



RESEARCH PAPER

Understanding the Impacts of China's Belt and Road Initiative (BRI) over the Program for Infrastructure Development in Africa (PIDA) (2013-2023)

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ABSTRACT

To fulfil her ever-growing commercial and economic needs, the 21st century China is undertaking multiple assignments and involved in several mega developmental projects across the globe nevertheless the South Asia, Central Asia and African Union (AU) have been enjoying primary importance in this regard and have attracted billions of dollars during the term of current Chinese President Xi Jinping. Keeping the preceding fact in view, the instant study focuses on the engagements of China with the member states of AU to understand the nature and scope of various projects being undertaken to increase the regional and intercontinental connectivity aligned with Belt & Road Initiative (BRI) and the Program for Infrastructure Development in Africa (PIDA) during 2013-2023 across five African geographical regions. By qualitatively evaluating relevant academic literature, project reports, and financial documents, it finds that China and the AU are mutually engaged in infrastructure development, establishing trade routes along with economic zones to promote industrialization and ensure economic growth. It establishes that substantial Chinese investment in the length and breadth of AU has contributed to regional integration and social prosperity whereas China, in return, has secured a deep-rooted as well as long-lasting penetration into the region which, for centuries, had commonly been dubbed as the dark continent.

KEYWORDS Belt and Road Initiative (BRI), Program for Infrastructure Development in Africa (PIDA), China-African Union Relations

Introduction

Persuasive China has been Africa's most significant economic partner for the last fifteen consecutive years. The BRI, one of the significant landmarks in world history, has transformed China's role in Africa. It has led to a substantial increase in Chinese financial support for regional integration and infrastructure development. Under the BRI, specific projects such as the Mombasa-Nairobi Standard Gauge Railway in Kenya and the Addis Ababa-Djibouti Railway in Ethiopia, both funded by China, have significantly enhanced trade and infrastructure development in these African nations. Working as catalysts, the Forum on China-Africa Cooperation (FOCAC) and the BRI strengthened the relationship between China and African Union. China has taken several steps to promote Foreign Direct Investment (FDI) in AU by providing direct and indirect subsidies to the promoters of these projects.

The era of an extended Chinese engagement with AU started under the newly introduced policy of the current Chinese President Xi Jinping in 2013 which was based on the principles of "sincerity, real results, affinity, and good faith" for advancement in relations with the AU. In 2013, Xi inaugurated mega developmental projects in AU under

the banner of BRI whereas China's prior involvement in the region was mainly in infrastructure development, oil, and mineral sectors. In this context, China announced her cooperation in 10 development projects over the next three years at the FOCAC 2nd Summit held in South Africa in 2013. Later, in FOCAC 2018, which was held in Beijing, China further committed, under the BRI framework, for an extensive assistance of \$60 billion to start the projects related to energy and infrastructure, communication networks and human capacity building, and construction of road and railways, bridges, and seaports. The AU prioritized all of these projects which also included tourism and urban development, the construction of Special Economic Zones (SEZs) and industrial parks. Several BRI projects which were started in 2013 had experienced extensive progress under the Initiative. The Program for Infrastructure Development in Africa (PIDA), was responsible for implementing these projects at the continental level.

In the pages to come, China's economic involvement across various regions of AU would be discussed separately.

1. The Case of North Africa

2.1 Egypt

During the years 2017-2022, a remarkable increase of 317% had been observed in the Chinese investment in Egypt (Maher & Farid, 2023). It is worth-noting that Egypt is maritime trade hub holding 12% of world trade (Brigham, 2021) with its strategically important ports located at the adjoining points of Asia, Europe and Africa which link the Mediterranean Sea, Red Sea and Indian Ocean (Mohamed, 2023). China's investment on these ports increased the economic growth and connectivity of Egypt. China is developing ports of international standards with a particular focus on the Suez Port. China Harbour Engineering Company (CHEC) started construction of Abu Qir Marine Port Container Terminal in Alexandria in March 2021 which was completed in October 2023 (Xinhua, 2024a). An international consortium led by China's Hutchison Ports took up the project to set up new container terminal covering an area of 1.6 million m² in Ain Sokhna Port along Red Sea in January, 2021 which was expected to be completed in 2025 (Xinhua, 2024c).

Another B 100 container terminal project was implemented by the Hutchison Ports in Alexandria Port wherein the length of each berth was 1680 m, depth 18 meter with covered area of 840000 m² having capacity to handle 1.5 million containers per annum (Egypt Today, 2024). Once completed, the B 100 would be a gateway to Alexandria port (The Maritime Executive, 2023). Noteworthy, the Hutchison Ports was investing \$700 million over two new container terminals in Ain Sokhna and Alexandria ports (Shaw-Smith, 2023). Another important engagement of China in Egypt was the establishment of the Suez Canal Economic Zone (SCZONE) in 2015 which is a strategically important and economically beneficial plan for Egypt. This special economic zone covered an area of 455 square kilometres situated along maritime corridor (Mohamed, 2023) which transformed the Suez Canal into a multifaceted hub for industrial, commercial and logistic activities (General Authority for Suez Canal Economic Zone, 2016). The SCZONE enhanced industrial development in Egypt, with 6 extremely significant ports and four industrial zones located very close to each other. It connected 1.6 billion consumers from three continents, i.e. Asia, Europe and Africa, strengthening Egyptian economy.

