Facilitating Industrialization in Africa

China's Aid and African Industrial Capacity Building

Song Wei

Abstract: Industrialization has long been the focus of national development plans in many African countries. Yet, Africa today is less industrialized than it was four decades ago. Industrial capacity building has recently been prioritized in Beijing's aid policy as a prerequisite for a thriving manufacturing sector in Africa. As a result, China's aid and investment in Africa focus on three areas: manufacture, infrastructure, and economic zone development. The choices reflect Beijing's four decades of experience in its own industrialization process. The two cases of Angola and Zambia presented in this article illustrate the constraining

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factors in Africa's industrialization: a business-unfriendly financial environment, vast untapped labor and resource potentials, an imbalanced growth model, and cumbersome bureaucratic procedures. To help Africa achieve higher levels of integration and industrialization, Beijing ought to do more and better along five lines of effort: first, by delineating the role of development cooperation in China-Africa capacity building cooperation; second, upgrading African industrial capacity both at the macro- and micro-levels; third, supporting infrastructure and agricultural modernization across Africa; fourth, working with African subregional institutions to stimulate regional integration and industrialization; and fifth, building greater complementarities with international organizations in Africa.

Keywords: Industrialization; capacity building; Chinese aid; African development.

Introduction

Industrialization — the “quintessential escalator for developing countries”¹ — holds the key to Africa's long-term economic growth and sustainable development. All African nations look to continued industrialization as the surest way to create more jobs, stimulate technological innovation, and increase overall productivity. But after decades of serious efforts by national governments, which have accepted vast sums of economic, financial, and technical aid from international development partners, the continent still lags behind in terms of industrial development. Thirty-three of the 47 countries labeled by the United Nations as the least developed countries² are in Africa. According to the 2018 Competitive Industrial Performance Index, most African economies are considered to be at the embryonic stage of industrialization where the size and scale of their manufacturing sectors have just met the lowest standards of industrial

¹AfDB, *African Economic Outlook 2019* (Abidjan: African Development Bank Group, 2019), p. 51, https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO_2019-EN.pdf.

²Defined as “low-income countries suffering from structural impediments to sustainable development.”

development, i.e., generating barely adequate job opportunities and positive growth rates.³

Since around 2000 when the Forum on China-Africa Cooperation (FOCAC) was instituted as a new guiding framework for a closer and more comprehensive relationship in the new century, Beijing has elevated its development partnership with Africa. After becoming Africa's largest trading partner in 2009 when the world was still reeling from the devastating impact of the global financial crisis, China has stepped up industrial capacity cooperation with Africa, with a view to helping the continent forming a solid manufacturing foundation for higher levels of industrialization. At the FOCAC's Johannesburg summit in late 2015, Chinese President Xi Jinping announced an industrial capacity cooperation initiative along with other nine major initiatives (with a fund of \$60 billion) between China and Africa over the following three years. Since then industrial capacity building has been prioritized in bilateral aid program planning and implementation. This article focuses on two African countries, Angola and Zambia, where Beijing's aid and investment in local manufacturing sectors have helped the two economies make remarkable progress in industrial capacity building. The two countries were chosen because both have long commercial and political ties with Beijing and are the earliest recipients of China's aid. The two cases are representative of many African economies which have long depended on exports of oil, gas, minerals, and other raw materials for growth and continued to suffer from the persistent "Dutch Disease." Major problems encountered in industrialization in the two countries are also common in other African economies and have to be addressed before higher levels of industrial development can be achieved. From Beijing's perspective, assisting African economies in addressing some structural problems in their industrialization processes will also help improve China's overall aid effectiveness in Africa. The article begins with an overview of the state of African industrialization in the new century. It then identifies the major structural problems and institutional vulnerabilities in China-Africa industrial capacity building by presenting two typical case studies. The

³UNIDO, *Competitive Industrial Performance Index Report 2018* (Vienna: United Nations Industrial Development Organization, 2019), <https://www.unido.org/sites/default/files/files/2019-05/CIP.pdf>.

conclusion presents a number of policy recommendations on how to help Africa fill the gaps in industrialization and improve foreign aid as an important instrument of China's diplomacy in Africa.

Rising Aspiration, Increasing Aid, But Less Industrialization

Policymakers and scholars have all agreed that industrialization is the fundamental path toward sustained economic growth and social progress in Africa. A robust manufacturing sector — the prerequisite for industrial development — promises better-paying jobs, higher household incomes, and greater domestic demands, the very foundation of long-term growth. Industrialization is also the key to the fulfillment of the United Nations' 2030 *Agenda for Sustainable Development*, from no poverty and zero hunger (SDG 1 and 2) to decent work, economic growth, and infrastructure (SDG 8 and 9), and from quality of education (SDG 4) and gender equality (SDG 5) to government capacity building and stronger institutions (SDG 16).

