

The role of international actors through international platforms in the ESG regulations of Chinese economic engagement in Africa is concentrated on setting standards, as the African host countries' enforcement administrations generally refer to the ESG standards stipulated by international platforms as their standards for compliance. In Nigeria's case, for example, the Nigeria National Industrial Court (NIC) enforces ESG compliance following the global standards prescribed by the International Labour Organization. In the case of Ethiopia, during the construction phase of the projects, the Ethiopian governments took the international Environmental, Health and Safety (EHS) guidelines and standards into account. Similarly, in the case of Egypt, the local authority's assessments of investment projects also constantly adjust Egypt's ESG regulations to meet international best practices, consistently referring to international norms as benchmarks for ESG governance. Overall, international platforms played minimal or almost negligible role in the actual implementation of ESG governance among African countries, where the local governments shoulder the main responsibility of ESG monitoring and enforcement.

POLICY RECOMMENDATIONS

There is no silver bullet for improving ESG practices for Chinese-financed projects in Africa, but there are some specific areas for improvement that can foster the mild successes identified in this review and mitigate the more systemic demonstrated risks. Based on the categories of stakeholders outlined, and generalizing beyond our case studies, we suggest policy recommendations to improve ESG standards for Chinese projects in Africa.

Chinese Actors

Broadly speaking, the extent to which Chinese firms respect ESG norms depends on the institutional capacity of the host state and their ability to design and implement laws and regulations that promote ESG standards. However, as mentioned in the section of China's ESG Regulations for Overseas Finance, China has increasingly sought to raise the standards for Chinese projects abroad. The following are recommendations to continue improving ESG standards for Chinese-financed projects in Africa:

- For the Chinese government, maintain a high-level commitment to ensuring ESG compliance for Chinese projects abroad.
- For Chinese financiers and regulators, ensure that small- and medium-sized Chinese companies operating in Africa are aware of and compliant with ESG regulations.
- For Chinese developers abroad, consider all project phases, from project initiation through project evaluation, financing, construction, operation, reporting and transfer/closure.
- Require and improve ESG impact assessments by independent auditors according to international best practices.
- For Chinese developers, require and improve mitigation plans, as well as monitoring and evaluation; provide publicly available reporting for accountability.
- For Chinese financiers and regulators, establish an accessible grievance redress mechanism for sharing violations of environmental agreements or laws throughout all project phases.
- For Chinese regulators, improve the Traffic Light System and associated regulations on overseas finance, including developing an exclusion list for certain types of projects, while promoting projects likely to perform well on ESG standards.
- For the Chinese government, engage in triangular cooperation projects with Western donors to jointly contribute to the implementation of ESG standards.

African Actors

The domestic political economy, governance structure and ESG standards set by African host governments, and the efficacy of institutions and monitoring systems, play a large role in shaping the impact of Chinese-built infrastructure projects. The following are recommendations to continue improving ESG standards for Chinese-financed projects in Africa:

- For host country governments, build internal capacity and legal frameworks to help enhance domestic ESG implementation.
- For host country governments, improve coordination across different actors for achieving ESG outcomes; include local stakeholders in these planning processes by providing public consultations.
- Require and improve environmental impact assessments and provide guidelines in line with international best practices, namely by requiring third-party, independent ESIA's.
- Assist local stakeholders in accessing grievance mechanisms, e.g., those that might be set up by Chinese financiers.
- For host country governments, create public awareness programs about the benefits of ESG standards for both international financiers and local communities.
- For host country governments, actively pursue multilateral coordination on shared ESG standards.
- For host country governments, jointly work with development agencies to improve local regulation to enhance domestic ESG frameworks.

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

**Stakeholder
Identification and Policy
Recommendations**

References

Appendix

International Actors

Beyond China and the African host countries where Chinese projects are developed, international actors can play a role in improving ESG outcomes. This includes individual third party countries, as well as international platforms. Progress on ESG outcomes will require coordination between countries and different kinds of actors to raise the bar, while acting on purely competitive and bilateral terms may mean slower progress on ESG standards. The following are recommendations to continue improving ESG standards for Chinese-financed projects in Africa:

- Through multilateral African platforms, call for ESG standards to increase the bargaining power of individual African host countries with Chinese developers (e.g., through the African Continental Free Trade Area or the African Union and Regional Economic Communities).
- Embed foreign investment plans in broader strategies for sustainable development, e.g., the SDGs.
- Provide funding and assistance for public ESG performance reporting that is available for international civil society, as well as local stakeholders.
- For German development agencies, capitalize on longstanding relationships with China and partner governments to improve the legal framework in African countries, utilizing e.g., the framework of the Sino-German Center for Sustainable Development.

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Executive Summary

Introduction

Empirical Overview of Chinese Finance in Africa

Case Studies

Stakeholder Identification and Policy Recommendations

References

Appendix

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Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

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Executive Summary

Introduction

Empirical Overview of
Chinese Finance in Africa

Case Studies

Stakeholder
Identification and Policy
Recommendations

References

Appendix

*Addis Ababa, Ethiopia
Photo by Gift Habeshaw via Unsplash*



APPENDIX

BACKGROUND ON THE TRAFFIC LIGHT SYSTEM

Various Chinese ministries backed the Green Development Guidance with its nine recommendations and one traffic light system published by the BRIGC in December 2020. Particularly the traffic light system has seen much global attention due to its innovative classification.

