

(IN)ROADS AND OUTPOSTS

CRITICAL INFRASTRUCTURE IN
CHINA'S AFRICA STRATEGY

NBR

THE NATIONAL BUREAU
of ASIAN RESEARCH



Edited by Nadège Rolland

NBR Board of Directors

John V. Rindlaub <i>(Chair)</i> Regional President (ret.) Wells Fargo Asia Pacific	Roy D. Kamphausen President NBR	William Rademaker Entrepreneur Duthie Hill LLC
Thomas W. Albrecht <i>(Vice Chair)</i> Partner (ret.) Sidley Austin LLP	Nobukatsu Kanehara Professor Doshisha University	Jonathan Roberts Founder and Partner Ignition Partners
Roger W. Bowlin Founder and Managing Partner Real Estate Transition Solutions	Ryo Kubota Chairman, President, and CEO Kubota Vision Incorporated	Tom Robertson Vice President and Deputy General Counsel Microsoft Corporation
Richard J. Ellings President Emeritus and Counselor NBR	Quentin W. Kuhrau <i>(Treasurer)</i> Chief Executive Officer Unico Properties LLC	Joseph E. Tofalo Vice President, Engagement and Customer Affairs Huntington Ingalls Industries, Inc.
Kurt Glaubitz <i>(Vice Chair)</i> General Manager, Corporate Affairs Asia Pacific Exploration and Production Chevron Corporation	Melody Meyer President Melody Meyer Energy LLC	Mitchell B. Waldman Principal M Barnet Advisors LLC
Charles Hooper Senior Counselor The Cohen Group	Long Nguyen Chairman, President, and CEO Pragmatics, Inc.	<i>Honorary Director</i> George F. Russell Jr. Chairman Emeritus Russell Investments
	Kenneth B. Pyle Professor, University of Washington Founding President, NBR	

NBR Chairs and Counselors

Charlene Barshefsky U.S. Trade Representative (ret.)	Richard J. Ellings NBR (ret.)	Jonathan W. Greenert Admiral, U.S. Navy (ret.) John M. Shalikashvili Chair
Charles W. Boustany Jr. U.S. House of Representatives (ret.)	Thomas B. Fargo Admiral, U.S. Navy (ret.)	Ashley J. Tellis Carnegie Endowment for International Peace
Norman D. Dicks U.S. House of Representatives (ret.)	Aaron L. Friedberg Princeton University	

NBR Board of Advisors

William Abnett NBR	Robert Holleyman C&M International	Pamela Passman APCO Worldwide
Se Hyun Ahn University of Seoul	Chun In-Bum Lt. Colonel, ROK Army (ret.)	Rajeswari Rajagopalan Observer Research Foundation
Dennis C. Blair Admiral, U.S. Navy (ret.)	Mark Jones Wells Fargo	Clarine Nardi Riddle Kasowitz, Benson, Torres & Friedman LLP
Ketty Chen Taiwan Foundation for Democracy	Amit Kapoor India Council on Competitiveness	Ryo Sahashi University of Tokyo
Josh Corless ConocoPhillips	Tariq Karim Former Ambassador (Bangladesh); Independent University	Ulrike Schaede University of California San Diego
Linda Distlerath PhRMA (ret.)	Heino Klinck U.S. Army/Department of Defense (ret.)	Robert Scher BP
Nicholas Eberstadt American Enterprise Institute	David Lampton Johns Hopkins University	David Shambaugh George Washington University
Karl Eikenberry Former Ambassador (U.S.); Lt. General, U.S. Army (ret.)	Stephen Lanza Lt. General, U.S. Army (ret.)	Benjamin Shobert Microsoft
Bates Gill Macquarie University	Nicholas Lardy Peterson Institute for International Economics	Travis Sullivan Boeing Company
Clara Gillispie NBR	Richard Lawless New Magellan Ventures	Travis Tanner Greenpoint Group
Stephen Hanson College of William and Mary	William McCahill Department of State (ret.)	Arzan Tarapore Stanford University
Harry Harding University of Virginia	Meredith Miller Albright Stonebridge Group	Jessica Teets Middlebury College
Mikkal Herberg University of California San Diego	John S. Park Harvard Kennedy School	Dana White Hyundai
Carla A. Hills Hills & Company		

THE NATIONAL BUREAU *of* ASIAN RESEARCH
NBR SPECIAL REPORT #98 | MAY 2022

(IN)ROADS AND OUTPOSTS
Critical Infrastructure in China's Africa Strategy

Edited by Nadège Rolland

THE NATIONAL BUREAU *of* ASIAN RESEARCH

The NBR Special Report provides access to current research on special topics conducted by the world's leading experts in Asian affairs. The views expressed in these reports are those of the authors and do not necessarily reflect the views of other NBR research associates or institutions that support NBR.

The National Bureau of Asian Research helps decision-makers better understand Asia and craft concrete, actionable policy. NBR is an independent research institution based in Seattle and Washington, D.C. We bring world-class scholarship to bear on the evolving strategic environment in Asia through original, policy-relevant research, and we invest in our future by training the next generation of Asia specialists.

Our research is conducted by a global network of specialists and tackles critical issues identified by stakeholders in anticipation of future challenges. The findings are a result of independent scholarship and do not reflect institutional perspectives. Our rigorous standards facilitate informed decision-making based on knowledge rather than ideology.

Established in 1989, NBR is a legacy organization of Senator Henry M. Jackson, who foresaw the national need for an institution to study and inform public policy on Asia in both the public and private sectors. Building on Senator Jackson's bipartisan approach, NBR engages policymakers looking for reliable Asia expertise through sustained interaction in high-trust, nonpartisan settings. Our experts and research have shaped congressional legislation and administration policies, brought issues to the top of the U.S. foreign policy agenda, and attracted worldwide media attention. We mobilize expertise on Asia for a more effective foreign policy.

NBR receives support from foundations, corporations, government (including foreign governments of allies and liberal democracies), and public agencies, and philanthropic individuals. NBR reserves the right to publish findings. We do not undertake classified or proprietary research work, and we observe policies to avoid conflicts of interest.

To download issues of the NBR Special Report, please visit the NBR website <http://www.nbr.org>.

This report may be reproduced for personal use. Otherwise, the NBR Special Report may not be reproduced in full without the written permission of NBR. When information from NBR publications is cited or quoted, please cite the author and The National Bureau of Asian Research.

This is the ninety-eighth NBR Special Report.

NBR is a tax-exempt, nonprofit corporation under I.R.C. Sec. 501(c)(3), qualified to receive tax-exempt contributions.

© 2022 by The National Bureau of Asian Research.

Cover design and illustration by Nate Christenson.

For further information about NBR, contact:

The National Bureau of Asian Research
1414 NE 42nd Street, Suite 300
Seattle, Washington 98105

206-632-7370 Phone
nbr@nbr.org E-mail
<http://www.nbr.org>

(IN)ROADS AND OUTPOSTS: *Critical Infrastructure in China's Africa Strategy*

— TABLE OF CONTENTS —

v	Foreword
1	Introduction <i>Nadège Rolland</i>
9	China's Ports in Africa <i>Isaac Kardon</i>
29	African Railway Ambitions Meet China's Belt and Road <i>Yunnan Chen</i>
45	Chinese Telecommunications Giants and Africa's Emerging Digital Infrastructure <i>Daria Impiombato</i>
59	China Electrifies Africa <i>Erica Downs</i>
75	Industrial Parks in Africa: Building Nests for the Chinese Phoenix <i>Thierry Pairault</i>

— FOREWORD —

The two-year research project “Into Africa: China’s Emerging Strategy” was launched by the National Bureau of Asian Research (NBR) in early 2021. The present study, “(In)Roads and Outposts: Critical Infrastructure in China’s Africa Strategy,” is the second report of a series that began with the publication of “A New Great Game? Situating Africa in China’s Strategic Thinking” in June 2021. It will be followed by a third report, “Political Front Lines: China’s Pursuit of Influence in Africa.”

Although the project seeks to better understand China’s perspectives, motives, aspirations, and strategy for Africa in the context of Beijing’s newfound global vision, it does not presuppose a lack of African agency. The July 2022 issue of NBR’s *Asia Policy* journal will publish a roundtable of essays written by African experts who offer contrasting perspectives on how African actors perceive and respond to China’s presence on the continent.

The editor would like to extend her profound thanks to the Carnegie Corporation of New York for its generous financial support and overall encouragement; to Rachel Bernstein for her outstanding assistance in managing the project; to Kanghee Park, Eliot Roberts, and Olivia Truesdale for their expert research assistance; and to Dr. Joshua Eisenman, General Charles W. Hooper (Ret.), Dewardric L. McNeal, and Ambassador David H. Shinn, for their invaluable input and guidance as senior advisers.

Introduction

Nadège Rolland

NADÈGE ROLLAND is Senior Fellow for Political and Security Affairs at the National Bureau of Asian Research. She is the author of “A New Great Game? Situating Africa in China’s Strategic Thinking” (2021), “China’s Vision for a New World Order” (2020), and the monograph *China’s Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative* (2017). She is also editor of the report “An Emerging China-Centric Order: China’s Vision for a New World Order in Practice” (2020). She can be reached at <nrolland@nbr.org>.

The National Bureau of Asian Research (NBR) project “Into Africa: China’s Emerging Strategy” endeavors to examine where the African continent fits in relation to China’s overall strategic vision. Our first report, “A New Great Game? Situating Africa in China’s Strategic Thinking,” found that Africa is centrally situated in China’s strategic thinking in the Xi Jinping era.¹ Chinese elites have been pondering options that will lead the continent through a series of transformations, both economic and political, so that it can better fit within the subsystem that Beijing aspires to create and dominate. Among the options discussed is the possibility of exporting elements of China’s economic development model, more specifically the combined development of labor-intensive industries, special economic zones (SEZs) and industrial parks, and infrastructure building that China adopted in the early stages of its reform and opening-up period.²

The current report examines how this effort to “share China’s experience” is taking root in Africa and what strategic implications may arise from China’s growing presence in the continent’s critical infrastructure. Each essay sheds light on a specific domain of activity that China is particularly invested in: ports, railways, industrial parks, information and telecommunication networks, and electrical power generation. The collective work presented here goes beyond available discussions of debt management, possible economic spillovers, and impact on Africa’s environment or employment rates. It attempts to understand whether and how China’s investment in critical infrastructure may help generate strategic advantages and focuses on what this could mean in the context of China’s global ambitions.

In no other sector has China’s expanding footprint in Africa been more obvious than in infrastructure building. Over the past two decades, China has financed one in five infrastructure projects and built one in three projects. Over half the Chinese-funded projects are in the transportation sector (including shipping and ports), followed by energy and power.³ As of 2018, Chinese companies had completed or were in the process of building 30,000 kilometers of highway, 20,000 megawatts of power-generation capacity, and over 30,000 kilometers of power transmission lines.⁴ Dozens of Chinese-built airports and terminals, bridges, ports, power stations, stadiums, and parliament and other government buildings have sprung up across the continent.⁵ Isaac Kardon finds in his essay that Chinese companies, acting as builders, financiers, owners, or operators, are involved in one out of four commercial ports in Africa—a higher level than has been observed anywhere else in the world. Railroad infrastructure is one of the largest sectors of Chinese financing and construction in Africa, notes Yunnan Chen. Chinese information and communications technology (ICT) companies such as Huawei have built the majority of Africa’s 4G networks and are involved in hundreds of projects, from carrier infrastructure to hardware, storage and software infrastructure, and software applications, points out Daria Impiombato in

¹ Nadège Rolland, “A New Great Game? Situating Africa in China’s Strategic Thinking,” National Bureau of Asian Research, NBR Special Report, no. 91, June 2021.

² He Wenping, “Zhongguo jingyan yu Feizhou fazhan: Jiejian, ronghe yu chuangxin” [China’s Experience and Africa’s Development: Reference, Integration, and Innovation], *Xiya Feizhou*, no. 4 (2017); and Lin Yifu, “Feizhou ying cong Zhongguo gongyehua jin Cheng xuexi shenme” [What Africa Should Learn from China’s Industrialization Process], Ministry of Foreign Affairs of the People’s Republic of China (PRC), January 6, 2016, <https://fmprc.gov.cn/zft/chn/zfgx/zfgxjmhzt/1329671.htm>. For more detail, see Rolland, “A New Great Game,” 21–24.

³ Hannah Marais and Jean-Pierre Labuschagne, “If You Want to Prosper, Consider Building Roads: China’s Role in African Infrastructure and Capital Projects,” Deloitte Insights, March 22, 2019, <https://www2.deloitte.com/us/en/insights/industry/public-sector/china-investment-africa-infrastructure-development.html>.

⁴ Feng Qiyu, “Zhong Fei ‘shida hezuo jihua’ jingmao jucuo quanmian luoshi” [China-Africa “Ten Major Cooperation Plans” Economic and Trade Measures Fully Implemented], *Economic Times*, August 29, 2018, http://www.gov.cn/xinwen/2018-08/29/content_5317272.htm.

⁵ Liu Qingjian, “Zhong Fei hezuo fazhan de xiandai zuyong yu Yidai Yilu changyi” [The Leading Role of China-Africa Development Cooperation and the Belt and Road Initiative], *Contemporary World*, no. 6 (2018): 68–71.

her essay. Erica Downs finds that Chinese contractors and financiers support 80 African coal and hydropower electrical generation projects. Likewise, Thierry Pairault notes that Chinese companies have established 25 overseas economic and commercial cooperation zones (OECCZs) throughout the continent to accommodate China's national economic needs. Chinese actors are present across the board, all over the African map.

Since 2013, discussions related to China's expanding role in and impact on global infrastructure building have mostly revolved around the deployment of the Belt and Road Initiative (BRI), branded as "One Belt, One Road" (OBOR) during the first two years following its launch. This is unsurprising considering Beijing's public commitment to spend \$1.3 trillion and its promotion of BRI's infrastructure-building component as China's generous contribution to closing the "infrastructure gap" faced by most developing countries. Initially, however, Africa was not officially included in the BRI scheme, which focused primarily on the 64 countries of the greater Eurasian continent.⁶ The State Council's March 2015 foundational "Vision and Actions" document did not mention Africa except when it described BRI as an effort to "connect Asian, European and African countries more closely,"⁷ and BRI did not appear in China's second white paper on Africa, published in December 2015.⁸ Even the Johannesburg Declaration, issued in December 2015 following that year's summit of the Forum on China-Africa Cooperation (FOCAC), remained vague about exploring possible linkages of BRI with African development agendas.⁹

Several prominent figures were early advocates of the continent's inclusion into the BRI fold. Lin Songtian, director of the Ministry of Foreign Affairs' Africa department, repeatedly expressed the view that Africa is an "important direction" for the construction of BRI,¹⁰ while Lin Yifu, former World Bank chief economist and senior vice president, pushed for the realization of not just OBOR but "One Belt, One Road, One Continent."¹¹ Was Africa an afterthought in Beijing's grand vision? It does not appear so. In a 2015 interview, Ambassador Liu Guijin, China's special representative for African affairs, indicated that the government intentionally did not officially include Africa within BRI in order to "avoid unnecessary speculation from the outside world, especially from conspiracy theorists who will say that China seeks geopolitical advantages and is intent on confronting whomever."¹² Instead, during his May 2014 visit to Ethiopia, Nigeria, Angola and Kenya, Premier Li Keqiang put forward the idea of "three networks and one-ization" (*san wang yi hua*), a flavorsome condensed formula for "three infrastructure networks (high-speed railways, expressways, regional aviation) and one industrialization" that many Chinese experts

⁶ Nadège Rolland, *China's Eurasian Century: Political and Strategic Implications of the Belt and Road Initiative* (NBR: Seattle, 2017).

⁷ National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce (PRC), "Vision and Actions on Jointly Building Belt and Road," March 28, 2015, http://www.china.org.cn/china/Off_the_Wire/2015-03/28/content_35182638.htm.

⁸ "Full Text: China's Second Africa Policy Paper," Xinhua, December 5, 2015, http://www.china.org.cn/world/2015-12/05/content_37241677.htm.

⁹ "Declaration of the Johannesburg Summit of the Forum on China-Africa Cooperation," Ministry of Foreign Affairs (PRC), December 10, 2015, https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/201512/t20151210_679428.html.

¹⁰ "Lin Songtian da Zhong ping: Yidai Yilu kending hui yanshen dao Feizhou" [Lin Songtian to China Review News: The Belt and Road Will Definitely Extend to Africa], CRNTT.com, May 8, 2015, <http://hk.crntt.com/doc/1037/4/3/0/103743083.html?coluid=70&kindid=1850&docid=103743083>; and "Feizhou shi jianshe Yidai Yilu de zhongyao fangxiang he luojiaodian: Fang waijiaobu Feizhou sihang Lin Songtian" [Africa Is an Important Direction and Foothold for the Construction of Belt and Road: Interview with Lin Songtian, Director of the Africa Department of the Ministry of Foreign Affairs], Center for African Studies of Shanghai Normal University, September 5, 2016, <http://webcache.googleusercontent.com/search?q=cache:qtDYLvD6AoQJ:shcas.shnu.edu.cn/2016/0905/c18799a517753/page.psp+&cd=1&hl=en&ct=clnk&gl=us>.

¹¹ Lin Yifu, "Yidai Yilu' xuyao jiashang 'yizhou'" ["One Belt, One Road" Must Add "One Continent"], *Guancha*, January 19, 2015, https://www.guancha.cn/LinYiFu/2015_01_19_306718.shtml?web.

¹² Liu Guijin, "Zhongguo you Feizhou ban de Yidai Yilu jihua" [China Has an African Version of the Belt and Road], *Takungpao*, June 1, 2015, available at <http://webcache.googleusercontent.com/search?q=cache:HXskY-fvXNsJ:222.xinshishe.net/3g/Show.asp%3Fm%3D1%26d%3D29673+&cd=1&hl=en&ct=clnk&gl=us&client=safari>.

considered at the time to be the African version of BRI.¹³ The incremental “Africanization” of BRI, or integration of Africa within the Belt and Road strategy, started with the December 2015 Johannesburg Summit in response to African countries’ “increasingly positive attitude” toward China’s initiative.¹⁴ They were later invited to join the May 2017 Belt and Road Forum for International Cooperation in Beijing. The following year, in his opening address to FOCAC’s Beijing Summit in September 2018, Xi Jinping reiterated his willingness to create a “China-Africa community with a shared future” that would deliver “happiness for all of us.”¹⁵ African governments responded enthusiastically to Xi’s call to join BRI. As of late 2019, in addition to the African Union as an institution, 43 individual countries had signed cooperation agreements with China, making over a third of BRI’s “circle of friends” African.¹⁶ By 2021, the number had risen to 46,¹⁷ and Xi could proudly announce at the November 2021 Dakar meeting that “almost all African members of FOCAC have joined the big family of Belt and Road cooperation.”¹⁸

Is being able to count a large number of African members as part of the BRI family China’s ultimate endgame? As observed earlier, from a strategic standpoint, Beijing appears keen on transforming the continent and preparing it to welcome China’s expanding presence. The development of critical infrastructure and industrial parks appears to be one key instrument that Beijing intends to use to help achieve this vision. As highlighted by a *People’s Daily* China’s Voice (*Zhongsheng*) op-ed published in 2017, the nature, structure, and overall vision for China’s cooperation with Africa have undergone major changes during recent years.¹⁹ Rather than simply offering development aid, or buying minerals and natural resources, China is now attempting to “build a nest to attract the phoenix” (*zhu chao yin feng*).²⁰ The expression, regularly used by Xi Jinping and Wang Yi in the context of China’s Africa policy,²¹ usually refers to Chinese local municipalities’ efforts to attract businesses and professional talent by providing quality

¹³ Yun Sun, “The Sixth Forum on China-Africa Cooperation: New Agenda and New Approach?” in “Foresight Africa: Top Priorities for the Continent in 2015,” Brookings Institution, December 30, 2014, <https://www.brookings.edu/wp-content/uploads/2016/07/china-africa-cooperation-sun-2.pdf>; and “Waijiaobu: Yuan tong Feizhou gongtong tuijin ‘san wang yi hua’ he channeng hezuo” [Ministry of Foreign Affairs: Willing to Work with Africa to Jointly Promote the “Three Networks and One-ization” and Production Capacity Cooperation], Xinhua, September 21, 2015, http://www.xinhuanet.com/world/2015-09/21/c_1116631655.htm. See also “Zhong Wai xuezheng tan Zhong Fei hezuo: ‘San wang yi hua’ shi Feizhou ban ‘Yidai Yilu’” [Chinese and Foreign Scholars Discuss China-Africa Cooperation: “Three Networks and One-ization” Is the African Version of “Belt and Road”], *People’s Daily*, September 11, 2015, <http://world.people.com.cn/n/2015/0911/c1002-27569764.html>.

¹⁴ Zhao Chenguang, “Er gui waijiao’ zhuli Yidai Yilu changyi zai Feizhou de tuijin” [“Track-2 Diplomacy” Helps Advancing Belt and Road Initiative in Africa], *Journal of Liaoning University* 46, no. 1 (2018).

¹⁵ “Chinese President Xi Jinping’s Speech at Opening Ceremony of 2018 FOCAC Beijing Summit,” China.org, September 5, 2018, http://www.china.org.cn/world/2018-09/05/content_62273841.htm.

¹⁶ The data was offered by Gu Shengzu, vice-chairman of the National Committee of the Chinese People’s Political Consultative Conference. See “Guanyu tuijin Yidai Yilu Zhong Fei hezuo de shitiao jianyi” [Ten Suggestions on Promoting China-Africa Cooperation Under the Belt and Road], China National Democratic Construction Association, November 6, 2019, <http://webcache.googleusercontent.com/search?q=cache:PYHc041Bt4MJ:www.cndca.org.cn/eportal/ui%3FpageId%3D458511%26articleKey%3D1439044%26columnId%3D461315+%&cd=1&hl=en&ct=clnk&gl=us>. See also Zhao, “Er gui waijiao’ zhuli ‘Yidai Yilu’ changyi zai Feizhou de tuijin.”

¹⁷ Wang Yi, “Forge Ahead Together to Deliver a Brighter Future for China and Africa” (remarks, Beijing, May 25, 2021), https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/zyjh_665391/202105/t20210527_9170549.html.

¹⁸ “Keynote Speech by Chinese President Xi Jinping at Opening Ceremony of 8th FOCAC Ministerial Conference,” FOCAC, December 2, 2021, http://www.focac.org/eng/gdtp/202112/t20211202_10461080.htm.

¹⁹ Zhongsheng is a pen name typically used by the *People’s Daily* editorial board to express views on foreign policy and international affairs. See David Gitter and Leah Fang, “The Chinese Communist Party’s Use of Homophonous Pen Names: An Open-Source Open Secret,” *Asia Policy* 13, no. 1 (2018): 69–112.

²⁰ Zhongsheng, “Dang Zhongguo zhuli Feizhou jinru ‘kuaishidai’” [When China Helps Africa Enter the “Accelerated Era”], *People’s Daily*, January 12, 2017, <http://opinion.people.com.cn/n1/2017/0112/c1003-29016590.html>.

²¹ “Xi zhuxi guanyu Feizhou de naxie jin ju” [President Xi’s Golden Words about Africa], Xinhua, December 1, 2015, http://www.xinhuanet.com/world/2015-12/01/c_128487410.htm; and Zhang Shuo, “Xi Jinping tan dui Feizhou hezuo: Shourenyiyubang zhuchaoyinfeng” [Xi Jinping Talks about Cooperation with Africa: Teach People How to Fish, Build Nest to Attract Phoenixes], *Ifeng*, April 8, 2014, http://sd.ifeng.com/dongying/xinwenzaobanche/detail_2014_04/08/2098450_0.shtml.

infrastructure (e.g., electricity, sewage, and telecommunications) and financial incentives.²² For Lin Songtian, “building a nest to attract phoenixes” is the essence of “China’s wisdom” that will help support Africa’s “independent and sustainable economic development.”²³ Which “phoenixes” will find Africa’s China-built infrastructure and industrial “nests” most comfortable?

The report is divided into five essays that address separate sectors in sequence. In his essay on port infrastructure, Isaac Kardon examines the push and pull factors that have led Chinese companies to invest in African commercial ports. Although economic objectives, rather than military basing, appear to be China’s primary interests, “‘strategic strongpoint’ ports are not envisioned as standalone projects but rather as platforms for building and sustaining an integrated Chinese presence.” Djibouti offers a striking example of how such an ecosystem can be established past the pier.

Yunnan Chen argues that similar push and pull factors explain Chinese interest in building African railroad infrastructure. Chinese overcapacity and capital abundance met clear demands and needs from African states at a moment when multilateral development banks were disengaged and uninterested. Beyond evident commercial benefits, China gains long-term advantages by creating linkages among Chinese-financed projects and establishing a presence within African rail management bureaucracies.

Daria Impiombato finds a similar mix of commercial and potential political gains as she examines the upward trajectory of Chinese tech giants in Africa, a region that has become crucial to China’s increased influence in the telecommunications sector. Chinese ICT companies enjoy a nearly absolute dominance over the continent’s digital infrastructure. In a world increasingly defined by competition among great powers, the “dissemination and adoption of critical and emerging technology can play a pivotal role in the degree of influence these powers have in the international arena.”

Erica Downs’s study of China’s role in the development of power-generation capacity in Africa uncovers similar patterns. Push factors from China’s side combine with African demands and needs to produce serendipitous results. Beyond market opportunities for Chinese companies and the export of Chinese industrial standards, Chinese-supported power plants have “contributed to a positive shift in perceptions of Africa among external investors and development financiers.”

In the final essay, Thierry Pairault looks beyond Beijing’s alluring invocation of industrial parks as a way for African states to emulate China’s early economic development model and facilitate Africa’s industrialization. Peeling off the misleading characterization of these parks as replicates of the SEZs established in China in the early years of its reform and opening-up era, he finds that OECCZs are akin to “quasi-extra-territorialized” appendages designed to “generate Sinicized ecosystems abroad in order to boost Chinese economic development at home.” Rather than sharing elements of China’s development model with African countries, African-based OECCZs appear as a 21st-century Chinese version of the 19th-century Western enclaves established in China.

When all the layers of activity are overlaid, what emerges is a map of the African continent crisscrossed with projects that could easily be integrated into a unified whole: electrified railways connecting to ports encased within digitally connected industrial parks, ready to export natural

²² Qi Hang, “Cong ‘zhuchaoyinfeng’ dao ‘weifengzhuchao’” [From “Building Nests to Attract Phoenixes” to “Building Nests For Phoenixes”], *Huanqiu*, January 18, 2017, <https://finance.huanqiu.com/article/9CaKrnJZOal>.

²³ Lin Songtian, “Quanmian luoshi Zhong Fei fenghui chengguo, tuijin Zhong Fei hezuo fazhan mai shang xin taijie” [Fully Implement the Outcomes of the China-Africa Summit, Advance China-Africa Cooperation to a New Level], Chinese People’s Institute of Foreign Affairs, undated, <http://www.cpifa.org/cms/book/64>.

resources, materials, and manufactured products to overseas clients. Seen in this way, the purpose of China's African critical infrastructure building seems not an end in itself but a means to a larger end: preparing Africa to play a role in relation to China similar to the role China has played so far in relation to the West. The transformation of Africa into an integrated and efficiently connected low-cost manufacturing platform could, in the longer term, also facilitate the emergence of a class of African consumers eager to buy Chinese higher-end products. In short, as China secures its long-term presence in African critical infrastructure, it may be outlining the future map of Sinocentric globalization.

THE NATIONAL BUREAU *of* ASIAN RESEARCH

NBR SPECIAL REPORT #98 | MAY 2022

China's Ports in Africa

Isaac Kardon

ISAAC KARDON is an Assistant Professor in the China Maritime Studies Institute at the U.S. Naval War College. He can be reached at <isaac.kardon@usnwc.edu>.

EXECUTIVE SUMMARY

This essay finds that Chinese firms are rapidly developing Africa's ports as platforms for the integrated political, economic, and military presence of the People's Republic of China (PRC) in each of the continent's subregions.

MAIN ARGUMENT

Chinese firms are now leading builders, bankers, owners, and operators of ports in Africa. They have quickly achieved significant scale and scope across the continent, using modern, deepwater ports to drive Chinese trade and promote investment in other economic projects past the pier. Several state-owned enterprises have been moving up the value chain in the sector, taking long-term control over ownership and operations of port assets instead of just building them on contracts. Such ports provide robust platforms for China's economic, political, and diplomatic access in Africa. They also establish ready sites for civil-military dual use. Chinese companies evidently pursue these projects to access African markets and resources, but also to advance broader Chinese foreign policy goals that are competitive with U.S. interests in Africa.

POLICY IMPLICATIONS

- Chinese firms pursue commercial and political incentives within an overall foreign policy framework. So long as PRC foreign policy continues to promote development of African ports as a means to greater access on the continent, Chinese firms will enjoy major cost and scale advantages in further building out Africa's maritime transport network. The practical policy questions revolve around how to adjust to this reality and mitigate China's exercise of undue influence through its position in African ports.
- The U.S. will not directly compete with China in developing and operating port infrastructure in Africa. But with enhanced U.S. coordination with local allies and partners (including their port and logistics firms) on prioritized countries and projects, Chinese firms can be kept from achieving market dominance. The U.S. can likely remain the great-power partner of choice for key African nations by providing superior security and technology.
- Even if Equatorial Guinea does not ultimately agree to host a Chinese military base, some other African state or states will eventually do so. A small number of People's Liberation Army bases will not tip the Atlantic naval balance nor fundamentally change the basic security dynamics in Africa, but it will alter perceptions of China's long-term objectives and intensify competition with the U.S.

At the 8th Forum on China-Africa Cooperation in Senegal in November 2021, Chinese foreign minister Wang Yi lauded Chinese firms' contributions to African development, calling special attention to their construction of "nearly one hundred ports."¹ While this figure far exceeds the number of China-built ports that can be verified in public records,² Wang's hyperbole highlights the prominent role that ports play in engagement by the People's Republic of China (PRC) across the African continent. Modern port infrastructure is frequently the centerpiece of broader development projects led by PRC firms that stretch far past the pier, including other critical infrastructure examined elsewhere in this report.

Over the last two decades, PRC firms have become the dominant builders of ports in Africa. Increasingly, Chinese enterprises also seek to own and operate these assets, pursuing not just one-off engineering contracts, but equity stakes and operational control over port terminals across the continent. At least one of these projects to build, own, and operate a port has led to the establishment of a Chinese military facility—namely the People's Liberation Army (PLA) base in Djibouti. This first official PLA base abroad opened in 2017 and relies in significant measure on the pier and other assets of the adjacent commercial port facility developed by a PRC state-owned enterprise (SOE).

Commercial port infrastructure is enabling China's military presence on and around the African continent.³ Military basing, however, is not the primary Chinese interest in African ports. The more basic impetus is the appeal of African markets and resources. While additional PRC-developed ports in Africa may well host PLA forces in the future, China's drive to build, finance, own, and operate ports across the continent primarily serves economic ends. Targeting the substantial deficit in Africa's transport infrastructure, PRC enterprises have pursued large port projects with host governments. They have done so with substantial political, financial, and diplomatic support from Beijing earmarked for ports and related infrastructure. These supply-side pushes further enhance Chinese firms' demand to exploit Africa's vast mineral and hydrocarbon resource wealth, emerging urban markets, large and youthful consumer base, and overall development potential.

This essay first seeks to describe the laydown of PRC ports in Africa, where they are located, and what roles PRC firms have played in their finance, construction, ownership, and operations. Turning next to the interests and objectives that motivate China's presence in African ports, it then analyzes how PRC leaders, firm executives, industry analysts, and maritime security experts characterize China's port activities. Brief case studies of Djibouti, Kenya, and Equatorial Guinea provide further insights into how ports serve as platforms for China's integrated commercial, diplomatic, and military presence and activity on the continent. The essay concludes by taking stock of the implications of China's African ports for the United States and its allies.

¹ Ministry of Foreign Affairs of the People's Republic of China (PRC), "Wang Yi: ZhongFei hezuo luntan jiang shuli xinde lichengbei" [Wang Yi: China-Africa Cooperation Forum Will Set a New Milestone], November 29, 2021, https://www.mfa.gov.cn/wjzbhd/202111/t20211129_10458190.shtml; and State Council Information Office (PRC), "China and Africa in the New Era: A Partnership of Equals," November 26, 2021, http://www.news.cn/english/2021-11/26/c_1310333813.htm. An earlier study identified 46 Chinese port projects in sub-Saharan Africa and noted a tendency among Chinese companies to inflate counts regarding their investments and contracts. See Judd Devermont, Amelia Cheatham, and Catherine Chiang, "Assessing the Risks of Chinese Investments in Sub-Saharan African Ports," Center for Strategic and International Studies, June 4, 2019, <https://www.csis.org/analysis/assessing-risks-chinese-investments-sub-saharan-african-ports>.

² There are 61 African ports in which Chinese firms have or had a verifiable role as builder, financier, owner, or operator of all or part of the facility. This figure and all other port-related data cited below utilize an original database on file with the author, compiled with assistance from the National Bureau of Asian Research and incorporating data from the College of William & Mary AidData project, the Johns Hopkins School of Advanced International Studies China-Africa Research Initiative (SAIS-CARI), and the websites and annual reports of the Chinese firms cited, websites of African nations' port authorities, and industry media reporting.