Apart from national development plans focusing on higher levels of industrial development, transnational and subregional initiatives have also been put forward by major regional organizations to promote larger-scale integration and industrialization. In 2015, the African Development Bank identified five development priorities in an ambitious program called "High 5s," namely, to Light up and Power Africa, Feed Africa, Industrialize Africa, Integrate Africa, and Improve the Quality of Life for the People of Africa. Incorporated into the African Development Bank's *Ten Year Strategy (2013–2022)*, the program is expected to help double the continent's industrial output by 2025 and achieve close to 90 percent of the United Nation's SDGs.⁴ The African Union also places industrialization and manufacturing at the center of its *Agenda 2063*, aiming to transform African economies through revitalizing manufacturing and utilizing the continent's vast resource endowments. In its effort to boost continental integration, the African Union brokered the African Continental Free Trade Agreement in 2018 to create the world's largest free trade area in terms of the number of

⁴"Investor Presentation," African Development Bank, April 2018, https://www.afdb.org/fileadmin/uploads/afdb/Documents/Financial-Information/Investor_presentation._AFDB.-_April2018.pdf.

participants since the formation of the World Trade Organization (WTO). By the end of 2019, 54 of the 55 African Union states had signed the agreement, and 27 of the member states had deposited their instrument of ratification.

African's indigenous efforts at greater integration and industrialization have also been acknowledged and supported by external partners. In mid-2016, the United Nations General Assembly adopted a resolution proclaiming 2016 — 2025 as the Third Industrial Development Decade for Africa and the United Nations Industrial Development Organization (UNIDO) was tasked with leading the implementation of the decade. Later in the same year, a *New Industrial Revolution Action Plan* was adopted at the G20 Summit in Hangzhou, China, designed to help the vast developing world better harness the new industrial revolution by intensifying technology transfer, knowledge sharing, and capacity building.

Despite Africa's decades-long efforts and global partners' continued assistance, the continent today is less industrialized than it was four decades ago. The contribution of Sub-Saharan Africa's manufacturing value added (MVA) to the continent's gross domestic product has declined from around 16 percent in the mid-1980s to 10 percent in 2018.⁵ An equally worrying fact is that, according to UNIDO, the technological intensity of manufacturing value added in Africa has declined steadily in the last decade.⁶ The share of medium-high and high-tech products declined from 21 percent in 2005 to 19 percent in 2015, a stark contrast to the rest of the world where the share of such products increased in the same period.⁷ A comparative analysis of industrial production in 18 African economies shows that Africa's industry is in many ways less advanced than it was in

⁵United Nations Industrial Development Organization, *Industrial Development Report 2018* (Vienna: UN Industrial Development Organization, 2017), http://www.indiaenvironmentportal.org.in/files/file/IDR2018_FULL%20REPORT.pdf.

⁶An increase in the share of medium-high and high-tech industries in total MVA indicates a region's technological intensity in manufacturing and its capacity to introduce new technology in other sectors.

⁷United Nations Industrial Development Organization, *Competitive Industrial Performance Report 2016, Volume II* (Vienna: UN Industrial Development Organization, 2017), <https://www.iccia.com/sites/default/files/library/files/CIP-2016-Volume-II-V5.pdf>.

the first decade following independence.⁸ Moreover, a succession of external shocks — fluctuations in commodity prices, spikes of real interest rates, weak public finances, and intensifying competition with foreign products — have presented additional challenges for African industrialization.

China-Africa Industrial Capacity Cooperation: A Guiding Framework and Two Country Profiles

Since 2000 when the first FOCAC ministerial conference was held, Chinese engagement with Africa has expanded steadily in a more institutionalized and focused way. Beijing is already the continent's most important economic partner in terms of trade, investment, and development cooperation. At the same time, the Sino-African relationship has also been evolving as the fast-growing continent is no longer a passive recipient of large volumes of donation and assistance. From Beijing's perspective, Africa is now a much more independent force on the world stage and its voices and views, especially those concerning development needs and challenges amid economic transformations, must be heeded and accommodated in bilateral and multilateral aid policy planning and implementation. In the most recent two FOCAC summits in 2015 and 2018 respectively, Beijing pledged a total of \$120 billion in financial support for ten cooperative initiatives and eight action plans, covering almost all sectors and aspects of African economies and societies, from infrastructure to industry, from agriculture to green development, and from health care to talent training. At the 2018 summit, Beijing's aid priority further tilted toward infrastructure interconnectivity, industrial capacity building, and market integration.

Beijing's new partnership with Africa for industrialization and integration is buttressed by the ever-growing presence of Chinese business and

Despite sustained economic growth over the years, today's Africa is less industrialized than it was in the 1970s.

⁸John Page, "Should Africa Industrialize?" Working Paper No. 2011/47, United Nations University, August 2011, <https://www.wider.unu.edu/sites/default/files/wp2011-047.pdf>

investment on the continent over the years. According to a 2017 McKinsey report, more than 10,000 Chinese-owned enterprises are operating in Africa, among which 90 percent are privately owned and 30 percent involved in manufacturing.⁹ China became the largest investor in African manufacturing in 2016¹⁰ and according to a database built by Johns Hopkins University's China-Africa Research Initiative, Chinese FDI has been steadily flowing into Africa at a yearly average rate of \$3 billion over the past ten years (see Figure 1). One-quarter of the Chinese investment is concentrated in South Africa and the Democratic Republic of Congo, followed by Zambia, Nigeria, Angola, and Ethiopia. Chinese capital concentrates on construction (29.8 percent), extractive industries (22.5 percent), and manufacturing (14 percent). The stock of FDI rose to \$43.3 billion in 2017, almost reaching that of the United States, which stood at \$50 billion.¹¹ Moreover, as a percentage of Chinese global FDI stock, Africa accounts for just above three percent in the last five years, leaving ample room for Beijing to devote much more resources to the continent's economic transition. At the same time, Beijing's involvement in Africa's information technology and agricultural capacity building is also growing. Its telecommunications giant *Huawei* has built half of the 4G networks on the continent and most of the 2G and 3G infrastructure. Transsion Holdings, an Africa-focused Chinese cellphone manufacturer, produces the three most popular phone brands in Africa — Tecno, itel, and Infinix. The company's market share in Africa stood at 48.71 percent in 2018.¹² Since 2006, Beijing