The classification of BRI projects investigates three major environmental objectives of pollution prevention, climate change mitigation, and biodiversity conservation. Based on positive and negative impact, projects are divided into “3+1” categories with the first three of:

- Green projects—encouraged projects (positive list): Projects in this “encouraged category” have no significant negative impact on any environmental aspect of climate change mitigation, pollution prevention, and biodiversity protection, and positively contribute to at least one environmental aspect, particularly if they support international environmental agreements and conventions. Projects such as renewable energy development and utilization (solar and wind power plants, etc.) fall into this category.
- Yellow projects—environmentally neutral projects with moderate impacts: Projects in this category “Do No Significant Harm” (DNSH) to any environmental aspect, and any residual environmental harm can be mitigated by the project itself through affordable and effective measures within reasonable boundaries. Yellow projects include waste-to-energy projects and urban freight transportation with emission standard above Euro IV/national IV standards (or similar local applicable one).
- Red projects—projects requiring stricter supervision and regulation (negative list): Projects at risk of causing “significant and irreversible” environmental damage or major negative environmental impacts in one or more aspect of climate change mitigation, pollution prevention, and biodiversity protection. Red projects include coal-fired power, hydropower, petrochemical, and mining and metal smelting projects.

For project developers and investors to be able to account for varied environmental and climatic conditions of BRI participating countries, the classification process considers two major factors regarding environmental risks:

- The inherent characteristics of projects that are similar to each project of a specific type; and
- The implementation characteristics specifically the application of mitigation and compensation measures to effectively avoid environmental impacts along project lifecycle.

For example, as part of the traffic light system, it was defined that any project being close (10 km) to a key biodiversity area would be labelled as ‘red’. Other biodiversity impacts include

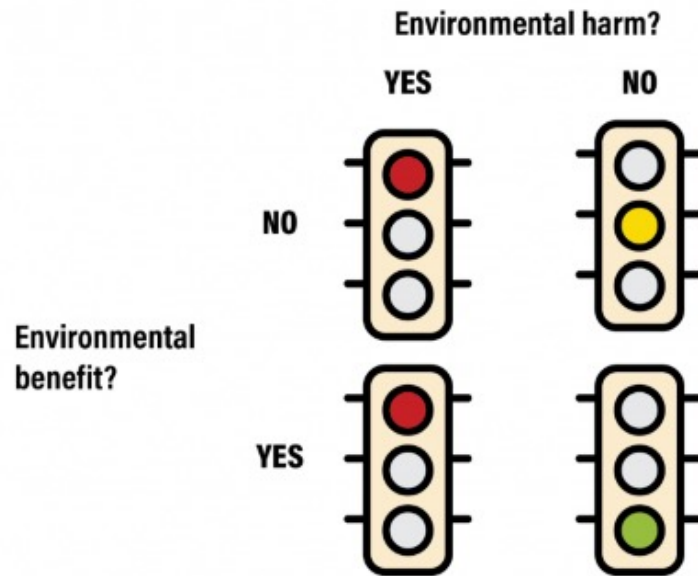
- Supply chain not affecting KBA.
- Project not affecting ecosystem services.
- Project not affecting livelihoods of hunters, gatherers, fishers.
- Project’s impact limited to within less than 500 m of site (e.g., water temperature impact, water chemistry impact).

- Does not affect routes of migratory species.
- All biodiversity impacts reversible within 24 months after project disassembly.

This color-coded classification also sets a fourth “transferred category” to provide a flexibility, which encourages projects to “upgrade” their category and allows them to consider local considerations in the respective countries by applying environmental management with measures to mitigate or compensate for potential environmental risks. Projects can be labeled as “red/yellow” or “red/green” with appropriate management.

Figure A1 The Color-Coded Classification Mechanism for BRI Projects

Source: Wang, Nedopil, Xie et al, 2021.