³ Isaac Kardon and Wendy Leutert, "Pier Competitor: China's Power Position in Global Ports," *International Security* 46, no. 4 (2022): 9–47.

Background

The diverse political, geographic, and geologic realities of Africa yield considerable variety in China's port projects. PRC firms are developing automated container ports designed for rapid transshipment; bulk mineral ports fed by rail from inland copper, bauxite, and iron ore mines; and specialized terminals for petroleum, livestock, grain, and industrial fishing. A brief look at where these ports are located, the types of cargo they move, and the nature of PRC involvement will set the table for subsequent analysis of why China has so energetically pursued Africa's ports.

Geographic Distribution

Chinese firms have built, financed, invested in, or operated one or more port terminals at 61 separate port facilities in 30 African states. This leaves only eight coastal or island African states that do not host some PRC port infrastructure.⁴ Another sixteen African states are landlocked and thus ineligible for deepsea ports—but, crucially, their markets and resources become more accessible with new ports and their hinterland transport infrastructure.⁵ PRC firms' involvement in 61 of an estimated 231 commercial ports in Africa establishes a Chinese presence in over a quarter of all ports on the continent, a substantially higher level than observed anywhere else in the world.⁶

PRC firms are most active on the less developed Atlantic and Indian Ocean coasts. West Africa hosts the greatest concentration of Chinese port projects, with 33 located on the long Atlantic coastline (see **Figures 1** and **2**, as well as **Table 1** in the **Appendix** for detail on individual projects in Africa). Bulk terminals for exporting minerals are more prevalent in this region, which holds much of the bauxite, cobalt, copper, and other critical mineral inputs that motivate China's involvement. There are, however, an increasing number of PRC-developed, modern, and partially automated container facilities (e.g., in Lomé in Togo and Lekki in Nigeria). East Africa is the second most concentrated region, with 17 ports and direct exposure to vital Indian Ocean sea lanes and transshipment routes through the Suez Canal to and from rich Mediterranean markets. The Horn of Africa, in particular, hosts several of China's most ambitious port projects, integrating major rail and industrial development across coastal and landlocked states (e.g., Djibouti-Ethiopia and Kenya-Sudan-Ethiopia). North Africa is the third most common location, with 9 PRC ports, 4 of them located in Egypt focusing on container trade transiting the Suez Canal. Finally, Southern Africa hosts the lightest and least complicated PRC port footprint, with only 3 sites—2 in Namibia and 1 in South Africa.

Port Construction

Chinese firms have been contracted to construct and engineer in at least 55 of the 61 ports with PRC presence. While there is no reliable aggregate data on the comparative presence of other countries' firms in the port sector, China is evidently the largest infrastructure construction player in Africa (as well as in most of the developing world). One study estimates that Chinese firms

⁴ These are Benin, Comoros, the Democratic Republic of Congo, Liberia, Libya, Mauritius, Seychelles, and Somalia.

⁵ Inland river ports are relevant in some economies—China's, in particular—but have not been the object of substantial Chinese attention in Africa and are excluded from the scope of this inquiry.

⁶ Guo Jie and Liu Yuan, "Woguo qiye touzi Feizhou gangkou de xingshi fenxi" [Analysis of the Situation of Chinese Enterprises Investing in African Ports], *Economic Observer* 4 (2018): 31.

FIGURE 1 Geographic distribution of PRC port projects in Africa

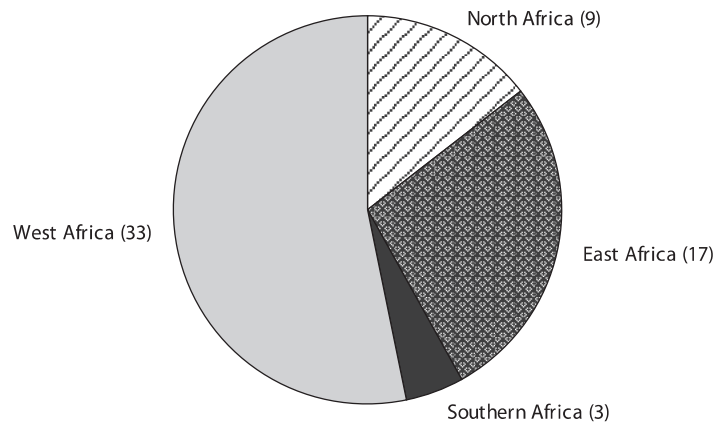
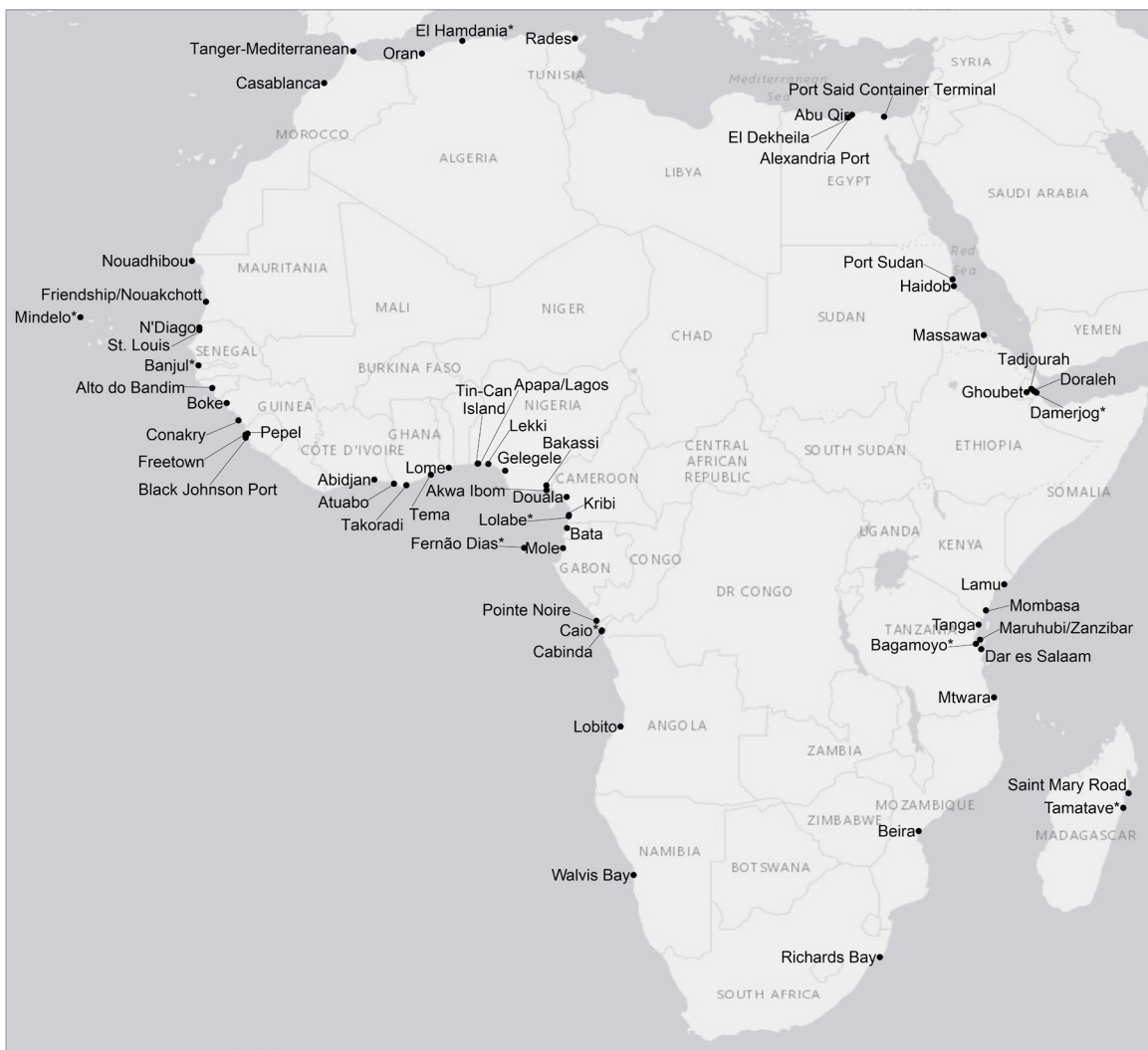


FIGURE 2 PRC port projects in Africa



held a 61% market share for such contracts in 2020, up from less than 10% in 2002.⁷ Official PRC data claims that Chinese firms “accounted for 31.4% of all infrastructure projects on the African continent in 2020.”⁸ These are not necessarily conflicting statistics, as “contracts” and “projects” are different metrics. Indeed, Chinese port projects typically roll through multiple phases and a series of contracts and subcontracts associated with them: dredging harbors; building or expanding breakwaters, piers, and wharves; installing cranes and other heavy equipment; extending berths; and all manner of other hydraulic and mechanical engineering tasks.

The China Communications Construction Corporation (CCCC) has been by far the most prominent player in the African port construction space, winning contracts in at least 38 ports. CCCC is a central SOE group⁹ composed of a host of subsidiaries that specialize in various aspects of infrastructure design, construction, and operations that have collectively undertaken projects in 46 African countries.¹⁰ Among them, the China Harbour Engineering Corporation (CHEC) is the most significant actor in ports, participating in 30 of the 38 CCCC projects.¹¹ CHEC has been particularly ambitious in moving beyond simple engineering, procurement, and construction (EPC) contracts, branching out into direct ownership and operations (e.g., in Kribi in Cameroon and Lekki in Nigeria).¹²

Finance

PRC financial institutions have offered commercial or concessionary loans or issued resource-backed credits at 25 of the 61 ports. Such financing has been offered only in cases where a Chinese firm was also contracted for construction. This constant conjunction of PRC capital and PRC contractors indicates that the undisclosed financing terms likely require borrowing nations to contract with Chinese firms. PRC financial institutions committed to (though they have not necessarily disbursed) around \$50 billion in loans for transport infrastructure in Africa from 2000 to 2019.¹³ The Export-Import Bank of China (China Exim Bank) is the most active Chinese lender in African ports, issuing credit in at least 16 of the 25 PRC-financed projects. China Development Bank (CDB), another PRC policy bank, accounts for 4 projects in West Africa.¹⁴

Ownership

A PRC firm holds some form of equity (typically in the corporation that holds the lease to operate a port terminal) in 28 of the 61 port projects. In all but six cases, this ownership stake includes some role in construction of the port; in all but ten, the firm is also involved in operation and management. There are only three cases in which a Chinese firm has made a pure portfolio

⁷ Hong Zhang, “Chinese International Contractors in Africa: Structure and Agency,” SAIS-CARI, Working Paper, no. 47, May 2021, 6.

⁸ State Council Information Office (PRC), “China and Africa in the New Era.”

⁹ A “central SOE” is one of 97 large conglomerates that are directly owned, administered, and supervised by the central government through the State-owned Assets Supervision and Administration Commission.

¹⁰ Liang Qingshan, “Kaifa Feizhou gongcheng chengbao shichang de sikao” [Thoughts on Developing the African Contracting Market], *International Project Contracting and Labor Service* 9 (2019): 30–32.

¹¹ This includes ports at which CHEC executed multiple contracts, invested, and played a role in operation of a few long-term ventures.

¹² Cheng Cheng and Zhang Tian, “Jiaozhu Feizhou gangkou yunying” [Competing for African Port Operations], *China Investment* 4, no. 8 (2018): 56–57; and Yang Zhongzhen et al., “China’s Investment in African Ports: Spatial Distribution, Entry Modes and Investor Profile,” *Research in Transportation Business and Management* 37 (2020).

¹³ China Africa Research Initiative, “Chinese Loans to Africa Database,” <https://chinaafricaloandata.bu.edu>.

¹⁴ These are state-owned banks that are responsible for implementing state policy on development, trade, and investment. China Exim Bank was established in 1994 with the core mission of supporting the export of China’s machinery and electronic products. See Lei Zuhua, “Zhongguo jinchukouyinhang huigu yu zhanwang” [Review and Outlook of the Export-Import Bank of China], *China Finance*, no. 6 (1995): 22–23.

investment in an African terminal and holds no other interest in the project.¹⁵ By and large, Chinese firms seek equity in port assets when they are involved in some way with its construction and operations. Such direct investment in a port creates a vested interest in its success and facilitates the integration of PRC firms' ventures in a given country or region.

Operations

PRC firms hold operating concessions or leases at 17 of the 61 sites. These operational roles are in all cases accompanied by some level of equity ownership; the reverse is not true, and is not even permitted in many jurisdictions that forbid foreign operators. A study by CDB analysts estimates that African states exercise public control over operations in 50%–70% of ports in Africa through transportation ministries, port authorities, and other public entities.¹⁶ Over time, many traditional port authorities have privatized all or part of their facilities, but this process is slow and has excluded China from a major business in key markets that it would otherwise almost surely pursue (South Africa, for example).

The operation of one or more terminals offers the most significant level of control that a firm may have over the use of port infrastructure. Such arrangements vary by jurisdiction, and their detailed terms are seldom disclosed. As a general matter, though, a PRC firm holding an operating lease or concession may determine the allocation of pier and yard space, accept or deny port calls, and generally manage the use of the facility. Operational control also allows the firm to determine whether and when it will allocate commercial pier and yard space for military uses, or whether to offer preferential rates and services for Chinese vessels and cargo.

Overall, the laydown of Chinese ports in Africa—that is, facilities at which a PRC enterprise has built, bought, managed, or financed some part of the port—is geographically extensive, with significant presence in every region. Among the 61 separate ports are a diverse mix of project types, including modern deepwater container terminals, bulk mineral and oil terminals, and fishing ports. China's position in African ports is substantial and growing, but its broader purpose is far from clear.

Analysis

Why has China sought to play such a significant role in the development and operation of African ports? Some insights may be gleaned from official documents and statements, as well as commentary by industry and academic experts in China. These sources help explain PRC firms' motivations to become Africa's leading port-builders and prominent financiers, owners, and operators of its port terminals. Chinese companies clearly pursue commercial gain, but are also evidently incentivized to align their port projects with Beijing's economic, political, and strategic priorities.

The factors pushing and pulling PRC firms into African ports may be stylized in terms of supply and demand. There are certain economic pulls (i.e., demand factors) that both make

¹⁵ China Merchants Port has a 49% stake in the French firm Terminal Link, which operates the facilities at Abidjan (Côte d'Ivoire), Casablanca (Morocco), and Tanger-Med (Morocco). See "CMA CGM Signs Binding Deal with China Merchants Port to Sell Ten Port Terminals to Terminal Link," PortSEurope, December 23, 2019, <https://www.portseurope.com/cma-cgm-signs-binding-deal-with-china-merchants-port-to-sell-ten-port-terminals-to-terminal-link>.

¹⁶ Guo and Liu, "Woguo qiye touzi Feizhou gangkou," 32.

maritime transport a priority for Chinese firms and make Africa an especially attractive target for developing and operating trade infrastructure like ports. Meanwhile, PRC firms are also motivated by pushes (i.e., supply factors) from China, which include overcapacity in key sectors and various financial incentives. But, critically, a big push comes from central political inducements to make ports the platform for PRC economic, political, and military access across Africa.

The Demand for Ports in Africa

China's push to develop African ports is in large part a response to a widely recognized commercial demand signal. Africa has abundant natural resources and a large, growing consumer base but lacks "adequate transport infrastructure and services...including maritime transportation connectivity," according to the UN Conference on Trade and Development.¹⁷ International development agencies, banks, consultancies, and industry players see demand for ports in Africa as substantial and growing.¹⁸ The African Development Bank estimates that delays and poor management raise handling costs at African ports an average of 50% over global rates.¹⁹

As Africa's largest trading partner since 2009, China feels the increased costs imposed by inadequate infrastructure with special intensity.²⁰ Arguably, China stands to benefit the most from reducing transport costs on its huge and growing trade with Africa. China gains as much as \$13 in trade revenues for every \$1 invested in ports, according to one study.²¹ Meanwhile, a CHEC study estimates that delays at African ports add an additional 10% to transport costs, and that these costs average 12.7% higher in Africa than elsewhere in the world.²² Researchers at Dalian Oceans University point out that virtually all China-Africa trade is maritime, while air freight is, and will remain, underdeveloped.²³

Chinese analysts and officials thus naturally view Africa as a prime port market. They cite its low existing infrastructure base, its appealing demographics, and the wide geographic distribution of its markets and resources—many of which are inland and far from existing hub ports.²⁴ CHEC researchers describe Africa as a potential "template" for its overall economic approach in the developing world, which hinges on large trade volumes moved at minimal cost and the introduction of manufacturing and industrial production connected to the transport network.²⁵ CCCC engineers take a more specified view of where demand is on the continent, noting that the economic conditions of port hinterlands, national economic structures and resource endowments, and the specific geographic and hydrographic conditions of the ports or port sites are critical factors that have historically limited African port development and require careful planning.²⁶

¹⁷ UN Conference on Trade and Development (UNCTAD), *Review of Maritime Transport 2020* (New York: UN Publications, 2020), 20.

¹⁸ Francois Botes and Stacey Buck, "Strengthening Africa's Gateways to Trade: An Analysis of Port Development in Sub-Saharan Africa," PricewaterhouseCoopers, April 2018, 4.

¹⁹ African Development Bank, *Tracking Africa's Progress in Figures* (Abidjan: African Development Bank, 2014), 50–54.

²⁰ State Council Information Office (PRC), "China and Africa in the New Era."

²¹ Botes and Buck, "Strengthening Africa's Gateways to Trade," 2.

²² Cheng and Zhang, "Jiaozhu Feizhou gangkou yunying," 56.

²³ Wang Jie, Wang Chunhui, and Fei Peng, "Zhongguo yu Feizhou haiyun hezuo jianxi" [A Brief Analysis of Maritime Cooperation between China and Africa], *China Water Transport* 19, no. 2 (2019): 39–40.

²⁴ Huang Meibo and Wang Xiaoyang, "Feizhou gangkou shichang jingzheng huanjing ji ZhongFei gangkou hezuo" [African Port Market Competitive Environment and China-Africa Port Cooperation], *Development Finance Research* 5, no. 33 (2020): 53–69.

²⁵ Huang Zhi and Zhong Jie, "Jingwai qianfada diqu gangkou xiangmu fazhan de fenxi" [Analysis of Port Project Development in Developing Areas Overseas], *China Water Transport* 19, no. 7 (2019): 44–45.

²⁶ Guo Xiujuan and Shen Yongfeng, "Feizhou gangkou fazhan geju ji qushi fenxi" [Development Status and Trends in African Ports], *Port and Waterway Engineering* 9, no. 560 (2019): 129–34.

In aggregate, there are substantial demand-side drivers for Chinese firms to invest in the continent with the world's lowest share of maritime trade and largest stores of unexploited natural resources.²⁷ China brings huge scale advantages, insatiable demand for African resources, and an export machine that is always seeking growth into new consumer markets. These are conditions that led CHEC chair and party secretary Lin Yichong to claim that “demand for ports in Africa will inevitably further increase.”²⁸ Chinese firms are uniquely positioned to supply the capital, manpower, and expertise to meet this demand.

The Supply Side of China's Port Ambitions in Africa

General Secretary Xi Jinping has remarked that “there's a common saying, ‘if you want to get rich, first build a road,’ but in coastal areas, if you want to get rich, you also need to build a port.”²⁹ Xi, like other Chinese leaders, has long promoted ports connected to roads and rail as the basic platform for economic development.³⁰ Chinese economic planning prioritizes ports as fundamental to the “construction of a strong transport nation,” as emphasized in the authoritative 14th Five-Year Plan (2021–25) and its various supporting official documents.³¹ As in domestic industrial policy, Chinese leaders also promote ports in their international development plans. This clear priority introduces a set of powerful supply-side forces—that is, motivations originating within PRC officialdom that actively push domestic firms to build and control ports abroad.

China's domestic political economy creates the conditions of supply for port development that do not exist elsewhere in the world. Put simply, Chinese firms—especially huge SOE groups—are in a unique position to export their engineering and construction services and industrial capacity to Africa. They are in this position in large part because domestic policies undertaken over the course of decades have built up excess capacity in several industrial sectors.³² Chinese firms have developed formidable commercial strengths in construction, engineering, and operations through their work expanding and modernizing China's domestic roads, railways, pipelines, airports, and seaports over the course of the reform era. These efforts supported an export-led growth model that has made China the world's largest trading nation and made its ports and maritime transport an area of particular strength and capacity. Some 31 of the world's top 50 ports by total cargo tonnage, and 7 of the 10 highest throughput container ports, are located within the PRC.³³ To appreciate this scale, consider the observation of a CDB study that a single Shanghai port moves

²⁷ UNCTAD, *Review of Maritime Transport 2020*, 5.

²⁸ Yang Haixia, Zhang Mei, and Pei Andi, “Lin Yichong: Feizhou gangkou de xiandaihua cai ganggang kaishi” [Lin Yichong: The Modernization of African Ports Has Just Begun], *China Investment* 8 (2018): 32–38.

²⁹ “Xi Jinping Guangxi kaocha: Xiehao xin shiji haiyang Sichouzhi lu xin bianzhang” [Xi Jinping on Guangxi Inspection: Write a New Chapter for the New Century's Maritime Silk Road], *Xinhua*, April 19, 2017, http://www.xinhuanet.com/politics/2017-04/19/c_129552538.htm.

³⁰ Ministry of Transport (PRC), “Da pingtai chu zhengce hang jichu po nandian” [Build a Platform, Lay Out Policies, Lay a Solid Foundation to Break Through Difficulties], November 3, 2021, https://www.mot.gov.cn/jiaotongyaowen/202111/t20211103_3624286.html.

³¹ “Zhonghua renmin gongheguo guomin jingji he shehui fazhan di shisi ge wu nian guihua he 2035 nian yuanjing mubiao gangyao” [Outline of the People's Republic of China's 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035], March 12, 2021, http://www.xinhuanet.com/2021-03/13/c_1127205564.htm; and “Shisiwu xiandai zonghe jiaotong yunshu tixi fazhan guihua” [14th Five Year Plan for the Development of a Modern, Comprehensive Transportation System], December 9, 2021, http://www.gov.cn/zhengce/content/2022-01/18/content_5669049.htm.

³² “Guanyu jianjue ezhi channeng yanzhong guosheng hangye mangmu kuozhang de tongzhi” [Notice on Resolutely Curbing the Blind Expansion of Industries with Severe Overcapacity], National Development and Reform Commission (PRC) and Ministry of Industry and Information Technology (PRC), May 10, 2013, https://www.ndrc.gov.cn/xwdt/gdzt/hjcnyszgsm/zcjd/201310/t20131031_1197937.html?code=&state=123.

³³ “One Hundred Ports 2021,” Lloyd's List, <https://lloydslist.maritimeintelligence.informa.com/-/media/lloyds-list/images/top-100-ports-2021-top-100-ports-2021-digital-edition.pdf>; and Drewry Maritime Research Services (proprietary data on file in author database).

over 30% more shipping containers than do all African ports combined, whose throughput is roughly equal to that of the port of Shenzhen.³⁴

China is saturated with modern ports; the opposite is true in Africa. Over the course of its export-led boom years from the 1980s into the 2000s, every city mayor worthy of the title needed to have a new port terminal to support local trade and industry.³⁵ China is now offering this same model to eager African leaders, promising to create a new Shenzhen or Dubai on the strength of ports integrated into local transportation and industry.³⁶ With huge cargo volumes flowing through Chinese ports, shipped on Chinese carriers, and often going to and from Chinese commercial enterprises overseas, there is a self-reinforcing logic to the externalization of China's tremendous domestic port capacity. This happy marriage of supply and demand, however, does not fully capture the political forces that have mobilized PRC firms to “go out” and develop ports in Africa.

Programmatic Political Aims to Leverage Ports

Central leadership objectives are the essential factors in shaping the supply of PRC built, owned, and operated ports in Africa. Beginning with the “go out strategy” of the late 1990s, Chinese firms were politically encouraged and financially incentivized to seek out foreign markets.³⁷ This process played out with particular intensity in Africa, where the demand-side conditions addressed above made it a highly attractive location for PRC firms. This priority is reaffirmed in Xi Jinping's signature Belt and Road Initiative (BRI) and its 21st Century Maritime Silk Road subcomponent, which have become the banner for Chinese firms operating across the continent. Underpinning BRI's hazily defined vision in which “Chinese enterprises will be guided to participate in the construction and operation of ports” is a set of specific political inducements for firms to concentrate their resources into priority regions and sectors.³⁸

Africa is one such priority region, and port firms promote themselves as “platform companies” capable of achieving the varied political and economic priorities articulated by Chinese leadership.³⁹ As Beijing's most recent white paper on Africa puts it, one such political-economic goal is “to transform China-Africa infrastructure cooperation to a wholly integrated model covering investment, construction and operation.”⁴⁰ Just as they have done domestically, PRC firms seek to internationally integrate their port projects to own and operate the facilities they build for the long term and link up with other firms to build out vertical connections to inland transport, services, and industries or overseas shipping and trade.

These efforts advance high-level priorities for ports abroad like those articulated in the 13th Five Year Plan (2016–21). That authoritative economic blueprint urged firms to “actively

³⁴ Guo and Liu, “Woguo qiye touzi Feizhou gangkou,” 31.

³⁵ Viviana Zhu, “Large but Not Strong: The Challenges for China's Domestic Ports,” Institut Montaigne, June 27, 2019, <https://www.institutmontaigne.org/en/blog/china-trends-2-large-not-strong-challenges-chinas-domestic-ports>.

³⁶ See, for example, Kong Xiaoqing, “Zhaoshang Gangkou fazhan ‘Shekou moshi’ de xingcheng” [Formation of the China Merchants Port “Shekou Model” of Development], *National Oceans Navigation*, November 2017, 39–54; He Jijiang and Liu Ning, “Shekou Moshi: yizhong shehui jishu chuangxin” [Shekou Model: A Type of Social Innovation of Technology], *Special Economic Zone Economics*, no. 12 (2014): 53–57; and Deng Yangzi, “Building the Shekou of East Africa,” *China Daily*, March 27, 2017, https://www.chinadailyasia.com/asiaweekly/2017-03/27/content_15592240_2.html.

³⁷ State Council Information Office (PRC), “Genghao de shishi ‘zouchuqu’ zhanlve” [Better Implement the “Going Out” Strategy], March 15, 2006, http://www.gov.cn/node_11140/2006-03/15/content_227686.htm.

³⁸ National Development and Reform Commission (PRC) and State Oceanic Administration (PRC), “Vision for Maritime Cooperation Under the Belt and Road Initiative,” *Xinhua*, June 20, 2017, http://english.www.gov.cn/archive/publications/2017/06/20/content_281475691873460.htm.

³⁹ Yang, Zhang, and Pei, “Lin Yichong: Feizhou gangkou.”

⁴⁰ State Council Information Office (PRC), “China and Africa in the New Era.”

advance the construction of maritime strategic strongpoints along the 21st Century Maritime Silk Road, participate in the building and operation of major ports along the road, and promote the joint development of industrial clusters around these ports to ensure that maritime trade routes are clear and free-flowing.⁴¹ As this five-year plan got underway in 2016, the PLA Navy commander, Wu Shengli, embraced “overseas strategic strongpoint construction” as a key enabler for overseas naval operations.⁴² These “strategic strongpoint” ports are not envisioned as stand-alone projects but rather as platforms for building and sustaining an integrated Chinese presence.

Policy is driving integration not only among firms but also between firms and the PRC officials who guide firms’ activity toward political objectives. One leading analyst observes that “most of the Chinese firms that participate in overseas port construction belong to large SOEs whose objectives have a high degree of consistency with the government’s external strategic objectives.”⁴³ In effect, he writes elsewhere, “the aims are to meet corporate interests and the needs of target countries, as well as to expand China’s political influence” through “government-enterprise coordination” and “government coordination with the host country.”⁴⁴ Industry leaders show enthusiasm for advancing national interests, with the secretary-general of the China Ports Association going so far as to ask “relevant national departments...to identify priority locations for ports along the BRI route...[and] promote the internal alliance of Chinese-funded enterprises to form a joint force, and go out to provide full-process services from dock design and construction to port production and operation, while avoiding bidding competition and promoting complementary advantages.”⁴⁵

With the state serving to coordinate and deconflict entrants into the African market, PRC firms are mobilized to particular locations and paired together to achieve the investment-construction-operation integration trifecta detailed in official documents.⁴⁶ This coordinated approach consolidates Chinese commerce and investment around ports, which are necessary conduits for trade flows and serve as platforms for follow-on PRC investment in related transportation and communications infrastructure. The details of a few specific cases help illustrate the wide-ranging political, economic, and strategic effects of China’s distinctive approach to port development in Africa.

Djibouti. The tiny nation of Djibouti on the Horn of Africa provides an acute example of PRC port development integrating various Chinese actors in support of wider national objectives. The key project in this case is the Doraleh multipurpose port, an asset of the 2012 joint venture between a subsidiary of the central SOE China Merchants Group (CMG) and the Djibouti Ports and Free Zones Authority, a government entity.⁴⁷ Although CMG is a minority shareholder (23.5%) in the venture, it has served as the central, coordinating player for China’s finance, development,

⁴¹ *The 13th Five-Year Plan for Economic and Social Development of the People’s Republic of China* (Beijing: Central Compilation and Translation Press, 2016), chap. 51, <http://en.ndrc.gov.cn/newsrelease/201612/P020161207645765233498.pdf>.

⁴² Conor Kennedy, “Strategic Strongpoints and Chinese Naval Strategy,” Jamestown Foundation, China Brief, March 22, 2019, <https://jamestown.org/program/strategic-strong-points-and-chinese-naval-strategy>.

⁴³ Sun Degang, “Zhongguo gangkou wajiao de lilun yu shijian” [China’s Port Diplomacy in Theory and Practice], *World Economics and Politics* 5 (2018): 4–32.

⁴⁴ Zou Zhiqiang and Sun Degang, “China’s Seaport Diplomacy in the Eastern Mediterranean: Features, Dynamics and Prospects,” *China: An International Journal* 19, no. 4 (2021): 102.

⁴⁵ Ding Li, “Yi gangkou wei zhanlue zhidian shuxie 21 shiji haishang Sichouzhilu jianshe xinpianzhang” [Writing a New Chapter in the Construction of the 21st Century Maritime Silk Road with Ports as the Strategic Strongpoint], *China Ports* 7 (2018): 4. The author is the secretary-general of the China Ports Society.

⁴⁶ The November 2021 China-Africa white paper calls for “transform[ing] China-Africa infrastructure cooperation to a wholly integrated model covering investment, construction, and operation.” See State Council Information Office (PRC), “China and Africa in the New Era.” For further exploration of this goal of integration, see Sun Haiyong, “Zhongguo canyu Feizhou gangkou fazhan: Xingshi fenxi yu fengxian guankong” [China’s Participation in African Port Projects: Progress and Risk Control], *Pacific Journal* 26, no. 10 (2018): 67–78.

⁴⁷ “Voluntary Announcement: Acquisition of 23.5% Interests in Joint Venture in Djibouti,” China Merchants Holdings (International) Company Limited, December 30, 2012, <https://www1.hkexnews.hk/listedco/listconews/sehk/2012/1230/ltn20121230025.pdf>.

construction, and operation of several port facilities in Djibouti and a raft of connected projects past the pier. These include an international free trade zone for export processing and logistics; a major railroad to Addis Ababa, the capital of land-locked Ethiopia, built by PRC state-owned contractors; an undersea fiber-optic cable built by Huawei; an international airport; water and natural gas pipelines; and a range of other infrastructure and service ventures.⁴⁸

The initial port infrastructure seeded what amounts to a Chinese business ecosystem in Djibouti. CMG executives claim that their port “provides a platform for Chinese-funded enterprises to feel in this region a similar investment environment that they experience in China.”⁴⁹ The PLA is only one of many PRC party-state entities using this platform to gain a foothold in an economically and strategically vital location astride the major sea lane linking Asia with Europe. PLA Navy surface vessels calling on the “Djibouti Support Base” share pier space with the multipurpose facility that flanks its northeast.⁵⁰ They further share an organizational preference for the transport, logistics, finance, and other major services in Djibouti to be modern, accessible, and run by like-minded compatriots. CMG recently agreed to finance and develop the old port at Djibouti, promising further consolidation of the PRC position in Djibouti’s maritime transport sector.⁵¹ Leading Chinese analysts consider Djibouti a model for successful integrated development and a transportation hub that “radiates” Chinese commercial power and access across other countries in East Africa, including Kenya.⁵²

Kenya. China also has ambitious port projects underway in Mombasa and Lamu, Kenyan ports that face the Indian Ocean sea lanes connecting China to Africa. As in Djibouti, a major part of Kenyan ports’ appeal lies in the prospects for providing international maritime transport to landlocked areas. Industry analysts consider Kenya a potential gateway to vast, underserved markets and untapped resources in Ethiopia, South Sudan, Uganda, Rwanda, Zambia, Burundi, Zimbabwe, and Malawi.⁵³ Unlike in Djibouti, however, Kenya’s government has retained control of its critical infrastructure, with a government entity as the sole owner and operator for all the nation’s ports.⁵⁴

PRC firms are major players in construction and finance, but not in the ownership and operation of ports in Kenya. CCCC has been a dominant force in Kenyan infrastructure

⁴⁸ For a detailed study of the ports and their associated infrastructure, see Peter Dutton, Isaac Kardon, and Conor Kennedy, “Djibouti: China’s First Overseas Strategic Strongpoint,” China Maritime Studies Institute, China Maritime Report, no. 6, April 2020, <https://digital-commons.usnwc.edu/cmsi-maritime-reports/6>.