Since the Egypt enjoyed a significant place in BRI (Shinn, 2021; Xinhuanet, 2021) thus China had been undertaking many bilateral and multilateral projects under PIDA. It also took part in Egyptian Ten-Year Plan (2014-2024) (Emewu, 2023) in infrastructure

development which envisaged the revamping of maritime infrastructure comprising eighty projects amounting to \$4 billion (Mohamed, 2023). China also invested an extensive amount in the expansion of SCZONE in 2016 (Gonen, 2023). The said expansion was actually intended to increase Sino-Egypt cooperation. Therefore, Xi Jinping visited Egypt in 2016 to attend the inaugural ceremony of five-year plan (2016-2020) for the development of SCZONE along with his Egyptian counterpart Abdel-Fattah al-Sisi (Xinhua News Agency, 2019). Under the implementation plan of BRI, the Tianjin Economic-Technological Development Area (TEDA), a state-owned Chinese enterprise, built an industrial park within the zone which had the capacity to house 140 firms (Xinhua News Agency, 2023a). In the second half of 2023, many investment deals had been finalized between Egypt and Chinese enterprises for the development of SCZONE which worth more than \$8 billion (Nyabiage, 2023b).

Egypt's vision is to make SCZONE a global trade hub and utilize it for economic growth, industrial integration and maritime intercontinental connectivity. Therefore, Chinese investments in this regard are playing crucial role and notable collaboration between Tianjin Economic-Technological Development Area (TEDA)-Egypt in development of SCZONE over the 7.3Km² as well as hosting the key enterprises which included Jushi Egypt (\$920 million), Fang Yang Factory (\$30 million), Midea Egypt (\$25 million), and Heng Ting Egypt (\$20 million). The total investment of all these firms was amounting to \$2.5 billion along with the creation of 10000 employment opportunities. In addition, many agreements have recently been concluded including important projects with Hidier Group (\$265 million), Shandong Tianyi Company (\$310 million), and Golden Spring Group (\$12 million) (China Daily, 2023). Although, the SCZONE was established in 2015 (Middle East Briefing, 2023) whereas the BRI was started in 2013 but now both are aligned to jointly implement these projects. As a consequence of their smooth operation and achievement, both are attracting further investments (Xinhua, 2023a).

The Central Business District (CBD), a new administrative capital of Egypt, was the ever-largest infrastructural project developed by the Chinese companies which covered an area of 505000 m² (Xinhua, 2024c). It featured with 20 commercial and residential skyscrapers covering an area of 1.92 million m² (Peizhao, 2023) including the 'Iconic Tower' with a height of 385.8 meters which, once completed, would be the tallest building in the AU (Xinhua, 2022a). This was the major BRI project located at a distance of 50 Km eastwards from Cairo which was expected to be completed in first half of 2024 (Xinhua News Agency, 2023b). The CBD represented a landmark project in Sino-Egypt friendship and cooperation within the BRI under Egypt's vision 2030 (Chen, 2018). The China State Engineering Corporation (CSECEC) started construction work on this \$3 billion joint venture in 2015 (Ahram Online, 2024; Invest Gate, 2023). The main structure of the project had been completed in 2023 and interior decoration, electrical as well as mechanical construction phase was under progress by then. The most significant aspect of the new administrative capital i.e. the CBD, which spans over an area of 700 km², is that it would eventually accommodate 6.5 million residents (Samir, 2023). This strategic endeavour created synergy between China and Egypt and aimed to drive rapid socio-economic growth in Egypt. The new capital is strategically positioned over the Suez Canal and the Nile River, serving as a gateway to Africa. It will further modernize and develop residential neighbourhoods, industrial precincts, educational institutions and recreational amenities, solidifying its strategic significance.

Tunisia

The Bizerte Port, a significant project in Tunisia, holds a strategic position in the Maritime Silk Road Initiative (MSRI) (Hlongwa, 2020). The importance of this port is