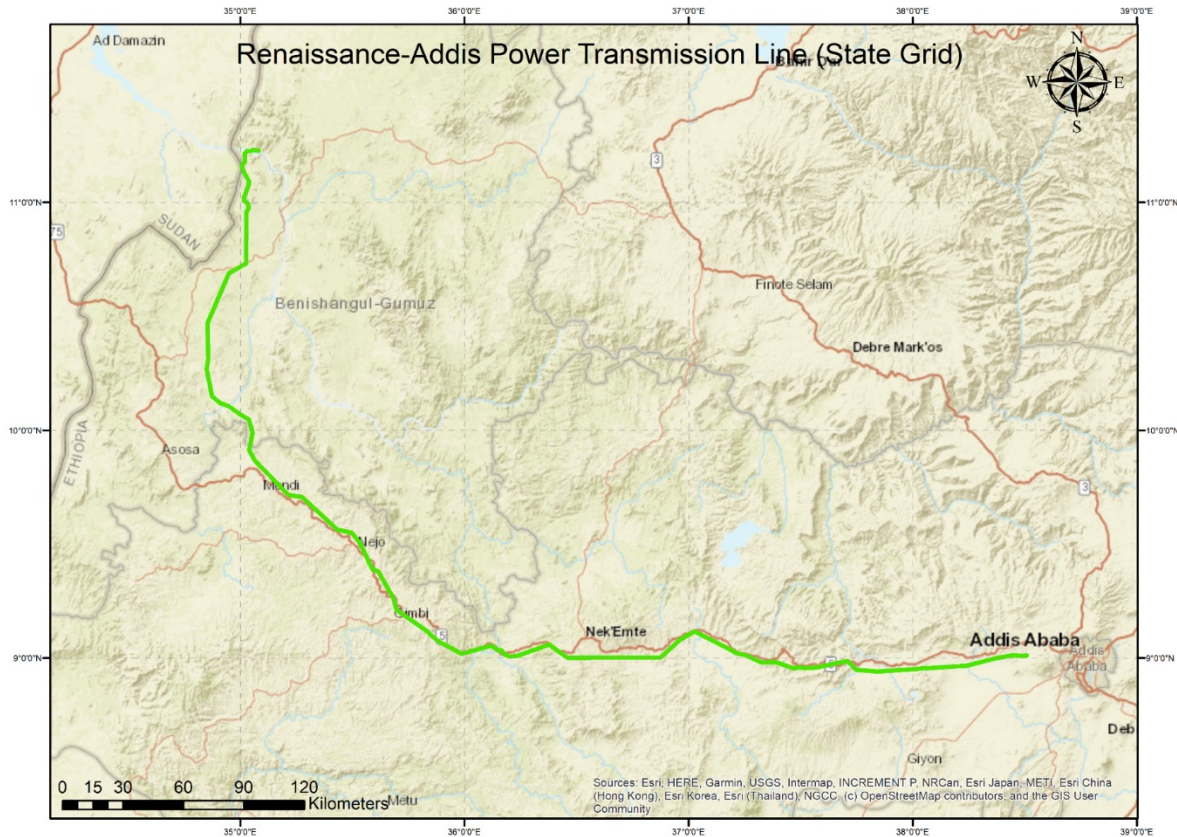
Furthermore, a list of projects was evaluated, including energy projects and transmission lines, as well as industrial parks: transmission lines are rated as “red/green”, due to their high risk to biodiversity as linear infrastructure and their potential to transport carbon-intensive electricity (e.g., from coal); by applying relevant biodiversity safeguards (e.g., IFC Performance Standard 6, avoiding any key biodiversity areas), and by transporting only green energy, transmission lines can be counted as green projects. Similarly, regular industrial parks are rated “red/yellow” due to their potential risks through pollution and emissions but can become yellow if significant risks can be reduced. Green industrial parks are supported and can be rated as “green” if all criteria for yellow are met and all electricity is either from green sources, or relevant emissions are offset.

BIODIVERSITY AND INDIGENOUS LANDS RISK MAPPING

This section shows the spatial location of each case study project as well as its overlap with biodiversity areas and Indigenous lands.

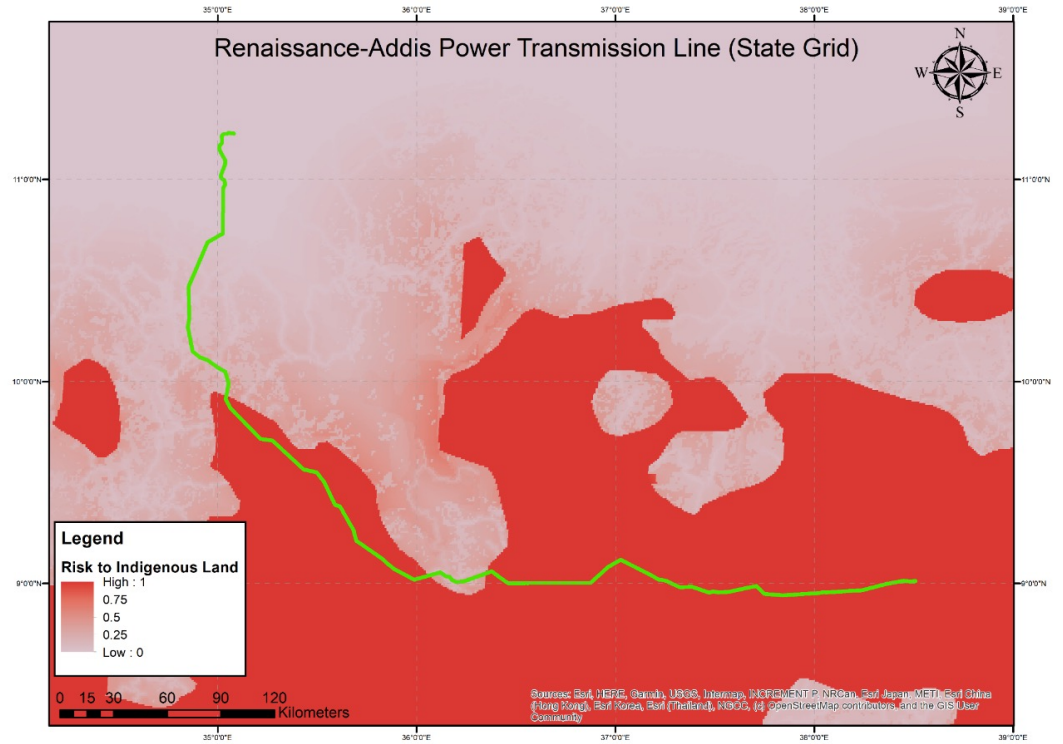
Renaissance-Addis Power Transmission Line (Ethiopia)