⁴⁹ Gao Jianhong, “Shekou Moshi 4.0’ luodi Jibuti Zhaoshangju yanxing chuhai” [“Shekou Model 4.0” Lands in Djibouti, China Merchants Geese Go to Sea], Sohu, July 5, 2017, https://www.sohu.com/a/154540170_115124.

⁵⁰ Based on EV Digital Globe imagery, the Djibouti base naval pier was completed in April 2021, but as late as December 2021, PLA Navy vessels still used the commercial Doraleh multipurpose terminal next door. See “Wo haijun di 39 pi huhang biandui wancheng shouci kaogang wuzi buji” [Our Navy’s 39th Escort Task Force Completes Its First Port Call to Resupply], Xinhua, December 4, 2021, http://www.news.cn/mil/2021-12/04/c_1211473531.htm. In March 2022 a PLA Navy vessel made the first call at the navy pier. See H.I. Sutton, “Chinese Navy Ship Seen at Important African Base for First Time,” Covert Shores, March 26, 2022, <http://www.hisutton.com/OSINT-China-Navy-Ship-Djibouti.html>. See also Dutton, Kardon, and Kennedy, “Djibouti,” 32.

⁵¹ Jevans Nyabiage, “China Merchants Signs US\$350 Million Deal for Shekou-Style Revamp of Djibouti Port,” *South China Morning Post*, January 5, 2021.

⁵² Zhang Hongming, ed., “Feizhou fazhan baogao (2018–2019)” [Africa Development Report (2018–2019)], in *Feizhou Huangpishu* [Africa Yellow Book], no. 21 (Beijing: Social Sciences Press, 2019), 294.

⁵³ Yang Yao, Zhao Shuai, and Qing Zhendong, “Yidai Yilu zhanlüe xia Zhongguo zai dongFei gangkou de buju fenxi” [Analysis of China’s Port Layout in East Africa under the Belt and Road Strategy], *Transportation Enterprise Management* 5 (2017): 1–3.

⁵⁴ See the “Kenya Ports Authority Handbook 2020,” 10, available at <https://www.landmarine.org/lm/kenya-ports-authority-handbook-2020>. In Djibouti, Chinese entities own and operate critical infrastructure (including the ports, rail, and pipeline systems). They have even been contracted to perform a variety of government services, including civil servant wage distribution, pension payments, and business taxes. See State Council Information Office (PRC), “Jibuti Silu Guoji Yinhang zhengshi chengli zhu li Yidai Yilu jinrong jichu sheshi jianshe” [The Silk Road International Bank in Djibouti Officially Established, Will Assist in Financing One Belt One Road Infrastructure Investment Projects], November 17, 2016, <http://www.scio.gov.cn/ztk/wh/slxxy/31208/Document/1519779/1519779.htm>.

construction in recent years, currently holding nearly \$7 billion in contracts.⁵⁵ Among the major projects is the new Kipevu Oil Terminal at Mombasa port, which Wang Yi visited upon its January 2022 completion.⁵⁶ The facility abuts the first PRC port project undertaken in Kenya, a modern container terminal built by a CCCC subsidiary in 2013 that transformed Mombasa into East Africa's largest port.⁵⁷ Still, CCCC engineers criticize the Kenya Ports Authority for its inefficient use of the facility, noting that Mombasa's throughput is "comparable to that of ordinary river ports in China."⁵⁸

Further north, the recently opened port of Lamu is the putative (but so far unsuccessful) solution to the capacity limitations at Mombasa.⁵⁹ It is the site of yet another major CCCC construction initiative. After completing the initial 3 berths of the planned 32-berth megaport, CCCC also contracted to build roads from Lamu inland as part of the Lamu Port–South Sudan–Ethiopia Transport (LAPSSET) corridor project.⁶⁰ While LAPSSET is not itself a Chinese program, CCCC is the prime contractor and may position other Chinese companies to own and operate the infrastructure, which Kenya plans to privatize in order to make it competitive.⁶¹

Chinese banks, at least, are reportedly in position to make claims to own Kenyan port infrastructure. The Standard Gauge Railway (SGR) project was financed by a loan from China Exim Bank, much of it used to pay a CCCC subsidiary for construction on the new line from Mombasa to Nairobi. A leaked Kenyan auditor-general report alleged that the loan was collateralized against the assets of the Kenya Ports Authority, making the Mombasa port a potential object of seizure should Kenya default on the loan.⁶² Kenyan and Chinese authorities have vigorously denied that this is an accurate characterization of the undisclosed loan terms.⁶³ Since then, China Exim Bank has agreed to a pandemic payment holiday for the loan vehicle and has evidently not seized any port assets, even if it is entitled to do so.⁶⁴

However the debt service on the SGR loan develops, Chinese firms are positioned to continue building out Kenya's ports and integrating them with ambitious schemes to achieve regional transport connectivity. The PLA is less conspicuously active in Kenya but undertook one of only a small handful of overseas "technical stops" with a naval surface vessel at Mombasa port in 2019.⁶⁵ As the ports of Lamu and Mombasa continue to develop under Chinese contracts, Kenya need not

⁵⁵ Otiato Guguyu, "Handful Chinese Firms Snap \$8.8 Billion Contracts," *East African*, January 5, 2022, <https://www.theeastafrican.co.ke/tea/business/handful-chinese-firms-snap-8-8-billion-contracts-3672770>.

⁵⁶ Ministry of Foreign Affairs (PRC), "Wang Yi: Biyibi shei wei Feizhou renmin fuchu gengduo de hanshui he xinlao" [Wang Yi: Compare Who Has Spent More Sweat and Hard Work for the African People], January 7, 2022, https://www.mfa.gov.cn/wjzbhd/202201/t20220107_10479751.shtml.

⁵⁷ "Yidai Yilu hao tongdao: Dong Fei di yi dagang Mengbasa gang" [A Good Channel for the Belt and Road: Mombasa Port, the Largest Port in East Africa], *Xinhua*, January 14, 2017.

⁵⁸ Zhan Meng, Yue Yao, and Feng Tongjun, "Feizhou donghai'an gangkou fazhan xianzhuang ji tedian fenxi" [Analysis of the Current Situation and Characteristics of Port Development on the East Coast of Africa], *Transportation Enterprise Management* 1 (2019): 22.

⁵⁹ "CMA CGM Seeks Concessions for Sending Ships to Lamu Port," *Maritime Executive*, July 13, 2021, <https://www.maritime-executive.com/article/cma-cgm-seeks-concessions-for-sending-ships-to-lamu-port>.

⁶⁰ "Kenya Signs Deal with Chinese Firm to Construct Regional Road," *Xinhua*, April 20, 2021, http://www.xinhuanet.com/english/2021-04/20/c_139894015.htm.

⁶¹ "Kenya's Lamu Port Construction of 3 Berths Completed," *Construction Review*, August 14, 2021, <https://constructionreviewonline.com/news/kenya/kenyas-lamu-port-construction-of-3-berths-completed>.

⁶² China Aid Data, "Project ID: 37103," <https://china.aiddata.org/projects/37103>.

⁶³ Embassy of the PRC in the Republic of South Africa, "Kenyatta: China's 'Takeover' of Mombasa Port Is Pure Propaganda," December 29, 2018, http://za.china-embassy.org/eng/zfgxss/zyjw/201812/t20181229_7688618.htm.

⁶⁴ Jevans Nyabiage, "China, Kenya Agree Repayment Holiday on US\$245 Million Worth of Debt," *South China Morning Post*, January 23, 2021.

⁶⁵ Wang Guanbiao, "Zhongguo haijun di 33 pi huhang bianhui Weifang jian jishu tingkao Kenniya Mengbasa gang" [The 33rd Chinese Naval Escort Taskforce Weifang Technically Docks at the Port of Mombasa, Kenya], *Liberation Army Daily*, December 9, 2019, 4.

militarize like Djibouti for it to advance other PRC objectives to secure commercial and strategic access to East Africa.

Equatorial Guinea. The coordinated efforts of PRC SOEs in and around ports have played an instrumental role in China's deepening relationship with Equatorial Guinea. The small, oil-rich nation on Africa's Atlantic coastline may even have reached an agreement to host PLA forces at port facilities built and financed by Chinese firms.⁶⁶ Whether or not a Chinese military base is eventually established in Equatorial Guinea, the case highlights the strategic opportunities that the PRC has created through development of critical port infrastructure in Africa.

Equatorial Guinea has borrowed extensively from Chinese lenders and contracted to build nearly \$20 billion in infrastructure with Chinese firms, making them the nation's largest project contractors.⁶⁷ CCCC is again the major player in national port development, primarily through its subsidiary China Road and Bridge Corp (CRBC). In 2007, CRBC inked a contract for Bata port's restoration and expansion, financed by a subsidiary loan drawing on a \$2 billion oil-backed buyer's credit established by China Exim Bank in 2006.⁶⁸ By the time the port project was completed in 2014, this debt instrument accounted for "nearly all of the Government of Equatorial Guinea's external debt" and facilitated other loans for an international airport, various roads, power plants and grids, a hotel, and a range of other projects, including military barracks.⁶⁹ Drawing on substantial oil revenues, Equatorial Guinea has continued to borrow from Chinese lenders (at least another \$2.5 billion) and used some of these funds to further develop the port at Bata.⁷⁰

As in Kenya, no PRC firm owns or operates the port, but the host nation depends on Chinese capital and expertise for the use and development of the facility. A governmental port authority operates the new terminal, though only after Chinese technicians trained and equipped their African partners and gradually facilitated "self-management" of Bata port.⁷¹ Engineers from CRBC describe this as one instance of broader efforts to "promote the use of Chinese standards in overseas projects...[and] proactively explain the detailed specifications to owners in order to eliminate their doubts and worries."⁷² Equatoguinean government and business leaders, for their part, have also been eager suitors of PRC infrastructure and investment. Long-serving president Teodor Obiang has made very frequent, public visits to the Bata facility and repeatedly traveled to Beijing to meet with Chinese SOE leaders and officials.⁷³

⁶⁶ Michael M. Phillips, "China Seeks First Military Base on Africa's Atlantic Coast, U.S. Intelligence Finds," *Wall Street Journal*, December 5, 2021.

⁶⁷ Qiu Qiongqiong, "Chidao Jineiya: jingji duoyuanhua yuncang liangji" [Equatorial Guinea: Opportunities for Economic Diversification], *China Investment*, January 19, 2021, http://new.tzxm.gov.cn/xwzx_9109/tjsy/202101/t20210119_1265321.shtml.

⁶⁸ "Zhongguo LuQiao qianyui Chidao Jineiya Bata gang xiangmu" [CRBC Signs Contract for Equatorial Guinea Bata Port Project], *China Road Machinery Network*, April 2, 2007, <https://news.lmjx.net/2007/200706/20070606095754.shtml>.

⁶⁹ International Monetary Fund, African Department, "Republic of Equatorial Guinea: Staff Report for the 2015 Article IV Consultation—Debt Sustainability Analysis," September 15, 2015, 2; and China Aid Data, "Project ID: 484." Another CCCC subsidiary, the CCCC First Harbor Engineering Co. Ltd. also contracted to implement part of the project. See China Aid Data, "Project ID: 1056."

⁷⁰ In 2015 the Industrial and Commercial Bank of China established yet another \$2 billion in infrastructure funding alongside an additional \$500 million credit from China Exim Bank. See "China and Equatorial Guinea Sign US\$2bn Loan Deal," *Economist Intelligence Unit*, May 7, 2015, https://country.eiu.com/article.aspx?articleid=1893139973&Country=Equatorial%20Guinea&topic=Econom_4. Several projects in and around the port have proceeded since its completion, including a water pressure system for the port and surrounding city areas implemented by another SOE, the Tianjin Harbor and Shipping Engineering Corp, and further expansion at Bata.

⁷¹ "Zhongguo LuQiao chengjian ChiJi Bata gang gai kuojian gongcheng kaigong" [China Road and Bridge Undertakes Bata Port Rehabilitation and Expansion Project], *Sohu*, August 7, 2008, <https://business.sohu.com/20080807/n258669278.shtml>.

⁷² Zhao Lianzhi, Wang Tao, and Guo Xiufeng, "Chidao Jineiya Bata gang gai kuojian xiangmu jianshe yaodian tantao" [Exploring the Key Points of Construction of the Bata Port Expansion Project in Equatorial Guinea], *Port Engineering Technology* 57, no. 3 (2020): 98.

⁷³ "President of Equatorial Guinea Accompanies President of Uganda in Visiting the Malabo National Park and the Port of Bata," *China Road and Bridge Corporation*, August 26, 2017, <https://www.crbc.com/site/crbcEN/77759/info/2017/46841832.html>; and "Chidao Jineiya zongli Aobiang fangwen Zhongguo jianzhu" [Prime Minister Obiang of Equatorial Guinea Visits China Construction], *China State Construction News*, May 20, 2019, 1.

With the announcement of a bilateral comprehensive partnership in 2015, Xi and Obiang pushed the bilateral relationship beyond infrastructure and oil exports to “promote defense and security cooperation...and strengthen cooperation in counterterrorism, intelligence, and counterpiracy.”⁷⁴ Beginning with the PLA Navy’s 2014 counterpiracy exercises with regional navies in the Gulf of Guinea, China has been pursuing extensive maritime security engagement in the area. By 2018, some Chinese analysts regarded the gulf as “the most dangerous sea area in the world,” and the PLA Navy began conducting combat exercises with regional states, including Equatorial Guinea.⁷⁵ Citing the piracy threat, the Chinese ambassador to the United Nations has advocated for growing international assistance, to include further “construction, operation, and maintenance of infrastructure such as ports” that would enable the “docking of ships, supply and maintenance capabilities, and improve the level of logistics support.”⁷⁶

Recent reports of a possible PLA agreement to establish a base in Equatorial Guinea are therefore not an altogether unexpected development.⁷⁷ Indeed, the ostensible purpose of the Djibouti base was also to support a UN-sanctioned counterpiracy mission.⁷⁸ Both ports lie on vulnerable maritime energy supply routes. Further, in each case China’s presence began with a commercial port, substantial loans from policy banks, and heavy engagement with the head of state. From Chinese analysts’ perspectives, the formal requirement to “protect overseas interests” and the existing “military foothold” in East Africa makes it quite natural that China should “seek opportunities to establish a second logistics base on the west coast of Africa at an appropriate time.”⁷⁹

Chinese officials have yet to deny that a basing arrangement has been reached in Equatorial Guinea. Bata’s potential role as a platform for Chinese naval power in the Atlantic is therefore quite plausible. PRC authorities in Equatorial Guinea are attuned to the “advantageous geographic location” and have directed Chinese enterprises accordingly.⁸⁰ While Bata is the first prominent case of advanced discussions for PLA basing in Africa since Djibouti, it is distinctive mostly in that the host government was unusually receptive to Chinese overtures. As Chinese firms establish a more integrated presence in Africa’s port sector, other willing hosts will likely emerge.

Implications

PRC firms have pursued ocean ports as key facilitators of China’s economic, diplomatic, and military presence across Africa. A small handful of Chinese SOEs and policy banks have become the central players in Africa’s growing maritime transport sector, positioning Beijing to influence vital flows of trade, investment, data, and capital (financial and political). The 61 (and growing) PRC port projects reflect a simple commercial logic: with virtually all China-Africa

⁷⁴ “Zhonghua renmin gonghehuo he Chidao Jineiya gongheguo guanyu jianli quanmian hezuo huoban guanxi de lianhe shengming” [Joint Statement of the PRC and the Republic of Equatorial Guinea on Establishing a Comprehensive Partnership], Ministry of Commerce (PRC), April 28, 2015, <http://gq.mofcom.gov.cn/article/zxhz/sbmy/201504/20150400955536.shtml>.

⁷⁵ Li Wentao, “Jineiya Wan haishang anquan wenti jiqi duo cengji zhili” [Maritime Security in the Gulf of Guinea and Its Multi-Level Governance], *Contemporary International Relations* 7 (2021): 26.

⁷⁶ State Council (PRC), “Zhongguo huyu guoji shehui xiezhu Jineiya Wan guojia daji haidao” [China Calls On the International Community to Assist Gulf of Guinea Countries in Combatting Piracy], Xinhua, April 26, 2016, http://www.gov.cn/xinwen/2016-04/26/content_5067913.htm.

⁷⁷ Phillips, “China Seeks First Military Base on Africa’s Atlantic Coast.”

⁷⁸ Li, “Jineiya Wan haishang anquan,” 26–33, 43.

⁷⁹ Liu Lei and He Jian, “Yidai Yilu changyi xia de ZhongFei haishang anquan hezuo” [China-Africa Maritime Security Cooperation under the Belt and Road Initiative], *International Security Research* 1 (2017): 106–13.

⁸⁰ Qiu, “Chidao Jineiya.”

trade conveyed by sea, modern ports serve to expand and consolidate trade flows to and from China. But PRC firms' enthusiasm for building out trade infrastructure is also a function of national-level objectives and security interests. Achieving greater control over the maritime trade and transport network on which China's economic system depends—especially for crucial natural resource inputs—is a central policy goal for Beijing that animates the push to develop ports in Africa and elsewhere.

Senior party-state officials prize Chinese firms' overseas port assets in particular because “port terminals are the highest priority for securing the sea lanes...they are not only for cargo handling, but also provide replenishment and logistics services” required to protect PRC interests overseas—with naval might, if necessary.⁸¹ The ports, however, are only one key node in a much more extensive network of maritime infrastructure built, financed, owned, or operated by PRC firms. For example, Huawei Marine has built submarine fiber-optic cables to each of the three ports examined as case studies above, and their other landing points are not coincidentally in other ports in which Chinese firms have established platforms. Chinese shipping lines are ubiquitous in Africa, especially those of the central SOE transport behemoth COSCO Shipping.⁸²

To fully appreciate the implications of the PRC position in African ports, however, requires a comparative perspective. First, on the commercial side, China is only the dominant player in the physical construction of African ports; when it comes to ownership and operations, several other foreign firms hold a greater market share, even if PRC firms are rapidly gaining ground.⁸³ There is little prospect for China to control access to African markets and resources through this mechanism. Second, from a political-military standpoint, China still lags the United States and even several European nations in its overall posture on the continent. The United States and its allies also enjoy significant advantages in basing and access across the Atlantic and Indian Oceans and Mediterranean Sea. China may be making up for this head start, but the prospects for deploying a high-end combat force to these faraway theaters remain distant.⁸⁴ The Bata port facility may well soon provide “a strategic base for China to go toward the ‘deep blue’ and radiate into the Gulf of Guinea,” as the Chinese ambassador to Equatorial Guinea exhorted CRBC executives in 2017.⁸⁵ But for the foreseeable future, any “radiation” is more likely to be limited in the naval realm to a modest presence for counterpiracy and other noncombat missions.

More significant near-term implications arise from the vast network of commercial ports that now serve as platforms for Chinese access across Africa. For the military, these facilities help forge new relationships with regional navies, as China emerges as a provider of military technology, training, and assistance. They enable routine intelligence collection and the accumulation of logistical experience by operating task forces around the region. The ports showcase the optics of attractive new PLA Navy surface vessels showing the PRC flag around a distant continent.

⁸¹ Li Cigui, “Fazhan haiyang hezuohuoban guanxi tuijin 21 shiji haishang Sichouzhilu jianshe de ruogan sikao” [Some Thinking on Developing Maritime Cooperative Partnership to Promote the Construction of the 21st Century Maritime Silk Road], *International Relations Studies*, April 2014, http://intl.cssn.cn/zxz/gjzzx_zxz/201408/t20140819_1297241.shtml.

⁸² COSCO Shipping alone operates ten shipping lines connecting the African continent to Chinese markets, up from eight as recently as 2019. See “Routes: Latin America/Africa,” COSCO Shipping, 40, <https://lines.coscoshipping.com/home/Services/route/15>; and Wang, Wang, and Fei, “Zhongguo yu Feizhou haiyun hezuo jianxi.”

⁸³ Huang and Wang, “Feizhou gangkou shichang jingzheng,” 57–58.

⁸⁴ On the PLA's growing interest and capability to conduct naval operations in the Atlantic, see Ryan D. Martinson, “China as an Atlantic Naval Power,” *RUSI Journal* 164, no. 7 (2019): 18–31.

⁸⁵ “Zhongguo zhu Chiji dashi Chen Guoyou, zonglingshi Gu Jiafeng he jingshang chu canzan Su Jianguo gongtong cangan bata gang” [Chinese Ambassador to Equatorial Guinea Chen Guoyou, Consul General Gu Jiafeng, and Economic and Trade Office Counsellor Su Jianguo Visited Bata Port], China Road and Bridge Corporation, Press Release, February 23, 2017, <https://www.crbc.com/site/crbc/276/info/2017/4336444.html>.

They are also the beachhead for wider Chinese engagement in Africa, providing a politically visible and commercially practical point of further access for PRC firms and official actors.

China's ports in Africa might be essential elements of the inchoate effort "to make Africa a strategic exterior line for China to geopolitically contain the United States," as observed in the lead report of this wider project on China in Africa.⁸⁶ The commander of the U.S. Africa Command, General Stephen Townsend, voiced a similar concern when he testified to a House committee that "the thing I think I'm most worried about is this [Chinese] military base on the Atlantic coast."⁸⁷ China will need to make much more intensive use of ports in Africa for them to present a meaningful operational challenge to the U.S. military. Yet the opportunity for China to take such a consequential step toward direct strategic competition with the United States in Africa is now latent in the network of ports built, financed, owned, and operated by Chinese firms. The depth and breadth of PRC firms' positions in African ports make these critical infrastructure assets some of the most likely and useful sites from which China can project power on the continent.

⁸⁶ Zhang Hongming, cited in Nadège Rolland, "A New Great Game? Situating Africa in China's Strategic Thinking," National Bureau of Asian Research, Special Report, no. 91, June 8, 2021, 16.

⁸⁷ See David Vergun, "General Says China Is Seeking a Naval Base in West Africa," U.S. Department of Defense, March 17, 2022, <https://www.defense.gov/News/News-Stories/Article/Article/2969935/general-says-china-is-seeking-a-naval-base-in-west-africa>. The general's written testimony also stated: "By 2030, Chinese military facilities and technical collection sites in Africa will allow Beijing to project power eastward into the Middle East and Indo-Pacific Theaters and west into the Atlantic." "Statement of General Stephen J. Townsend, U.S. Army, Commander, U.S. Africa Command," testimony before the U.S. House Armed Forces Committee, Washington, D.C., March 17, 2022, 3.

APPENDIX

TABLE 1 Geographic distribution of PRC port projects in Africa

Port	Country	Finance	Construction/ engineering	Ownership	Operations
El Hamdania*	Algeria	Eximbank	CHEC & CSCEC	CHEC & CSCEC	Shanghai International Port Group
Oran	Algeria	–	CHEC	–	–
Cabinda	Angola	CDB	China Gezhouba	–	–
Caio*	Angola	Eximbank & Sinosure	CRBC	–	--
Lobito	Angola	Eximbank	CHEC & CCCC	–	–
Douala	Cameroon	–	CHEC	–	–
Kribi	Cameroon	Eximbank	CHEC & CCCC	CHEC	CHEC
Lolabe*	Cameroon	–	CHEC	–	–
Mindelo*	Cape Verde	MOFCOM	CRBC	–	–
Abidjan	Côte d'Ivoire	Eximbank	CHEC	China Merchants	–
Damerjog*	Djibouti	Eximbank	CSCEC & CCECC & China Poly-GCL	China Merchants	–
Doraleh	Djibouti	Eximbank	CSCEC & CCECC	China Merchants	–
Ghoubet	Djibouti	Eximbank	CHEC	China Merchants	–
Tadjourah	Djibouti	Eximbank	Baoye Hubei Construction	China Merchants	–
Abu Qir	Egypt	Hutchison	Hutchison	Hutchison	Hutchison
Alexandria Port	Egypt	–	–	Hutchison & Shenzhen Yantian	Hutchison
El Dekheila	Egypt	–	–	Hutchison	Hutchison
Port Said Container Terminal	Egypt	–	–	COSCO	COSCO
Bata	Equatorial Guinea	Eximbank	CRBC & CCCC	–	–
Massawa	Eritrea	–	CHEC	–	–
Mole	Gabon	–	CHEC	–	–
Banjul*	Gambia	Eximbank	CHEC & CRBC	–	–
Atuabo	Ghana	–	CHEC	–	–
Takoradi	Ghana	CDB	CHEC	–	–
Tema	Ghana	Bank of China & ICBC	CHEC & CCCC	–	–
Boke	Guinea	–	–	Yantai Port Group & Shandong Weiqiao	Yantai Port Group & Shandong Weiqiao
Conakry	Guinea	–	CHEC	Rizhao Port Group & Chinalco	Rizhao Port Group & Chinalco

TABLE 1 CONTINUED

Port	Country	Finance	Construction/ engineering	Ownership	Operations
Alto do Bandim	Guinea-Bissau	MOFCOM	CRGEG	Fujian Shihai Corporation	-
Lamu	Kenya	-	CCCC & CRBC	-	-
Mombasa	Kenya	Eximbank	CCCC & CRBC	-	-
Saint Mary Road	Madagascar	-	CRBC	-	-
Tamatave*	Madagascar	-	CHEC	-	-
Friendship/ Nouakchott	Mauritania	Eximbank & MOFCOM	CRBC & CCCC	-	-
N'Diogo	Mauritania	-	China Poly Group	-	-
Nouadhibou	Mauritania	-	Fuzhou Hong Dong	-	Fuzhou Hong Dong
Casablanca	Morocco	-	-	China Merchants	-
Tanger-Mediterranean	Morocco	-	-	China Merchants	-
Beira	Mozambique	Eximbank	CHEC	-	-
Walvis Bay	Namibia	-	CHEC	-	-
Akwa Ibom	Nigeria	-	CHEC	PowerChina	PowerChina
Apapa/Lagos	Nigeria	-	CHEC	-	-
Bakassi	Nigeria	-	CHEC	CHEC	-
Gelegele	Nigeria	-	CHEC	-	-
Lekki	Nigeria	CDB	CHEC	CHEC	CHEC
Tin-Can Island	Nigeria	-	-	China Merchants & China Africa Development Fund	-
Pointe Noire	Republic of the Congo	Eximbank	CRBC	CRBC	CRBC
Fernão Dias*	São Tomé and Príncipe	Macau Legend Development	CRBC & CHEC	-	-
St. Louis	Senegal	-	CHEC	-	-
Black Johnson Port	Sierra Leone	-	Yantai Development Zone	Yantai Development Zone & China Railway International Group	Yantai Development Fishing
Freetown	Sierra Leone	-	Taifu Heavy Equipment Group	-	-
Pepel	Sierra Leone	-	-	Kingho Group	Kingho Group
Richards Bay	South Africa	-	Chery Holdings	-	-

TABLE 1 CONTINUED

Port	Country	Finance	Construction/ engineering	Ownership	Operations
Haidob	Sudan	–	CHEC	CHEC	–
Port Sudan	Sudan	–	CHEC	–	–
Bagamoyo*	Tanzania	–	China Merchants	China Merchants	China Merchants
Dar es Salaam	Tanzania	–	CHEC	Hutchison	Hutchison
Maruhubi/ Zanzibar	Tanzania	Eximbank	CHEC	CHEC	–
Mtwara	Tanzania	–	CRCEG & CRMBEG	–	–
Tanga	Tanzania	–	CHEC	–	–
Lome	Togo	CDB	CMPort	CMPort	CMPort
Rades	Tunisia	–	Huawei	–	–

NOTE: Asterisk indicates project under development. CHEC is China Harbour Engineering Corporation; CSCEC is China State Construction Engineering Corporation; Eximbank is China Export-Import Bank; CDB is China Development Bank; CRBC is China Road and Bridge Corporation; CCCC is China Communications Construction Corporation; MOFCOM is the PRC Ministry of Commerce; CCECC is China Civil Engineering Construction Corporation; CRGEG is China Railway Guangzhou Engineering Group Corporation; CRCEG is China Railway Construction Engineering Group; and CRMBEG is China Railway Major Bridge Engineering Group.

THE NATIONAL BUREAU *of* ASIAN RESEARCH

NBR SPECIAL REPORT #98 | MAY 2022

African Railway Ambitions Meet China's Belt and Road

Yunnan Chen

YUNNAN CHEN is a London-based researcher in the Development and Public Finance program at ODI, where her work centers on the changing global development finance architecture and China's global footprint. Previously, she was affiliated with the Johns Hopkins School of Advanced International Studies China Africa Research Initiative (CARI). She was also a fellow with the Global China Initiative at the Global Development Policy Center at Boston University and a predoctoral fellow at the Center for Global Development. She can be reached at <y.chen@odi.org.uk>.

EXECUTIVE SUMMARY

This essay finds that Chinese railway investment in Africa has been driven by Chinese domestic commercial and strategic interests, alongside the modernization ambitions of African economies, and argues that the sustainability of these projects faces multiple financial, political, and security challenges.

MAIN ARGUMENT

Chinese-built railways across Africa have become major flagship projects of the Belt and Road Initiative (BRI), driven by China's domestic economic cycle, which pushed out excess capacity and official capital via lending and investment in the early 2010s. These projects have been a major component of Chinese lending to African sovereigns but, in turn, have contributed to growing debt burdens facing many countries, particularly in the wake of the Covid-19 pandemic. Although railways can play a transformative role in supporting industrial strategies, they are also a challenging type of infrastructure to import and adapt. The standard-gauge railways in Ethiopia, Nigeria, and Kenya illustrate many of these technology transfer challenges. While Chinese lending has slowed down, Chinese state-owned enterprises will have a long-term presence in the capacity building of these projects, as well as a long-term stake in these economies.

POLICY IMPLICATIONS

- Railway infrastructure carries huge potential for structural transformation and industrialization in Africa, but technical capacity and systematic training will be crucial to foster indigenous capacity and independent innovation. These are areas where the U.S. and other partners can play a key role in fostering capabilities.
- Chinese railway lending was driven by a broader context of domestic industrial overcapacity. In the wake of the Covid-19 pandemic, it is highly unlikely that this kind and volume of finance will return. At the same time, the questions raised about debt sustainability suggest that African governments need to build greater capacity in project due diligence and loan negotiation and increase transparency around debt.
- Fostering railway development will require not only economic sustainability in financing and supporting railway operations but also a stable and secure political context, as railways can become flashpoints for conflict. Long-term investments entail long-term security interests from Chinese firms and other actors on the continent.

An often-cited trope to describe the ethos of China's Belt and Road Initiative (BRI) is "If you want to get rich, build a road." In Africa, however, it is railways rather than roads that have embodied this ethos. Railways carry a strong political salience in China's infrastructure investment in Africa and have become one of the largest sectors of financing and construction on the continent. This has included several massive national infrastructure investments, utilizing Chinese standard-gauge railway (SGR) technology and construction contractors. These railways have become symbols of African modernization for political leaders as well as flagship projects in BRI.

At the same time, Chinese railways have raised a series of challenges for host governments and their Chinese partners, including management and operations, security and environmental effects, and critically the impact of the sizable infrastructure loans from Chinese banks that facilitated construction. The financing of railways has been one of the most significant and visible aspects of the growing lending and development relationship between China and African countries. In the last two decades, China has become the largest bilateral lender on the continent. At the current juncture, African governments must navigate the fiscal impacts of the Covid-19 pandemic, while servicing the debt on infrastructure loans, both to China and to other external creditors.

China's railway expansion in Africa takes place in a broader context of railway exports around the globe, including significant railway lines in Southeast Asia and Eastern Europe. There are, however, crucial differences between these projects and those in Africa. In Asia, China's focus has been on the export of high-speed-rail technology, which has been an area of competition with Japan, particularly in the geography of how these networks develop.¹ In Africa, there is less competition and openness in the development of these lines, with differences in the technology and locomotives used. Nevertheless, the SGR model is still drawn entirely from the Chinese domestic railway network model, with implications for operations and maintenance, technology transfer and capacity building, and the network's future development.

Railways have been a significant and politically visible symbol of China-Africa cooperation. For example, the Tazara Railway from Tanzania to Zambia was constructed in the 1970s with Chinese aid and continues to be a symbol of solidarity and development cooperation. Its decline in the decades after completion underscores the need for modern SGRs to be economically viable. However, the new lines are different: their construction was financed by loans with strong commercial motivations during a historically contingent moment of easy finance in the early 2010s. This trend has slowly ebbed over time as teething problems dog the first completed railways and the appetite for large infrastructure wanes—both from Chinese lenders and from African borrowers with mounting debt distress risk. While railways have significant potential to create sustainable and low-cost methods of transportation, as well as to stimulate economic transformation via cargo and shipping, the prospects of Chinese-backed rail in Africa have dwindled with China's own retrenchment in finance.