⁹Irene Yuan Sun, Kartik Jayaram, and Omid Kassiri, *Dance of the Lions and Dragons* (New York: McKinsey & Company, 2017), <https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Middle%20East%20and%20Africa/The%20closest%20look%20yet%20at%20Chinese%20economic%20engagement%20in%20Africa/Dance-of-the-lions-and-dragons.pdf>.

¹⁰Landry Signè, "The Potential of Manufacturing and Industrialization in Africa," Brookings Institution, September 2018, <https://www.brookings.edu/wp-content/uploads/2018/09/Manufacturing-and-Industrialization-in-Africa-Signe-20180921.pdf>.

¹¹CARI, "Data: Chinese Investment in Africa," China Africa Research Initiative, Johns Hopkins University, <http://www.sais-cari.org/chinese-investment-in-africa>.

¹²"Top Phone Maker in Africa Transsion Holdings: What Makes It Successful and Where Will It Go," Medium, April 9, 2019, https://medium.com/@pingwest_62480/top-phone-maker-in-africa-transsion-holdings-what-makes-it-successful-and-where-will-it-go-25fa290fc0eb.

Fig. 1. Chinese FDI Stock and Flow In and To African Countries (USD billion).

Source: China-Africa Research Initiative, Johns Hopkins University.

has launched 30 agricultural technology demonstration centers across the continent to help increase productivity, transfer technology, train farmers, and strengthen food security.

Greater emphasis on China-Africa partnership in industrialization does not mean that Beijing’s increasing aid and investment in Africa are evenly spread out across the continent. A number of countries can be easily identified as priority states in Beijing’s aid and investment policy, from which Angola and Zambia stand out as two illustrative examples. The two countries are selected for three reasons. First, both were identified as priority partners in China-Africa industrial capacity-building collaboration during the FOCAC’s Johannesburg summit in 2015 and have since received growing sums of Chinese aid and investment. Second, like many other African countries, Angola and Zambia are resources-fueled economies where the extractive sector has crowded out manufacturing, and the two have long suffered from the “Dutch Disease.” Structural challenges facing the two economies are also endemic in other African nations. Third, with longstanding friendships with Beijing, Angola and

Zambia have looked to China for long-term solutions to the major economic challenges and development needs arising in their industrial transitions.

The Forum on China-Africa Cooperation is a new guiding framework for a closer and more comprehensive relationship between China and Africa as a whole.

Angola

Located on the west coast of Southern Africa, the Republic of Angola prioritizes its economic ties with neighbors and regional blocs. It has joined the Southern African Development Community (SADC), the Common Market for Eastern and Southern Africa (COMESA), and the Organization of the Petroleum Exporting Countries (OPEC). Angola has also signed the African Continental Free Trade Agreement (AfCFTA), pending a ratification by its national assembly. Angola's economic takeoff began after 2002 when the

decades-long civil war finally came to an end. In the period 2001–2010, Angola had the world's highest annual average GDP growth rate (11.1 percent). Growth contracted in the last three years following the sharp decline in oil prices, but moved back into positive territory in 2019.¹³ The recovery had been driven mainly by the export of diamonds and farm products.

Angola has an oil-fueled economy, with oil production contributing to around half of its GDP, 93 percent of national exports, and more than 70 percent of government revenue. This heavy dependence on oil exports renders the economy vulnerable to international oil price fluctuations. Following the 2009 global financial crisis and a sharp decline in oil prices, Angola had to take a \$1.4 billion loan from the International Monetary Fund to balance its economy.¹⁴ In 2016, the Angolan government once again asked the Fund for financial assistance as a result of plunging oil prices since mid-2014.¹⁵

¹³AfDB, *African Economic Outlook 2019* (Abidjan: African Development Bank Group, 2019), p. 133.

¹⁴"General Profile Angola," United Nations Conference on Trade and Development, <https://unctadstat.unctad.org/CountryProfile/GeneralProfile/en-GB/024/index.html>.

¹⁵Andrew Walker, "Angola Seeks IMF Help in Wake of Oil Price Falls," BBC News, April 6, 2016, <http://www.bbc.com/news/business-35981850>.

Oil dependence has resulted in an increasingly imbalanced economy. Agriculture only accounts for 10 percent of Angola's total GDP,¹⁶ but 70 percent of the country's population is engaged (as labor force) in agriculture.¹⁷ Manufacturing too is weak in Angola, accounting for only 6.5 percent of GDP in 2017,¹⁸ with most consumer goods imported from abroad. Angola's private sector is small with a large number of mostly informal micro-size enterprises, employing around 60 percent of the national labor force,¹⁹ while key economic sectors are dominated by uncompetitive state-owned or government-affiliated firms.²⁰

A number of important development plans have been introduced in Angola since the late 2000s outlining the priority sectors for structural reforms and economic transition. The *2025 Angola Long Term Strategy Angola*, adopted in 2008, serves as the overarching framework for Angola's socioeconomic transformation, with the aim of turning Angola "into a prosperous, modern country, without poverty and with a growing insertion in the world and regional economy."²¹ Within this framework, two more detailed five-year development strategies have been adopted, namely, the *National Development Plan 2013–2017* (NDP 2013–2017) and its successor, the *National Development Plan 2018–2022* (NDP 2018–2022). Both highlight the imperative of economic diversification and call for the development of labor-intensive industries in non-oil sectors as a way to boost job creation and increase tax revenues.