Figure A2 Location of the Renaissance-Addis Power Transmission Line



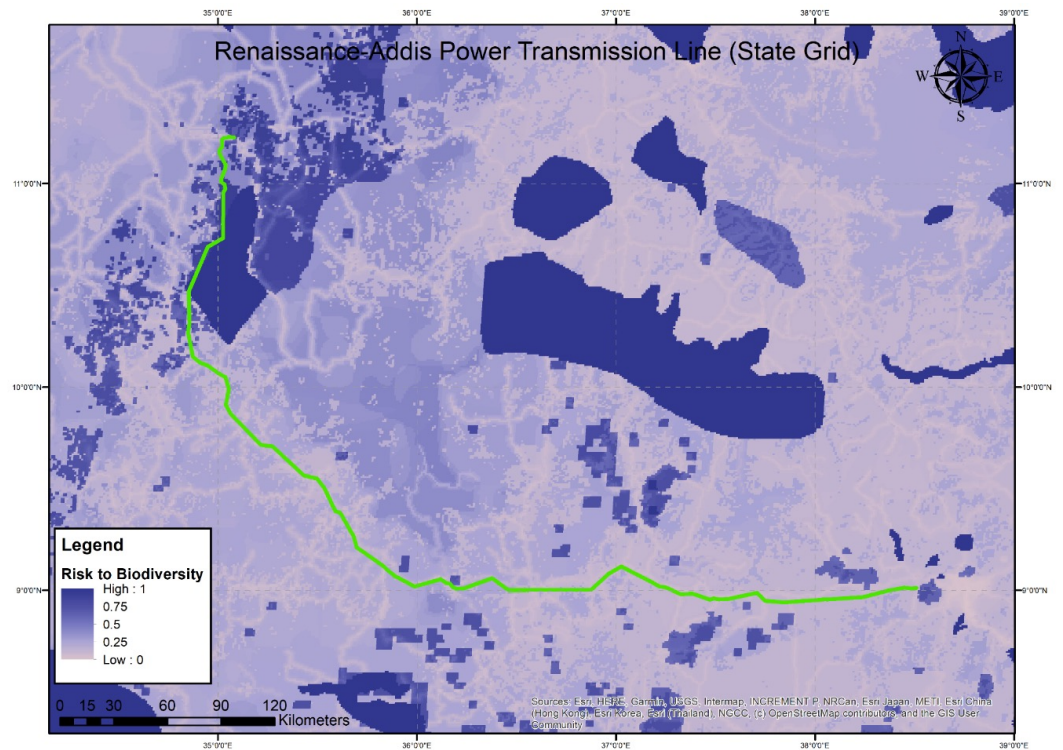
Source: OpenInfraMap.

Figure A3 Indigenous Lands Risk Index for the Renaissance-Addis Power Transmission Line



Source: Author's elaboration.

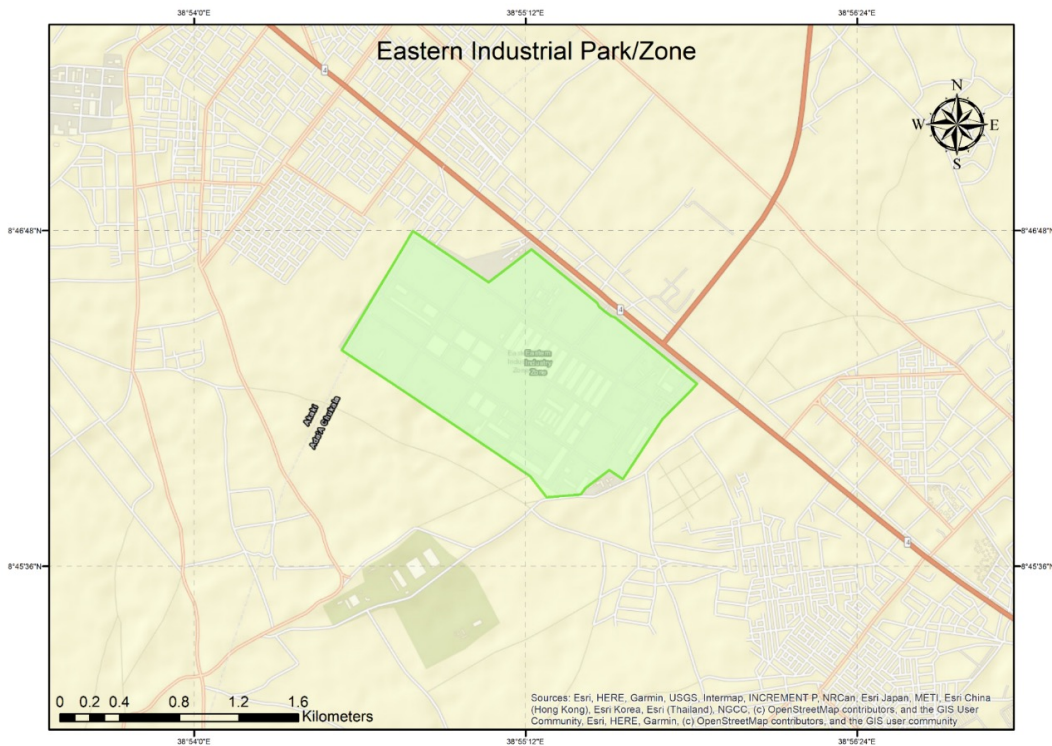
Figure A4 Biodiversity Risk Index for the Renaissance-Addis Power Transmission Line