underscored by its strategic location, which not only attracts China but also provides easy access to Europe (Zoubir, 2020a) and handles the submarine cable network linking Asia to Europe (Semler, 2018). This network serves as a crucial telecommunication gateway between the Middle East, Asia, and Europe. The role of Bizerte Port in transshipment makes it a point of contention among major powers such as France, the USA, and China (Semler, 2018). The Chinese enterprise, Sichuan Engineering Company, was set to build the Bizerte port bridge with an investment of \$270 million (Usman, 2024). Construction was scheduled to begin in the first quarter of 2024 and was expected to be completed by 2027, following a detailed plan (Agency Tunis Afrique Press, 2024; Carthage Magazine, 2024). China actively engaged in AU through FDI, technology transfer, industrialization, and infrastructure development. In 2018, a Chinese car manufacturing firm, Greely, opened its first automobile assembly unit in Sousse, a city in Tunisia (Xinhuanet, 2018). This project was completed in collaboration with Tunisian company, Mediacars, with a total project cost of \$7.44 million (Agency Tunis Afrique Press, 2018). The project, which covered a land area of 50 hectares located quite close to Zarzis port generated employment for almost 4000 people (African Manager, 2019). It not only enhanced the skill level of the local workforce but also underscored the significant role of the community in this initiative. This unit, a key component of China's infrastructure networks, bolstered the local economy while contributing in the development of the automotive industry in Tunisia and the broader African region. It would be relevant to mention here that this was part of the plan to establish an economic hub in Zarzis, spreading over almost 1000 hectares of land, which would include the development of a commercial port, logistics facilities, and an industrial zone. This economic hub, strategically vital, is located 70 Km away from Libya and 200 Km from the Algeria border (Zarzis Park, n.d.). It would connect the trans-Maghreb highway with the proposed Gabès-Médenine railway line, opening up significant economic opportunities (Salemi, 2022). Furthermore, Batou, a Chinese firm with expertise in the assembly of locomotives and railway carriages, intended to industrialize the production of locomotive and wagons facilities in Tunisia in order to meet the growing export demands from various African states and outside Africa (Tunis Afrique Presse, 2018). For that, it had forwarded a request to the Government of Tunisia in June 2018, but further data about the status of the said request is yet to be available. This project, under the public-private partnership, would utilize and modernize the National Society of Tunisian Railway (SNFCT) workshops. China donated 60 grain transport wagons to Tunisia which valued \$4.5 million (Custer et al., 2023; Dreher et al., 2022a). This initiative improved the grain transport from Tunisia to Bizerte and Ghardimaou. In addition, the China State Construction Engineering Corporation (CSEC) expressed its intention to cooperate with Tunisia over mega projects, including construction of highways, railway networks, and commercial ports (Xinhuanet, 2022). These initiatives, with their potential to transform the economic and trade landscape, represented the growing economic and trade relations between Tunisia and China in the context of BRI.

The Case of East Africa

Kenya

China's planned developmental projects across Africa, particularly those related to the maritime routes, are of significant importance. The Mombasa-Nairobi Standard Gauge Railway (SGR), Lamu Gateway Development (LAPSSET), Garissa power plant, and construction of Mombasa Port berths are among the major Kenyan projects implemented by China. The Garissa power plant of 55 MW, covered an area of 34.40 hectares and is located in north-eastern Kenya (Xinhua, 2024b). The construction of the project was started in September, 2016 with \$135.78 million financed by China (Custer et

al., 2023; Dreher et al., 2022b). This Project is a testament of China's commitment to eco-friendly development and it is one of the largest photovoltaic (PV) power generation plants in the East and Central African region (Opali, 2022). Garissa solar power plant had a designated capacity of 54.66 MW which would generate green energy (Power Technology, 2021) and facilitate 625000 households. It would also make a substantial impact on environment by reducing the emission of 43000t of Carbon Dioxide (CO₂) annually (Andeso, 2018; Nduire, 2018).

Moreover, the Lamu Gateway Development (LAPSSET) is an inclusive network that integrated the road, railway, pipeline, and a large port (Onditi, 2018). It spans over the Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and East African Community (EAC) regions and connects Indian Ocean with Atlantic Ocean (AUDA-NEPAD, 2016). The project, passing through South Sudan and the Central Asian Republics and then connecting both oceans in Cameroon, holds immense potential for economic growth (Nairobi Forum, 2013). It consists of a road and railway network designed to connect Kenya with Ethiopia (Enns, 2019), which joins the Chinese-built Djibouti-Addis Ababa SGR, promising increased trade and connectivity. The project underlies the three categories; national, regional and continental (LAPSSET, 2017). At national level, it criss-crosses nine counties (Marsabit, Garissa, Turkana, Isiolo, Lamu, Laikipia Baringo, Samburu, and Meru) which covered the 70 percent of land mass of Kenya, looped with LAPSSET Corridor bringing employment, trade and revenue (LAPSSET, 2017). Its role is pivotal in regional integration by providing trade opportunities for South-Soudan, Kenya and Ethiopia and neighbouring states of Rwanda, Uganda, Burundi and Congo (New Markets Lab & East Africa Trade and Investment Hub, 2018). The LAPSSET Corridor is connected with other continental corridors such as East Africa Northern Corridor and East Africa Central Corridor (Olingo, 2020). Therefore, PIDA and Presidential Infrastructure Champion Initiative (PICI) project admitted the LAPSSET under the umbrella of New Partnership for Africa's Development (NEPAD) and African Union Commission (AUC) (Kitimo, 2020). The Lamu Port project, a part of LAPSSET Corridor programme, consists of 32 (Jorgic, 2013) berths. The work started on Lamu Port in May, 2015 (Mwita, 2015) and China Communications Construction Company completed the 1st Phase consisting of three births in May, 2021 (Hakeenah, 2021; Xinhua, 2021).