Upgrading domestic production and reducing imports are prioritized in NDP 2013–2017 in which four sectors are highlighted as priorities in the

¹⁶See World Bank Data on Angola, <https://data.worldbank.org/country/angola?view=chart>.

¹⁷See African Development Bank's country profile on Angola, <https://www.afdb.org/en/countries/southern-africa/angola>.

¹⁸See World Bank Data on Angola, <https://data.worldbank.org/country/angola?view=chart>.

¹⁹UNCTAD, *Trade Policy Framework: Angola* (Geneva: United Nations Conference on Trade and Development, 2016), https://unctad.org/en/PublicationsLibrary/ditctn2015d5_en.pdf.

²⁰See World Bank Data on Angola, <https://data.worldbank.org/country/angola?view=chart>.

²¹Jacinto Caculo, "Country Report: Knowledge Co-creation Program-Energy Policy," Institute of Energy Economics, August 2016, <https://eneken.ieej.or.jp/data/6871.pdf>.

“Industrialization Program of Angola”: energy and water; food and agro-industry; housing; and transportation and logistics. Economic diversification is the focus of NDP 2018–2022, with agriculture, fishery, mining, and manufacturing being the four non-oil priority sectors. Apart from oil, Angola has other natural resources in abundance, such as land, water, and minerals. Angola is the world’s leading diamond producer, with around 90 percent of its diamond deposits untapped.²² Among the most recent initiatives to promote diversification are the “Program to Support Production, Diversification of Exports and Import Substitutions” and the “Regulation of the Commercial Chain of Supply of the Basic Basket and Other Priority Goods of National Origin.” Domestic productivity has been the major victim of Angola’s overdependence on oil exports. The country relies on imports to meet domestic demands for food and consumer goods. In 2017, Angola spent \$2 billion on the import of food.²³ According to the WTO, 13 percent of Angolan imports are agricultural products and 55 percent manufactured goods. The two largest sources of Angola’s imports are the European Union (33 percent) and China (17 percent). To reduce dependence on foreign markets and sources of livelihood, the Angolan government has committed to upgrading its domestic capacity to produce and process many of the imported products, such as coffee, honey, fishery products and byproducts, woods, iron ore, alcoholic and non-alcoholic beverages, vegetables, and textiles.²⁴

China’s proposed productive capacity partnerships with African countries resonate with the Angolan government. Following the end of the Angolan civil war, the bilateral relationship soon transitioned from a defense- and security-focused partnership to one oriented toward reconstruction and development. Some estimates show that China has loaned Angola more than \$60 billion since the beginning of their diplomatic relations in 1983. Some observe that the strategic partnership can be characterized as “infrastructure for petroleum”: China funds infrastructure

²²The 2019 United States Geological Survey ranks Angola 4th in gem diamond mine production, <https://www.usgs.gov/centers/nmic/mineral-commodity-summaries>.

²³Interview with Angola government officials and development partners March 4–8, 2018 in Luanda, Angola.

²⁴*Ibid.*

projects in exchange for future oil exports. More recently, private Chinese investments have flowed in growing volumes into such sectors as agriculture, industry, human resources, and health care. After FOCAC's Beijing summit in 2018, Chinese investors pledged to invest up to \$10 billion in Angola's manufacturing, agriculture, and scientific research in the following three years.²⁵ The Chinese Ministry of Commerce estimates that there are more than 200 Chinese-funded enterprises operating in Angola, mainly in construction, trade, real estate, and manufacturing. China's investment in Angola has exceeded \$20 billion as of 2019, covering a wide range of sectors like energy, infrastructure, health care, social welfare, and industrial park development.²⁶

Two mega-projects stand out as symbols of Sino-Angolan strategic partnership in productive capacity building. The first is an aluminum alloy plant — the largest one in Angola — jointly funded by two subsidiaries of Citic Group Corporation, a Chinese conglomerate. Located in the Luanda-Bengo Special Economic Zone in South Luanda, the factory was inaugurated in May 2019, covers an area of 20 hectares, and is expected to produce about 10,000 tons of aluminum profiles for doors, windows, curtain walls, and electricity field. It may also produce for export if its productive capacity further increases.²⁷ Launched in December 2016 and completed in 2018, the China-Angola Agricultural Technology Demonstration Center (ATDC) aims to promote agricultural technologies and farming expertise to significantly increase agricultural productivity. Consisting of office buildings, plantation demonstration fields, and livestock

²⁵"Angola: Chinese Want to Invest U.S.\$10 Billion in Angola," All Africa, January 10, 2019, <https://allafrica.com/stories/201901100472.html>.

²⁶Liane Ferreira, "Chinese Investment in Angola exceeds \$20 billion," China Global Television Network, September 27, 2019, <https://news.cgtn.com/news/2019-09-27/Chinese-investment-in-Angola-exceeds-20-billion-KkluSMHALC/index.html>.