Source: Authors' elaboration

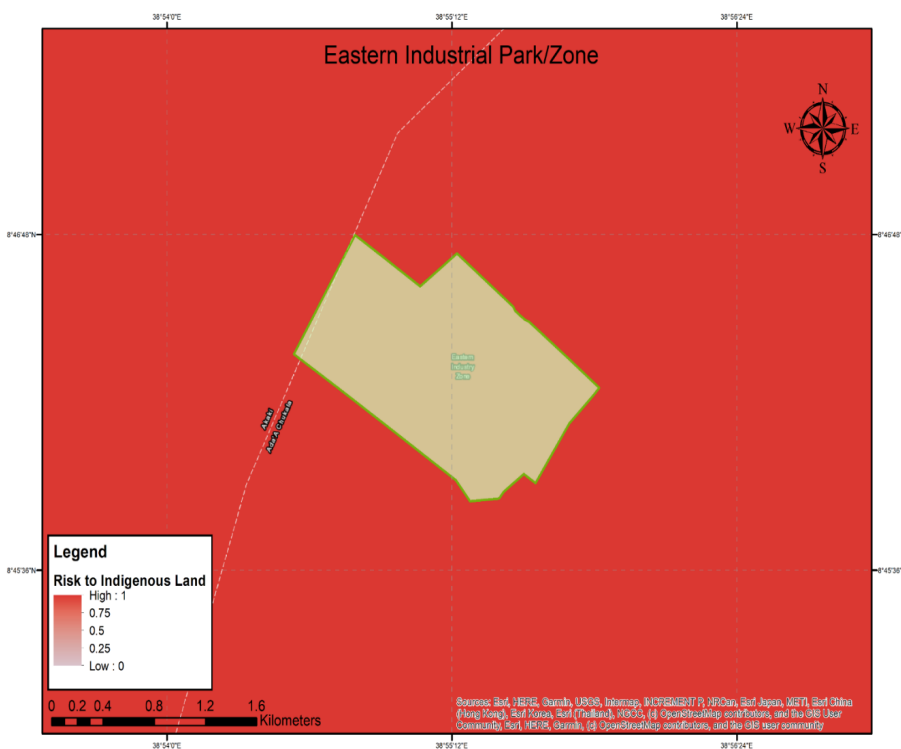
Eastern Industrial Zone (Ethiopia)

Figure A5 Location of the Eastern Industrial Zone



Source: Authors' elaboration.

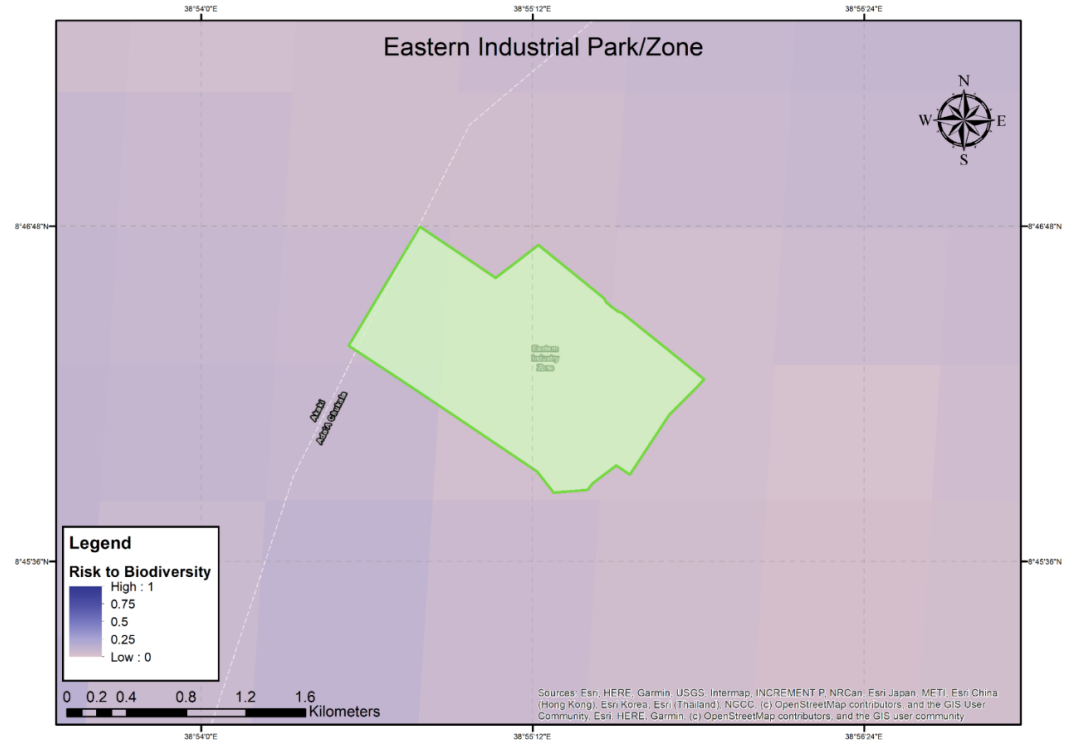
Figure A6 Indigenous Lands Risk Index of the Eastern Industrial Zone



Source: Authors' elaboration.