With the significant support from China, the Mombasa-Nairobi SGR extension is planned which would link five more African countries such as Congo, South Sudan, Uganda, Burundi, and Rwanda (Otini, 2022). This collaboration with China is part of a broader initiative to enhance regional connectivity and trade. All these arrangements and extensions make up the PIDA Northern Multimodal Transport Corridor, which connects the Indian and Atlantic Oceans through the Port of Banana in Congo (World Bank, 2020). The extension of the Mombasa-Nairobi SGR would play a crucial role in establishing the Northern Corridor while linking with the port of Dar es Salaam (the largest city and a major financial hub of Tanzania) through the Central Multimodal Corridor. This railway extension is not just a project but a significant step towards enhancing regional connectivity and economic growth. The Central Multimodal Corridor, a network of roads and railways, connecting nine countries, including Kenya, Congo, Mozambique, Uganda, Burundi, Malawi, Rwanda, and Zambia, with Dar es Salaam, will be further strengthened by this extension (Northern Corridor Transit and Transport Coordination Authority, n.d.). The railway line passing through these corridors would be further extended up to the Tanzania-Zambian Railway (TAZARA), which would enhance regional transportation.

China has completed the two phases of Kenya's SGR. The Mombasa-Nairobi SGR Project was completed in Phase-I, whereas the Nairobi-Naivasha was completed in Phase-II. The commencement of work on Phase-I was started in December, 2014 (Xinhua, 2023b). The China Road & Bridge Corporation (CRBC) completed the project (Jing, 2024) with a total length of 485 Km. This rail project is carrying the passengers and cargo from Mombasa to Nairobi with 60% reduction in time and transport cost. The Mombasa-Nairobi SGR (Phase-I) was completed with financial aid of about \$3.6 billion (Custer et al., 2023; Dreher et al., 2022a) in May, 2017 (Yifeng, H. and Akoth, J., 2022; Yusuf, 2020). It has created 46000 jobs since being operational and is providing immune to Kenyan economy by facilitating manufacturing, agriculture and tourism industry (Eximbank, 2022). The Phase-II, comprising Nairobi to Naivasha SGR, is also built by China with a loan amount of \$1.39 billion provided by Exim Bank (Custer et al., 2023; Dreher et al., 2022b). The project was officially launched in October, 2016 and was implemented by commercial contract between Kenya Railways Corporation (KRC) and China Road and Bridge Corporation (CRBC) (Taylor, 2023). The Mombasa-Naivasha SGR has a length of 120 Km (The East African, 2024). It starts from Nairobi south hub in west, intersects the Mombasa-Nairobi SGR and connects SEZs in Naivasha with Mombasa and Nairobi. The railway line became operational and opened for work in October, 2019. It transformed the economic connectivity and trade at regional level (Anami, 2024).

Tanzania

The Bagamoyo Port, a monumental 10-billion-dollar project (Connors, 2022), stands as a crucial gateway, linking numerous African states in the East African region, including Comoros, Malawi, Seychelles, South Sudan, Mozambique, Madagascar, Zambia, Kenya, Congo, Uganda, Burundi, and Rwanda, with the Maritime Silk Road. This colossal undertaking, financed by China, is located 96.56 Km away from Dar es Salaam and encompasses a road, railway, and industrial city, making it the largest Chinese-funded project in the region till to-date. This would be the biggest African port once completed and would connect with Central Corridor Railway and Tanzania-Zambia Railway (TAZARA) through an extension (Nilson, 2024). The most significant part of the Bagamoyo project consists upon development of Export Development Zone (EDZ) and construction of industrial city along with upgradation of roads and railways' infrastructure (Léautier et al., 2015). In 2013, China and Tanzania finalized agreement for construction of Bagamoyo Port project, hence, the China Merchant Holdings International, a Chinese state-owned enterprise, started construction in 2015. It was responsible to bear the 80% of its total cost and the remaining 20% would have to be provided by Oman (Rath, 2016). The proposed date for completion of Phase-I of the project was 2017 but it was delayed when Magufuli, the Tanzanian president, cancelled the agreement in 2016 (The Citizen, 2020). Finally, after a long halt in the Bagamoyo Port project, renegotiation between China and Tanzanian government started for the construction of the Bagamoyo Port on 26 June, 2021 (CGTN Africa, 2024).

Moreover, the Kigamboni (Nyerere) Bridge, 680 meters long, connects Kigamboni Creek with Dar es Salaam city in the Indian Ocean (The State Council The People's Republic of China, 2016; Xinhua, 2016). The construction of 32 meters wide bridge spreading over 6 lanes was started in 2012 and completed in April, 2016 (China Railway Group Limited, 2018). This Tanzanian project, a testament to the power of international collaboration, was made possible with China's engineering and construction support (Belt and Road Portal, 2017).