²⁷With an expected annual output of 10,000 tons, the factory has created around 300 jobs, supporting the government's efforts to promote employment. In the first phase, raw materials for its operation were all imported, because of the lack of locally produced inputs and backward linkages in Angolan manufacturing sector, a key challenge on the road to industrialization. However, the investor expects operations to expand upstream, significantly reducing the import needs of raw materials and creating more jobs. The whole set of processing machines were imported from China.

breeding demonstration area, the project would cover a total area of 54 hectare. At the launching ceremony, José Amaro Tati, Angola's Secretary of State for Agriculture said that China's assistance is expected to increase the competitiveness of Angolan farm products, cultivate agricultural professionals, and promote a more diversified Angolan economy.

Although Angola has made remarkable progress in economic diversification and industrial capacity building with growing Chinese assistance and investment, considerable domestic constraints still remain, especially those structural ones that may take years or even decades to overcome. The most difficult challenge is Angola's underdeveloped financial infrastructure. Although foreign enterprises are guaranteed access to loans made by local banks, the cost of borrowing is prohibitively high. In 2018, local loan interest rate was 20.7 percent, versus a deposit rate of 6.9 percent,²⁸ and rose to as high as 26 percent in the first months of 2019, making it extremely difficult, if not impossible, for foreign enterprises to get loans from local banks. The National Bank of Angola has recently regulated that commercial banks have to apply an interest rate equal to or lower than 7.5 percent for loans to the economy, with a focus on agriculture,²⁹ in order to boost credit growth and support development and investment. Angola also imposes strict foreign currency controls under which remittance is subjected to cumbersome bureaucratic procedures and a restrictive quota regime. Although domestic administrative measures and financial aid agreements with the IMF have helped bring down loan interest, as late as May 2020, bank lending rate still stood at 19.5 percent.³⁰ The second major constraint is the lack of a skilled labor force. A devastating civil war that lasted for decades and the subsequent social unrest have deprived the Angolan people of the educational and training opportunities that are required to help the nation achieve industrialization and transformation. According to UNICEF statistics, adult literacy rate in Angola has seen a steady decline

²⁸See World Bank Data on Angola, <https://data.worldbank.org/country/angola?view=chart>.

²⁹"Angolan Commercial Banks Forced to Grant Loans at Reduced Interest Rates," Macau Club, April 3, 2019, <https://macauhub.com.mo/2019/04/03/pt-bancos-comerciais-de-angola-obrigados-a-conceder-credito-a-taxa-reduzida/>.

³⁰"Angola Bank Lending Rate," Trading Economics, <https://tradingeconomics.com/angola/bank-lending-rate>.

since 2001 (with the most recent available number at 66 percent in 2014, slightly higher than the Sub-Saharan Africa average of 63.5 percent), but the nation's net enrollment rate for secondary education is far below the African average, indicating that Angola has a long way to go before it can make the transition from a resources-driven economy to a more balanced and diversified one with a competent labor force.

Zambia

Like its western neighbor Angola, Zambia is also a proponent of subregional economic integration. It has also signed the pan-African free trade agreement, pending a parliamentary ratification. With a generally stable domestic environment, Zambia has seen its economy grow at an average rate of 6 percent since the early 2000s, peaking in 2010 when GDP rose by 10.2 percent year-on-year. Affected by the aftershock of the 2008–09 global financial crisis and falling copper prices, the economy has been growing at a much slower pace of 3.7 percent on average.³¹ However, sustained economic growth does not come without costs. Over the past decade, debt has grown at a much faster pace than the economy. According to the African Development Bank, Zambia is now at a “high risk of debt distress.” The debt as a percentage of GDP rose to 61 percent in 2016 from as low as 25 percent in 2012. In 2018, domestic debt reached an estimated 20 percent of GDP while external debt stood at 39.2 percent (around \$10 billion). World Bank statistics show that Zambia's external debt stocks-to-GNI ratio stood at 65.3 percent in 2017, down from 75.8 percent from the previous year, but well above 20.5 percent in 2010.³²

Zambia is the second-largest copper producer in Africa with mining output accounting for 12 percent of its GDP. The Zambian economy is largely dependent on the export of primary commodities with raw copper accounting for 47 percent and refined copper 27 percent of the total in 2017. China is the largest market for Zambia's exports, followed by

³¹See World Bank Data on Zambia, <https://data.worldbank.org/country/zambia?view=chart>.

³²See African Development Bank's country profile on Zambia, <https://www.afdb.org/en/countries/southern-africa/zambia>.