- Executive Summary
- Introduction
- Empirical Overview of Chinese Finance in Africa
- Case Studies
- Stakeholder Identification and Policy Recommendations
- References
- Appendix

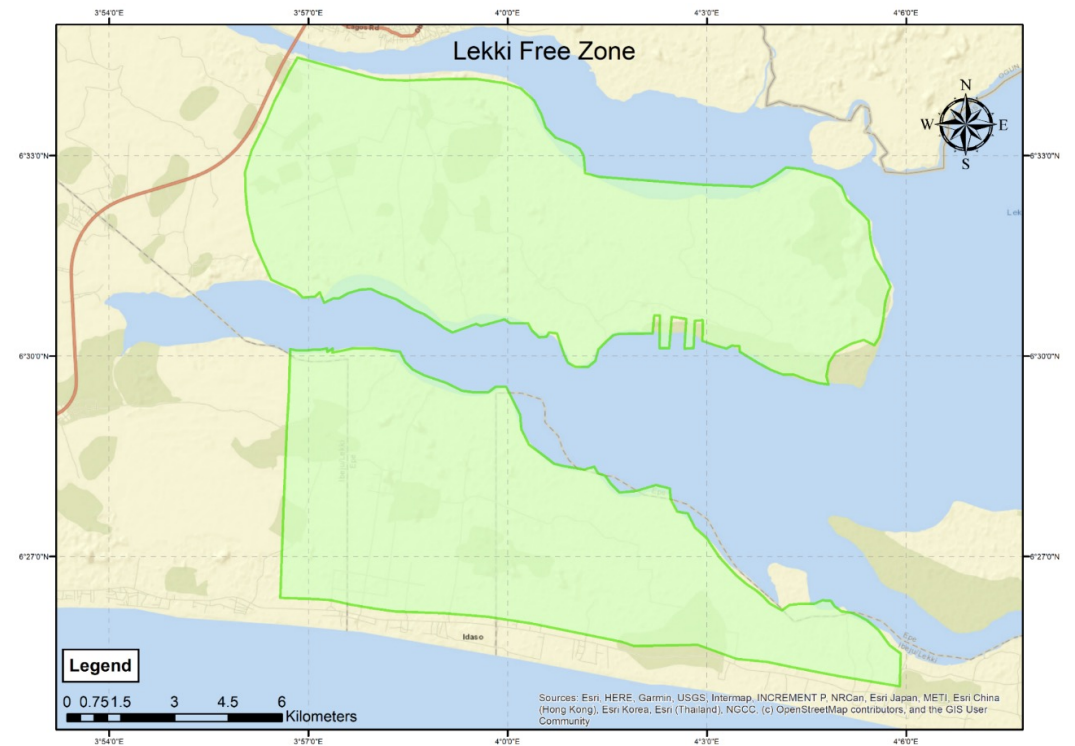
Figure A7 Biodiversity Risk Index of the Eastern Industrial Zone



Source: Authors' elaboration

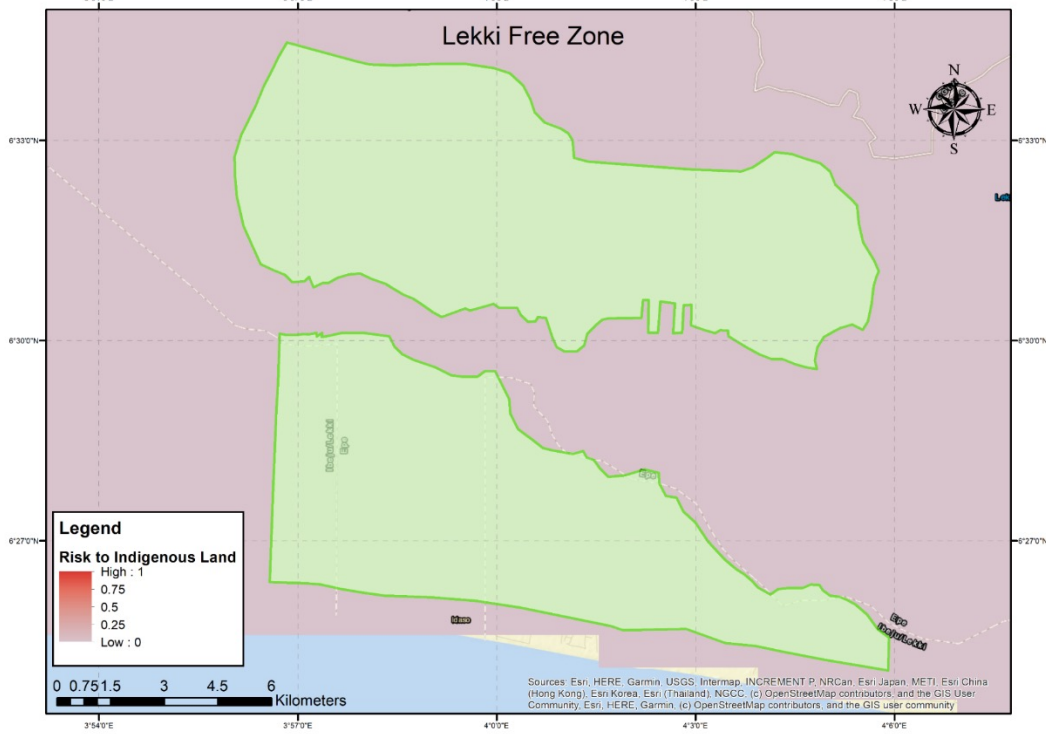
Lekki Free Zone (Nigeria)