Djibouti

Djibouti, a coveted Indo-Pacific's gateway to Africa (Chire' et al., 2023), is situated at the confluence of Red Sea and Indian Ocean which increases its strategic importance (Berhanu Kemal, 2023). It also holds a pivotal position in BRI for international trade and promoting regional and intercontinental connectivity (Alam & Asef, 2020; Xinhua, 2024d). China has initiated several projects focusing on the advancement of Djibouti (Elenwo-Roge, 2023). One of the important projects China has taken under the umbrella of BRI is the Djibouti-Addis Ababa SGR as a part of China's grand strategy of advanced connectivity (Wang, 2018). The construction on Djibouti-Addis Ababa electric railway project started in 2012 and completed in 2017 with the help of Chinese construction companies and a financial assistance of \$220 billion provided by the Exim Bank (Custer et al., 2023; Dreher et al., 2022).

Besides, the Doraleh Multipurpose Port (DMP), spreading over an area of 690 hectares, has been built by China (Tesfa News, 2017). The construction work started in August 2014; China financed the project with an extensive amount of \$405 million (Styan, 2022). China also invested in development of port-related projects such as infrastructure, railway and construction of two international airports which were included in \$420 million contract (Blanchard & Collins, 2019). The DMP project was completed in May, 2017 (Xinhua, 2022b); since being operational it released some of the work pressure exerted over the Port of Djibouti S.A. and accelerated the trade volume with the rest of the world (Custer et al., 2023; Dreher et al., 2022). Similarly, work started on a potable water pipeline in July 2015, which was 63-mile long linking Ethiopia with Djibouti (Xinhuanet, 2017). The Exim Bank of China funded this project with an amount of \$322 million (Custer et al., 2023; Dreher et al., 2022). The project has been completed and officially handed over to the concerned authorities in June, 2017 (Zelege & Yifeng, 2018). China has already established its naval base in Djibouti to cope with pirates which further increased strategic importance of Doraleh Port (Lendon & McCarthy, 2023). The Djibouti International Free Trade Zone (DIFTZ) covers 48.2 Km² which has been built by China (Global Times, 2022). The work on Phase-I started in January, 2017 and China Merchants Port Holdings Company Limited (CMP), a Chinese state-owned enterprise, provided loan of \$150 million for the project (China Merchants Port Holdings Company Limited, 2017). The DIFTZ is supporting the industrial sectors in many areas including logistics, construction, automotive, domestic electrical and marine industry (Africa Research Online, 2018; Djibouti Ports and Free Zones Authority, 2018). The project became operational in July, 2018. Moreover, the China Development Bank (CDB) provided the loan of \$240 million for expansion project of DIFTZ (Custer et al., 2023; Dreher et al., 2022). This project enhanced trade and improved the commercial connectivity at regional as well as international level. It might be observed that China is developing Djibouti following the model of Dubai hence shaped it into an 'entrepôt' city (Chire' et al., 2023).

Ethiopia

China's investment in Ethiopia is truly monumental, particularly in the fields of industry and construction. A striking testament to China's construction funding is the AU headquarters, a project they undertook with a staggering amount of \$200 billion. Under the BRI, China's contribution has significantly been improving the wellbeing of the Ethiopians (Belt and Road Portal, 2024). China engaged in Ethiopia in various infrastructure development projects such as industrial parks, railway stations, digital networks, and roads constructions (China SCIO, 2018). Since last ten years, BRI brought impetus in infrastructure development as well as in production sector which is creating employment opportunities for Ethiopian. The establishment of Ethiopia-Djibouti

railways (752.7 Km) network and construction of 15 industrial parks vividly illustrate Chinese multifaceted cooperation with Ethiopia (Xinhuanet, 2019a). The Ethiopia-Djibouti railway started working in 2018 and it had completed operations of 1824 passenger trains and 6133 cargo trains until the end of June 2023 (Huaxia, 2023). These Chinese-built development projects, for example, transportation networks and industrial zones, are, in fact, propelling the Ethiopian economy (Atinafu, 2024).

China constructed the Ethiopia-Hunan Industrial Park Project with a financial assistance of \$262.25 million (Custer et al., 2023; Dreher et al., 2022b). The project, officially started in second half of 2017, covered 122 hectares of land with a total cost of \$350 million (Hunan Provincial Government, 2018) and was inaugurated in October, 2018. This project is a part of Addis Ababa-Djibouti Port Industrial Economic Corridor which includes factories, roads, offices and other relevant infrastructure (Custer et al., 2023; Dreher et al., 2022b).

The Addis-Ababa Light Rail project (AALRT) is another landmark showcasing significant China-Ethiopia cooperation. This project was started in April 2013. It spreads over a length of 34 Km and includes 39 stations (Xinhuanet, 2024). It was designed to improve intercity transportation network with total cost of \$475 million. The Exim Bank of China provided funds of \$403.7 million (Custer et al., 2023; Dreher et al., 2022b) and Chinese companies built this project which was opened for operation in September, 2015 (Tadesse, 2024). The AALRT is a cheap and rapid transport service efficiently serving the citizen of Addis Ababa.