Switzerland, India, and South Africa.³³ On the other hand, Zambia's agriculture remains labor-intensive (84 percent of the working population is engaged in the agricultural sector) with low levels of productivity, investment, and technology.³⁴ What is worse is that agriculture's contribution to GDP had declined to 2.6 percent in 2018 from 16.2 percent in 2000.³⁵

Zambia's dependence on copper exports has made it vulnerable to international commodity price fluctuations. According to UNCTAD's concentration index, the Zambian economy scored 0.67 in 2017, up from 0.5 on average in the period between 2000 and 2005, a sign that the country's exports became less diversified.³⁶ The United Nations *Human Development Report 2016* attributes Zambia's low level of industrialization to the so-called "Dutch Disease."³⁷ Zambia's GDP per capita growth averaged 3.1 percent, much lower than its economic growth.³⁸ According to the World Bank, Zambia ranks among the countries with highest levels of inequality globally. As of 2015, 58 percent of Zambians earned less than the international poverty line of \$1.90 per day (compared to 41 percent across Sub-Saharan Africa) and three quarters of the poor lived in rural areas.³⁹ Having achieved middle-income country status in 2011 during a decade (2004–2014) of impressive economic growth, Zambia remains one of the world's least developed countries and is projected to graduate in 2025.⁴⁰

³³"General Profile Zambia," United Nations Conference on Trade and Development, <https://unctadstat.unctad.org/CountryProfile/GeneralProfile/en-GB/894/index.html>.

³⁴*National Development Plan 2017–2021*, Government of Zambia, <https://www.mndp.gov.zm/wp-content/uploads/2018/05/7NDP.pdf>.

³⁵See World Bank Data on Zambia, <https://data.worldbank.org/country/zambia?view=chart>.

³⁶As a comparison, in 2017, lower-middle income countries' concentration of exports index average was 0.08 and Sub-Saharan Africa countries' average 0.27.

³⁷UNDP, *Zambia Human Development Report 2016*, http://hdr.undp.org/sites/default/files/zambia_human_development_report_2016.pdf.

³⁸In the same period, population grew by 2.8 percent per year on average (World Bank).

³⁹"The World Bank in Africa," World Bank, October 13, 2019, <https://www.worldbank.org/en/country/zambia/overview>.

⁴⁰"General Profile Zambia," United Nations Conference on Trade and Development, <https://unctadstat.unctad.org/CountryProfile/GeneralProfile/en-GB/894/index.html>.

Since mid-2000s, the government in Lusaka has introduced a number of development plans and initiatives to tackle some of the most difficult structural problems in socioeconomic development, for example, *Vision 2030: A Prosperous Middle-Income Nation by 2030*, *Strategy Paper on Industrialization and Job Creation*, *Seventh National Development Plan* (NDP), and *2018–2021 Strategic Plan*. The fulfillment of *Vision 2030* requires full implementation of Zambia's national development plans. The current seventh NDP (2017–2021) reiterates the country's need to diversify and become more resilient to external shocks by making the best use of Zambia's comparative advantages — rich natural resources (especially renewable ones) — and its competitive sectors, such as tourism, green housing, and forestry and fishery to achieve five key objectives: (1) economic diversification and job creation; (2) poverty and vulnerability reduction; (3) inequality reduction; (4) human development enhancement; and (5) to create a conducive governance environment for transformation.⁴¹

Priority areas identified in Zambia's industrialization planning include agriculture, tourism, manufacturing, energy, and infrastructure.⁴² The government plans to create a whole value chain linking the country's resources-driven agriculture and agro-processing through the engineering and chemical industries to infrastructure and manufacture. To this end, the government has launched a block farm model in which more than 150,000 hectares of farming land are set aside to build power and water infrastructure and promote economies of scale and implement large-scale out-grower schemes for smallholder farmers.⁴³ Furthermore, the Zambian government is pursuing a multi-facility economic zone (MFEZ) initiative as

⁴¹*Seventh National Development Plan 2017–2021* (Lusaka: Ministry of National Development Planning, 2017), <https://www.mndp.gov.zm/wp-content/uploads/2018/05/7NDP.pdf>.

⁴²Ministry of Commerce, Trade and Industry, *Strategy Paper on Industrialization and Job Creation*, https://www.mcti.gov.zm/?wpfb_dl=49; Zambia Development Agency, *2018–2021 Strategic Plan*, <http://investzambia.zda.org.zm/wp-content/uploads/2019/04/ZDA-Strategic-Plan-2018-2021.pdf>; and Ministry of National Development Planning, *National Development Plan 2017–2021*, <https://www.mndp.gov.zm/wp-content/uploads/2018/05/7NDP.pdf>.

⁴³Interview with Zambian government officials and development partners July 17–21, 2017, in Lusaka, Zambia.

part of the broader effort to promote industrialization and increase the share of manufacturing in the economy.⁴⁴ At the same time, to support the growth of small businesses and the private sector, the government has introduced a number of preferential policies (for example, the *Micro, Small and Medium Enterprise Development Policy of 2008*) to help homegrown enterprises integrate into global value chains by encouraging and facilitating the establishment of joint ventures between local companies and foreign-funded ones.⁴⁵

Programs of industrial partnership between China and Zambia mainly involve infrastructure development, productive capacity building, and training and education. Major infrastructure projects funded and constructed by the Chinese include the TAZARA Railway, Kariba Dam, Chambishi bridge, Lusaka-Kaoma road, and Solwezi-Mansa road. China also helped upgrade the Mbala-Nakonde road and Mansa-Luwingu road and expand the Lusaka International Airport.⁴⁶ In the two decades before Zambia launched its nationwide privatization programs in the early 1980s, Beijing helped build a number of factories and plants in different parts of Zambia, for example, the Majani Garment Factory, Gray Textile and Dyeing Factory, and Chingola Corn Flour Mill. These projects helped increase Zambia's domestic productive capacity and propelled the country's economic takeoff in the years leading up to its integration with the wider African market in the 1990s. Since the mid-1970s, Chinese experts have come to Zambia to train local workers and technicians in operating and maintaining Chinese-built railway systems, industrial plants, and agricultural projects. For example, a TAZARA training school was set up immediately after the railway project was completed. The school has so far offered 16 training sessions to local workers, with each session lasting for 2–3 years. The China-Zambia Agricultural Technology Demonstration Center, established in 2009 and managed by the Jilin University of China in

⁴⁴UNDP, *Zambia Human Development Report 2016*, http://hdr.undp.org/sites/default/files/zambia_human_development_report_2016.pdf.