Figure A8 Location of the Lekki Free Zone



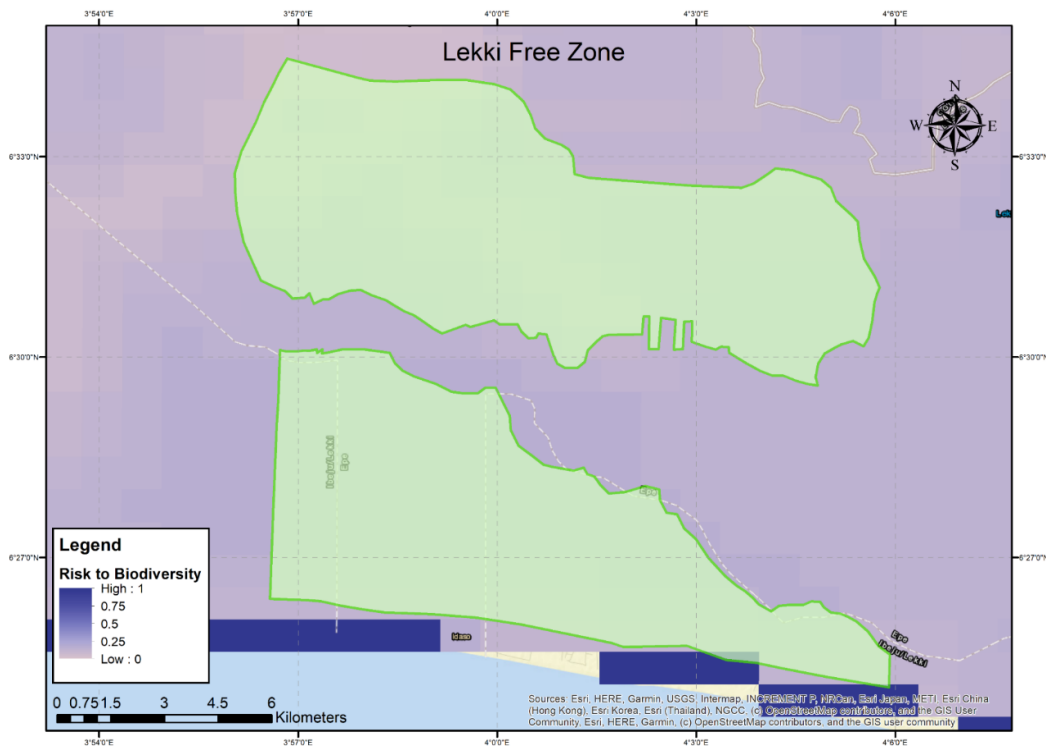
Source: Lekki Free Trade Zone 2022, Lawanson and Agunbiade 2018.

Figure A9 Indigenous Lands Risk Index for the Lekki Free Zone



Source: Authors' elaboration

Figure A10 Biodiversity Risk Index for the Lekki Free Zone

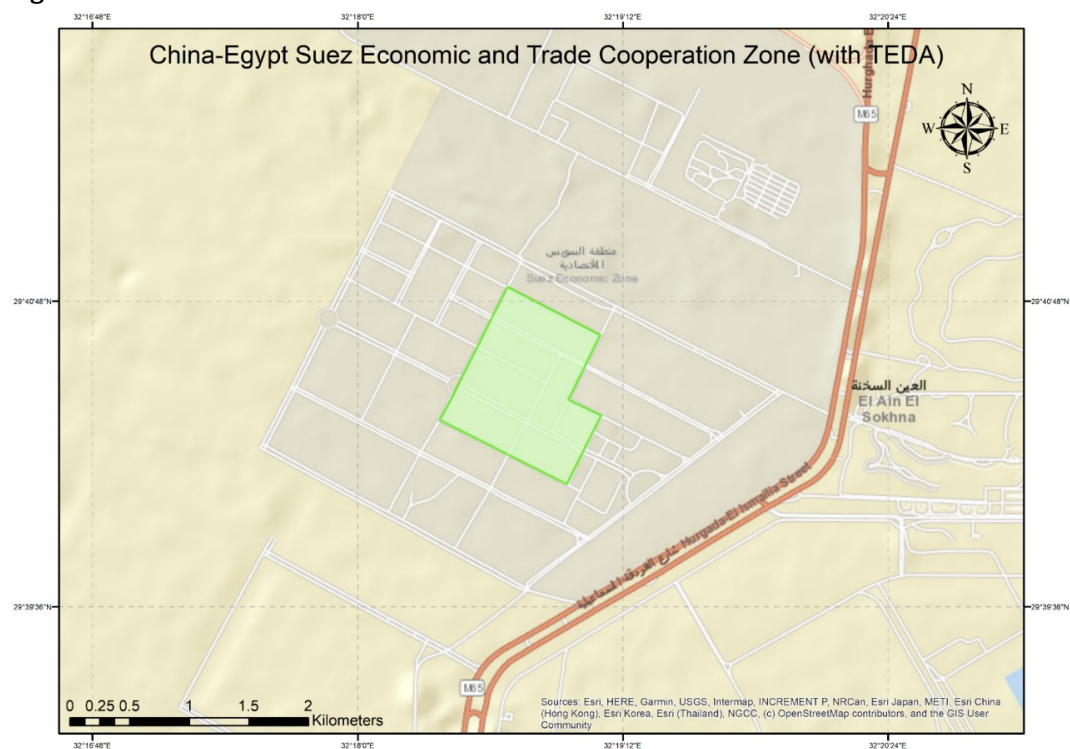


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- Executive Summary
- Introduction
- Empirical Overview of Chinese Finance in Africa
- Case Studies
- Stakeholder Identification and Policy Recommendations
- References
- Appendix