Furthermore, the construction of five dams planned on Gibe-Omo river (Hailu Woldegebrael, 2018), i.e. Gibe I to V dam series, is a part of that plan. China provided the financial aid worth \$500 million for construction of Gibe III dam to Ethiopian government (Hatton, 2011). The total project cost was \$1.75 billion and it started full-scale operation in 2016 (Custer et al., 2023; Dreher et al., 2022a). This project fulfills the Ethiopian energy needs and supports the industrial growth hence positively impacts the economy. Gibe IV (Koysa) is a 2160 MW hydropower project which started in 2016 and expected to be completed in 2025 (Power Technology, 2024). The total project cost of Koysa (Gibe IV) is \$2.80 billion (NS Energy, 2021) out of which China provided a finance of \$238 million (85% of the total cost of the project) (Custer et al., 2023; Dreher et al., 2022a). This dam would help Ethiopia to become a leading state in energy production at continental level (Impreglio, 2014; NS Energy, 2021).

In 2014, the Ethiopian Industrial Parks Development Corporation (IPDC) was established (Embassy of Ethiopia(Brussels), 2017b) which constructed the Hawassa Industrial Park (HIP) with the help of China. The HIP initially covered an area of 130 hectares to be extended later to 300 hectares which would be a hub of manufacturing and textiles (Development Seed et al., 2017) (Development Seed, Digital Globe & N-Lab, 2017). Role of China in the development of HIP was pivotal; through extensive investment and utilization of advanced technologies, China built it in quite a short time. The project began in July, 2015 and merely after one year it became operational in July, 2016 (Belt and Road Portal, 2019; Industrial Parks Development Corporation, 2022a). The China Civil Engineering Construction Corporation played central role in its rapid construction and early operation (CGTN, 2017). The total cost of the project was \$250 million and it included 52 sheds for factories located southwards of Addis Ababa at a distance of 275 km (Custer et al., 2023; Dreher et al., 2022b). The HIP is a flagship industrial park fully laced with state-of-the-art technologies contributing and extensively transforming the Ethiopian Economy (Tekle, 2017). It epitomizes the Chinese collaboration in infrastructural development as well as in economic growth. Ethiopia is

earning extensive amount in exports e.g. it earned an amount of \$142 million in 2019 (Xinhuanet, 2019c) whereas this earning was \$20 million in first half of the fiscal year 2023-2024 (CGTN, 2024). In future, Ethiopia expectedly would move forward with fifteen industrial parks while most of them would be built by China (Xinhuanet, 2019b).

Strategically, Adama Industrial Park (120 hectares) and Dire Dawa Industrial Park (150 hectares) are very important to facilitate the foreign trade as they are located near the Port of Djibouti (Walta Media and Communication Corporate S.C. (WMCC), 2017). In quite a short duration, China built both these industrial parks with an investment of \$125 million and \$190 million respectively (Embassy of the People's Republic of China in the Republic of South Africa, 2017). The construction work was started in 2016 (Yarns and Fibers News Bureau, 2017) and inauguration took place in 2017 (Industrial Parks Development Cooperation, 2022b). Both industrial parks mainly deal with textile and garment production playing vital role in improving the economy of the country.

Similarly, China built the Mekelle and Kombolcha Industrial Parks covering the area of 100 hectares (Tarrosy et al., 2020) and 75 hectares (Embassy of Ethiopia London, 2017a) with the cost of \$100 million and \$90 million respectively. The construction started in 2016 (McDubus, 2016). Textile and apparel manufacturing was the basic domain of both these industrial parks which became functional in 2017 (Embassy of Ethiopia (Brussels), 2017a). Both these parks extensively transformed the Ethiopian economy by connecting the major regional economic and trade routes. Furthermore, Chinese companies constructed Kilinto, Bole Lemi II, Debre Bihran, Arerti, Bahir Dar, Ayesha, Assosa, Semera and Jimma industrial parks showcasing the pivotal role of China in industrialization and development of Ethiopia (CGTN Africa, 2023; Embassy of Ethiopia London, 2017b).

Uganda

In December 2013, China started the construction of Uganda's largest Karuma Hydroelectric Power Station in Kiryandongo on the Victoria Nile which would have a proposed capacity of 600 MW. The estimated cost of the project was \$1.7 billion and its initial completion date was 2018. Due to some unprecedented delays, the completion date was revised to September, 2024 and the cost also escalated to about \$2.178 billion (The Independent, 2024) (Westhuizen, 2011). Currently, 4 out of 6 units became operational in 2023 and remaining two units would be operational at the end of 2024 (Infrastructure, 2023). The Chinese company Sinohydro was constructing the dam and the Exim Bank of China was providing financial assistance. The Karuma power project is a significant addition in Uganda's power infrastructure that would assist to meet the state's energy demand.