This essay examines the historical and contingent development of Chinese railways across the continent, drawing from scholarly and policy research, media sources, and personal fieldwork in Ethiopia and Nigeria. It discusses the financing, construction, and development of the three major SGR lines in Africa: the planned Lagos-Kano line in Nigeria, the Addis-Djibouti railway in Ethiopia, and the Nairobi-Mombasa line and its extensions in Kenya. It then examines the major

¹ David M. Lampton, Selina Ho, and Cheng-Chwee Kuik, *Rivers of Iron: Railroads and Chinese Power in Southeast Asia* (Berkeley: University of California Press, 2020).

drivers behind these projects—both from the Chinese supply side and from the African demand side—before turning to the salient challenges these railways have generated, particularly around their economic and financial sustainability, governance, and long-term prospects.

I argue that the era of exuberant railway financing has been a historically contingent one that rose and fell with China's own industrial and financial cycles. Nonetheless, Chinese contractors remain on the continent, and the commercial and strategic incentives to complete these railway projects remain strong. For U.S. political and commercial actors, the African railway market has not gained much attention—though the participation of U.S. firms such as General Electric shows that there are viable commercial opportunities in the sector. More broadly, the cases examined illustrate the need for building technical and administrative capacity to more efficiently manage these railway projects and negotiate external finance.

Major Chinese Railway Projects in Africa

Chinese contractors and financiers have been involved in a number of railway projects in Africa, including light-rail projects, rail rehabilitation, and sales of locomotives (see **Figure 1**). This section focuses on three national SGRs in Nigeria, Ethiopia, and Kenya. These projects are the largest on the continent in terms of value and involve Chinese financing, Chinese construction, and eventual Chinese management over their entire life cycles. With the exception of Ethiopia, projects are financed through loans from the Export-Import Bank of China (China Exim Bank) and contracted to Chinese state-owned enterprises (SOEs), which have a near monopoly in the rail and transport sector.

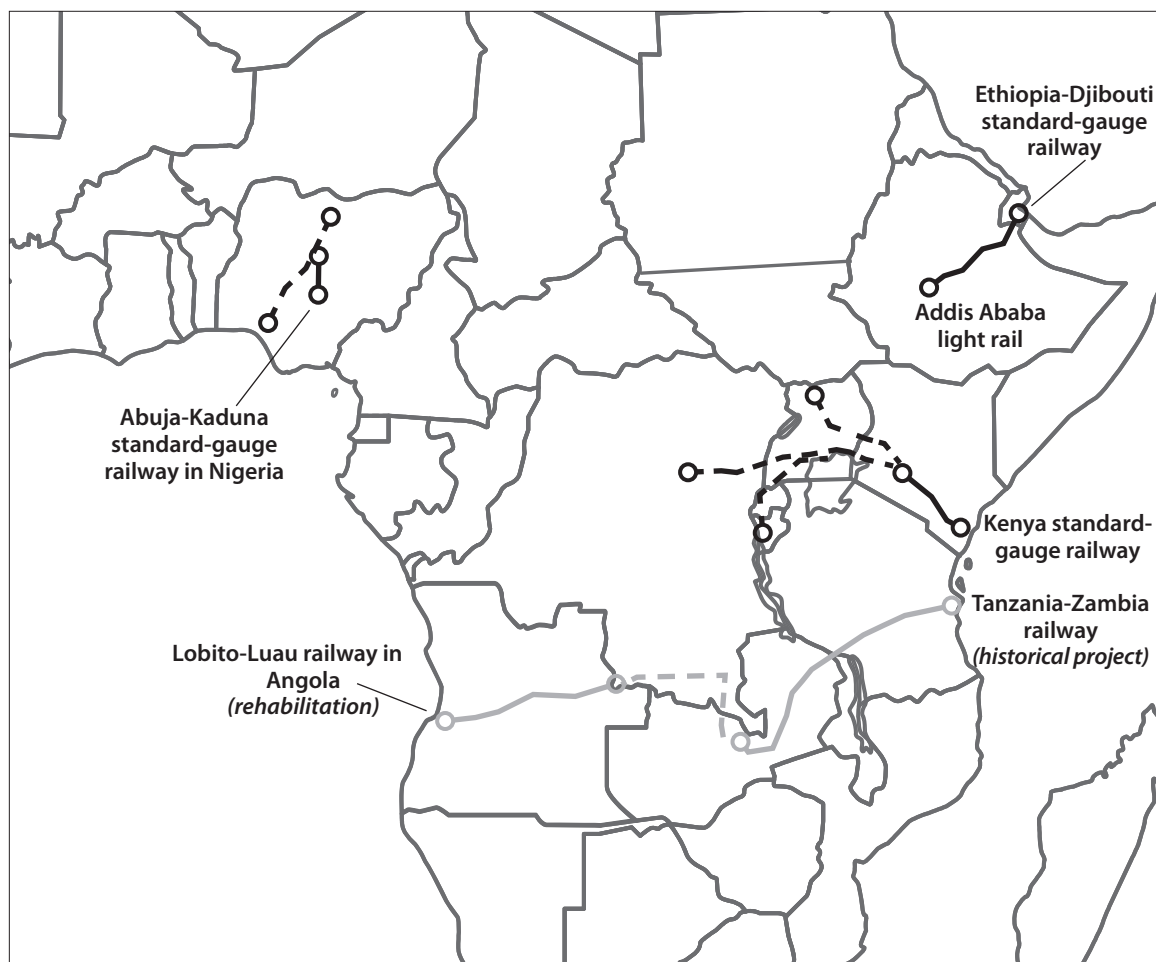
In all three cases, Chinese rail financing coincided with long-standing national ambitions and plans. Construction built upon existing, colonial-era rail routes that were converted to SGR standards. Despite these plans and agreements predating BRI, many projects, particularly the Kenyan and Ethiopian railways, have been folded into the discourse and political symbolism of the initiative.

Nigeria

Nigeria's plans for railway modernization started several decades ago, during the tenure of former president Olusegun Obasanjo, who commissioned a 25-year strategic vision to overhaul the sector. The plan sought to rehabilitate three major north-south arterial lines, narrow-gauge rail inherited from the British colonial period, and to connect all 36 major states and economic hubs.² The plan was overseen by the Ministry of Transport along with the Nigerian Railway Corporation. In the 2000s, discussions were held with several international partners, including the African Development Bank, General Electric, and China Civil Engineering and Construction Corporation (CCECC), which already had a long-standing presence in Nigeria's infrastructure sector. CCECC was first contracted in 2006 for the modernization of the western trunk line to join the port of Lagos to the northern economic hub of Kano via SGR. The project spurred trade and exports and reduced transport costs along the congested corridor.

² "Connect Rail to 36 State Capitals, Buhari Directs," *Vanguard*, October 20, 2017, <https://www.vanguardngr.com/2017/10/connect-rail-36-state-capitals-buhari-directs>.

FIGURE 1 Chinese-built railways



Completed railway	Year built	Length	Design speed	Construction duration	Cost
Abuja-Kaduna	2016	186.5 km	150 km/h	5 years	\$874 million
Addis Ababa light rail	2015	34.0 km	70 km/h	3 years	\$470 million
Ethiopia-Djibouti	2016	752.7 km	120 km/h	6 years	\$4.0 billion
Kenya	2017	480 km (first phase)	120 km/h	about 3 years	\$3.8 billion
Lobito-Luau	2015	1,344 km	90 km/h	8 years	\$1.2 billion
Tanzania-Zambia	1976	1,860.5 km	110 km/h	5 years, 8 months	\$406 million

SOURCE: “Chinese-Built Railway in Africa,” Xinhua.

While originally financed through an “oil for infrastructure” lending model, plans were suspended under Umaru Musa Yar’Adua’s presidency (2007–10) and not resuscitated until 2012 by President Goodluck Jonathan (2010–15).³ The Lagos-Kano line was constructed in installments, beginning with the 187-kilometer (km) single-track line from the capital Abuja north to Kaduna. The project was completed by CCECC in 2014 at a cost of \$874 million with a \$500 million concessional loan from China Exim Bank. A subsequent 156-km line from Lagos to Ibadan commenced construction in 2017 and began trial operations in late 2020.⁴ Other segments of the railway are still in the planning stages, including an \$11 billion coastal line spanning from Lagos east to the port of Calabar. The line was designed, proposed, and subsequently awarded to CCECC, though financing has not been forthcoming.⁵

Ethiopia

Like Nigeria, Ethiopia also had an old, French-built, narrow-gauge railway line dating back to 1917, which had fallen into disrepair. After the Ethiopian-Eritrean war left Djibouti as Ethiopia’s primary port access, the rehabilitation of a working railway became a strategic lifeline for the Ethiopian state. Prime Minister Meles Zenawi (1995–2012) sought to use the railway as part of the national Growth and Transformation Plan to promote Ethiopia’s industrial modernization and national political cohesion.⁶

Plans for a 5,000-km railway network were developed in the 2000s, and a new Ethiopian Railway Corporation was established in 2007 to oversee its development. This would replace the old French line as well as the old railway institutions. Ethiopia sought financing from European partners, with interest from both the French Development Agency (AFD) and the European Commission, which agreed to finance the rehabilitation of the old railway line conditional on a secured concession. These plans eventually dissolved. After the global financial crisis, AFD pulled back from sovereign lending, and the grant from the European Commission was insufficient for the project’s scale.⁷ Ethiopia and China subsequently negotiated a broad package of infrastructure finance, including plans for a light rail, an SGR from Addis Ababa to Djibouti, and multiple industrial zones.

The 756-km Addis-Djibouti line was the first, and most strategically important, line to be constructed. Construction began in 2012 and was contracted to two firms: CCECC, which constructed the Djibouti segment and eastern half, and China Railway Engineering Corporation (CREC), which built the Addis light-rail transit and designed the trunk railway. Notably, the line is electrified railway along its entire route—a feature that was pushed by Ethiopian decision-makers, making it the only SGR to have this. The Ethiopian portion of the route was constructed at a cost of \$3.5 billion via a China Exim Bank loan of \$2.5 billion. While the railway was completed in 2016, operations did not begin until early 2018 due to delays in the power supply for the electrified rail.

³ Gregory Mthemba-Salter, “China’s Engagement with the Nigerian Oil Sector,” South African Institute of International Affairs, Policy Briefing, no. 11, November 2009; and Yunnan Chen, “China’s Role in Nigerian Railway Development and Implications for Security and Development,” United States Institute of Peace, Special Report, no. 423, April 18, 2018.

⁴ “NRC Begins Lagos-Abeokuta-Ibadan Rail Services,” *Punch*, December 7, 2020, <https://punchng.com/nrc-begins-lagos-abeokuta-ibadan-rail-services>.

⁵ Chen, “China’s Role in Nigerian Railway Development.”

⁶ Yunnan Chen, “Laying the Tracks: The Political Economy of Railway Development in Ethiopia’s Railway Sector and Implications for Technology Transfer,” Boston University Global Development Policy Center, GCI Working Paper, no. 14, January 2021.

⁷ Arthur Foch, “The Paradox of the Djibouti-Ethiopia Railway Concession Failure,” Proparco, Private Sector and Development, May 2, 2011, <https://blog.private-sector-and-development.com/2011/05/02/paradox-of-djibouti-ethiopia-railway-concession-failure>.

Unlike the other cases, Ethiopia's railway sector has seen more competition. Notably, CREC and CCECC partnered both in the construction of the line and in the operations and maintenance (under a five-year contract). Chinese SOEs have also not monopolized this sector in Ethiopia. The first segment of the railway's next phase from Awash to Mekele, extending from Awash to Weldiya, was built by Turkish firm Yapi Merkezi with the support of Türk Eximbank and private-sector lenders, including Credit Suisse. The second segment to Mekele was contracted to China Communications Construction Company (CCCC)—though funding from China Exim Bank has not been forthcoming, due in part to reservations over the Addis-Djibouti railway operations.⁸ The Awash-Weldiya line was completed in 2021, but testing and operations have been delayed by logistical as well as security issues due to the Tigray War.

Kenya

The highest-cost and most politically visible Chinese railway in Africa has been the Kenya Standard Gauge Railway, sometimes called the Madaraka Express. The railway has been a flagship project of BRI and was even featured in a controversial comedy sketch for a Chinese New Year Spring Festival variety show.⁹ The Kenya SGR follows the route of the old British "Lunatic Express" and is intended to replace it. Plans for the Kenya SGR are part of a grander regional ambition, the East African Railway Master Plan. The plan was developed in the 2000s as a strategy for upgrading the dilapidated rail infrastructure across the region; rejuvenating existing railways in Tanzania, Kenya, and Uganda; and extending them to Rwanda, Burundi, and beyond. The contract for the first leg of the rail network, the 609-km line from Mombasa to Nairobi, was won by China Road and Bridge Corporation (CRBC), a subsidiary of CCCC. The \$5.3 billion cost was substantially higher than other projects and supported through two China Exim Bank loans totaling \$3.6 billion: a concessional tranche of \$1.6 billion and a commercial tranche of \$2 billion.

Construction began in 2013 and was completed ahead of schedule in May 2017.¹⁰ Operations and maintenance for the railway are contracted to CCCC for five years. A further extension of the railway from Nairobi to the Ugandan border has been planned, with an extension to Naivasha being completed by CCCC in 2019 at a cost of \$1.5 billion. Further phases extending the railway from Naivasha to Kisumu and then Malaba have come under strain. Financing for these segments is predicated on agreement from Uganda to construct its portion of the SGR network, which Ugandan president Yoweri Museveni had oscillated on. Eventually, Uganda agreed to a rehabilitation of its old narrow-gauge network to Malaba, which will link to the Kenya SGR at Naivasha.¹¹ However, linking the two lines will require the Kenyan track to switch from standard to narrow gauge at Naivasha. This raises questions about the integration of the two types of track, with implications for railway operations, as well as the financial sense in upgrading to SGR.

⁸ Chen, "Laying the Tracks."

⁹ Salem Solomon, "Chinese New Year Skit Sparks Backlash Over Relationship with Africa," *Voice of America*, February 18, 2018, <https://www.voanews.com/a/chinese-new-year-skit-about-kenya-railway-prompts-global-backlash/4259601.html>.

¹⁰ Yuan Wang and Uwe Wissenbach, "Local Politics Meets Chinese Engineers: A Study of the Chinese-Built Standard Gauge Railway Project in Kenya," Johns Hopkins School of Advanced International Studies (SAIS) China Africa Research Initiative (CARI), Policy Brief, no. 16, October 2016.

¹¹ Otiato Opali, "Uganda Seals Deal to Rehabilitate Malaba-Kampala Railway," *China Daily*, May 20, 2021, <https://www.chinadaily.com.cn/a/202105/20/WS60a614c9a31024ad0bac0545.html>.

Drivers of Investment: BRI Meets African Ambitions

The three major SGR projects discussed in the previous section represent a confluence of several factors that ushered in a period in which Chinese railway finance poured into the continent. All three projects predate BRI (but have been easily folded in post hoc), with construction contracts and financing secured between 2009 and 2012. Despite their diverse experiences and contexts, all three railways were the result of the same supply-side factors that pushed out Chinese enterprises' excess capacity and offshored significant amounts of Chinese capital. This was readily met with clear demands from African leaders who sought to leverage these projects to achieve domestic political goals and national economic interests.

Railways and African Industrialization

The supply of Chinese finance and technology “going out” in the early 2010s coincided with the transformation strategies and ambitions of African governments. In all three countries, plans for railway rehabilitation had been long-standing, and in some cases, such as Nigeria, decades old. The railway sector was one where the World Bank and other multilateral and bilateral donors had little capacity or interest. The entry of Chinese actors into this market paved the way for these plans to finally be realized. In all three cases, railways served to link inland regions to key port connections where Chinese players were already active. In some cases, a railway formed a key instrument in a national plan for economic modernization, such as Ethiopia's Growth and Transformation Plan, which is founded on an export-oriented industrialization strategy.

Railways have also played a political role. Designed railway networks in Ethiopia and Nigeria have explicit nation-building motivations behind them by bringing together ethnically diverse and often fragmented regions. This is frequently manifested in the prioritization of network development: Ethiopia's selection of the branch north to Mekele as the second railway to be financed and constructed reflected, at that time, the political importance of the Tigray region. In the case of Nigeria, the order in which railroad extensions have been prioritized also reflects political imperatives. For example, the decision to prioritize the Abuja-Kaduna line in construction is owed in part to the political importance of the North, and plans to extend lines to Sokoto in the northwest reflected the sultanate's importance for the government's electoral interests rather than commercial benefits.¹² Railway infrastructure also plays a politically symbolic role. The commission of the Kenya SGR, for example, was intimately tied to electoral cycles, with the inauguration of the Mombasa-Nairobi line occurring weeks before the 2017 elections.¹³

At a regional level, China's rail infrastructure has complemented plans for regional integration in the form of the East African Railway Master Plan as well as the African Union's Agenda 2063. The latter envisions an African Integrated High-Speed Railway Network to connect capitals and economic hubs across the continent in the name of trade and pan-Africanism. Chinese railway financing via BRI has been crucial in catalyzing these plans.¹⁴

¹² Chen, “China's Role in Nigerian Railway Development.”

¹³ Wang and Wissenbach, “Local Politics Meets Chinese Engineers.”

¹⁴ “Detailed Scoping Study (DSS) of Vision 2063 Africa Integrated High Speed Railway Network and Master Plan,” Programme for Infrastructure Development in Africa, February 1, 2020, <https://www.au-pida.org/download/detailed-scoping-study-dss-of-vision-2063-africa-integrated-high-speed-railway-network-and-master-plan>.

BRI as a “Spatial Fix”

On the supply side, BRI has been driven by many Chinese strategic goals: forging closer ties throughout Eurasia, fostering regional integration, and expanding the “go west” initiatives to develop China’s hinterland regions and assert a strategic presence.¹⁵ While the initiative serves geopolitical interests, it also serves other contingent, commercial goals, particularly in offshoring surplus investment at home to other geographies in what has been called a “spatial fix.”¹⁶ This expansionism is an instrument to resolve latent issues of overcapacity and debt issues through the export of capital and capacity.

Construction SOEs Go Out

Following the 2008 global financial crisis, which saw China inject huge sums of capital at home, the domestic infrastructure market became increasingly saturated, leading SOEs to search for other markets. Africa and other developing economies became important destinations for SOEs and private investors.¹⁷ Some of these firms leveraged historical links from development aid projects to play a political entrepreneurship role with African governments. For example, CCECC had been in Nigeria for several decades and played a role in designing and proposing new projects such as the planned coastal railway, despite the absence of official finance to support it.

Railway construction is only one part of a broad portfolio of economic contracts for firms: in Nigeria, Ethiopia, and Kenya, the contractors have continued their involvement even after project completion. In Ethiopia, both CREC and CCECC have long-term interests in other sectors of the economy. CREC is developing commercial centers along the Addis Ababa urban light rail, while CCECC has constructed several industrial zones across the country, including in Dire Dawa, along the route of the railway.¹⁸

Within China’s strategies for “national champions,” railway construction is also considered a strategic sector for the export of Chinese technology.¹⁹ This has been called a “supply-chain export” strategy, where the building of SGR entails the use of Chinese locomotives, signaling, and equipment designed for the rail.²⁰ Countries import not only technological standards but also “soft” infrastructure through adoption of standard operating procedures, knowledge transfer from capacity building, and training programs for local staff, giving Chinese firms and technology a path-dependent advantage down the line.

¹⁵ Nadège Rolland, *China’s Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative* (Seattle: National Bureau of Asian Research, 2017); and Bhavna Dave and Yuka Kobayashi, “China’s Silk Road Economic Belt Initiative in Central Asia: Economic and Security Implications,” *Asia Europe Journal* 16, no. 3 (2018): 267–81.

¹⁶ Pádraig Carmody, Ian Taylor, and Tim Zajontz, “China’s Spatial Fix and ‘Debt Diplomacy’ in Africa: Constraining Belt or Road to Economic Transformation?” *Canadian Journal of African Studies* 56, no. 1 (2022): 57–77; and David Harvey, “Globalization and the ‘Spatial Fix,’” *Geographische Revue* 3, no. 2 (2001): 23–30.

¹⁷ Hong Zhang, “The Aid-Contracting Nexus: The Role of the International Contracting Industry in China’s Overseas Development Engagements,” *China Perspectives*, no. 4 (2020): 17–27.

¹⁸ Chen, “Laying the Tracks.”

¹⁹ Andrew Szamosszegi and Cole Kyle, “An Analysis of State-Owned Enterprises and State Capitalism in China,” U.S.–China Economic and Security Review Commission (USCC), October 26, 2011, https://www.uscc.gov/sites/default/files/Research/10_26_11_CapitalTradeSOEStudy.pdf.

²⁰ Michelle Ker, “China’s High-Speed Rail Diplomacy,” USCC, Staff Research Report, February 21, 2017, <https://www.uscc.gov/research/chinas-high-speed-rail-diplomacy>.

The Rise of China's Development Finance

In the same period following the 2008 global financial crisis, there was an outflow of capital. China's overseas lending and investment accelerated, both to advanced economies and to the global South.²¹ The goal in part was to seek higher returns from substantial dollar reserves and diversify from U.S. Treasury bonds. All major SGRs in Africa were financed during this period of capital abundance. In addition to the eventual emergence of BRI, China played a growing role in multilateral finance, including through the provision of financing to the African Development Bank and the establishment of two new China-initiated multilateral development banks.²² For BRI, this coincided with the significant capitalization and strengthening of the main policy banks—China Exim Bank and China Development Bank. Their role as providers of development finance in Africa took off in the 2010s, alongside growing lending from Chinese commercial actors.²³ This “coordinated credit space” between the policy banks and SOEs has given Chinese contractors an edge in winning contracts and helped them gain a foothold in new markets.²⁴

Lending to Africa reached a total of \$153 billion in 2000–2019, peaking in 2016.²⁵ All three major SGR project hosts (Ethiopia, Kenya, and Nigeria) are among the top five recipients of Chinese lending (alongside Angola and Zambia), making railway finance a significant contributor to debt. Meanwhile, Chinese finance has been subject to increasing scrutiny. Although allegations of Chinese “debt-trap diplomacy” have been widely refuted,²⁶ the response of Chinese creditors to debt distress and restructuring has remained limited, even as African countries face growing fiscal crises brought on by the impacts of the Covid-19 pandemic.²⁷

Geostrategic Benefits of Railways

BRI is often cited as a grand strategy that seeks both geopolitical and commercial goals in building a network of key connectivity assets, including ports and maritime projects connected to rail, as well as asserting soft power. In reality, many BRI infrastructure projects have been driven more by SOE contractors on the ground than from the top down.²⁸ Nevertheless, there are clear dividends to China's geostrategic interests in the development of railway connectivity, in terms of both commercial advantages for Chinese firms and industries through the export of standards and railway technologies and geostrategic advantages for power projection at the regional level.

Linkages between Chinese-financed infrastructure projects along BRI routes allow for formal and informal coordination between firms and projects, which benefit Chinese SOEs. This is seen, for

²¹ Kevin P. Gallagher and Rebecca Ray, “Scope and Findings: China's Overseas Development Finance Database,” Boston University Global Development Policy Center, December 13, 2020, <https://www.bu.edu/gdp/2020/12/13/scope-and-findings-chinas-overseas-development-finance-database>.

²² Chris Humphrey and Yunnan Chen, “China in the Multilateral Development Banks: Evolving Strategies of a New Power,” ODI, September 27, 2021, <https://odi.org/en/publications/china-multilateral-development-banks>.

²³ David Dollar, “Is China's Development Finance a Challenge to the International Order?” *Asian Economic Policy Review* 13, no. 2 (2018): 283–98; and Muyang Chen, “Beyond Donation: China's Policy Banks and the Reshaping of Development Finance,” *Studies in Comparative International Development* 55, no. 4 (2020): 436–59.

²⁴ Gregory T. Chin and Kevin P. Gallagher, “Coordinated Credit Spaces: The Globalization of Chinese Development Finance,” *Development and Change* 50, no. 1 (2019): 245–74; and Zhang, “The Aid-Contracting Nexus.”

²⁵ Boston University Global Development Policy Center, Chinese Loans to Africa Database, <https://chinaafricaloandata.bu.edu>.

²⁶ Deborah Brautigam, “A Critical Look at Chinese ‘Debt-Trap Diplomacy’: The Rise of a Meme,” *Area Development and Policy* 5, no. 3 (2019): 1–14.

²⁷ Marina Rudyak and Yunnan Chen, “China's Lending Landscape and Approach to Debt Relief,” ODI, October 21, 2021, <https://odi.org/en/publications/chinas-lending-landscape-and-approach-to-debt-relief>.

²⁸ Many of the railway and port infrastructure projects have followed a scattershot approach, where an African agency has also played a key role. In Tanzania, for example, similar attempts to build a new railway and port complex by Chinese SOEs with China Exim Bank financing have not been successful.

example, in the competitive edge of CCECC in winning contracts for railway, port, and industrial zone construction in both Ethiopia and Nigeria, giving it a long-term role in the operation and eventual success of projects. This connectivity provides long-term strategic advantages for Chinese overseas trade by facilitating imports and attracting further foreign investment. Railway and port development in Ethiopia also coincided with China's first overseas naval base in Djibouti, adjacent to the complex of rail, industrial zone, and port construction. This entails greater security and strategic interest in the region for China, seen most recently in the creation of a new special envoy for the Horn of Africa.²⁹

Challenges and Changing Fortunes of African Railways

The significant cost of infrastructure and the long timeline for economic or financial returns make railways a high-risk investment. This explains in part why traditional financiers and multilateral banks have avoided the railway sector in previous decades. However, the imperatives that have undergirded China's BRI investment overseas have meant that Chinese firms were disposed to invest in this sector when others did not have such deep pockets.

Given that passenger railways around the world tend to be loss-making and require government subsidies, the rationale for building SGRs is not necessarily in the promise of direct financial returns. Instead, the incentive is the broader catalytic effect of such infrastructure for economic growth and structural transformation through fostering greater exports, improving domestic competitiveness, and building domestic technological capacities. In practice, however, African SGR projects have faced numerous challenges in implementing the projects to achieve these goals.

The Economic Rationale of Railways

Since the first railways were commissioned, the economic rationale for their construction has been tested. All three SGRs operate both passenger and freight lines, but it is freight rather than passenger rail that generates revenue. The design of the railways—the wider gauge and larger stations and locomotives—reflects the influence of China's domestic railway network, which has been strongly oriented toward freight shipping rather than passenger travel.

However, the broader economic stimulus effect for exports and freight shipping has not been evident in many of the major SGRs. In Ethiopia's case, while revenues have risen and freight services have doubled, in its early years of operation, the railway has operated at a loss. Goods coming from the port have constituted much of the freight traffic, while exports and outward shipping account for less than 5% of total freight volume.³⁰ In part, this is due to the last-mile costs of haulage, since few firms based in the main industrial zones are easily linked to the railway. The political economy of logistics is another factor, at least where the logistics sector is dominated by a state-owned shipping company that favors trucking over rail.

In Kenya's case, revenue for the railway was bolstered by a government mandate that lasted until 2019, which forced all goods passing through the port of Mombasa to use the SGR (to strong opposition from shippers and the trucking industry). Yet the railway has also been a loss-maker

²⁹ "Special Envoy for the Horn of Africa Affairs of the Foreign Ministry Xue Bing Meets with Principal Secretary of the Ministry of Foreign Affairs of Kenya Macharia Kamau," Ministry of Foreign Affairs of the People's Republic of China, March 22, 2021, https://www.fmprc.gov.cn/mfa_eng/wjrb_663304/zzjg_663340/fzs_663828/xwlb_663830/202203/t20220321_10653797.html.

³⁰ Chen, "Laying the Tracks."

in its first three years due to the last-mile costs and uncompetitive fees compared to trucking, requiring government subsidies to fill the gap.³¹

In Nigeria's case, the railway presents a stronger commercial alternative to trucking given the poor and underdeveloped state of the country's road network. This suggests better commercial prospects for the Lagos-Ibadan SGR. However, the long-term returns will depend on the size of the network and the economies of scale that the railway brings—which require the continued expansion of railway infrastructure.

Technology Transfer and Capacity Building

One major feature of Chinese-financed railways in Africa is the long-term involvement of Chinese SOEs and commercial actors beyond the usual tenure of turnkey EPC projects that have characterized other BRI infrastructure. Unlike a road or building, the operation and sustainability of railway infrastructure require not only a technical corps of staff in driving, maintenance, and upkeep of the railway but also a management bureaucracy. In Africa, where former railway bureaucracies running older colonial-era lines have long faded away, this technical capacity is often lacking. As such, following the completion of the major SGR projects in all three countries, the Chinese construction SOEs remained on the project to help operate and manage the line itself. This arrangement is premised on capacity building for the eventual handover of railway management to domestic actors after the completion of the operations and maintenance contract, which in the case of the Ethiopian and Kenyan railways is around six years.

In practice, such capacity building and technology transfer have proved to be a significant challenge. Notably, Chinese SOEs have played a key role—far beyond that of a construction contractor—in transferring knowledge and skills, including through the instruction of domestic engineers, drivers, and other technical staff.³² This has occurred alongside other forms of capacity building via Chinese development cooperation, including student exchanges and courses in partnership with Chinese railway specialist colleges.³³ This will likely be a long-term process, as language barriers hinder the transfer of deeper knowledge. Moreover, the lower skill base in local economies means that the presence of Chinese firms may be extended past the initial six-year term.

There is an inherent tension between the potential for technology transfer and capacity-building activities driven by Chinese firms and the rationale that drives the outward export of railway technology and infrastructure to Africa. Though Chinese SOEs and other development actors have adopted a holistic approach to training local workers, this has largely focused on operational knowledge of the infrastructure rather than localization of construction or manufacturing methods of the railway and locomotive technologies. While China's own railway capacities emerged through absorbing foreign technologies and developing indigenous innovation capacities,³⁴ there are clear barriers to these processes for African economies. First, the lower base

³¹ Carlos Mureithi, "Kenya's Expensive Chinese-Built Railway Is Racking Up Losses Even as Loans Come Due," Quartz, October 9, 2020, <https://qz.com/africa/1915399/kenyas-chinese-built-sgr-railway-racks-up-losses-as-loans-due>.

³² Chen, "Laying the Tracks."

³³ "Ethiopian Light Rail Train Drivers Trained in China Graduate," 2016, available at <http://www.ena.gov.et/en/index.php/component/k2/item/1859-reversing-effects-of-drought-through-concerted-efforts>; Philip Mwakio, "Meet the Women Who Will Be Steering New SGR Trains for the First Time in Kenya's History," *Standard* (Kenya), May 10, 2017, <https://www.standardmedia.co.ke/entertainment/local-news/2001237595/meet-the-women-who-will-be-steering-new-sgr-trains-for-the-first-time-in-kenyas-history>; and "China Supports Training Programs for Would-Be Train Drivers from Ethiopia, Djibouti," *Xinhua*, July 22, 2018, http://www.xinhuanet.com/english/2018-07/21/c_137339710.htm.

³⁴ Szamosszegi and Kyle, "An Analysis of State-Owned Enterprises and State Capitalism in China"; and Ker, "China's High-Speed Rail Diplomacy."

of manufacturing, engineering, and knowledge is a key weakness in developing domestic railway manufacturing capacity. Second, China's supply-chain export strategy hinges on the continued export of parts, equipment, and materials to African SGRs, which runs against incentives of contractors to engage in technology transfer and build innovation capacity in host countries.

Debt Issues

Around one-third of China's lending to Africa in the transportation sector has been dedicated to rail. The contribution of these loans to host-country debt has been of growing concern in recent years, even prior to the Covid-19 pandemic. In the cases of both Ethiopia and Kenya, repayment of the loans for SGR construction has become fraught. Since 2017, Ethiopia has faced shortages in foreign exchange reserves and struggled to repay its external debts, including to Chinese lenders. The Tigray War has likely worsened this situation. Similarly, in 2020, Kenya's parliament set out to renegotiate its Chinese railway loans.³⁵

However, SGR loans also showcase the distinct flexibility that Chinese loans offer. Ethiopia was able to defer repayment for a year and renegotiate the terms of lending in 2018 after the high-level Forum on China-Africa Cooperation (FOCAC) summit, extending the duration of the loan from 15 to 30 years.³⁶ Ethiopia has also struggled to pay the Chinese contractors managing the railway operations, but the contractors have continued to finance the costs of operations and capacity building through their own means.³⁷

Debt-trap narratives have been salient in SGR projects, particularly surrounding the use of particular clauses in Chinese loan contracts. For example, the Kenya SGR loan required a "waiver of sovereign immunity" in case of default, which—while commonly used in commercial contracts—takes on a sinister tone in the context of sovereign lending from an official creditor.³⁸ Other controversies have surrounded the implication of using the port of Mombasa as collateral for the country's railway loans from China.³⁹ The reality is more nuanced: such lending practices are common in commercial transactions and represent extra caution on the part of a lender rather than any real risk of asset seizure, which is for many reasons far less likely.⁴⁰

There are strong financial and political disincentives for taking over failing infrastructure. Furthermore, the negative optics of a debt trap have potentially contributed to greater risk aversion around valid instruments such as debt-for-equity swaps. Such swaps, commonly used in commercial debt workouts, would give Chinese actors an investment stake in strategic sovereign

³⁵ Mureithi, "Kenya's Expensive Chinese-Built Railway Is Racking Up Losses Even as Loans Come Due"; and Jevans Nyabiage, "Kenya Seeks Debt Relief from China as Railway Loan Deadline Looms," *South China Morning Post*, January 20, 2021, <https://www.scmp.com/news/china/diplomacy/article/3118379/kenya-seeks-debt-relief-china-railway-loan-deadline-looms>.