⁴⁵Interview with Zambian government officials and development partners July 17–21, 2017 in Lusaka, Zambia.

⁴⁶Charles Chisala, "Africa, Zambia Eye China's Silk Road Benefits," *Zambia Daily Mail*, May 18, 2017, <http://www.daily-mail.co.zm/africa-zambia-eye-chinas-silk-road-benefits/>.

partnership with the University of Zambia,⁴⁷ is a high-profile case of bilateral agricultural technical cooperation, focusing on promoting high-yielding farming techniques for a variety of crops, such as maize and wheat. In mid-April of 2019, the Zambian government announced the construction of three China-aided milling plants in three different locations, one of which would be a demonstration plant attached to the demonstration center and expected to train up to 200 local technicians each year.⁴⁸

From a Chinese perspective, lack of close coordination among Zambian government agencies is the major obstacle to the country's systemic efforts to build a more pro-business environment and further industrialize the economy. Mandated to introduce preferential policies and pro-investor regulations on foreign businesses and economic zone development, the Zambia Development Agency spearheads the nationwide effort to attract foreign capital by streamlining cumbersome bureaucratic procedures and offering incentives of various types. Intended as a "one-stop shop" providing a whole range of services for foreign businesses from registration to operation and from talent recruitment to tax benefits, the agency, in practice, has encountered great difficulties in fulfilling its functions, according to Chinese investors with local operations.⁴⁹ The World Bank's *Doing Business Report* of 2019 ranks Zambia 87th among 190 economies in the world and 6th in Sub-Saharan Africa. In particular, Zambia performs poorly in terms of registering property (150th) and enforcing business contracts (130th).

Major Gaps in African Industrialization

The model of resources-fueled economic growth renders Africa particularly vulnerable to fluctuations in primary commodity prices and highly dependent on imports (from apparel to automobiles and shoes to electronics) for people's livelihoods. A growing consensus is that the continent's economic diversification can only be achieved through large-scale industrialization. But despite decades of earnest efforts by national governments

⁴⁷This agricultural demonstration center has a 1484-square-meter office training building, a 755-square-meter farm shed, and a 528-square-meter warehouse.

⁴⁸"Zambia Launches Construction of China-aided Milling Plants," Xinhua News, April 18, 2019, http://www.xinhuanet.com/english/2019-04/18/c_137988314.htm.

⁴⁹Interview with Chinese enterprises in Zambia July 17–21, 2017 in Lusaka, Zambia.

complemented by foreign assistance from major development partners like the Chinese and Europeans, significant gaps and challenges still remain in African industrialization.

First, the very foundation of industrial development, infrastructure, remains underdeveloped. According to the Africa Development Bank, the deficit in infrastructure, lack of skilled labor, a large financing gap, and unfavorable business environment are the main obstacles to growth. For the infrastructure gap alone, the bank estimates that Africa needs \$130–170 billion (a financing gap of \$68–108 billion at the current level) a year in infrastructure investment, approximately 7 percent of the continent's total GDP.⁵⁰

Second, limited industrial capacity and lack of a skilled workforce have been constraining industrialization of most sectors of African economies. For example, agricultural output and productivity in Angola remain low due to the shortages of quality seeds and fertilizers, limited mechanization, poor agronomic practices, and low irrigational efficiency. In the food-processing industry, there is a lack of capacity to produce items such as flour, chicken, eggs, and milk.⁵¹ The textile industry, though supported by Japan's credit lines, have not been making profits due to lack of skilled management and low industrial capacity.⁵²

Third, Africa's financial environment is business-unfriendly if not outright anti-business. Borrowing money from local commercial banks is extremely difficult as interest rates remain prohibitively high. Multinationals and international venture capitalists remain hesitant about making forays into the African market as projected returns on investments are consistently low. Global investors find that it is almost impossible for foreign businesses to integrate into local financial systems. High interest rates lead to low levels of domestic savings in many African countries like Zambia, and as a result external debts have risen to alarming levels. Worse still, increasing investment made by institutions like the China

⁵⁰AfDB, *African Economic Outlook 2019* (Abidjan: African Development Bank Group, 2019), p. 18.

⁵¹Interview with Angola government officials and development partners March 4–8, 2018 in Luanda, Angola.

⁵²Ibid.

Development Bank and China-Africa Development Fund in African industrial capacity building is met with growing criticism and skepticism from the West which accuses Beijing of creating a huge debt trap to undermine Africans' sovereign rights and development prospects.

Toward Closer Sino-African Industrial Capacity Cooperation

Promoting industrialization was highlighted at the FOCAC summit in Beijing in September 2018 where President Xi Jinping unveiled eight major cooperative initiatives with Africa for the following decade, the first of which was industrial development. Based on the above case studies in which major "roadblocks" in the path of Africa's industrialization have been identified, this article now outlines several lines of effort whereby China's involvement in African industrialization could become more cost-effective and consequential.