The Case of Central and West Africa

Sudan

China's strategic efforts to modernize the railway and link it with the Port of Sudan and Khartoum are not isolated initiatives, but part of a larger, interconnected plan. A railway line spanning 782 km, stretched from Port Sudan to Khartoum, was built by China with massive investment of \$1.1 billion which started operation in 2014 (Davis, 2016). This railway link is a part of strategy to streamline intercontinental trade and connectivity by linking eastern and western African coasts (Dzekashu & Anyu, 2021). Furthermore, the extension plan of this railway line intends to connect other sub-Saharan states with N'Djamena, the capital city of Chad in Central Africa as well as to extend it

to East Africa (Barber, 2020). This project aligns with the Ethiopian railway extension plan from Djibouti to Addis Ababa, spanning about 3000 miles and ultimately connecting Kenya, Sudan, and South Sudan (Kaiman, 2017). The interconnection of the LAPSET Railway is a crucial component of this plan, significantly enhancing the reach and impact of China's railway projects in Africa.

Senegal

The Dakar-Touba road project, commenced in 2016, is a testament of China-Senegal collaboration. This project was a great addition in Senegal's infrastructure which significantly contributed in regional integration and development goals of West Africa and was aligned with PIDA's objectives. China provided the financial support to Senegal through Exim Bank with a substantial amount of \$680 million (which constituted 85% of the total cost of \$800 million) (Custer et al., 2023; Dreher et al., 2022b). The road length is about 189.90 Km, stretching from Dakar to Touba, completed in December, 2018. It enhanced economic development and transport efficiency in the region (Xinhuanet, 2023a). China also financed the Dakar-Kidira railway corridor in Senegal. The project commenced in 2016 and Exim Bank of China pledged \$1.25 billion for the construction of railway line spreading over a distance of 377.79 miles (Ecofin Agency, 2015). This project is a segment of Dakar-Bamako railway as well as the part of PIDA Dakar-Bamako-Niamey Multimodal Transport Corridor (Programme for Infrastructure Development in Africa, n.d.). Another significant project Diamniadio International Industrial Platform (DIIP) was completed by China in Senegal in two phases. First phase was completed in 2017 and second phase was completed in 2023 with a total cost of \$112 million and it covered the area of 9500 square meter (Xinhua, 2023). This project would create 10000 jobs and support the Senegal's industrial and economic development as well as regional integration. It would further support the local farmers by increasing the demand of cotton. In a nutshell, the China-Senegal relations are very cordial as Senegal was the first signee of the BRI among the West African states hence Xi Jinping started Africa's visit in 2015 from Senegal.

The Case of North and Southern Africa

Algeria

The East-West Highway of Algeria stretches over a distance of 1216 km (China Communications Construction Company, 2023). It was designed by a subsidiary of China Communications Construction Company (CCCC) and completed by China International Trust and Investment Corporation (CITIC) in 2023. This project, initiated in 2017, links Morocco, Tunisia, and twenty-four Algerian provinces (China SCIO, 2023). The highway has significantly boosted the Algerian economy, enhancing regional connectivity and economic exchanges. It was a monumental project for Algeria, which required advanced technological construction skills and tackling of geologically complex terrain hence it is a testament to the engineering prowess of China (Jin, 2023). As a flagship BRI project, it underscores China's pivotal role in the development of Algerian infrastructure and regional connectivity (Global Times, 2023; Xinhuanet, 2023b).

Morocco

From 2011 to 2015, a significant increase of about 195% in Chinese FDI in Morocco was recorded (Global Risk Insights, 2017). This surge was largely due to the construction of the Noor Solar Plant in 2014, a project that not only boosted the FDI but also inspired the potential of renewable energy (Zoubir, 2020b). The Noor Solar Complex is a project of immense significance which consists of four phases. A key player in this project is

Shandong Electric Power Construction Co., Ltd (SEPCO III), which has played a vital role in the construction of Noor II and Noor III Concentrated Solar Power (CSP) in Ouarzazate. Both phases were completed in 2018 (China Solar Thermal Alliance, 2023). Both of these i.e. the 200 MW parabolic (Noor II) tough power plant and the 160 MW (Noor III) tower power plant are the largest of their types in the world and a testament to SEPCO III's expertise and dedication (China Solar Thermal Alliance, 2023; ESFC, 2024). This Solar project has not only increased Morocco's renewable energy resources but also created 5500 jobs, a feat that would not have been achieved without the contribution of SEPCO III. The Chinese President Xi Jinping and King Mohammad-VI of Morocco laid the foundation for a strategic partnership (GlobeNewswire, 2016) by signing 15 agreements and removing the visa restrictions on Chinese visitors (Lamlili, 2016). Noteworthy, the Sino-Morocco trade volume increased from \$4 billion to \$5.3 billion in 2018 (Zoubir, 2020b). The Muhammad-VI Tangier Tech City project, a beacon of hope for the future, is currently under construction in Morocco. This ambitious project, completely backed by China with a generous funding of \$1 billion, spans over an area of 200 hectares (Nyabiage, 2023a). King Mohammed-VI launched the project in March 2017, which is expected to be completed in 2027 (The Agility Effect, n.d.). The aim of this city is to host 200 Chinese companies which would work in different sectors like aerospace, automotive, and electronics. This initiative is a part of the BRI and would include an industrial acceleration zone covering an area of 947 hectares along with an additional area of 1120 hectares planned to be dedicated for services, tourism, and residences (Zouiten, 2023). It is a transformative developmental project encompassing residential zones, a high speed railway network connecting Morocco to Agadir, expansion of Tanger Med Port and development of highway infrastructure. The project's objectives are both comprehensive and optimistic, aiming to provide 100000 employment opportunities (Africanews, 2019) and facilitate the transfer of cutting-edge technologies. Notably, manufacturing of electrical buses and aeronautical components is slated within the project's ambit, promising a significant boost to the local economy and technological advancement. The completion of the project would play a key role in bolstering Morocco as a financial and industrial hub.