³⁶ Aaron Maasho, "UPDATE 1-Ethiopia PM Says China Will Restructure Railway Loan," Reuters, September 6, 2018, <https://www.reuters.com/article/ethiopia-china-loan-idUSL5N1VS4IW>; and Yunnan Chen, "Ethiopia and Kenya Are Struggling to Manage Debt for Their Chinese-Built Railways," Quartz, June 4, 2019, <https://qz.com/africa/1634659/ethiopia-kenya-struggle-with-chinese-debt-over-sgr-railways>.

³⁷ Chen, "Laying the Tracks."

³⁸ Uche Igwe, "What Do Sovereign Immunity Clauses Mean for Chinese Engagement with Africa?" London School of Economics and Political Science, December 1, 2020, <https://blogs.lse.ac.uk/africaatlse/2020/12/01/what-do-sovereign-immunity-clauses-mean-for-china-engagement-africa-debt>; and Anna Gelpert et al., "How China Lends: A Rare Look into 100 Debt Contracts with Foreign Governments," Center for Global Development, AidData, Kiel Institute for the World Economy, and Peterson Institute for International Economics, March 31, 2021, <https://www.cgdev.org/publication/how-china-lends-rare-look-into-100-debt-contracts-foreign-governments>.

³⁹ "Kenya's Port of Mombasa is Reportedly Considered Collateral for the Country's Railway Loans from China," RWR Advisory Group, December 21, 2018, <https://www.rwradvisory.com/kenyas-port-of-mombasa-is-reportedly-considered-collateral-for-the-countrys-railway-loans-from-china>.

⁴⁰ Ian Taylor, "Kenya's New Lunatic Express: The Standard Gauge Railway," *African Studies Quarterly* 19, no. 3 (2020): 29–52; and Kanyi Lui and Yunnan Chen, "The Evolution of China's Lending Practices on the Belt and Road," ODI, November 26, 2021, <https://odi.org/en/publications/the-evolution-of-chinas-lending-practices-on-the-belt-and-road>.

infrastructure. However, this tool has yet to be used in China's overseas debt relief. This is likely due to the lack of technical capacity and experience in Chinese financial institutions, but political backlash is ostensibly another contributing factor.

Nevertheless, the significant cost of railways has been a clear burden to indebted African governments, especially in the era of Covid-19. Chinese debt is still a low proportion of Nigeria's overall debt portfolio,⁴¹ but both Ethiopia and Kenya have applied for debt relief through the G-20 Debt Service Suspension Initiative.⁴² Ethiopia has also applied for further debt restructuring through the G-20 Common Framework in order to renegotiate the terms of its external loans with China and other creditors.

Governance and Security

A final challenge to the operation and sustainability of Chinese-built African railways has been governance and security. SGR projects and their contractors have been associated with corrupt practices around procurement.⁴³ This is most marked in the Kenyan case, where the tendering of the railway line has been characterized by a lack of transparency. Most notably, CRBC's contract was not awarded through open competition, as required by law, but instead was directly granted.⁴⁴

Managing the environmental and social impacts of railway construction and displacement has also been highly contingent on local contexts. While guidelines exist for corporate social responsibility and environmental regulations, historically the degree to which they are enforced by SOEs is highly adaptive to local conditions.⁴⁵ For instance, land appropriation has been less an issue in Ethiopia, where land is government-owned, while in Kenya, where there is a livelier ecosystem of media and civil society, the railway has faced more scrutiny over its environmental impact on national parks and wildlife.⁴⁶

The most significant challenges have related to security. The development of new strategically important infrastructure brings with it the need to protect this infrastructure against security risks and threats. In Kenya, this has led to the establishment of a new railway police force, which contracts a Chinese security firm to protect the railway and train local security personnel.⁴⁷ The rise of this nascent security industry is concomitant with China's growing commercial interests in Africa and its need to protect Chinese workers and valuable strategic infrastructure.

These risks have been graphically demonstrated in the recent attack on the Abuja-Kaduna railway in Nigeria in March 2022, when assailants derailed the train and killed passengers,

⁴¹ Debt Management Office (Nigeria), "Facts about Chinese Loans to Nigeria," June 18, 2020, <https://www.dmo.gov.ng/facts-about-chinese-loans-to-nigeria>.

⁴² World Bank, Debt Service Suspension Initiative, <https://www.worldbank.org/en/topic/debt/brief/Covid-19-debt-service-suspension-initiative>.

⁴³ Damilare Famuyiwa, "Why World Bank Blacklisted CCECC, 5 Other Chinese Firms," Nairametrics, August 20, 2019, <https://nairametrics.com/2019/08/20/here-is-why-world-bank-blacklisted-ccecc-5-other-chinese-firms/>; and Yuan Wang and Uwe Wissenbach, "Clientelism at Work? A Case Study of Kenyan Standard Gauge Railway Project," *Economic History of Developing Regions* 34, no. 3 (2019): 280–99.

⁴⁴ Ying Xia, "Influence through Infrastructure: Contesting the Chinese-Built Standard Gauge Railway in Kenya," University of Oxford China Centre, Research Brief, no. 9, September 25, 2019.

⁴⁵ Maria Adele Carrai, "Adaptive Governance Along Chinese-Financed BRI Railroad Megaprojects in East Africa," *World Development* 141, no. 1 (2021).

⁴⁶ Xia, "Influence through Infrastructure."

⁴⁷ Paul Nantuluya, "Chinese Security Firms Spread along the African Belt and Road," Africa Center for Strategic Studies, June 15, 2021, <https://africacenter.org/spotlight/chinese-security-firms-spread-african-belt-road/>; and Shuwen Zheng and Ying Xia, "Private Security Companies in Kenya and the Impact of Chinese Actors," SAIS-CARI, Working Paper, no. 44, February 2021.

prompting calls for better security surveillance.⁴⁸ The Ethiopian SGR has also been an acute site of security risk. Local grievances have fomented due to the railway's impacts on local villages (such as collisions with livestock as a result of the lack of fencing along the route) and compensation issues. The railway has also been a flashpoint for existing grievances against the federal government, which has led to a growing number of security incidents and blockades. While the 2018 peace treaty with Eritrea raised the prospects of the expansion of a northern branch through Mekele to Asmara, the deteriorating Tigray conflict has halted further expansion plans and raised fresh questions over the security and future of the railway itself. As with the Kenya SGR, Chinese SOE contractors have sought to guarantee the safety of the railway, given concerns that the project will continue to be a lightning rod for controversy and may be viewed as a strategic asset in the ongoing conflict.

Future Prospects

The development of standard-gauge railway in Africa came during a historically contingent period of outward capital investment from Chinese financial institutions when Chinese SOEs sought new markets in developing countries to cultivate long-term opportunities in the railway sector. This supply of capital and capacity coincided perfectly with existing demand and regional ambitions for railway infrastructure development in Africa to facilitate industrialization and structural transformation. Although these projects under BRI have been characterized as “win-win,” the proportion of risk borne by host governments is notably higher.

Since the collapse of the commodity price cycle and the wane of Chinese development finance overseas after 2016, no further SGRs have been financed. Planned extensions in Ethiopia and Kenya have not been granted further loans,⁴⁹ and Nigeria's major SGR line still remains to be constructed in prolonged stages. The sole new railway to be funded in Africa in recent years was a light-rail project in Egypt, which received a China Exim Bank loan of \$1.2 billion in 2019.⁵⁰ In the wake of the Covid-19 pandemic, there is a sense that the golden age of BRI infrastructure financing—at least in transport and construction—is over. This was further supported by a 2021 FOCAC announcement on the significant reduction in development finance offered to Africa, though the pledge of ten regional connectivity projects signals that regional integration is still a part of the agenda.⁵¹

However, while further financing from Chinese lenders is unlikely, this does not entail the abandonment of the existing railway lines. Chinese SOEs still have long-term economic interests extending beyond railway infrastructure into other sectors of the economy, including industrial zones, real estate, maintenance, and capacity building. They are likely to remain heavily involved in SGR operations for years to come.

⁴⁸ Mohammed Babangida and Abubakar Ahmadu Maishanu, “Terrorists Attack Abuja-Kaduna Train in Northern Nigeria (LIVE UPDATES),” *Premium Times*, March 29, 2022, <https://www.premiumtimesng.com/news/headlines/520477-terrorists-attack-abuja-kaduna-train-in-northern-nigeria-live-updates.html>.

⁴⁹ Allan Olingo, “Kenya Fails to Secure \$3.6B from China for Third Phase of SGR Line to Kisumu,” *East African*, April 27, 2019, <https://www.theeastafrican.co.ke/tea/business/kenya-fails-to-secure-3-6b-from-china-for-third-phase-of-sgr-line-to-kisumu-1416820>.

⁵⁰ “Egypt Borrows \$1.2Bn from China to Fund Electric Train Project,” *Middle East Monitor*, January 16, 2019, <https://www.middleeastmonitor.com/20190116-egypt-borrows-1-2bn-from-china-to-fund-electric-train-project>.

⁵¹ Yunnan Chen and Yue Cao, “Changing Tides for China-Africa Cooperation: Our Key Takeaways from the 8th FOCAC,” ODI, December 8, 2021, <https://odi.org/en/insights/changing-tides-for-china-africa-cooperation-our-key-takeaways-from-the-8th-focac>.

These rail projects also continue to be politically salient as part of BRI. Their symbolism in African countries' diplomatic and strategic relationships with China has been a powerful factor in ensuring that SOEs continue to operate and support projects, even as they incur losses and the railway owners—in the case of Ethiopia—are unable to pay management fees.⁵² These strategic motives have helped override commercial justifications for the projects, ensuring that, despite challenges, the railways must not be allowed to fail.

⁵² Chen, "Laying the Tracks."

THE NATIONAL BUREAU *of* ASIAN RESEARCH

NBR SPECIAL REPORT #98 | MAY 2022

Chinese Telecommunications Giants and Africa's Emerging Digital Infrastructure

Daria Impiombato

DARIA IMPIOMBATO is a Researcher at the Australian Strategic Policy Institute's International Cyber Policy Centre. She can be reached at <dariaimpiombato@aspi.org.au>.

EXECUTIVE SUMMARY

This essay finds that Chinese technology and telecommunications companies play an increasingly dominant role in the rise of Africa's digital infrastructure, creating key strategic opportunities for China's global tech and geopolitical ambitions.

MAIN ARGUMENT

Chinese technology companies have become the main actors in the development of Africa's digital infrastructure. Beijing's influence has induced increasing dependence on Chinese providers in the financing, provision, and operation of critical information and communications technology (ICT) infrastructure across Africa. These factors compound to create ripple effects where the end result is a potentially powerful political agenda both regionally and globally. Further, Beijing's influence has assisted several Chinese technology companies in dominating certain areas of Africa's tech space, overcoming and counteracting difficulties resulting from Western governments' actions against the companies that excluded them from lucrative markets. This raises questions about the Western approach to engaging illiberal African countries, especially in areas in which China has increased its presence, such as the creation of internet services. In the short term, the Chinese party-state may improve its international image, economic standing, and sphere of influence. Over the longer term, China's activities could create the tools needed to achieve a global alternative to the U.S.-led technological ecosystem and the rules-based order.

POLICY IMPLICATIONS

- More investigations are needed to better understand how Chinese telecommunications companies operate in different contexts. These should assess the extent to which African countries' dependence on Chinese providers has put them at risk of coercion and exploitation.
- To mitigate these effects, the international community should push for the creation and enforcement of transparency mechanisms for ICT companies. This should diminish reliance on single-country sanctions that may have the unintended effect of propelling the growth and dominance of Chinese companies in more fragile states.
- Democratic countries should invest in generating viable options for African states and the private sector to diversify the provision of digital infrastructure, engaging with local providers to mitigate dependence on China. While this may often not be economically convenient or viable in the short term, not doing so will leave space for Chinese telecommunications companies to fully dominate the African market.

Chinese telecommunications companies are critical to Africa's digital infrastructure. The Chinese government has facilitated the expansion of Chinese tech companies predominantly through aid and heavy investment in information and communications technology (ICT) infrastructure projects. As part of its wide-ranging national plans to achieve global leadership in cyberspace, these projects serve as a means for China to pursue its international agenda and are intertwined with global geopolitical and economic factors. Africa has become a pivotal area of Chinese influence, particularly in the telecommunications sector, because the vast majority of African countries have huge and rising demand for connectivity services as well as for financing to fund the required development and infrastructure.

There are many examples of Chinese ICT companies building digital infrastructure in Africa. Huawei, a private company, has come to the attention of international policy circles in relation to its 5G infrastructure. Several countries have banned the company due to concerns that its technologies purposefully contain security holes that the Chinese government can exploit for corporate and state espionage. Huawei's development of 5G networks and data centers in Africa shows how the purported aim of increased data sovereignty actually engenders heavy dependence on Chinese technology. The publicly owned Chinese technology firm ZTE offers a different dimension to Chinese state involvement and is prominent in the provision of ICT infrastructure in Ethiopia and Zimbabwe. The company has been accused of overlooking human rights concerns, and its activities have buttressed authoritarian tendencies in countries where it has operated. China's state-owned enterprises (SOEs) China Unicom, China Telecom, and China Mobile are heavily involved in the development of undersea cable networks connecting Africa, which is an example of the provision of long-term infrastructure with a high potential for espionage and military use.

Other than commercial gains, Chinese ICT companies have political reasons for continued expansion into the African market.¹ China has long seen itself as the leader of the "global South" in a struggle against a "global North" led by the United States and its key allies. What defines China's present strategy is that this quasi-anti-imperialist objective is channeled through domination of key technological infrastructure. This will place Beijing in a strengthened position in global organizations, including those which set international technology standards. In a world of increasing competition between great powers, the dissemination and adoption of critical and emerging technology can play a pivotal role in the degree of influence these powers have in the international arena. Understanding China's engagement in Africa through the digital infrastructure sector is paramount to any assessment of its strategic, political, and economic interests in the region.

This essay assesses fundamental questions about China's influence in Africa. It begins by outlining the Chinese leadership's key policy frameworks and discourse to expand its sphere of influence by analyzing China-Africa cooperation under President Xi Jinping's vision for a "community of shared future" and how this intersects with national plans such as the Belt and Road Initiative (BRI), Made in China 2025, and the Standards 2035 project. Chinese telecommunications companies and their projects are central to these strategies. The essay then analyzes global interventions by China's tech giants and details four case studies that exemplify aspects of China's Africa strategy, encompassing private, publicly owned, and state-owned companies. It concludes with an assessment of the implications of this expansion for the United

¹ Lloyd Thrall, *China's Expanding African Relations: Implications for U.S. National Security* (Santa Monica: RAND Corporation, 2015), chap. 2.

States and its allies, including a set of policy options aimed at mitigating the effects of Beijing's market domination in a critical industry for Africa's development.

A Community of Shared Future in Cyberspace

Beijing's Global Ambitions

What President Xi Jinping terms a “community of shared future” forms the strategic basis of China's outgoing tech strategy. This section outlines the key ideational trends that frame China's engagement in Africa as well as the significant aspects of BRI that are relevant for understanding Beijing's activities across Africa.

Like the West, China has forums where its vision of technology is put on display. A key difference, however, with the tech summits that occur in the United States is that China's leading event, the World Internet Conference (WIC), is convened by party-state officials. At the 2015 WIC, Xi said that “China stands ready to work with all parties concerned, increase investment and technical support to accelerate the building of global internet infrastructure, and enable more developing countries and their peoples to take advantage of the development opportunities brought by the internet.”² Yet six years later at the 2021 WIC, technology journalists noted that, in addition to the usual mentions of cybersecurity, digital governance, and tech companies' social responsibility, there was an almost relentless focus on internet control.³ Policies that “implement products and services to protect underage users” sound moderate, but there is a sharper edge. A new set of cybersecurity regulations approved by China's State Council in July 2021 strengthened the state's grip over companies involved in its “critical information infrastructure.”⁴

Several initiatives have contributed to the advance of China's technological vision. The heightening of tensions between the United States and China, exacerbated by the Covid-19 pandemic, has accelerated Beijing's reshaping of its economic policy, providing new impetus for the Chinese domestic economy. For example, Made in China 2025 prioritizes investing in strategic industries traditionally led by the United States, including information technology. One iteration of this rebadged policy is the emergence of “dual circulation,” aimed at boosting domestic demand, resolving impending issues of supply chain vulnerability, and reducing dependence on international markets. While seeking to minimize dependence on foreign economies, the strategy aims to make other countries heavily reliant on China as an exporter of high-tech supplies.⁵

Even in the world of technology standards, China is flexing its muscles. In theory, standards help ensure the transparency and openness of global trade. According to Tim Rühl from the German Council on Foreign Relations, “If China strategically spreads its own technical standards for critical infrastructure in package deals along the Belt and Road, it creates one of the most effective forms of technological lock-in that turns into political dependency.”⁶ While some experts

² Xi Jinping, “A New Partnership of Mutual Benefit and a Community of Shared Future,” President of the People's Republic of China (PRC), September 28, 2015, <https://www.xuexi.cn/7a09c727d5241aa17a32926072108964/e43e220633a65f9b6d8b53712cba9caa.html>.

³ Shen Lu, “Decoding China's Latest World Internet Conference,” Protocol, September 29, 2021, <https://www.protocol.com/china/wuzhen-world-internet-conference-policy-signals>.

⁴ Li Keqiang, “Zhonghua Renmin Gongheguo Guowu yuanling: Di 745 hao” [Decree of the State Council of the People's Republic of China: No. 745], Central People's Government (PRC), July 30, 2021, http://www.gov.cn/zhengce/content/2021-08/17/content_5631671.htm.

⁵ Frank Tang, “What Is China's Dual Circulation Economic Strategy and Why Is It Important?” *South China Morning Post*, November 19, 2020, <https://www.scmp.com/economy/china-economy/article/3110184/what-chinas-dual-circulation-economic-strategy-and-why-it>.

⁶ Patrick Lozada, Tim Rühl, and Helen Toner, “Chinese Involvement in International Technical Standards: A DigiChina Forum,” *DigiChina*, December 6, 2021, <https://digichina.stanford.edu/work/chinese-involvement-in-international-technical-standards-a-digichina-forum>.

have analyzed China's Standards 2035 project with skepticism,⁷ others have urged governments to consider it a real threat.⁸ Chinese tech companies have already started playing a bigger role in global industry standard setting. ZTE and China Telecom, for example, have targeted standard-setting proposals at bodies such as the United Nations' International Telecommunication Union, whose policies are widely adopted in developing countries across Africa. Approval of these standards, especially in the fields of facial recognition and surveillance technologies, helps Chinese companies enter the African market, which provides greater opportunities to gather data vital to the improvement of the technologies. Likewise, efforts to boost cooperation between China and Africa through China's BeiDou satellite system can be viewed under the standard-setting lens. Wider applications of the system in the domains of public safety, agriculture, and transportation, among others, will foster a new stream of industry standards in the region, promoting the use of BeiDou over other satellite systems.⁹

Overall, the ability to set standards gives companies greater power over defining the future of the internet, which in itself represents an excellent soft-power tool. President Xi has charted a path to achieve a community with a shared future in cyberspace, with the first step being, "accelerating the building of global internet infrastructure."¹⁰ The ways in which Beijing is attempting to do this rely heavily on setting up its companies, infrastructure, and equipment as the default in as many countries as possible. Africa offers unbeatable opportunities to do exactly that.

China-Africa Cooperation in the New Era

BRI has been one of the key drivers at the theoretical and operational levels for Chinese companies' expansion overseas.¹¹ This section outlines the significant aspects of the framework that are relevant for understanding Beijing's activities across Africa.

By 2021, 46 African countries and the African Union (AU) Commission had signed on to BRI, an achievement that is often remarked on during diplomatic efforts.¹² BRI—and particularly one of its most prominent subsections, the Digital Silk Road—has laid the basis for China's standard-setting and market dominance, which allows for the control of data traffic as well as data and intelligence gathering.¹³ The International Monetary Fund estimates that sub-Saharan Africa had an average of one new internet user per second between 2012 and 2017,¹⁴ making it an incredibly

⁷ See, for example, Naomi Wilson, "China Standards 2035 and the Plan for World Domination—Don't Believe China's Hype," Council on Foreign Relations, June 3, 2020, <https://www.cfr.org/blog/china-standards-2035-and-plan-world-domination-dont-believe-chinas-hype>.

⁸ See, for example, Matt Sheehan, Marjory Blumenthal, and Michael R. Nelson, "Three Takeaways from China's New Standards Strategy," Carnegie Endowment for International Peace, October 28, 2021, <https://carnegieendowment.org/2021/10/28/three-takeaways-from-china-s-new-standards-strategy-pub-85678>.

⁹ Zhao Lei, "China and Africa Will Strengthen Cooperation on BeiDou Satellite System," *China Daily*, November 6, 2021, <https://www.chinadaily.com.cn/a/202111/06/WS618587cfa310cdd39bc73aa8.html>.

¹⁰ Office of the Central Cyberspace Affairs Commission (PRC), "Wangluokongjian mingyun gongtongti de goujian fanglüe" [A Strategy to Build a Community of Shared Future in Cyberspace], November 23, 2020, http://www.cac.gov.cn/2020-11/23/c_1607695819067155.htm.

¹¹ Nadège Rolland, *China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative* (Washington, D.C.: National Bureau of Asian Research, 2017).

¹² Wang Yi, "Forge Ahead Together to Deliver a Brighter Future for China and Africa" (remarks, Beijing, May 25, 2021), http://www.focac.org/eng/ttxsxy/202105/t20210527_9131710.htm.

¹³ Australian Strategic Policy Institute (ASPI), Mapping China's Tech Giants, <https://chinatmap.aspi.org.au>.

¹⁴ Félix Simione and Martha Tesfaye Woldemichael, "Digitalizing Sub-Saharan Africa: Hopes and Hurdles," International Monetary Fund, June 15, 2020, <https://www.imf.org/en/News/Articles/2020/06/15/na061520-digitalizing-sub-saharan-africa-hopes-and-hurdles>.

attractive market—especially for companies such as Huawei and ZTE that were struggling to bounce back from foreign sanctions.¹⁵

Theoretically, the main intention of companies like Huawei, which say they are bridging the urban-rural digital divide,¹⁶ is to provide affordable infrastructure projects to connect Africa's remote areas that have been overlooked by Western companies. The absence of other attractive options has made several fragile African states fully dependent on Huawei, or a combination of Chinese companies, for their telecommunications infrastructure. Meanwhile, the United States and the European Union have been either unable or unwilling to provide a viable alternative, despite the importance of internet access and connectivity for the development of these countries. This has made it practically impossible for African leaders to turn down offers from Huawei or other Chinese telecom providers chartered through BRI projects.¹⁷

Chinese Telecommunications Companies in Africa

How do researchers and policymakers better understand the scale of global interventions by China's tech giants? This question motivated the Mapping China's Tech Giants project, in which researchers at the Australian Strategic Policy Institute (ASPI) tracked the international expansion of 27 key Chinese technology companies.¹⁸ They categorized ways in which China is developing and investing in technology such as artificial intelligence (AI), biotechnology, the Internet of Things (IoT), surveillance, and telecommunications. The project filled a gap created by these companies' lack of transparency about their operations, governance structures, and relationship to the Chinese party-state. This section discusses the relevant parts of the project for the telecommunications sector in Africa.

As of June 2021, the ASPI website counted 480 points of presence of Chinese tech companies in Africa out of a total of almost 4,000 data points, or approximately 12% of the total data set. These points of presence consist of overseas headquarters, offices, projects, partnerships with local governments, and partnerships with international or local companies. The data shows that while Asia is still the leading region of interest for most Chinese tech companies, there is a growing interest in less developed markets, especially on the African continent. This is particularly true for Chinese ICT and telecom companies, such as Huawei, ZTE, China Telecom, China Unicom, and China Mobile.

Of further note, financing channels create a closed loop between China's technology companies and government investment. Chinese companies in the telecommunications sector are fundamentally different from their Western competitors. In particular, they are subject to Chinese laws on national security, including cybersecurity, intelligence, and counterespionage.¹⁹ Most of

¹⁵ Fergus Ryan, Audrey Fritz, and Daria Impiombato, "Mapping China's Tech Giants: Reining in China's Technology Giants," ASPI, June 8, 2021, <https://www.aspi.org.au/report/mapping-chinas-technology-giants-reining-chinas-technology-giants>.

¹⁶ "Huawei's Bridging the Digital Divide Goal in 2018: Extend Wireless Network Coverage to 100 Million New Rural Users," Huawei, April 17, 2018, <https://www.huawei.com/en/technology-insights/industry-insights/outlook/mobile-broadband/wireless-for-sustainability/feature-stories/extend-network-coverage-to-100-million-rural-users>.

¹⁷ Chiponda Chimbelu, "Investing in Africa's Tech Infrastructure: Has China Won Already?" Deutsche Welle, May 3, 2019, <https://www.dw.com/en/investing-in-africas-tech-infrastructure-has-china-won-already/a-48540426>.

¹⁸ The author of this essay contributed to ASPI's Mapping China's Tech Giants project.

¹⁹ Jennifer Hillman and David Sacks, "China's Belt and Road: Implications for the United States," Council on Foreign Relations, Independent Task Force Report No. 79, March 23, 2021, <https://www.cfr.org/report/chinas-belt-and-road-implications-for-the-united-states>.

them are obliged to build internal party committees and conduct party activity. All are compelled to pursue centrally dictated goals for the development of the Chinese nation.

Chinese Aid

Aid from China has been a key vector of influence of many telecommunications infrastructure projects, creating significant advantages for companies like Huawei over their international competitors. In less developed countries, the Export-Import Bank of China (China Exim Bank) finances smart city and public security projects, while e-governance and telecommunications initiatives have often received funding through both the China Development Bank and China Exim Bank. ASPI's China tech map shows a total of 65 broader projects fully funded or partly supported by the Chinese party-state in Africa, most of them in the telecommunications industry. Due to the nature of digital infrastructure, this translates into vast coverage of numerous countries, automatically linking them to Chinese aid. As with most China Exim Bank financing of telecommunications infrastructure, the money is usually given directly to the Chinese company, not the host government.

The telecommunications sector has been identified as a prime example of how Chinese aid is being directed not exclusively toward less democratic countries but also toward the poorest and most isolated ones.²⁰ According to Chinese scholar Yang Jian, vice president of the Shanghai Institute of International Studies, Huawei has already achieved dominance in a “high-tech digital circle” that mainly includes developing and less developed nations.²¹ As one of China's national champions and a leader of global expansion for Chinese technologies, Huawei has always benefited from ample state support. While the ability to provide cheaper alternatives has played a role in putting the company ahead of competitors, this alone is insufficient to explain its success in Africa. In fact, research has shown that hiring local staff and providing professional and technical training,²² as well as targeting local consumers through specific marketing strategies,²³ have also been key.²⁴

In Ghana, Huawei started building the backbone infrastructure for nationwide e-government services in 2011, which connected all of the country's districts and included two data centers and training sessions. The national data center was then rebuilt in 2015 by Huawei, as reported by Chinese state media, and financed by China Exim Bank via a \$20 million loan.²⁵ In October 2020, the bank provided funds for Huawei to deploy its Rural Star flagship product in Ghana.²⁶ Rural Star is a project to provide data services to over 3.4 million people in rural communities, per a financing agreement signed by Ghana's Ministry of Communications and the Ghana Investment Fund for Electronic Communications. The Ghana News Agency reported that this project “would

²⁰ Jonathan Dove, “Debunking the Myths of Chinese Investment in Africa,” *Diplomat*, February 21, 2016, <https://thediplomat.com/2016/02/debunking-the-myths-of-chinese-investment-in-africa>.

²¹ Yang Jian, “Dang quanqiu shuzi shengtai zaoyu baquan zhengzhi: 5G shichang tanpan zhongdi ‘Huawei chongtu’” [When the Global Digital Ecology Encounters Hegemonic Politics: The “Huawei Conflict” in 5G Market Negotiations], *Pacific Journal* 1 (2021).

²² Henry Tugendhat, “How Huawei Succeeds in Africa: Training and Knowledge Transfers in Kenya and Nigeria,” China Africa Research Initiative, Working Paper, no. 34, March 2020.

²³ Abdi Latif Dahir, “How Africa's Top Handset Maker Designs Phone Cameras Calibrated for Darker Skin Tones,” *Quartz Africa*, June 3, 2019, <https://qz.com/africa/1633699/transions-tecno-infinix-camera-phones-made-for-dark-skin-tones>.

²⁴ Henry Tugendhat, “Huawei Is Trying to Avoid U.S. Sanctions: That May Change the U.S.-China Tech Rivalry in Africa,” *Washington Post*, April 30, 2021, <https://www.washingtonpost.com/politics/2021/04/30/huawei-is-trying-avoid-us-sanctions-that-may-change-us-china-tech-rivalry-africa>.

²⁵ “Chinese Telecom Firm Huawei Supports Ghana's ICT Modernization,” *Global Times*, June 12, 2015, <http://web.archive.org/web/20150720001422/http://www.globaltimes.cn/content/926770.shtml>.

²⁶ “(Huilianwang) yi ge laizi Feizhou CEO de gushi!” [(Internet) A Story from an African CEO!], Huawei Cloud, February 25, 2021.

extend the national mobile communication coverage from 83% to 95%.”²⁷ After the project’s completion, local mobile carriers would then be able to lease the infrastructure. Furthermore, the Ghanaian government announced in November 2020 that Huawei would provide equipment for a \$189 million project called Ghana Rural Telephony and Digital Inclusion to improve telecommunication services for rural residents. The money to buy Huawei’s equipment was provided by the Chinese SOE China National Technical Import and Export Corporation.²⁸

Ghana, which is one of Africa’s most politically stable democratic countries, has for the past few years intensified its dependence on Chinese loans. After a particularly generous 2019 deal with the Chinese government, it is now one of Africa’s most highly indebted countries to China.²⁹ Ghana has also been one of the main recipients of Chinese aid within the ICT sector, which shows that Chinese aid is not exclusively directed at less stable and more autocratic states.³⁰

While some have argued that these more commercially oriented forms of aid do not much differ from Western-led initiatives in terms of motives,³¹ such investments clearly have great potential to shape the ways societies are governed as well as their development paths. Therefore, it is important to monitor the trajectories of aid in the telecommunications sector. By 2020, Ghana was one of the many African governments calling for debt relief from Beijing. Rising debt burdens have already pushed some of these countries, including Ghana, to cancel Chinese state-backed projects.³² As pressure mounted for the Chinese government to provide more support for these highly indebted countries, at the 2021 Forum on China-Africa Cooperation, Xi Jinping announced a reduction of its financial support directed to Africa over the next three years.³³ This will likely cause a shift from heavily investing in construction projects to focusing more on the financing of ICT infrastructure and IoT projects, especially given the emphasis on such projects within the 2022–2024 Dakar Action Plan.³⁴

Huawei

Huawei, the world’s biggest telecommunications provider, is by far the most profitable actor among China’s tech giants in Africa, targeting a vast majority of African countries. Its inroads and almost absolute dominance in the region are due to the fact that it offers solutions across the entire spectrum of internet provision, from terrestrial networks to smartphones, in addition to the edge given by Chinese state banks’ funding.

Founded in 1987, Huawei is employee-owned through an unclear arrangement involving an investment company. Its governance structure and processes have raised much suspicion outside

²⁷ “Government, Huawei to Construct Rural Star Sites to Bridge Digital Divide,” Ghana Chamber of Telecommunications, October 6, 2020, <https://telecomschamber.com/news-media/industry-news/government-huawei-to-construct-rural-star-sites-to-bridge-digital-divide>.

²⁸ Manny Pham, “Ghana, Huawei Unveil €155 Million Rural Connectivity Project,” Developing Telecoms, November 16, 2020, <https://www.developingtelecoms.com/telecom-business/telecom-regulation/10295-ghana-huawei-unveil-155-million-rural-connectivity-project.html>.

²⁹ Elliot Smith, “China’s \$2 Billion Deal with Ghana Sparks Fears Over Debt, Influence and the Environment,” CNBC, November 21, 2019, <https://www.cnbc.com/2019/11/21/chinas-2-billion-ghana-deal-fears-over-debt-influence-environment.html>.

³⁰ Rong Wang, François Bar, and Yu Hong, “ICT Aid Flows from China to African Countries: A Communication Network Perspective,” *International Journal of Communication* 14 (2020): 1498–523.

³¹ Axel Dreher et al., “Apples and Dragon Fruits: The Determinants of Aid and Other Forms of State Financing from China to Africa,” *International Studies Quarterly* 62, no. 1 (2018): 182–94.