First, delineating the role of development cooperation in China-Africa capacity building cooperation. Beijing ought to take a market-based approach to its partnership with Africa in industrial capacity building. Beijing's official development aid, in the form of government-sponsored funds, state banks' loans, and private investments, should complement market-based cooperation on industrial development, especially in areas where foreign businesses are reluctant to get involved and bear the necessary risks. Development cooperation should also take on a bigger role in building an enabling environment for mobilizing more commercial funds and private actors' participation in African industrial capacity building.

Second, upgrading African industrial capacity both at the macro- and micro-levels. To help African countries close the gaps in skills and industrial capacity, China should first help Africa develop the skills, knowledge, and abilities of its labor force through stepped-up knowledge sharing, vocational training, and technical education. At the macro-policy level, Beijing should share its knowledge, expertise, and practices in formulating and

Major roadblocks in the path of African industrialization include a business-unfriendly financial system, lack of a skilled workforce, an imbalanced growth model, and cumbersome bureaucratic procedures.

implementing strategies and policies on industrial development with African countries which are in the early stages of industrialization. At the micro-technical level, in its transition to becoming a global manufacturing powerhouse, Beijing also has mastered valuable know-how, techniques, and skills for a variety of sectors which could also be shared with African countries in need of sectoral expertise for further industrialization. For example, African countries interested in launching their own industrial parks and economic zones could learn from China's best practices in the design and operation of similar projects. Beijing could also set up an international peer-to-peer evaluation mechanism to help African countries assess the feasibility of their major economic initiatives.

Third, vigorously supporting infrastructure and agricultural modernization across Africa. The share of concessional loans in Beijing's funding package for African infrastructure development should be increased and greater transparency on lending conditions for commercial loans is needed to reduce recipient governments' skepticism. Government-sponsored funding mechanisms like the China-Africa Development Fund ought to play a more active role in bringing together more public and private actors in infrastructure building and promoting a more effective BOT model in Africa. At the same time, Beijing should also step up coordination with Africa's development partners from the rest of the world with regard to project planning, feasibility study, and capacity upgrading. The more than 30 agricultural technology demonstration centers built by China in different parts of Sub-Saharan Africa have proven to be successful in significantly increasing productivity in host nations through the transfer of agricultural technology and talent recruiting and training. Moving forward, China-Africa agricultural cooperation should focus on creating more backward and forward linkage effects, promoting technological innovation in small-holder farming, and helping the agro-processing sector integrate deeper into global value chains.

Fourth, working closely together with African subregional organizations to stimulate regional integration and industrialization. Subregional organizations have a much bigger role to play in promoting a continental common market in Africa as they are the most interested stakeholders of African integration. The African Continental Free Trade Area agreement, for example, is expected to remove tariffs from 90 percent of goods, ensure the free flows of commodities, services, capital, and people throughout the continent, and

boost intra-African trade by 52 percent by 2022.⁵³ Subregional organizations could help reduce and mitigate the competition among various sectors of African economies and create synergies for regional industrialization. Beijing's partnership with these organizations, hitherto limited in scope and depth, ought to come in the form of increased policy coordination and deeper financial integration

Fifth, building complementarities with international organizations in Africa.

International organizations have long been engaging in African development but focusing on different priority areas than China. Given China's expertise and comparative advantages in agriculture, manufacturing, and infrastructure development, there are opportunities for Beijing to work with Africa's development partners actively engaged in these sectors by sharing knowledge, promoting best practices, and creating a funding pool. China and the United Nations Development Program are already engaged in a trilateral collaborative project in Zambia on renewable energy development which is yielding positive results. Building on this trilateral partnership, China and international organizations could scale up the project and jointly identify other areas for cooperation that aligns with Zambia's and some other African countries' industrialization priorities. Meanwhile, China's South-South Cooperation Assistance Fund is now open for application annually, which encourages international organizations to cooperate with Chinese partners.

Conclusion

Today's Africa represents a paradox: a fast-growing continental economy constrained by an increasingly marginalized manufacturing and low levels of industrial production. Africa was turned into a raw material producer long before its independence. A resources-fueled economic model has created a comfort zone that African countries feel reluctant to move out of. As a result, many African economies have long been plagued by the "Dutch Disease." Major roadblocks still exist in the path of African industrialization: business-unfriendly financial environment, lack of skilled labor force,

⁵³Loes Witschge, "African Continental Free Trade Area: What You Need to Know," Al Jazeera, March 20, 2018, <https://www.aljazeera.com/news/2018/03/african-continental-free-trade-area-afcfta-180317191954318.html>.

imbalanced growth model, cumbersome bureaucratic procedures, and so on. Despite earnest indigenous efforts, African countries still depend on external assistance (aid, investment, trade, technology transfer, etc.) to achieve higher integration and industrialization. As the continent's most important development partner over the past decades, China has recently identified industrial capacity building as a priority area for closer China-Africa cooperation in the decade to come. Chinese aid and investment in African industrialization has focused on three areas: manufacturing, infrastructure, and economic zone development. To be more cost-effective and consequential, China-Africa partnership in industrial capacity building must also be complemented by better coordination with other stakeholders of African industrialization, such as traditional donors, subregional blocs, and international organizations.