Mozambique

China is a strategic partner of Mozambique, engaged there in infrastructure development and is investing in Maputo, Beira, and Nacala corridors to enhance the connectivity of the landlocked neighboring states (Banco Nacional de Investimento (BNI), n.d.). The Macesse and Techobenine Port project and the Beira-Machipanda railway line are Mozambique's major projects backed by China (Club of Mozambique, 2017; Costantini et al., 2018). Mozambique is active part of China's BRI which status is bringing industrial and infrastructure developments therein. She is now gaining advancement in trade, cutting-edge technologies, and new job opportunities. China's investment in Nacala Port of \$200 million (Reuters, 2011), and \$120 million in Beira Fishing Port (Club of Mozambique, 2017; Costantini et al., 2018) showcases the strong Sino-Mozambique cooperation. China's engagements in media and telecommunications are quite significant as Chinese firms are involved in the development of digital media infrastructure. Huawei established data centers to facilitate e-government services and provide technical training (Chichava et al., 2014). Mozambique, the first state among African nations, signed a comprehensive strategic partnership agreement with China (Gustava, 2024). It is also a member of FOCAC, Macao Forum, and BRI.

The strategically important Nacala Port serves as the gateway to the Nacala Corridor, a crucial transportation route (Japan International Cooperation Agency (JICA), 2023). A group of banks, including the Industrial and Commercial Bank of China (ICBC),

provided \$2.73 billion for the construction of the Nacala Corridor and Port Project (Bank et al., 2017). In 2017, the ICBC contributed \$200 million to the project (Custer et al., 2023; Dreher et al., 2022a). The China Communication Construction Group Limited was one of the contractors responsible for implementing the project. The Nacala Corridor, comprising over a 912 km railway line consisting of three sections and an export terminal (Railway Gazette, 2017), including a coal storage yard at the port of Nacala-a-Velha (Programme for Infrastructure Development in Africa, 2019), was successfully completed in October 2023, marking a significant achievement (OC Global, 2023). The project was officially opened after a grand inauguration ceremony, attended by the President of Mozambique Filipe Jacinto Nyusi along with the Minister of Transport and Communications, Mr. Mateus, the Zambian President Hakainde Hichilema, and the Malawian President Lazarus McCarthy Chakwera. The event marked the achievement of a significant milestone in the infrastructure development of the region (Lusakatimes, 2023).

Conclusion

BRI, the China's ambitious project, has had significant impacts on the infrastructure development in the AU. These effects showcase remarkable developments during the Xi Jinping term as the Chinese President (2013---). The quantum of Chinese investments and projects demonstrate the substantial contribution to the growth, advancement, and modernization of infrastructure across many African Regions, including Northern, Eastern, Central, Western, and Southern Africa. Keeping in view the above details, it can be safely observed that China played a central role in the enhancement of connectivity, promoting economic growth, and providing great support in the achievement of regional integration through the massive construction of roads and highways, high-speed railway networks, industrial zones, and power stations. The significant collaboration between China and AU states such as Egypt, Mozambique, Tanzania, Senegal, Djibouti, Ethiopia, Sudan, Uganda, Algeria, Tunisia, Morocco, and Kenya has yielded remarkable positive outcomes, including extensive improvement in transportation networks, increased energy capacity, and establishment of several industrial hubs to promote trade and economic development. Notably, these projects are well-aligned, planned, and coherent with Africa's developmental goals. They also underscore the strategic importance and viability of China-AU relations within the framework of a game-changer BRI. Finally, African countries need to ensure sustainable and equitable development in collaboration with China through BRI & PIDA-nexus from the AU and FOCAC platforms. In sum, BRI has proved itself a strong catalyst for infrastructure development in the African continent, bringing opportunities to strengthen ties between China and the AU through its substantial contribution aligned with AU's Agenda-2063 for Africa's long-term growth and prosperity. However, there is a dire need to ensure that China's multi-dimensional involvement within the AU would not hurt the sovereignty of the member states since some scholars believe that BRI symbolizes economic imperialism and a modern way to colonize the developing states.

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