³² Malancha Chakrabarty, “China and Africa—Is It the End of the Honeymoon Period?” Observer Research Foundation, October 27, 2021, <https://www.orfonline.org/expert-speak/china-and-africa-is-it-the-end-of-the-honeymoon-period>.

³³ David Pilling and Kathrin Hille, “China Cuts Finance Pledge to Africa amid Growing Debt Concerns,” *Financial Times*, December 1, 2021, <https://www.ft.com/content/b7bd253a-766d-41b0-923e-9f6701176916>.

³⁴ Ministry of Foreign Affairs (PRC), “Forum on China-Africa Cooperation Dakar Action Plan (2022–2024),” November 30, 2021, https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/202112/t20211202_10461183.html.

China due to this unconventional ownership model as well as a more general lack of transparency.³⁵ Between August 2018 and March 2021, Huawei and 68 of its non-U.S. affiliates were added to several U.S. government sanction lists, which include companies designated as national security threats.³⁶ Despite its gigantic global presence in the telecommunications and technology fields, the U.S. sanctions against Huawei have had a remarkable impact. The company's shipments dropped 21% between 2019 and 2020,³⁷ and its smartphone sales were dramatically reduced.³⁸ The economic cost, as well as the damage to the company's image, from bans and sanctions has created a greater incentive for Huawei to focus instead on countries far less likely to impose such measures. As a result, its operations in Africa have increased.

According to ASPI's map, the company operated 210 projects across Africa as of July 2021, predominantly covering telecommunications and ICT infrastructure (82) and smart cities (39), but also surveillance, cloud services, 5G, AI, and e-payment services. Other think tanks estimate that Huawei has developed 30% of Africa's 3G and 70% of the continent's 4G networks.³⁹ In addition, it is among the world's few providers of 5G technology and has already started building the first networks in Africa. Many African governments are yet to be persuaded that Huawei is a real security risk. "As a government, we are aware of the questions about suppliers and technology," Kenyan ICT minister Joseph Mucheru said at Safaricom's 5G launch, "but some of them are more about politics than technology."⁴⁰

Senegal data centers. An important part of Huawei's projects in Africa has involved the construction and operation of data centers, facilities consisting of computer systems that store critical data to facilitate enterprise computing. One of the most prominent projects was conducted in Senegal, where a new national data center was inaugurated in June 2021. The project was commissioned by President Macky Sall, a strong promoter of cooperation with China. The financing came from a \$17 million Chinese loan, the details of which are unclear.⁴¹

The center enables Senegal to store data locally instead of in the United States or Asia, where it was stored in the past. It also offers cheaper options for local tech start-ups.⁴² Significantly, Sall announced that the project aims to enhance "digital sovereignty" by transferring all data and digital platforms of the government and state-owned businesses to the data center and to end reliance on foreign-located servers. This data governance model is the first of its kind for Africa but significantly replicates elements of China's model.⁴³ Huawei provides capabilities in all four layers of the technology business ecosystem—namely, carrier infrastructure, hardware, storage

³⁵ Colin Hawes and Grace Li, "Transparency and Opaqueness in the Chinese ICT Sector: A Critique of Chinese and International Corporate Governance Norms," *Asian Journal of Comparative Law* 12, no. 1 (2017): 41–80.

³⁶ Ryan, Fritz, and Impiombato, "Mapping China's Tech Giants."

³⁷ Jon Porter, "Apple Retakes Second Place in Smartphone Shipment Rankings as Sanctions Bite Huawei," *Verge*, January 28, 2021, <https://www.theverge.com/2021/1/28/22254368/smartphone-sales-2020-counterpoint-research-canalys-apple-samsung-huawei-xiaomi-oppo>.

³⁸ David Kirton, "Huawei Smartphone Revenue to Fall at Least \$30–40 Bln in 2021—Chairman," *Reuters*, September 24, 2021, <https://www.reuters.com/technology/huawei-2021-smartphone-revenue-drop-by-least-30-40-bln-rotating-chairman-2021-09-24>.

³⁹ Mohammed Yusuf, "China's Reach into Africa's Digital Sector Worries Experts," *Voice of America*, October 22, 2021, <https://www.voanews.com/a/china-reach-into-africa-digital-sector-worries-experts/6281543.html>.

⁴⁰ Jevans Nyabiage, "Kenya to Continue Working with Huawei on 5G Roll-out, IT Minister Says," *South China Morning Post*, March 28, 2021, <https://www.scmp.com/news/china/diplomacy/article/3127307/kenya-continue-working-huawei-5g-roll-out-it-minister-says>.

⁴¹ "Senegal Aims for Digital Sovereignty with New China-Backed Data Centre," *Reuters*, June 22, 2021, <https://www.reuters.com/article/senegal-datacenter-idINL5N2O44D3>.

⁴² Dan Swinhoe, "Senegal to Migrate All Government Data and Applications to New Government Data Center," *Data Center Dynamics*, June 23, 2021, <https://www.datacenterdynamics.com/en/news/senegal-to-migrate-all-government-data-and-applications-to-new-government-data-center>.

⁴³ Eric Olander, "The Powerful Symbolism of the Huawei-Built Data Center Deal in Senegal," *China Africa Project*, June 24, 2021, <https://chinaafricaproject.com/analysis/the-powerful-symbolism-of-the-huawei-data-center-deal-in-senegal>.

and software infrastructure, and software applications. Management of data has emerged as an important aspect of China's standard-setting and expansionist efforts.⁴⁴ Huawei thus is well-positioned to become a key asset for China to address some of its key foreign policy objectives. In fact, the Senegalese government's embrace of China's discourse around data sovereignty suggests that Huawei's initiatives have already yielded practical results.

5G. Having built the majority of Africa's 4G networks, Huawei has an additional advantage in many African countries: local providers are more likely to rely on the "reliable strategic partner" that built their current networks.⁴⁵ As noted earlier, according to some estimates, Huawei has gone from building 30% of Africa's 3G infrastructure to winning bids for 70% of the continent's 4G systems. The trajectory is visibly upward and potentially irreversible. As it becomes increasingly isolated in Western and developed countries, Huawei aims to dominate the 5G space in the developing world. In this scenario, if tech decoupling between the United States and China is to happen, Africa will most certainly fall under China's sphere of influence.⁴⁶

Some North American and European companies have been willing to continue cooperating with Huawei in Africa, despite the obvious technological competition at stake. For example, French telecommunications firm Orange is still very active in investments and retail sales, especially in West and Central Africa, where France continues to have influence.⁴⁷ The company has stated that it "sees no issue in working with Huawei in Africa." Nonetheless, intensified lobbying by the United States has helped persuade several European governments to push their companies away from commercial entanglements with Huawei. "It's not only the pressure from the government—we are European citizens and share the concern... We can't ignore the fact that the big Chinese players are close to the Chinese state," said Orange's CEO Stephane Richard. But he went on to explain that the company is "working more and more with Chinese vendors in Africa, not because we like China, but [because] we have an excellent business relationship with Huawei."⁴⁸

The partnership between Huawei and AU countries was strengthened in May 2019 with an agreement to collaborate on 5G, cloud services, AI technologies, high-speed networks, and training.⁴⁹ The agreement was signed despite a massive controversy that put Huawei at the center of criminal investigations into alleged data breaches.⁵⁰ International media reports claimed that the AU headquarters in Addis Ababa had been bugged and that data had been transferred

⁴⁴ Samantha Hoffman and Nathan Attrill, "Mapping China's Tech Giants: Supply Chains and the Global Data Collection Ecosystem," ASPI, June 8, 2021, <https://www.aspi.org.au/report/mapping-chinas-tech-giants-supply-chains-and-global-data-collection-ecosystem>.

⁴⁵ "Rain lianhe Huawei fabu Feizhou shou ge 5G duli zuwang shangyong wangluo" [Rain and Huawei Released Africa's First 5G Standalone Commercial Network], Huawei, July 19, 2020, <https://www.huawei.com/cn/news/2020/7/rain-huawei-africa-first-standalone-5g-network>.

⁴⁶ Alex Stone and Peter W. Singer, "How China Is Planning for a Tech Decoupling," Defense One, October 12, 2021, <https://www.defenseone.com/ideas/2021/10/how-china-planning-tech-decoupling/186029>.

⁴⁷ "Orange, a Multi-Service Operator in Africa and the Middle East," Orange, <https://www.orange.com/en/africa-and-middle-east>.

⁴⁸ Clara-Laeila Laudette and Supantha Mukherjee, "Orange Sees Role for Huawei in 5G Africa Rollout," Reuters, June 29, 2021, <https://www.reuters.com/business/media-telecom/orange-sees-role-huawei-5g-africa-rollout-2021-06-29>.

⁴⁹ "African Union Deepens Cooperation with Huawei," France 24, May 21, 2019, <https://www.france24.com/en/20190531-african-union-deepens-cooperation-with-huawei>.

⁵⁰ Ghalia Kadiri and Joan Tilouine, "A Addis-Abeba, le siège de l'Union africaine espionné par Pékin" [In Addis Ababa, the Headquarters of the African Union Spied On by Beijing], *Le Monde*, January 26, 2018, https://www.lemonde.fr/afrique/article/2018/01/26/a-addis-abeba-le-siege-de-l-union-africaine-espionne-par-les-chinois_5247521_3212.html; and John Aglionby, Emily Feng, and Yuan Yang, "African Union Accuses China of Hacking Headquarters," *Financial Times*, January 29, 2018, <https://www.ft.com/content/c26a9214-04f2-11e8-9650-9c0ad2d7c5b5>.

regularly back to servers located in Shanghai between 2012 and 2017.⁵¹ Despite bringing in Western expertise, African leaders did not seem to be worried about the incident.⁵²

This highlights the complicated nature of Africa's relationship to China and Chinese technology. African nations seek options beyond their historical colonial and postcolonial interactions with the global North. China, however, has its own technological and authoritarian baggage, and its pronouncements of solidarity with the global South are undercut by allegations of eavesdropping on AU affairs. The debate over whether Chinese companies pose a national security threat continues within the domestic politics of these countries. In the meantime, Huawei has been making great strides in the 5G space. In July 2020, South Africa's network operator Rain announced that the continent's first independent 5G commercial network had been finalizing plans to use Huawei solutions.

In order to become a technological superpower, China intends to enhance its ability to shape how cyberspace is regulated and even conceptualized. This means not only co-opting international organizations but also multiplying its foreign support and making its own infrastructure, equipment, and services the default framework. Dominating Africa's 5G race is a milestone toward this achievement.

ZTE

Huawei is by far the predominant Chinese telecommunications company in Africa, but it is not alone. According to reports, ZTE also increased its 5G revenue despite U.S. sanctions.⁵³ The company has come under mounting international scrutiny several times over the years. The first was in April 2018, when ZTE broke an embargo on commercial activities with Iran and consequently was sanctioned and fined by the United States.⁵⁴ It was later added to several entity lists and designated as a national security threat by the U.S. Federal Communications Commission.⁵⁵

Unlike Huawei, ZTE is a publicly owned company, though with a high level of Chinese party-state control. Telecommunications products and equipment are its primary business. Since 2019, it has been focusing more on 5G, becoming only the fourth company in the world in this space after Huawei, Ericsson, and Nokia.⁵⁶ In total, ZTE has run telecommunications and ICT projects in at least 60% of all African countries, according to ASPI's tech map.

Ethiopia and the African Union. Ethiopia is an interesting case when it comes to the implications of China's influence in African nations. China provided the country with a \$3 billion loan, the largest for telecommunications in the history of Africa, to take over the country's digital infrastructure.⁵⁷

⁵¹ Danielle Cave, "The African Union Headquarters Hack and Australia's 5G Network," ASPI, Strategist, July 13, 2018, <https://www.aspistrategist.org.au/the-african-union-headquarters-hack-and-australias-5g-network>.

⁵² Ben Blanchard, "African Union Says Has No Secret Dossiers after China Spying Report," Reuters, February 8, 2018, <https://www.reuters.com/article/us-china-africanunion-idUSKBN1FS19W>.

⁵³ Sam Varghese, "Despite U.S. Sanctions, Huawei and ZTE Increase 5G Market Share," iTWire, December 7, 2020, <https://www.itwire.com/business-technology/despite-us-sanctions-huawei-and-zte-increase-5g-market-share.html>.

⁵⁴ Steve Stecklow and Karen Freifeld, "U.S. Bans American Companies from Selling to Chinese Phone Maker ZTE," Reuters, April 16, 2018, <https://www.reuters.com/article/usa-china-zte-idUSL1N1RT0IX>; and Jenny Leonard, "U.S. Lifts Ban on China's ZTE after \$1.4 Billion Penalty," Bloomberg, July 13, 2018, <https://www.bloomberg.com/news/articles/2018-07-13/u-s-lifts-ban-on-china-s-zte-after-it-pays-1-4-billion-penalty>.

⁵⁵ U.S. Federal Communications Commission, "FCC Designates Huawei and ZTE as National Security Threats," June 30, 2020, <https://www.fcc.gov/document/fcc-designates-huawei-and-zte-national-security-threats>.

⁵⁶ Juan Pedro Tomás, "ZTE Has Racked Up 46 5G Commercial Contracts Globally," RCR Wireless, February 25, 2020, <https://www.rcrwireless.com/20200225/5g/zte-already-secured-46-5g-commercial-contracts-globally>.

⁵⁷ Iginio Gagliardone, "Chinese Digital Tech in Africa: Moral Panics and the Messy Reality of Surveillance," London School of Economics, May 20, 2021, <https://blogs.lse.ac.uk/cff/2021/05/20/chinese-digital-tech-in-africa-moral-panics-and-the-messy-reality-of-surveillance>.

In 2013, ZTE signed an agreement with the mobile operator Ethio Telecom to expand the country's mobile phone infrastructure and build the capital Addis Ababa's 4G network as part of a broader \$1.6 billion deal between ZTE, Huawei, and Ethio Telecom. ZTE and Huawei agreed to provide low-interest loans through vendor financing.⁵⁸ The agreement was modified in 2014 after disputes over ZTE's proposed cost for the network upgrade,⁵⁹ leading the Ethiopian company to partly replace ZTE with Ericsson for a portion of the network.⁶⁰ Despite this setback, ZTE managed to complete construction of Addis Ababa's 4G network in 2014 and announced that it would expand services to six other cities in Ethiopia by February 2021.⁶¹ While Huawei is the major operator in providing ICT services to the AU headquarters in Addis Ababa, ZTE also provided some of these services.⁶² For example, in 2017 a Smart Health Monitoring Center was jointly launched by the AU and ZTE.⁶³

Market and economic considerations help explain the concentration of Chinese investment in Ethiopia. Yet this partnership has also served Beijing's political goals over the years. African countries like Ethiopia have often been pressed to back China on political issues, especially within international organizations.⁶⁴

As an authoritarian state that has repeatedly proved to be a close partner of Beijing, Ethiopia has readily adopted features of the digital authoritarianism that is so familiar to mainland China. It has done so by exploiting not only Chinese technologies but also those developed in cooperation with the United Kingdom, Italy, France, and Germany. The case of Ethiopia exemplifies an incredibly complex scenario that intersects technology, development, and security and demonstrates how important regulations become when investments alone will not disentangle all these issues.

Zimbabwe. Zimbabwe offers a glimpse into how the endorsement of the Chinese party-state can support Chinese technology companies in enhancing a local authoritarian regime. Filling a technological gap created by Western countries' sanctions against Zimbabwe over human rights violations, China is now the country's major investment source. Both Huawei and ZTE play a critical role in its telecommunications sector, in collaboration with local state-owned NetOne, and are mainly financed by the Chinese government. ZTE's activities in the country have resulted in corruption allegations and network disruptions.⁶⁵ Zimbabwe's leaders have looked at China's model of internet crackdowns, social media control, and surveillance, including facial recognition systems and smart city programs.

⁵⁸ Aaron Maasho, "Ethiopia Signs \$800 Million Mobile Network Deal with China's ZTE," Reuters, August 18, 2013, <https://www.reuters.com/article/us-ethiopia-china-telecom/ethiopia-signs-800-million-mobile-network-deal-with-chinas-zte-idUSBRE97H0AZ20130818>.

⁵⁹ "Ethiopia Launches 4G Mobile Service in the Capital," Reuters, March 21, 2015, <https://www.reuters.com/article/ethiopia-telecoms-idUSL6N0WN0BU20150321>.

⁶⁰ Anne Morris, "Ethio Telecom Launches 4G in Addis Ababa," Fierce Wireless, March 23, 2015, <https://www.fiercewireless.com/europe/ethio-telecom-launches-4g-addis-ababa>.

⁶¹ "Ethio Telecom and ZTE Expand 4G/LTE Penetration in East Africa," ITP.net, February 20, 2021, <https://www.itp.net/infrastructure/networking/96132-ethio-telecom-and-zte-expand-4glte-penetration-in-east-africa>.

⁶² African Union, "Bidding Document for Revamping of Old Campus Network: Replacement of Core Switches Cisco 4500-X and 6500-X," June 2018, https://web.archive.org/web/20180629145706/https://au.int/sites/default/files/bids/34457-revamping_of_old_campus_network_replacement_of_core_switches_bid.pdf.

⁶³ "China's ZTE Launches Smart Health System Project in Africa," Global Growth Markets, October 27, 2017, <https://www.ggmkt.com/china/i-Chinas-ZTE-launches-smart-health-system-project-in-Africa>.

⁶⁴ Thierry Pairault, "China's Presence in Africa Is at Heart Political," *Diplomat*, August 11, 2021, <https://thedi diplomat.com/2021/08/chinas-presence-in-africa-is-at-heart-political>.

⁶⁵ "ZTE Solar Tender 'Under Probe,'" Sunday Mail, March 27, 2016, <https://www.sundaymail.co.zw/zte-solar-tender-under-probe>; and Tatira Zwinoira, "Network Disruptions to Continue," NewsDay (Zimbabwe), March 7, 2019, <https://www.newsday.co.zw/2019/03/network-disruptions-to-continue>.

Both the Ethiopian and Zimbabwean cases raise human rights concerns related to the expansion of China's technology companies, particularly directed at other authoritarian states. There needs to be a nuanced understanding of the role that technology companies play in East African states adopting a Chinese model of internet control. While Chinese officials and academics continue to call for a more open and interconnected cyberspace, the Ethiopian and Zimbabwean cases suggest that the reality is that both the government and Chinese companies are already working toward a version of the internet that is factioned and ruled by separate sets of standards.

Chinese SOEs

While not the most dominant companies in their fields, state-owned and party-controlled companies such as China Unicom, China Telecom, and China Mobile still play an important role in developing Africa's telecommunications infrastructure through submarine cable networks.

As part of BRI, the Djibouti Data Center has become a landmark infrastructure project and an exemplary case of China-Africa cooperation. Built as the head access for cables into Djibouti Telecom's landing station, it connects to more than half a dozen submarine cables. The center has agreements with China Mobile, China Unicom, and China Telecom.⁶⁶ These companies operate submarine cables that typically connect to Africa as part of an international consortium. One of the most highly anticipated cable projects was the PEACE Cable system (also part of BRI), connecting China to its assets in Africa, including the People's Liberation Army naval base in Djibouti.⁶⁷ China Unicom led construction for this project.⁶⁸ Ownership was then transferred from state-owned China-ASEAN Information Harbor and Tropic Science to PEACE Cable International Network Co. Ltd, a subsidiary of the Hengtong Group.⁶⁹

Owning submarine cables, which transmit data and provide the vast majority of internet connectivity, is of paramount importance to any country that aims to be a key player in cyberspace. Besides providing increased connectivity and development, the cables offer strategic opportunities for political purposes. They are vulnerable not only to sabotage attacks but also to espionage, raising security concerns. This network of submarine cables thus gives China unprecedented leverage over the numerous African countries it will connect, from Djibouti into the center of the continent. It is also essential to achieving control of the majority of Africa's telecommunications infrastructure and data flows. For these reasons, cables feature prominently in Digital Silk Road projects and are seen as key to sustaining Beijing's outgoing influence operations.

Conclusion

Western concerns and attempts by the United States and other countries to deter governments and private companies from collaborating with Chinese telecoms have had minimal results in

⁶⁶ "China Mobile Selects Djibouti Data Center for African Expansion," Techerati, September 5, 2017, <https://techerati.com/the-stack-archive/data-centre/2017/09/05/china-mobile-selects-djibouti-data-center-for-african-expansion>; "Djibouti Data Centre's John Melick III on Two New International Cable Connections for the Region and Operating Neutral, Third Party Combined Landing Stations and Data Centres," AllAfrica, September 28, 2018, <https://allafrica.com/stories/201810020271.html>; and "Global Data Center Map," China Telecom Americas, <https://www.ctamericas.com/global-data-center-map>.

⁶⁷ François Dubé, "China's Experiment in Djibouti," *Diplomat*, October 05, 2016, <https://thediplomat.com/2016/10/chinas-experiment-in-djibouti>.

⁶⁸ "Zhongguoliantong qiantou chengli Zhongguo-Dongmeng xinxi gang gufen youxiangongsi" [China Unicom Took the Lead in Establishing the China-ASEAN Information Harbor Co., Ltd.], Hexun, June 24, 2016, <http://tech.hexun.com/2016-06-24/184581510.html>.

⁶⁹ "Huawei Haiyang PEACE hailan xiangmu qidong hailan he shebei shengchan" [Huawei Ocean PEACE Submarine Cable Project Starts Submarine Cable and Equipment Production], Huawei, October 22, 2018, <https://www.huawei.com/cn/news/2018/10/huawei-peace-cable-project>.

African nations. On the contrary, Africa has become a pivotal area not only for Chinese companies but for the Chinese government itself. The continent provides the perfect ground for pursuing commercial goals as well as the political goals of influence expansion and leadership in cyberspace. To this end, China will leverage its significant economic and strategic power in Africa.

This essay has presented a picture where China is set to dominate Africa's digital infrastructure, leaving very few alternative options. China's sphere of influence has become increasingly wide and difficult to counteract, challenging the West's democratic values and creating a viable alternative to the rules-based international order. The United States and its allies should redefine their global priorities within this space with a long-term vision that includes Africa. First, there needs to be a more nuanced understanding of how Chinese telecommunications companies operate across different African countries, including assessments of risks for coercion and exploitation. Second, it is in the interest of the whole international community to create and enforce a set of standards for the transparency of ICT companies' operations. Finally, there should be more proactive engagement and investment from democratic countries into the provision of digital infrastructure for African states and their local providers. This would not only mitigate their dependence on China. It would also promote a more sustainable development path as well as better relationships between the United States and African countries, as these ties become increasingly important.

THE NATIONAL BUREAU *of* ASIAN RESEARCH

NBR SPECIAL REPORT #98 | MAY 2022

China Electrifies Africa

Erica Downs

ERICA DOWNS is a Senior Research Scholar at the Center on Global Energy Policy at Columbia University SIPA, focusing on Chinese energy markets and geopolitics. She can be reached at <ed347@columbia.edu>.

NOTE: The author would like to thank Philippe Benoit, Deborah Brautigam, Harry Verhoeven, Jianxing Wan, and individuals who wish to remain anonymous for helpful comments and conversations and Jiashi Yang for research assistance.

EXECUTIVE SUMMARY

This essay examines China's role in developing power-generation capacity in Africa over the past twenty years by detailing the different ways Chinese entities are involved in power projects, exploring why Chinese companies have developed so many power-generation facilities, assessing some of the impacts on African countries, and discussing implications for the U.S.

MAIN ARGUMENT

China's power-construction companies and financial institutions are primarily supporting the development of new power-generation facilities in Africa because of the business opportunities available on a continent that needs more generation capacity to support economic growth. Africa, with its large and mostly untapped hydropower resources, is especially appealing to China's dam builders, which face limited prospects to expand at home. Contracts to build hydropower projects can also drive exports of Chinese generation equipment and industrial standards. Chinese-supported power plants not only are an important source of new generation capacity but also have contributed to a positive shift in perceptions of Africa among external investors and development financiers. In addition, the construction of these generation facilities reflects both a "push" from China and a "pull" from Africa. Numerous African governments have turned to China to finance projects that the World Bank and other donors refused to finance. Moreover, multiple governments have championed projects for various political and economic reasons, with costs borne and benefits accrued by different population segments.

POLICY IMPLICATIONS

- Africa's power-generation market is large enough for U.S., Chinese, and other companies and financiers to participate.
- Increased competition between firms domiciled in the U.S., China, and other countries is likely to benefit African nations by providing them with an opportunity to shop around for the best deal.
- If the U.S. government provides more funding for Power Africa, an interagency initiative launched by President Barack Obama to increase electricity supply and access, then the initiative would be better positioned to help increase Africa's generation capacity and connect homes and businesses to electricity.

China has played an important role in developing power-generation capacity in Africa. In 2016 the International Energy Agency (IEA) reported that power projects with Chinese companies as the main contractors were responsible for 30% of capacity additions in sub-Saharan Africa in 2010–15.¹ In November 2021, during the 8th Forum on China-Africa Cooperation, Xinhua reported that Chinese firms had built more than 80 large-scale power facilities for Africa since the forum’s establishment in 2000.²

Chinese companies began constructing hydropower plants in Africa as part of the Ministry of Water Resources and Electric Power’s foreign aid department in the 1960s.³ The pace at which new capacity was added accelerated in the 2000s when the inception of China’s “going out” strategy, which encouraged Chinese companies to venture overseas, coincided with the World Bank’s retreat from financing large hydropower projects. This momentum continued into the 2010s with the launch of China’s Belt and Road Initiative (BRI), one of the aims of which is building infrastructure to foster greater global connectivity. In recent years, power plants and other infrastructure developed by Chinese firms in Africa have engendered suspicions in the United States because of environmental concerns, the debt sustainability of host nations, and U.S.-China competition for global influence. In November 2021, while on a visit to Nigeria, Secretary of State Antony Blinken revealed that these issues are still of concern to Washington. During a press conference in Abuja, he stated that “too often, international infrastructure deals are opaque, coercive. They burden countries with unmanageable debt. They’re environmentally destructive. They don’t always benefit the people who live there. We will do things differently.”⁴

This essay considers why Chinese companies are developing so many power-generation facilities in Africa and what it means for the United States. The first section describes the relevant projects, and section two examines Chinese companies’ motivations for undertaking them, with an emphasis on information available from Chinese sources. The essay then details some of the impacts of these projects on African countries, and the conclusion discusses implications for the United States.

Projects

This essay focuses on 78 power-generation projects, referred to for the purposes of this analysis as the “dataset.” The projects were identified by two databases managed by Boston University’s Global Development Policy Center: the Chinese Loans to Africa Database (CLAD, formerly managed by the Johns Hopkins School for Advanced International Studies) and the China’s Global Power Database (CGPD). The CLAD covers projects for which a loan agreement was

¹ International Energy Agency (IEA), *Boosting the Power Sector in Sub-Saharan Africa: China’s Involvement* (Paris, August 2016), 7, <https://www.oecd.org/publications/boosting-the-power-sector-in-sub-saharan-africa-9789264262706-en.htm>.

² “Xinhua Commentary: FOCAC Effective Platform for Promoting Fruitful China-Africa Cooperation,” Xinhua, November 30, 2021, http://www.news.cn/english/2021-11/30/c_1310343651.htm; and Embassy of the People’s Republic of China (PRC) in the Republic of Liberia, “Chronicle of FOCAC,” <https://www.mfa.gov.cn/ce/celr/eng/sghdhzxxx/t625129.htm>.

³ Zheng Qingting, “Zhuanfang Sanxia zhongshuidian gongsi dangwei shuji, zhixing dongshi Li Li: Wei Feizhou tigong zonghe shuidian jiejie fang’an tuijin jianshe kua quyu nengyuan hulianwang” [Interview with Li Li, Party Committee Secretary and Executive Director of China Three Gorges Corporation’s China International Water and Electric Corporation: Providing Comprehensive Hydropower Solutions for Africa and Promoting the Construction of a Cross-Regional Energy Network], *21st Century Business Herald*, September 4, 2018, <http://www.21jingji.com/2018/9-4/5OMDEzNzlfMTQ0NzQ5OQ.html>; and “Zhongguoren di yi ci zai waiguo jian dianzhan” [The First Time the Chinese Built a Power Station in a Foreign Country], *Paper* (PRC), http://m.thepaper.cn/baijiahao_12931376.

⁴ Libby George, “In Pitch to Africa, Blinken Vows Cleaner Business Deals,” Reuters, November 19, 2021, <https://www.reuters.com/markets/asia/blinken-vows-avoid-opaque-coercive-africa-infrastructure-deals-2021-11-19>.

signed, implemented, or completed between 2000 and 2019.⁵ The CGPD provides data for power plants from around the world that received foreign direct investment from Chinese companies or loans from the China Development Bank (CDB) or the Export-Import Bank of China (China Exim Bank). It covers projects that were in operation, under construction, or in the planning stage between 2000 and 2018.⁶ The dataset excludes projects with non-Chinese financiers, as well as ones supported by loan agreements signed before 2000 because of the limited amount of lending, small size of projects, and difficulty obtaining enough information for verification.⁷

The dataset contains information to explain why Chinese companies are involved in so many power-generation projects in Africa. First, it identifies the Chinese lenders and contractors involved in projects supported by a Chinese loan, information that is essential for ascertaining motivations to support the development of generation capacity in Africa. Second, if there is a strategic element to China's involvement in Africa's power sector, it would likely appear in projects supported with loans from Chinese state-owned financial institutions or with equity financing from Chinese state-owned enterprises.⁸

Participants

The 78 projects involve more than a dozen contractors. Sinohydro Corporation is a contractor for 19 of the projects. Other Chinese firms that appear frequently in the database as contractors are China Machinery Engineering Corporation (CMEC), with 9 projects; China National Electric Engineering Company (CNEEC), with 7 projects; and China Gezhouba Group, with 5 projects.

The largest financiers in the database are two policy banks, China Exim Bank and CDB, which have a mandate to advance China's national interests as defined by party leadership. China Exim Bank has signed loan agreements totaling \$11.6 billion for 19 projects. CDB has agreed to lend South African electricity public utility Eskom \$4 billion for the construction of two coal-fired power plants (Medupi power station and Kusile power station), each with a capacity of 4,800 megawatts (MW). The third largest financier is the Industrial and Commercial Bank of China (ICBC), which has agreed to lend a total of \$2.8 billion to 9 projects.

Technologies

The new generation capacity of the 78 projects is at least 26,864.5 MW. Coal accounts for 44% of the new capacity, and hydropower accounts for 40% (see **Figure 1**). Most of the coal capacity is concentrated in Southern African countries, where most of the continent's coal resources can be found. In contrast, new hydropower capacity in the dataset is spread among 22 countries across the rest of the continent.

Chinese-supported coal and hydropower resources face diverging fortunes in Africa, reflecting the different outlooks for these technologies globally as countries transition to a lower-carbon future. In September 2021, President Xi Jinping pledged that China will not build new coal-fired power plants overseas, aligning the party-state's position with that of other major

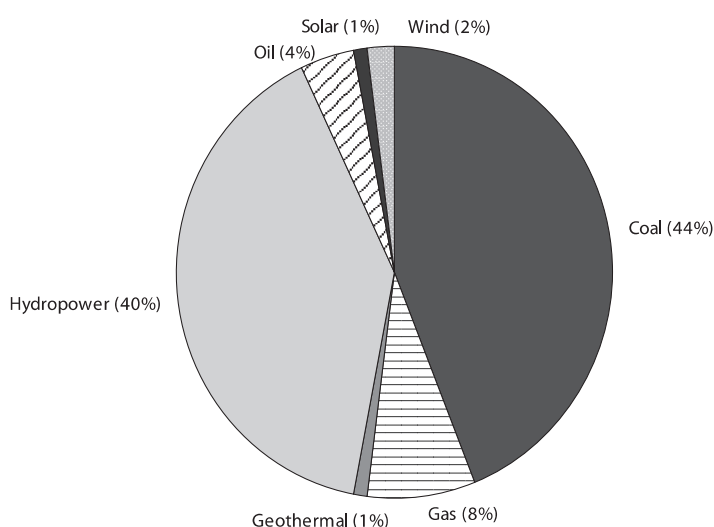
⁵ China Africa Research Initiative and Boston University Global Development Policy Center, Chinese Loans to Africa Database, Version 2.0, <https://www.bu.edu/gdp/research/databases/global-china-databases/#Chinese-Loans>.

⁶ Boston University Global Development Policy Center, China's Global Power Database, <https://www.bu.edu/cgp>.

⁷ Email to author from Deborah Brautigam, November 30, 2021.

⁸ Email to author from Deborah Brautigam, December 1, 2021.