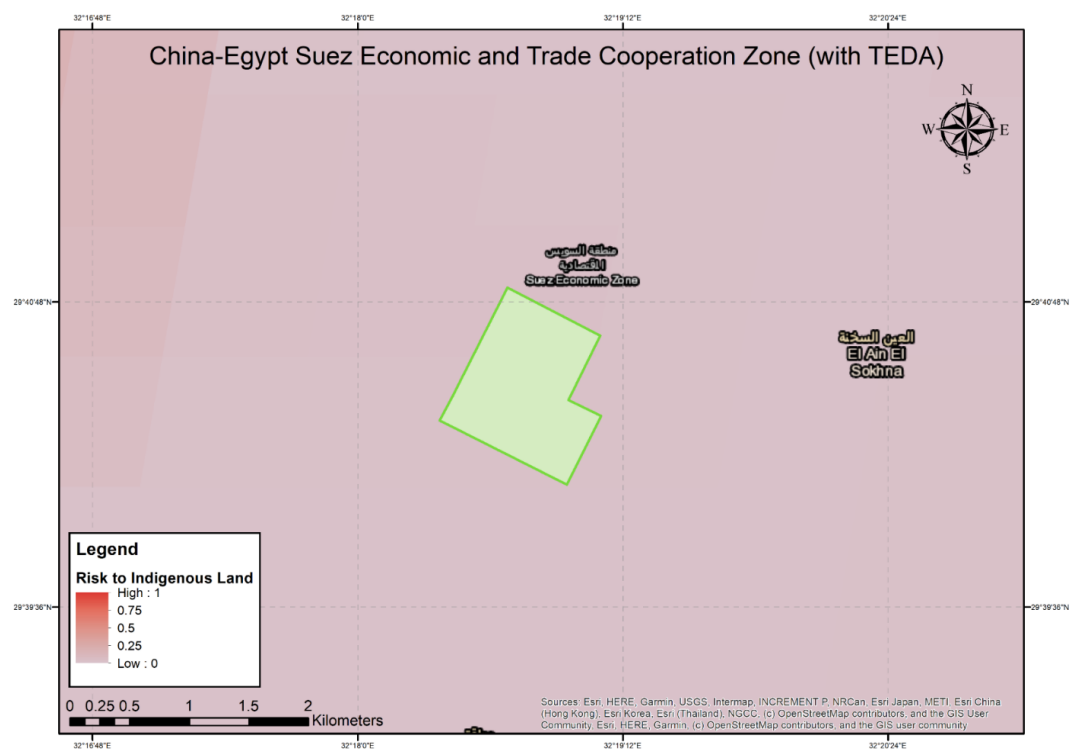
China-Egypt Suez Economic and Trade Cooperation Zone (with TEDA) (Egypt)

Figure A11 Location of TEDA-Suez



Source: Authors' elaboration

Figure A12 Indigenous Lands Risk Index for TEDA-Suez



Source: Authors' elaboration

Executive Summary

Introduction

Empirical Overview of Chinese Finance in Africa

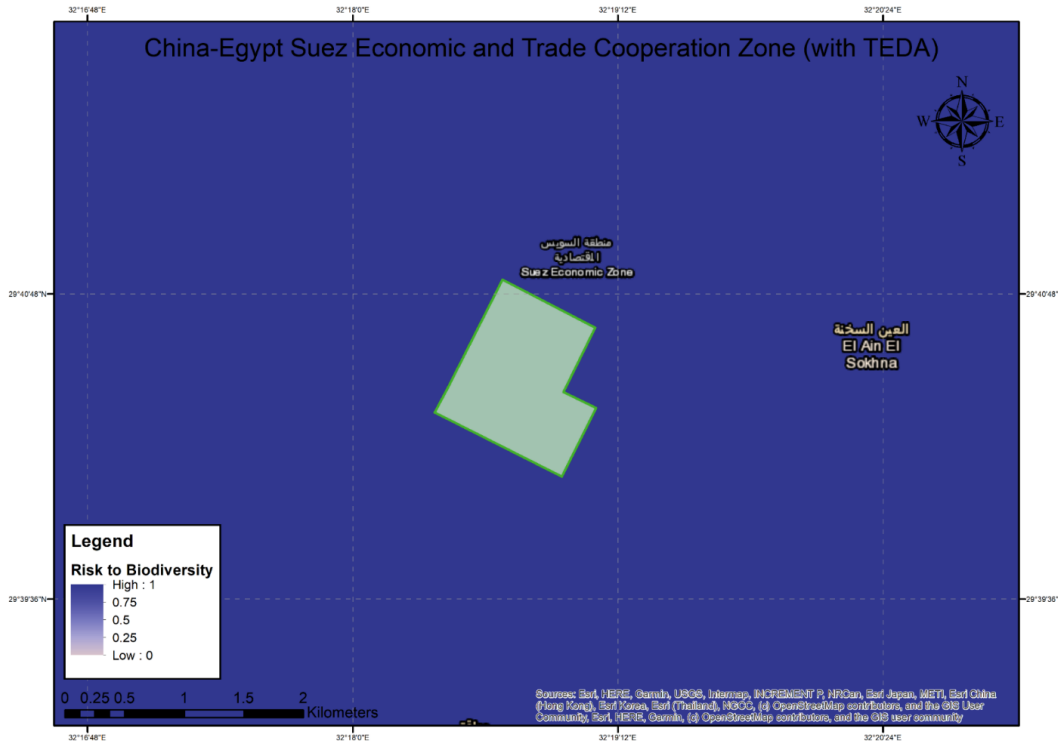
Case Studies

Stakeholder Identification and Policy Recommendations

References

Appendix

Figure A13 Biodiversity Risk Index for TEDA-Suez



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- Executive Summary
- Introduction
- Empirical Overview of Chinese Finance in Africa
- Case Studies
- Stakeholder Identification and Policy Recommendations
- References
- Appendix



Suez, Egypt.
Photo by Faqih Abdul on Unsplash.