FIGURE 1 New generation capacity supported by Chinese capital by technology



SOURCE: Author's dataset.

economies such as the United States, the European Union, Japan, and South Korea.⁹ Auguring Xi's announcement, the ICBC abandoned plans to finance the development of the Sengwa coal power plant (2,800 MW) in Zimbabwe in July 2020 and the Lamu coal power plant (1,050 MW) in Kenya in November 2020.¹⁰

In contrast, the IEA has described hydropower as the “forgotten giant of low-carbon electricity,” which has a key role to play in the energy transition in terms of both producing large quantities of low-carbon electricity and providing unmatched flexibility and storage.¹¹ Africa has abundant hydropower resources, with about 40% located in central Africa and almost 30% in eastern Africa, more than 90% of which is unexploited.¹² The IEA expects China to be involved in nearly 70% of the hydropower projects developed in sub-Saharan Africa during the 2020s.¹³

The dataset shows that the largest amount of new power-generation capacity is being added by Chinese-supported projects in South Africa, followed by Angola, Ethiopia, Sudan, and Nigeria. Collectively, the five countries account for 74% of the new capacity (see **Figure 2**). The development

⁹ Vincent Ni and Helen Sullivan, “Big Line in the Sand’: China Promises No New Coal-Fired Power Projects Abroad,” *Guardian*, September 21, 2021, <https://www.theguardian.com/world/2021/sep/22/china-climate-no-new-coal-fired-power-projects-abroad-xi-jinping>; and Ilaria Mazzocco, “China’s Commitment to Stop Overseas Financing of New Coal Plants in Perspective,” Center for Strategic and International Studies (CSIS), September 24, 2021, <https://www.csis.org/analysis/chinas-commitment-stop-overseas-financing-new-coal-plants-perspective>.

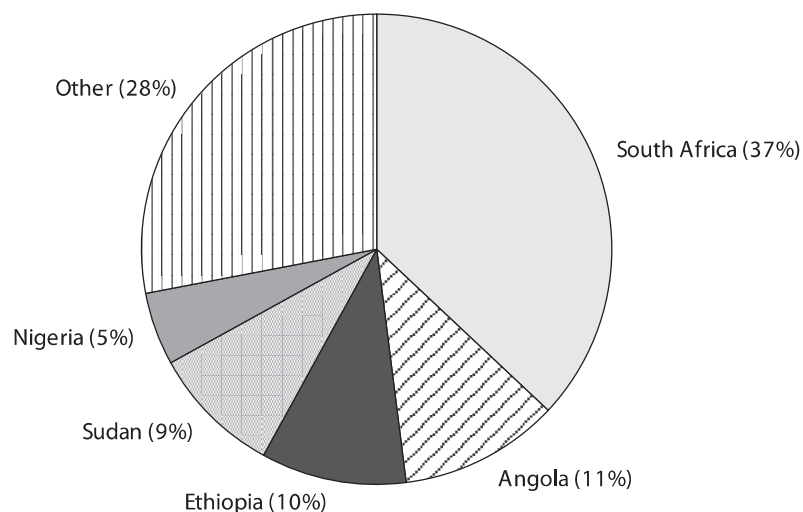
¹⁰ Ray Ndlovu and Antony Sguazzin, “Biggest China Bank Abandons \$3 Billion Zimbabwe Coal Plan,” *Bloomberg*, June 30, 2021, <https://www.bloomberg.com/news/articles/2021-06-30/biggest-china-bank-walks-away-from-3-billion-zimbabwe-coal-plan>; and “ICBC Withdraws Financing from the Lamu Coal Plant,” *Save Lamu*, November 2020, <https://www.savelamu.org/wp-content/uploads/2020/11/Press-release-on-ICBC-withdrawal-from-financing-coal.-1.pdf>.

¹¹ “Hydropower Has a Crucial Role in Accelerating Clean Energy Transitions to Achieve Countries’ Climate Ambitions Securely,” IEA, June 30, 2021, <https://www.iea.org/news/hydropower-has-a-crucial-role-in-accelerating-clean-energy-transitions-to-achieve-countries-climate-ambitions-securely>.

¹² “The Renewable Energy Transition in Africa: Powering Access, Resilience and Prosperity,” KfW Development Bank, Deutsche Gesellschaft für Internationale Zusammenarbeit, and the International Renewable Energy Agency (IRENA), March 2021, 38, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/March/Renewable_Energy_Transition_Africa_2021.pdf.

¹³ IEA, *Hydropower Special Market Report: Analysis and Forecast to 2030* (Paris, July 2021), 10, https://iea.blob.core.windows.net/assets/4d2d4365-08c6-4171-9ea2-8549fabd1c8d/HydropowerSpecialMarketReport_corr.pdf.

FIGURE 2 New generation capacity supported by Chinese capital by country



SOURCE: Author's dataset.

of coal-fired power plants has added 97% of the new capacity in South Africa, whereas hydropower accounts for at least 50% of the capacity additions in the other four countries.

Ownership

Most of the power-generation projects in the dataset are owned by the host countries and built by Chinese contractors with Chinese financing. Typically, the host country signs an engineering, procurement, and construction (EPC) contract with a Chinese construction company. The Chinese financier provides a loan to the project owner, which is used to pay the Chinese contractor to deliver a completed project, usually for a fixed price.¹⁴

There are, however, numerous power plants with Chinese owners. Chinese companies have acquired ownership of these facilities in a variety of ways. Several examples are listed below:

- *Egypt*. China General Nuclear Power Corporation acquired two gas-fired power plants—Suez Gulf (682.5 MW) and Port Said East (682.5 MW)—when it purchased the power-generation assets of 1Malaysia Development Berhad (1MDB) in 2016.¹⁵
- *Ghana*. Shenzhen Energy Corporation and the China-Africa Development Fund own Sunon Asogli Power, which operates a gas-fired power plant. The first phase (200 MW) was completed in 2010, and the second phase (360 MW) was completed in 2017.¹⁶

¹⁴ “The New Great Walls: A Guide to China’s Overseas Dam Industry,” 2nd ed., International Rivers, November 2012, 10, <https://www.globalccsinstitute.com/archive/hub/publications/162708/new-great-walls-chinas-overseas-dam-industry.pdf>.

¹⁵ Elffie Chew and Vinicy Chan, “CGN Said to Weigh \$400 Million IPO of Former 1MDB Power Assets,” Bloomberg, October 31, 2016, <https://www.bloomberg.com/news/articles/2016-10-31/cgn-said-to-weigh-400-million-ipo-of-former-1mdb-power-assets>; and CGNPC International Limited, Offering Circular, December 5, 2017, 142, https://ise-prodnr-eu-west-1-data-integration.s3-eu-west-1.amazonaws.com/legacy/ListingParticulars_5adb4d8b-4b69-4595-9ccf-491f0d007244.PDF.

¹⁶ “About Us,” Sunon Asogli Power, <http://sunonasogli.com/index.php/about-us-2>.

- *Guinea.* China International Water and Electric Corporation (CWE)—the EPC contractor for the Souapiti dam (450 MW)—and the Guinean government co-own a company with rights to operate the dam for 25 years. The latter holds a 51% share, while the former holds a 49% share. In order to raise capital for equity financing, the Guinean government sold CWE a 51% stake in the company that has rights to operate the Kaléta dam (240 MW) (also built by CWE) for 40 years. Moreover, China Exim Bank signed a loan agreement of \$1.175 billion to finance the Souapiti dam.¹⁷
- *Nigeria.* The Shandong Electric Power Construction Corporation III (SEPCO3) was the loan financier and EPC contractor for the Olorunsogo Phase 1 gas-fired power plant (335 MW), and CMEC was the loan financier and EPC contractor for the Omotosho Phase I gas-fired power plant (335 MW). After the Power Holding Company of Nigeria defaulted on its payments to SEPCO3 and CMEC, it ceded control of the plants to their respective EPC contractors in debt equity swaps in 2013 (Omotosho) and 2014 (Olorunsogo).¹⁸ These transfers occurred during a massive privatization of Nigeria’s power-generation assets.¹⁹

Motivations

Chinese companies, especially those in the hydropower industry, are developing power-generation projects in Africa for several reasons. The primary reason is to find new markets abroad as opportunities to build dams at home dwindle. Related motivations include exporting Chinese power-generation equipment and industrial standards—a goal facilitated by the World Bank’s retreat from large hydropower projects in the 2000s. An added benefit is generating goodwill toward China.

China’s power-construction firms are looking for new markets abroad. China’s dam builders are constructing hydropower projects in Africa due to limited opportunities for expansion at home. China Three Gorges Corporation (CTG), the parent company of CWE, is a case in point. In 2014, the company’s vice general manager, Bi Yaxiong, stated that the domestic hydropower market was reaching a saturation point. He noted that “once the downstream Jinsha river project is completed in 2020, [we] face the serious situation of having no large-scale hydropower plants left to build, and we won’t be able to take full advantage of our core expertise.”²⁰ The need to find new markets overseas underpinned CTG’s 2011 acquisition of CWE, with its decades of international experience. Indeed, as CWE’s general manager Luo Gujun told a journalist in 2008, “[the construction of] China’s Three Gorges Dam, which the Three Gorges Corporation is responsible for, is a national key project and will end next year. Then, as an enterprise, how will it develop in the future? To this end, the Three Gorges Corporation has formulated a development strategy to develop the Yangtze River and go international.”²¹

¹⁷ “We’re Leaving Everything Behind: The Impact of Guinea’s Souapiti Dam on Displaced Communities,” Human Rights Watch, April 16, 2020, <https://www.hrw.org/report/2020/04/16/were-leaving-everything-behind/impact-guineas-souapiti-dam-displaced-communities>.

¹⁸ Anton Eberhard et al., *Independent Power Projects in Sub-Saharan Africa: Lessons from Five Key Countries* (Washington, D.C.: World Bank, 2016), 149–51, <https://openknowledge.worldbank.org/bitstream/handle/10986/23970/9781464808005.pdf>.

¹⁹ “Privatisation of Power Generation Assets in Nigeria,” Oxford Business Group, <https://oxfordbusinessgroup.com/analysis/privatisation-power-generation-assets-nigeria>.

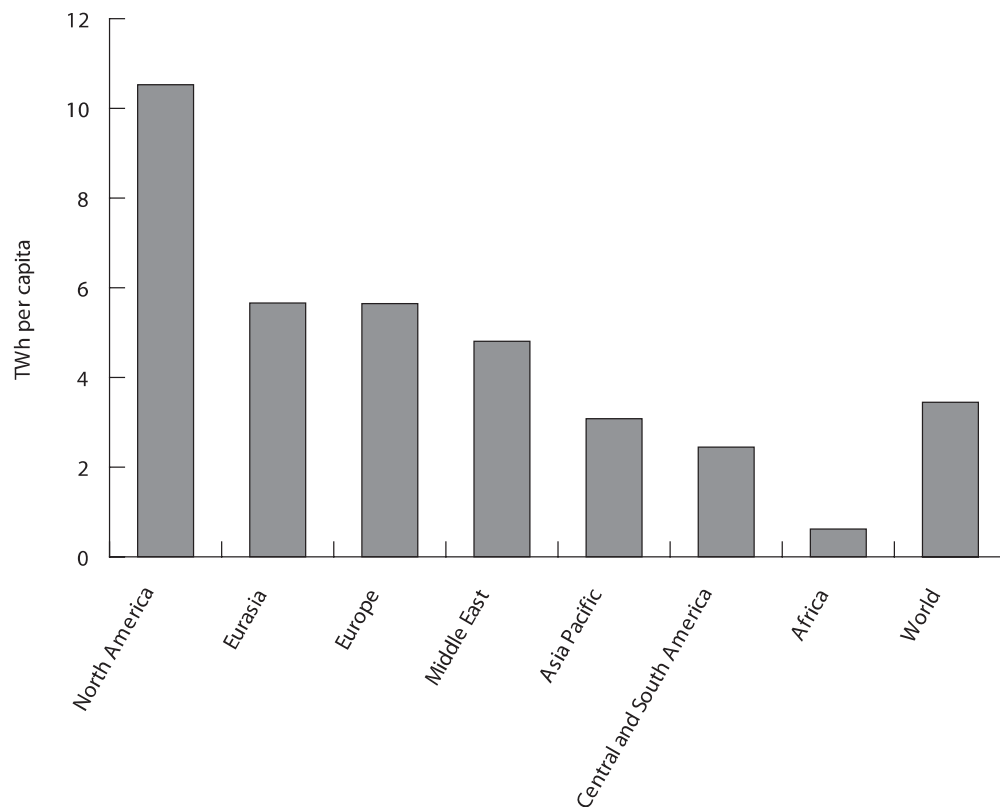
²⁰ “China’s Three Gorges to Diversify as Big Dam Projects Dry Up,” Reuters, November 14, 2014, <https://www.reuters.com/article/us-china-power-threeorges/chinas-three-gorges-to-diversify-as-big-dam-projects-dry-up-idUSKCN0IY0PE20141114>.

²¹ “Dazao Zhongguo shuidian de guoji jingzhengli—Zhongguo shuili dianli duiwai gongsi zongjingli Lu Guojun zhuanfang” [Building the International Competitiveness of CWE—an Interview with Lu Guojun, General Manager of China International Water and Electric Corporation], *World Affairs* 21 (2008).

Africa is an attractive destination for China’s dam builders because of its untapped hydropower potential. In 2014, Zhang Boting, deputy secretary general of the China Society for Hydropower Engineering, said that “the current hydropower development rate in Africa is only 8%–9%. The rate is double digits in Southeast Asia, much lower than the development rate of 70%–80% in developed countries. It’s not a problem [for PowerChina and its subsidiary Sinohydro] to work in the overseas hydropower market for another 30 to 50 years.”²²

Africa needs more generation capacity. More broadly, the search for new markets abroad by China’s power-construction companies dovetails with Africa’s need for more power-generation capacity to support economic growth. According to the IEA, Africa’s electricity generation per capita in 2020 was only 18% of the world average (see **Figure 3**). The IEA projects that Africa’s generation capacity will triple to 270 gigawatts (GW) by 2040, in line with soaring needs.²³

FIGURE 3 Electricity generation per capita in 2020



SOURCE: IEA, *World Energy Outlook 2021* (Paris: IEA, 2021), 319 and 328.

²² “Zhanju haiwai shuidian shichang banbijiangshan Zhongguodianjian zouqu ke zai gan sanwushi nian” [Occupying Half of the Overseas Hydropower Market, PowerChina Can Go Global for Another 30 to 50 Years], *China Securities News*, February 17, 2014, https://finance.ifeng.com/a/20140217/11667493_0.shtml.

²³ IEA, *World Energy Outlook 2021* (Paris: IEA, 2021) 114, <https://iea.blob.core.windows.net/assets/4ed140c1-c3f3-4fd9-acae-789a4e14a23c/WorldEnergyOutlook2021.pdf>.

Africa also needs additional power-generation capacity to provide more people with access to energy. According to a report published in 2021 by the IEA, World Bank, and other agencies, sub-Saharan Africa has the largest access deficit in the world. In 2019, 46% of its population had access, leaving 570 million people without electricity.²⁴ Based on population, fifteen of the world's top twenty countries lacking access to electricity are in the region, including the top three: Nigeria, the Democratic Republic of the Congo, and Ethiopia.²⁵

Executives from China's power-construction companies often highlight the contributions that their companies are making to Africa's generation capacity in interviews with Chinese-language media. For example, the general manager of CWE's African business division has pointed out that people living in Guinea recognize the benefits of the Kaléta hydropower station, noting that Conakry's electricity supply has greatly improved.²⁶ Similarly, the chair of the Dongfang Electric Corporation, which built the Gibe III hydropower plant (1,870 MW) in Ethiopia, has said that the project doubled the national power-generation capacity and enabled the country to bid farewell to the era of power shortages.²⁷

Beijing wants to export more power-generation equipment. Building power plants in Africa furthers Beijing's objective of increasing exports of generator sets and other power-generation equipment. Over the past decade, China has produced more generator sets, which are used in thermal, hydro, and nuclear power plants, than it has installed domestically. As **Figure 4** shows, China only installed around half the generator sets it produced in 2011–20.

The Chinese government has encouraged Chinese manufacturers to export excess generator sets instead of warehousing them. The State Council, in its May 2015 document “Guiding Opinions on Promotion of International Production Capacity and Manufacturing Cooperation,” called on power companies to accelerate their international expansion by expanding thermal and hydropower markets in relevant countries in order to export the relevant equipment and technology. The document also states that, to this end, increased support from China's financial institutions, including its policy banks and the China-Africa Development Fund, should be made available.²⁸

Chinese power company executives have highlighted the ways in which generation projects in Africa have driven exports of Chinese power equipment and materials. Li Li, party secretary of CWE, told a Chinese business publication that the Kaléta hydropower station built in Guinea involved more than 30 Chinese enterprises and resulted in exports of Chinese equipment and materials totaling around \$173 million.²⁹ Similarly, the Gibe III hydropower station in Ethiopia

²⁴ “Tracking SDG 7: The Energy Progress Report 2021,” International Bank for Reconstruction and Development, 4, https://trackingsdg7.esmap.org/data/files/download-documents/2021_tracking_sdg7_report.pdf.

²⁵ *Ibid.*, 4, 22.

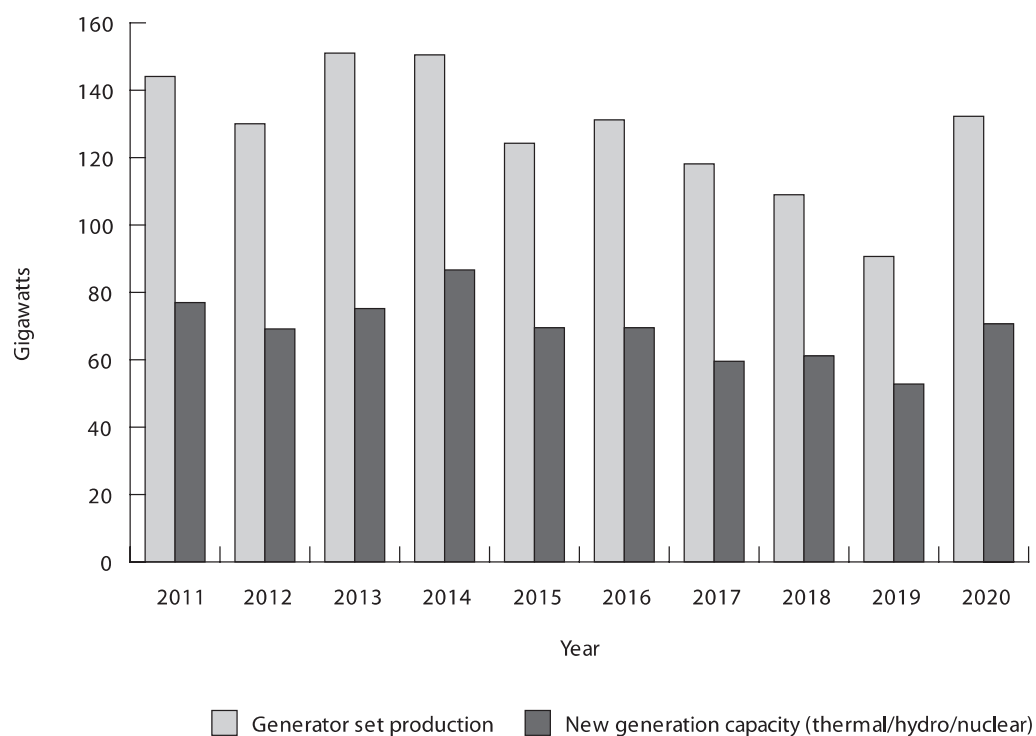
²⁶ “Chedi jie jue Jinei ya dianli wenti—zhuangfang Zhongguo shuili dianli dui wai youxian gongsi (CWE) Feizhou yewu yi bu zongjinli Zhang Rujun” [Thoroughly Solving the Power Problem in Guinea—Interview with Zhang Rujun, General Manager of the African Business Division of China International Water and Electric Co., Ltd. (CWE)], *Paper* (PRC), September 23, 2019, https://www.thepaper.cn/newsDetail_forward_4503468.

²⁷ “Dongfang dianqi xiang Feizhou dadi shusong qingjie nengyuan” [Dongfang Electric Delivers Clean Energy to Africa], China Association for International Economic Cooperation, September 7, 2018, <http://www.cafiec.com.cn/article/zqzhw/201809/20180902784217.shtml>.

²⁸ State Council (PRC), “Guowuyuan guanyu tuijin guoji channeng he zhuangbei zhizao hezuo de zhidao yijian” [Guiding Opinions on Promotion of International Production Capacity and Manufacturing Cooperation], May 16, 2015, http://www.gov.cn/zhengce/content/2015-05/16/content_9771.htm.

²⁹ Zheng, “Zhuangfang Sanxia zhong shuidian gongsi dangwei shuji, zhixing dongshi Li Li”

FIGURE 4 China's generator set production exceeds new installations



SOURCE: National Bureau of Statistics of China and China Electricity Council.

drove Chinese machinery and equipment exports of \$392 million, according to an executive with the project's contractor, the Dongfang Electric Corporation.³⁰

Beijing wants to export industrial standards. China-financed power-generation projects in Africa support Beijing's goal of exporting industrial standards. To be sure, expanding the use of Chinese standards supports Chinese exports. The State Council is clear about this in its "Reform Plan to Deepen Standardization," released in March 2015. Section three calls for the "promotion of Chinese standards" to drive exports of China's "products, technology, equipment, and services." It also states that "by combining overseas project contracting, exports of major equipment, and foreign aid construction work, [we shall] promote Chinese standards, driving China's products, technologies, equipment, and services exports."³¹

That said, Chen Gao, the Sinohydro executive managing the development of the Memve'ele hydropower station in Cameroon, has indicated that expanding the use of Chinese standards is not just about driving China's exports but also about increasing its national power. In an interview

³⁰ Li Zhiwei, "Dongfei shuita bian Dongfei dianta: Zhongqi chengjian shuidianzhan dailai dianli he guangming (Yidai Yilu—huli huhui)" [The East Africa Water Tower Becomes the East Africa Electric Tower: The Construction of Hydropower Stations by Chinese Enterprises Brings Power and Light (One Belt, One Road—Mutual Benefits)], *People's Daily*, April 22, 2017, <http://world.people.com.cn/n1/2017/0422/c1002-29228400.html>.

³¹ State Council (PRC), "Shenhua biao zhunhua gongzuo gaige fang'an" [Reform Plan to Deepen Standardization], March 11, 2015.

with the *21st Century Business Herald* in 2017 about the Memve'ele hydropower station, Chen said the following about Chinese standards: "From the perspective of national influence, of course, it helps to improve our status. In fact, standards are a manifestation of a country's soft and hard power."³²

China dominates the global hydropower market. Chinese companies and banks dominate the world's hydropower market. In January 2019 the head of China's Society for Hydro-engineering stated that Chinese firms accounted for 70% of the global hydropower construction market and had developed 320 projects with a combined capacity of 81 GW in more than 140 countries.³³ Two of China's policy banks, China Exim Bank and CDB, are the world's largest financiers of hydropower projects.³⁴

China's emergence as the world's largest developer of hydropower projects roughly coincided with the temporary retreat of the World Bank from financing dams.³⁵ To be sure, Chinese companies had started to develop hydropower projects as foreign aid projects in the 1960s. However, Beijing's going-out strategy, announced in 1999, provided Chinese dam builders with added impetus to expand abroad. Indeed, the construction of hydropower projects overseas aligned with one of the original objectives of going out: driving exports of Chinese products and labor.³⁶

While China's dam builders increased the number and size of their overseas projects, the World Bank, then the world's largest financier of big dams, largely withdrew funding after the cancellation of several projects in the 1990s over concerns about negative environmental and social impacts. The World Bank and the World Conservation Union established the World Commission on Dams in 1998 in response to growing opposition to large dams.³⁷ A 2000 report by the commission, which challenged the World Bank's practices and called for large dam projects to internalize social and environmental costs, had a chilling impact on its ability to support big hydropower projects.³⁸ This retreat from large hydropower projects roughly coincided with China's advance. After decades of building small hydropower projects in Africa, Chinese firms began increasingly developing large dams in the 2000s.³⁹ Examples include Sudan's Merowe dam (1,250 MW) and Ghana's Bui dam (400 MW).

Power projects can generate goodwill toward China. There has been a political dimension to China's development of power-generation projects in Africa dating back to its first overseas power plant, the Kinkon hydropower station in Guinea. Before members of the project team traveled to

³² Zhao Yining, "Zhongguo dianjian jituan Kamailong Manweilai shuidianzhan gongcheng xiangmu jingli Chen Gao: 'Huoqu dianli shi Kamailong zui zhongda de guanqie'" [Chen Gao, Project Manager of PowerChina's Memve'ele Hydropower Station in Cameroon: "Access to Electricity Is Cameroon's Most Important Concern"], *21st Century Business Herald*, March 29, 2017, http://www.21jingji.com/2017/3-29/00MDEzNjFfMTQwNTY0OQ.html?ulu-rcmd=0_09COM_art_4_4b20651d5db142b19ce2178a2d8e6500.

³³ Deng Zhuokan, "Zhongguo shuidian qiye yi zhan haiwai 70% yishang shuidian jianshe shichang" [Chinese Hydropower Companies Account for More than 70% of the Overseas Hydropower Construction Market], *Xinhua*, January 22, 2019, http://www.xinhuanet.com/power/2019-01/22/c_1210044274.htm.

³⁴ Bo Kong, "Domestic Push Meets Foreign Pull: The Political Economy of Chinese Development Finance for Hydropower Worldwide," Boston University, Global Development Policy Center, Working Paper, no. 17, July 20, 2021, 3, <https://www.bu.edu/gdp/2021/07/19/domestic-push-meets-foreign-pull-the-political-economy-of-chinese-development-finance-for-hydropower-worldwide>.

³⁵ "Hydropower Dams: What's Behind the Global Boom?" *BBC News*, August 6, 2018, <https://www.bbc.com/news/world-45019893>.

³⁶ State Council (PRC), "Geng hao de shishi 'zouchuqu' zhanlüe" [Better Implement the "Going-Out" Strategy], March 15, 2006, http://www.gov.cn/node_11140/2006-03/15/content_227686.htm.

³⁷ Robert Goodland, "Viewpoint: The World Bank Versus the World Commission on Dams," *Water Alternatives* 3, no. 2 (2010): 384–86.

³⁸ "Hydropower Dams: What's Behind the Global Boom?" *BBC News*, August 6, 2018, <https://www.bbc.com/news/world-45019893>; and author's conversation with Philippe Benoit, December 9, 2021.

³⁹ Yunnan Chen and David G. Landry, "Capturing the Rains: A Comparative Study of Chinese Involvement in Cameroon's Hydropower Sector," Johns Hopkins University School of Advanced International Studies, China Africa Research Initiative, Working Paper, no. 6, September 2016, 6, <https://static1.squarespace.com/static/5652847de4b033f56d2bdc29/t/583dc95603596e5fc7e734dc/1480444251435/cameroon+final+draft+9.pdf>.

Guinea, Minister of Water and Electricity Qian Zhengying and Minister of the State Economic Commission Fang Yi personally summoned them to explain that “after arriving in Guinea, not only will it be necessary to build a hydropower station, but also to establish a good relationship with the people of Guinea and establish a good international image of the Chinese. This is not only an economic task, but also a political task.”⁴⁰

While generating goodwill toward China is not the chief motivation, Chinese executives are probably aware of its secondary benefit. The Kaléta dam in Guinea is a case in point. CWE finished the project on budget and a year ahead of schedule during the country’s worst-ever Ebola outbreak, winning high praise from Energy Ministry official Lansana Fofana: “The Chinese saved us...With Western companies, costs would have gone up and they would have walked out as soon as the first case of Ebola hit.”⁴¹ Chinese power-generation projects are even pictured on various African currencies. For example, Guinea has the Kaléta and Kinkon hydropower projects (3.4 MW) on its 20,000 and 5,000 franc notes, respectively; Sudan’s 500 pound note features the Merowe dam (1,250 MW).⁴²

Impacts on Africa

Chinese-supported power plants are not only an important source of new generation capacity in Africa. These projects, along with other economic activities by Chinese firms, have also prompted a positive shift in perceptions of Africa among external investors and development financiers. Their construction reflects not only a “push” from China but also a “pull” from Africa. Individual power-generation projects, notably large hydropower plants, have had different impacts on different population segments of various countries.

A new international image. China’s economic activity in Africa in the 2000s, including in the power sector, changed how foreign investors and development financiers viewed the continent in terms of investment potential.⁴³ This change in image is captured by two frequently referenced covers run by the *Economist* roughly a decade apart, “Africa: The Hopeless Continent” (May 2000) and “Africa Rising” (December 2011).⁴⁴ The former characterized African societies as being especially susceptible to brutality, despotism, and corruption, while the latter argued that “after decades of slow growth, Africa has a real chance to follow in the footsteps of Asia.”⁴⁵ What caused the magazine to change its assessment of Africa? According to the Economist Intelligence Unit, it was the arrival of China and other countries, including Brazil, Russia, and India, that “helped to put Africa back on the map of development and investor interests.”⁴⁶ Specifically, the growing presence of Chinese companies in Africa shifted perceptions of Africa from a continent in need

⁴⁰ “Zhongguoren di yi ci zai waiguo jian dianzhan” [The First Time the Chinese Built a Power Station in a Foreign Country], *Paper* (PRC), June 2, 2021, http://m.thepaper.cn/baijiahao_12931376.

⁴¹ Franz Wild and Ougna Camara, “China Wins African Friends by Building Dam in Ebola Outbreak,” Bloomberg, September 29, 2015, <https://www.bloomberg.com/news/articles/2015-09-29/china-wins-african-friends-by-building-dam-during-ebola-outbreak>.

⁴² “Zhaxie guojia ba ‘Zhongguo zhizao’ yin zailie chaopiao shang” [These Countries Have Printed “Made in China” on Their Banknotes], China Central Television, April 26, 2019, <http://m.news.cctv.com/2019/04/26/ARTIpV2a9HAJcbfkUx4fPpIS190426.shtml>.

⁴³ Myriam Dahman-Saïdi, “Chinese Investment in Africa (Part 1),” BSI Economics, November 19, 2013, <http://www.bsi-economics.org/219-chinese-investment-in-africa-part-1>.

⁴⁴ “Into Africa: Emerging Opportunities for Business,” Economist Intelligence Unit, June 2012, available at https://ciaotest.cc.columbia.edu/wps/eiu/0026030/f_0026030_21320.pdf.

⁴⁵ “Hopeless Africa,” *Economist*, May 13, 2000, 17; and “Africa Rising: The Hopeful Continent,” *Economist*, December 3, 2011, 15.

⁴⁶ “Into Africa: Emerging Opportunities for Business.”

of saving via foreign aid to a land of opportunities for investment by providing, in the words of Myriam Dahman-Saïdi, a “demonstration effect.”⁴⁷

African agency. While China’s government and companies are strongly incentivized to supply Africa with large hydropower projects, many African countries have similarly strong demand. Dams for which African governments had sought financing from other development financiers before turning to China are cases in point. For example, Ghana turned to China to finance and build the Bui dam after the World Bank and other donors refused.⁴⁸ Similarly, Chinese entities helped develop the Gibe III dam in Ethiopia after the World Bank, European Investment Bank, and African Development Bank declined to support the project.⁴⁹ Before Sinohydro built Sudan’s massive Merowe dam in 2003–9, Sudanese government delegations traveled to Canada, Malaysia, Europe, and several Arab countries in a largely unsuccessful attempt to secure funding for the project.⁵⁰

Different projects, different impacts. Hydropower projects in Sudan and Ethiopia illustrate the different impacts. In northern Sudan, for example, the Al-Ingaz regime spearheaded the development of the Merowe dam primarily to ensure its long-term political survival by garnering the support of the region’s inhabitants.⁵¹ The NGO International Rivers described the dam as “one of the world’s most destructive hydropower projects.”⁵² It was built without a proper environmental and social impact assessment and displaced more than 50,000 people from the Nile River Valley to desert locations.⁵³

Meanwhile, Ethiopia partnered with firms domiciled in countries such as China, India, and Italy to develop a series of dams aimed at furthering several objectives, including increasing electricity production and consumption, reducing Ethiopia’s vulnerability to climate change, and earning foreign exchange through electricity exports.⁵⁴ Chinese entities participated in the development of several dams—Tekeze (300 MW), Gibe III (1,870 MW), and Genale Dawa III (254 MW)—that supported multiple national plans aimed at increasing access to electricity, which grew from less than 10% in 2005 to 44% by 2021.⁵⁵

Implications

China’s involvement in Africa’s power-generation sector has several implications for the United States.

Africa’s power-generation market is large enough for U.S., Chinese, and other financiers and builders. This point is illustrated by the growth in new generation capacity over the past decade

⁴⁷ “Into Africa: Emerging Opportunities for Business.”

⁴⁸ Charles Amo-Agyemang, “The Role of the State in Sino-Ghanaian Relations: The Case of Bui Hydroelectric Dam,” *Cogent Social Sciences* 7, no. 1 (2021).

⁴⁹ “Gibe III Dam, Ethiopia,” International Rivers, <https://archive.internationalrivers.org/campaigns/gibe-iii-dam-ethiopia>.

⁵⁰ Peter Bosshard, “China Dams the World,” *World Policy Journal* 26, no. 4 (2010): 44.

⁵¹ Harry Verhoeven, “Dams Are Development’: China, Al-Ingaz Regime and the Political Economy of the Sudanese Nile,” in *Sudan Looks East: China, India and the Politics of Asian Alternatives*, ed. Daniel Large and Luke A. Patey (Cambridge: Cambridge University Press, 2013), 127–32.

⁵² “Merowe Dam, Sudan,” International Rivers, <https://archive.internationalrivers.org/campaigns/merowe-dam-sudan-0>.

⁵³ “Merowe Dam, Sudan.” See also Verhoeven, “Dams Are Development’: China, Al-Ingaz Regime and the Political Economy of the Sudanese Nile,” 130–31, 137.

⁵⁴ Harry Verhoeven, “The Politics of African Energy Development: Ethiopia’s Hydro-Agricultural State-Building Strategy and Clashing Paradigms of Water Security,” *Philosophical Transactions of the Royal Society* 371, no. 2002 (2013): 4–6.

⁵⁵ Nduta Njenga and Temwanani Karen Phiri, “Issue 3: Reforming the Power Sector,” Oxford Policy Fellowship, July 2021, <https://www.policyfellowship.org/wp-content/uploads/2021/07/ETHIOSPOTLIGHT-ISSUE-3-POWER-SECTOR-REFORM.pdf>.

from projects supported by both Chinese loans and Power Africa, a U.S. government-led initiative launched by President Barack Obama in 2013 that assembles legal and technical experts, the private sector, and foreign governments to increase the number of people in sub-Saharan Africa with access to electricity.⁵⁶ In 2013–19, Chinese loan agreements were signed, implemented, or completed for projects with a combined generation capacity of 17,054.3 MW. Over the same period, Power Africa reached financial closure on projects totaling 10,390 MW.⁵⁷

Increased competition is likely to benefit Africa. Competition among the United States, China, and other countries to develop power-generation projects almost certainly will provide African countries with an opportunity to select the best deal by playing competitors off each other. Washington and at least a few African governments appear to agree on this point:

- In April 2018, Ugandan president Yoweri Museveni noted that Western companies were “waking up to Africa” and that “the Chinese had already woken up,” concluding that African countries should take advantage of both.⁵⁸
- In November 2021, Secretary of State Blinken said that “when it comes to infrastructure investment...we would like to think of it as a race to the top.”⁵⁹
- In November 2021, Nigerian foreign affairs minister Geoffrey Onyeama said that “regarding U.S.-Chinese competition in Africa...I don’t want to sound almost—well, cynical, almost, about it...But sometimes it’s a good thing for you if you’re the attractive bride and everybody is offering you wonderful things.”⁶⁰

Pay (more) to play (more). As experts at the Energy for Growth Hub wrote in a 2021 report, a lack of adequate and reliable financial resources is limiting the effectiveness of Power Africa. They recommend that the White House and Congress secure a line-item budget of \$300 million per year for the initiative, four times the program’s recent annual budget of \$75 million.⁶¹ If the U.S. government increases the amount of funding available to Power Africa, then it could provide African countries with more options for adding generation capacity to connect homes and businesses to electricity.

Chinese firms are likely to increase investments in renewable energy projects in Africa. The 8th Forum on China-Africa Cooperation (FOCAC), hosted by Senegal in November 2021, indicated that Chinese companies are likely to expand investments in wind, solar, and other renewable energy projects. First, Xi Jinping called for the active promotion of renewable energy during his keynote speech.⁶² Second, both the China-Africa Cooperation Vision 2035 and the Declaration

⁵⁶ United States Agency for International Development (USAID), “Power Africa,” <https://www.usaid.gov/powerafrica>.

⁵⁷ USAID, *Power Africa, Annual Report 2019* (Washington, D.C., 2019), 4, https://www.usaid.gov/sites/default/files/documents/power_africa_annual_report_2019.pdf.

⁵⁸ Edward Wong, “Competing against Chinese Loans, U.S. Companies Face Long Odds in Africa,” *New York Times*, January 13, 2019, <https://www.nytimes.com/2019/01/13/world/africa/china-loans-africa-usa.html>.

⁵⁹ Felix Onuah, “U.S. Wants ‘Race to the Top’ on Africa Infrastructure amid China Competition, Says Blinken,” Reuters, November 18, 2021, <https://www.reuters.com/world/africa/us-wants-race-top-africa-infrastructure-amid-china-competition-says-blinken-2021-11-18>.

⁶⁰ Michael Crowley, “China’s Influence Looms over Blinken’s Africa Visit,” *New York Times*, November 19, 2021, <https://www.nytimes.com/2021/11/19/world/asia/blinken-africa-china-invest.html>.

⁶¹ Katie Auth et al., “Going Big on Power Africa: Fortifying the Initiative for Today’s Urgent Challenges,” Energy for Growth Hub, March 24, 2021, 13, <https://www.energyforgrowth.org/report/going-big-on-power-africa-fortifying-the-initiative-for-todays-urgent-challenges>.

⁶² State Council Information Office (PRC), “Full Text: Keynote Speech by Chinese President Xi Jinping at Opening Ceremony of 8th FOCAC Ministerial Conference,” Xinhua, November 30, 2021, https://english.www.gov.cn/news/topnews/202111/30/content_WS61a577d6c6d0df57f98e5c05.html.

on China-Africa Cooperation on Combating Climate Change underscored Xi's message, with the latter repeating Xi's promise not to build new coal-fired power plants abroad.⁶³

In conclusion, the large number of Chinese-supported power plants in Africa reflects both a push from China and a pull from Africa. China's power-construction companies, especially those involved in dam building, are venturing overseas because of limited opportunities at home. Africa is an attractive destination because of its untapped hydropower resources. This search for new markets abroad dovetails with Africa's demand for more generation capacity to support economic growth. African governments have also capitalized on the need of Chinese power-construction companies for new business opportunities to realize the development of hydropower projects that other financiers declined to support.

Xi's declaration that China will not build new coal power plants overseas should shift the focus of China's power-construction companies to developing lower-carbon power plants in Africa. Hydropower projects are likely to continue to be constructed because of Africa's hydropower resources and the fact that such projects can generate contracts for multiple Chinese companies. That said, more Chinese-supported wind and solar projects are likely to be developed as well, in line with Xi's speech at the 8th FOCAC.

Competition between firms and financiers from China, the United States, and other countries to develop power-generation projects in Africa is likely to benefit the continent by providing countries with the opportunity to get the best value for their money. Officials from the United States and African governments have stated that they welcome competition for this reason. If the U.S. government increases the amount of funding available to Power Africa, it could provide African countries with more options for adding generation capacity.

⁶³ Ministry of Commerce (PRC), "China-Africa Cooperation Vision 2035," December 8, 2021, <http://images.mofcom.gov.cn/xyf/202112/20211208170334939.pdf>; and Ministry of Foreign Affairs (PRC), "Declaration on China-Africa Cooperation on Combating Climate Change," December 2, 2021, https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/202112/t20211203_10461772.html.

THE NATIONAL BUREAU *of* ASIAN RESEARCH

NBR SPECIAL REPORT #98 | MAY 2022

Industrial Parks in Africa: Building Nests for the Chinese Phoenix

Thierry Pairault

THIERRY PAIRAULT is an Emeritus Research Director at France's National Centre of Scientific Research (CNRS) and at the School for Advanced Study in the Social Sciences (EHESS) Research Centre on Modern and Contemporary China (CECMC). He can be reached at <pairault@ehess.fr>.

EXECUTIVE SUMMARY

This essay examines the impact and consequences of the promotion in Africa of China's experience with special economic zones (SEZs), how these zones could enable African countries to emulate the "Chinese miracle," and how they will serve China's ambition to pursue its economic goals.

MAIN ARGUMENT

There is evidence that Chinese industrial parks in Africa, which China refers to as overseas economic and commercial cooperation zones (OECCZs), are not replicating the experience of SEZs in China. While an SEZ is a zone created by a host country on its own territory to attract foreign investors and to promote its own development, an OECCZ is an enclave designed by a Chinese company appointed by China to create a Chinese ecosystem in a host country's territory to accommodate Chinese companies. OECCZs are de facto subject to Chinese law and thus boost Chinese economic development. While China is forging such economic dependence of African countries on its own economy, it is also building a political clientele to serve its power assertion.

POLICY IMPLICATIONS

- If the development strategy of the African countries hosting Chinese companies in these Chinese industrial parks does not tightly define their entrepreneurial strategy, the gain for these countries is likely to be more social (income distribution) than economic (developmental industrialization).
- If firms' selection is up to the Chinese operator and fosters the creation of labor-intensive and resource-based manufactures, the risk is that the host country will not generate inclusion in the global economy, technologically catch up, or climb up the value chains, but at best obtain a place behind China in the international division of labor.
- If the Chinese operator gets a full transfer of ownership of the land used for the industrial park as advocated by the Chinese government, then the host country will lose any control and leverage it would have had under a concession contract (public-private partnerships) over both the entrepreneurial choices and the internal regulation of these parks.
- If the U.S., the EU, and their allies want to contribute to Africa's industrialization and development, they must deepen economic rapprochement through productive activities (coproduction and insertion in U.S.-African and Euro-African value chains), not just commercial ones, and enrich their policies to encourage U.S. and European direct investment in Africa.

This essay examines the impact and consequences of the promotion in Africa of China's experience with special economic zones (SEZs), including how these zones could enable African countries to emulate the "Chinese miracle" and how they will serve China's ambition to pursue its economic goals, stimulate its own economic development, and assert its own political power.

The essay will first discuss the background. It will show that the origin of the project to foster SEZs in Africa is an initiative of the World Bank, which invited China to promote the Chinese model in Africa. At the same time, this project was embedded in China's drive to internationalize its companies (the "going global" policy). The essay will then explain the economic rationale behind these Chinese industrial parks and show that their purpose is to generate Sinicized ecosystems abroad in order to boost Chinese economic development at home. By tying African economies to its own, China is endeavoring to drag African countries into its orbit for political and security reasons. The essay will conclude by considering the policy implications both for African countries themselves and for countries that would like to participate in the establishment of traditional SEZs in Africa.

The World Bank and China for Development

The 2008 financial crisis made it clear that the economies of developed countries alone were no longer sufficient to ensure the growth of the global economy. For developing countries, this meant more intense competition to promote their development strategies. This was the time when the World Bank posited China as a model for Africa, the spirit of which would involve poverty alleviation, reform of the property rights structure, privatization, trade liberalization, opening up to foreign investment, and SEZs.

This approach has resulted in the publication of a number of reports. The first, published in 2007 and led by Harry Broadman, is a report of limited programmatic scope that argues that the World Bank must play a proactive role in supporting Africa to better compete with China and India.¹ A second report, published in February 2008, is a reflection by David Dollar that already sets China as a model, using the Chinese motto "reform and opening up" (*gaige kaifang*).² Furthermore, the World Bank embarked on a reflection on SEZs illustrated for Africa by Thomas Farole's work³ and complemented by another study on the role of Chinese investment in African SEZs that he coauthored with Deborah Brautigam and Tang Xiaoyang.⁴

The annual report published by the World Bank in 2008 under the aegis of its new president, Robert Zoellick (in charge from July 2007 to the end of June 2012), asserted an interest in Africa, but above all entrusted a new mission to China: "The [World] Bank is working closely with the China Export-Import Bank to bring China's development experience to other developing countries through staff exchanges and joint pilot projects in Africa."⁵ Zoellick provided a vivid confirmation

¹ Harry G. Broadman, *Africa's Silk Road: China and India's New Economic Frontier* (Washington, D.C.: World Bank, 2007).

² David Dollar, "Lessons from China for Africa," World Bank, Working Paper, February 2008.

³ Thomas Farole, *Special Economic Zones in Africa: Comparing Performance and Learning from Global Experiences* (Washington, D.C.: World Bank, 2011).

⁴ Deborah Brautigam, Thomas Farole, and Tang Xiaoyang, "China's Investment in African Special Economic Zones: Prospects, Challenges, and Opportunities," World Bank, Economic Premise, no. 5, March 2010, <https://openknowledge.worldbank.org/bitstream/handle/10986/10202/536820BRI0EP50Box345623B001PUBLIC1.pdf?sequence=1&isAllowed=y>.

⁵ World Bank, *The World Bank Annual Report 2008: Year in Review* (Washington, D.C.: World Bank, 2008).

of the role of development paragon in Africa attributed to China by soliciting the economist Lin Yifu for the positions of chief economist and senior vice president of the World Bank (from June 2008 to June 2012), whose first trip was to Ethiopia, Rwanda, and South Africa. It is this World Bank and China patronage that explains the promotion of China's SEZ experience in Africa and the incentives provided to Chinese companies to invest in Africa's SEZs. The enthusiasm of African countries for this solution has not waned to this day, nor has their desire to emulate the "Chinese miracle" through it.

This project was thus advanced by Lin Yifu, who forged it during his time at the World Bank and continued its theoretical justification after his tenure ended. All his main publications on this topic were published between 2013 and 2015 and make the same point following the same argument. They begin by stating the Chinese miracle and then setting out the causes of an earlier failure: a misallocation of resources and a focus on capital-intensive industries "defying comparative advantage" resulting from a factor endowment specific to a low-income agricultural economy. China, on the other hand, would have benefited from a backwardness that would mean it would reap the benefits of its predecessors without having to bear the costs. Lin theorizes that the economic development strategy adopted by China pursued a gradual shift toward a dual-economic system. Within this system, one sector transforms slowly while a second sector, based precisely within the SEZs, embraces the two conditions necessary for emergence: a government with little direct economic involvement and a free and well-functioning market. This is the reason SEZs would be the *primum principium* of any efficient industrial and developmental policy. This scheme is supposed to be replicable in Africa. The low cost of labor on the continent would outweigh low productivity, so that it could accommodate Chinese labor-intensive, low-technology industries penalized by high wage costs to the greater benefit of African countries.⁶ At least so says the narrative.

Industrial Parks and China's Internationalization

The strategy of internationalization of Chinese companies was gradually launched after the 1996 visit to Africa by Jiang Zemin, then general secretary of the Chinese Communist Party. In Chinese, the three characters *zou chu qu* strictly mean "to go out." This concept does not *ipso facto* imply a globalization of the companies that go out of China, because their market does not become global and the share of their turnover realized outside China generally remains very small. The establishment of SEZs abroad was from the outset thought to be a powerful tool for this Chinese internationalization, including through its presence in Africa.

In this respect, the subheading of the nineteenth Yellow Book of Africa (published in 2017) is particularly enlightening: *African Industrialization and China's Construction of Industrial Parks in Africa*.⁷ The first thing to note, however, is the terminology used. Here, the phrase is *chanye yuanqu*, which refers to "industrial parks" and not to "special economic zones" or any other conventional designation. In recent Chinese scientific or political papers, it has become customary to reserve the term "special economic zones" (*jingji tequ*) for references to the experiments carried out in China by Chinese authorities. When these texts have a comprehensive

⁶ Thierry Pairault, "Lin Yifu, l'Afrique et le modèle chinois d'émergence" [Lin Yifu, Africa and the Chinese Emergence Model], *Revue de la Régulation* 25 (2019), <http://journals.openedition.org/regulation/14529>.

⁷ Zhang Hongming and Wang Hongyi, eds., *Feizhou fazhan baogao n°19 (2016–2017): Feizhou gongye hua yu Zhongguo zai Feizhou chanye yuanqu jianshe* [Africa Development Report, no. 19 (2016–2017): African Industrialization and China's Construction of Industrial Parks in Africa] (Beijing: Shehui kexue chubanshe, 2017).

approach, they then speak of “industrial parks” (*chanye yuanqu* or *chanye qu*). These, strictly speaking, are industrial zones designed in such a way that the concentration of infrastructure and companies reduces industrial, administrative, environmental, and social costs. This is therefore a broader concept than the SEZ, which designates industrial parks that set up a system of fiscal, customs, and legal incentives to attract investors. Contrary to He Wenping’s assertion, SEZs are not a Chinese “idiosyncrasy” (*yuansu*) or a Chinese invention,⁸ as they are found all over the world in various guises and at all times. The economic history of the nineteenth century, or even earlier, provides many examples. The English economist Alfred Marshall was the first to theorize this concept in his *magnum opus* published in 1890 and entitled *Principles of Economics*.⁹ By contrast, the reversal of its logic is Chinese.

This is what the change in terminology illustrates. Some Chinese officials saw that the SEZ model they were proposing in Africa and elsewhere did not replicate the Chinese model. The first chapter of the nineteenth Yellow Book of Africa presents an analysis of different typologies of the *jingwai jing mao hezuo qu*, or overseas economic and commercial cooperation zones (OECCZs).¹⁰ Although OECCZs are industrial parks, they are very different from traditional SEZs. Both are concerned with providing fiscal, legal, and other benefits to investors who would otherwise abstain. Yet whereas an SEZ is a zone created by a host country on its own territory to attract foreign investors and to promote its own development, the same is not true of an OECCZ. The latter is an enclave designed by a Chinese company appointed by China—mainly through the Ministry of Commerce (MOFCOM)—to create a Chinese ecosystem in a host country’s territory to accommodate Chinese companies, which are de facto subject to Chinese law and thus boost Chinese economic development.

OECCZs for Africa

The project initiated in 2005–6 provided for the creation of some 50 such industrial parks. Information released by MOFCOM on its website shows that twenty OECCZs have been “certified” (*tongguo queren kaohe*) up to 2016, of which only four are in Africa (after the declassification of the Jiangling OECCZ project): Ethiopia, Egypt, Nigeria, and Zambia.¹¹ The discrepancy between the originally planned target and the actual results suggests that implementation was not as easy as expected and that the strategy has evolved, leading to a discontinuation of certifications.

According to Luo Yuze, the benefit of certification is that it gives an honorary title (*ming hao*).¹² This not only makes it easier to obtain additional funding and attract Chinese companies wishing to go out, but also gives them a kind of legitimacy vis-à-vis foreign governments, as if they were officially representing China—but without the former East India Company power and arrogance. However, if some OECCZs are certified, others are not. For instance, the Mauritius Jinfei

⁸ He Wenping, “Zhongguo jingyan yu Feizhou fazhan: Jiejian, ronghe yu chuangxin” [China’s Experiences and African Development: Reference, Integration and Innovation], *Xiya Feizhou* 4 (2017): 84.

⁹ Alfred Marshall, *Principles of Economics* (London: Palgrave Macmillan 2013), 222–31.

¹⁰ Wang Hongyi, “Zhong Fei gong jian chanye yuan de xianzhuang, wenti he duice” [China-Africa Industrial Park: Status, Problems and Solutions], in Zhang and Wang, *Feizhou fazhan baogao n°19 (2016–2017)*, 1–28.

¹¹ Ministry of Commerce of the People’s Republic of China (PRC), “Tongguo queren kaohe de jingwai jingmao hezuo qu minglu” [List of Certified Overseas Economic and Trade Cooperation Zones], <http://fec.mofcom.gov.cn/article/jwjmhzq/article01.shtml>.

¹² He Jia, “2017 Jingwai jingmao hezuo qu shengtai diaocha: Jieduan xing chengguo yi xian jidai tazhan ke chixu rongzi qudao” [OECCZs Ecological Survey in 2017: Interim Results Show That Sustainable Funding Channels Need to Be Increased], *21st Century Business Herald*, January 22, 2018.

Economic and Trade Cooperation Zone was never certified as an OECCZ, as it is the result of a direct concession from an African country to a Chinese public or private entity serving primarily its own interests.

All certifications were granted between 2006 and 2013 except for the Julong Agricultural Industry Cooperation Zone in Indonesia (2016). This operation, launched in 2006, reportedly received direct support from Xi Jinping during his 2013 trip to Jakarta when he delivered his second speech on the new silk roads.¹³ Indeed, it is a strategic moment when the incentive to go out is integrated into the new silk roads strategy, with the Indonesian experience at the hinge. From then on, establishing OECCZs broadened considerably and no longer seems to be limited to public experiments more or less piloted by MOFCOM, nor to have the least developed countries as the sole destination. The current narrative now includes earlier experiences in the United States.¹⁴

Statistics to assess the current proliferation of OECCZs are scarce and sketchy. MOFCOM statistics reportedly identified 99 OECCZs in 44 countries worldwide by the end of 2017. A study published in 2021 reports that their number would have more than doubled in two years and could have been 205 by the end of 2019, of which 161 would have been operational.¹⁵ With respect to the African continent, MOFCOM's 2020 data shows 25 OECCZs in Africa, or 31% of the total, and ranks six of them among the “thirty most important along the new silk roads,” including two in Nigeria and one in each of the five other countries (Egypt, Ethiopia, Mauritius, Sierra Leone, and Zambia). These 25 OECCZs in Africa would have hosted more than 623 Chinese companies and created about 42,000 local jobs.¹⁶ They thus represent one-eighth of the African industrial parks in operation according to a UN Conference on Trade and Development and Africa Economic Zones Organization survey (200 in total, of which 37 are under construction).¹⁷

Mapping the OECCZs in Africa is a challenge because their numbers and locations are not known with accuracy. The official figure would be around 25, but no enumeration has been published. MOFCOM lists 4 historical OECCZs—the 4 that were certified before the launch of the new silk roads strategy.¹⁸ The China Council for the Promotion of International Trade website identifies 13 OECCZs, including the 4 historical ones.¹⁹ The China International Electronic Commerce Center—a government consulting agency under MOFCOM—assesses the number at more than 50, of which 25 would be actually controlled by Chinese operators, while at the same

¹³ It is the first pilot project in the Association of Southeast Asian Nations (ASEAN) region to be supported by the Ministry of Agriculture and Rural Affairs of China for national agricultural investment cooperation, a national-level overseas economic and trade cooperation zone confirmed by the Ministry of Commerce and the Ministry of Finance, and a key project in the 13th Five-Year Plan of Tianjin. It is also one of the first pilot projects in the ASEAN region to be supported by the Ministry of Agriculture and Rural Affairs of China. “Xi Jinping zai Yindunixiya guohui de yanjiang” [Xi Jinping’s Speech to the Indonesian Parliament], Central Government Portal (PRC), October 3, 2013, http://www.gov.cn/lhdh/2013-10/03/content_2500118.htm. The author prefers the phrase “new silk roads” to “one belt, one road” or “belt and road.” “Silk roads” is a geographic expression created at the end of the nineteenth century without political connotations to designate traditional trade routes, including the maritime route.

¹⁴ Ministry of Commerce (PRC) and UN Development Programme, *Report on Fostering Sustainable Development through Chinese Overseas Economic and Trade Cooperation Zones along the Belt and Road* (New York, 2019), 2.

¹⁵ Yan Bing, Xie Xindi, and Zhang Yu, “Jingwai jingmao hezuo qu maoyi xiaoying pinggu—jiyu dongdaoguo shijiao” [Evaluation of Trade Effects of OECCZs—from the Perspective of the Host Country], *Zhongguo Gongye Jingji* 7 (2021): 119–36.

¹⁶ Li Zhiming, Zhang Cheng, and Chen Xi, “Woguo jingwai chanye yuan de quwei buju he fazhan xianzhuang fenxi” [Analysis of Area Distribution and Development Status of OECCZs], *Zhongguo Keji Ziyuan Daokan* 52, no. 5 (2020): 103; and Ministry of Commerce (PRC), *Zhongguo yu Feizhou jingmao guanxi baogao (2021)* [China-Africa Economic and Trade Relationship Annual Report (2021)] (Beijing, 2021).

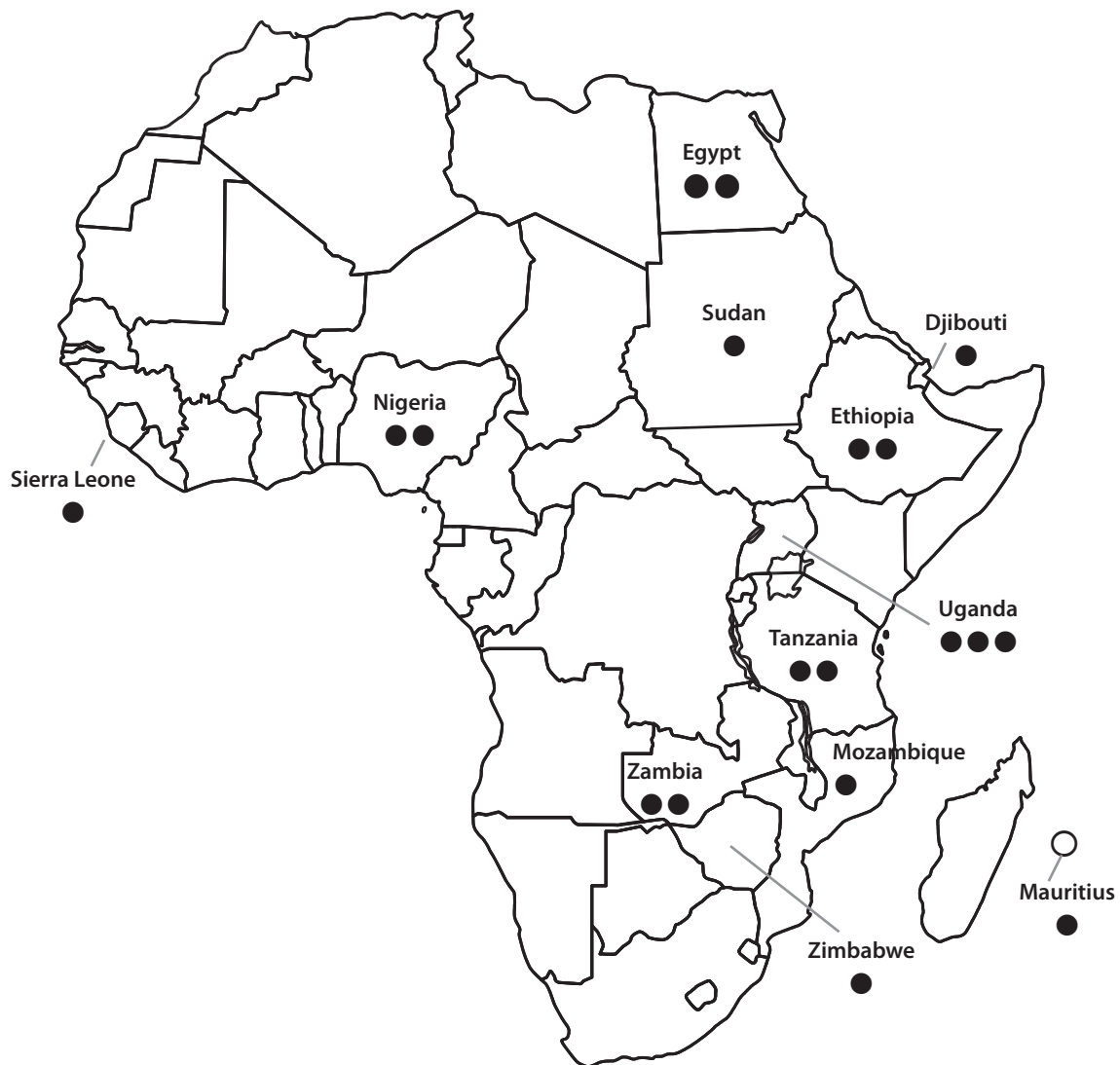
¹⁷ UN Conference on Trade and Development and Africa Economic Zones Organization (AEZO), “Special Economic Zones & African Continental Free Trade Agreement: Results from a Continent-Wide Survey,” 2021; and AEZO, “The African Economic Zones Outlook 2019,” 2019. For both documents, see the AEZO Knowledge Center at <https://www.africaeconomiczones.com/aezo-knowledge-center/reports-presentations>.

¹⁸ Ministry of Commerce (PRC), “Tongguo queren kaohe de jingwai jingmao hezuo qu minglu.”

¹⁹ China Council for the Promotion of International Trade, “Chanye yuanqu > Feizhou” [Industrial Parks > Africa], https://oip.ccpit.org/ent/parksIntroduces_list/6?page=1.

time listing 30 OECCZs without any indication as to which are among the 25.²⁰ If considering only industrial parks operated by a Chinese developer and excluding Agricultural Demonstration Centers and the like, as well as industrial sites dedicated to a single company, there are only 19 parks whose current activity can be verified with some confidence and which deserve to be labeled as OECCZs (see **Figure 1** for a map of these parks).

FIGURE 1 OECCZs in Africa operated by Chinese developers



NOTE: Map notes industrial parks operated by Chinese developers that can be verified with some confidence as OECCZs. This excludes agricultural demonstration centers and industrial sites dedicated to a single company.

²⁰ “Jingwai jingmao hezuoku” [Overseas Economic and Commercial Cooperation Zones], China International Engineering Consulting Corporation, https://www.investgo.cn/channel/v3_0/hzq/hzqList.shtml?ContinentID=%E9%9D%9E%E6%B4%B2.

Djibouti and the Shekou Model

Regardless of the variety of OECCZs (certified or noncertified, public or private, large or small) that exist in Africa today, they are often said to derive directly or indirectly from the so-called “Shekou model” (*Shekou moshi*).

In Djibouti, there are many industrial parks, including two Chinese OECCZ projects. One is under the aegis of a small private group that seems to have been discontinued. The other is under the auspices of China Merchants Port (CMP)—a Hong Kong subsidiary of a publicly funded Chinese group—which intends to duplicate the so-called Shekou model.²¹ The model is already reportedly implemented in the concessions it manages in Sri Lanka (Hambantota port), Australia (Newcastle port), and Togo (Lomé port). The origin of this model is the Shekou Industrial Park, which was established by China Merchants (CMP’s parent company) in Guangdong in January 1979 and was the first avatar in China of SEZs.²²

The managers of CMP formalize their experience with the formula “the port in front, the (industrial) park in the middle, and the city behind” (*qian gang, zhong qu, hou cheng*, rendered in English as “port-park-city”). This is a management model for the OECCZs operated by the CMP and not a form of industrial park of a different nature from the OECCZs promoted by China to achieve its goals. The justification for the solution adopted by CMP is that an active port with an industrial free zone would attract foreign companies, which in turn would generate a demand for local labor that would have to be accommodated in a new town with all the necessary urban services. In this model, the Chinese government and the local government—the Bao’an municipality in China in 1979; the host country (Djibouti) today—would hand over authority to a Chinese company that was fully responsible for the management of the park. A single operator (CMP for the Djibouti International Free Trade Zone, or DIFTZ) should increase the efficiency of the services and allow for the creation of a cocoon where hosted companies can develop free from administrative, fiscal, and even trade union constraints.²³ This model is also driven by technical choices. It is built on the sole re-export of imported products processed in the OECCZ, requiring only short-distance (small) trucking services and not access to railways that would bring these products from distant manufacturing sites to be processed.²⁴ Such is the narrative as told by CMP, but the practice of OECCZs in Africa looks rather different.

The Shekou model implemented in Djibouti is not necessarily replicated everywhere. The famous Eastern Industry Zone in Ethiopia is far from replicating the model’s three criteria (port-park-city), unless one considers its location as a dry port. The distance from the sea (almost 800 kilometers) requires the use of a railway line, the construction of which was entirely supported by the Ethiopian government (with a Chinese loan). Conversely, the Sino-Egyptian Suez Economic and Trade Cooperation Zone, which is located in the Sukhna Industrial Zone next to the port of Ain Sukhna on the west coast of the Gulf of Suez and north of the Red Sea, replicates to a great

²¹ Thierry Pairault, “La China Merchants à Djibouti: de la route maritime à la route numérique de la soie” [China Merchants in Djibouti: From the Maritime to the Digital Silk Road], *Espace Géographique et Société Marocaine*, no. 25–26 (2018): 59–79.

²² On the origin and history of this model, see Wu Dianqing, “Ye Fei yu ‘Shekou moshi’” [Ye Fei and the “Shekou Model”], *Dang Shi Bolan* 2 (2013): 16–21.

²³ He Jihong and Liu Ning, “Shekou moshi: yizhong shehui zhidu chuangxin” [Shekou Model: A Social System Innovation], *Tequ Jingji* 310 (2014): 53–57; Hu Wen, “Zhaoshang shekou shi ge ‘quan’” [China Merchants Shekou Is a “Cocoon”], *21st Century Business Herald*, November 13, 2017; and Zhou Zhiyu, “‘Yidai yilu’ changyi de xianxingzhe: ‘Shekou moshi’ quanqihua fuzhi” [A Pioneer of the “Belt and Road” Initiative: The “Shekou Model” Replicated Globally], *21st Century Business Herald*, December 21, 2017.

²⁴ James Wang and Brian Slack, “The Evolution of a Regional Container Port System: The Pearl River Delta,” *Journal of Transport Geography* 8, no. 4 (2000): 263–75.

extent the Shekou model, even if it is not operated by CMP but by Tianjin Economic-Technological Development Area Investment Holdings (TEDA), the public operator running the Tientsin SEZ.

Even in the case of Djibouti, the application of the model is unique, as it was not designed to be the basis for the industrialization of the country. Here it is not Sanyo (a leading Japanese electronics company) or its like that is called on to invest, as was historically the case for Shekou, but rather the mainly service activities of CMP clients. Thus, little manufacturing transfer is to be expected in this case. Recent Chinese regulations allow and facilitate the organization of a seamless continuum between SEZs in China and OECCZs abroad such that the latter are no more than overseas appendages of the former.²⁵ The Qianhai Shekou Free Trade Zone is a specialized zone of the China (Guangdong) Pilot Free Trade Zone established in 2014, designed to conduct a leading experiment to open up China's financial industry and provide a major base for global services trade and an international port hub. In this context, the DIFTZ is intended to be an outgrowth of the Qianhai Shekou Free Trade Zone, as illustrated by the "twin zone network" (*shuang qu liandong*) of the business-to-business transaction platform Djimart.com developed by CMP. The platform offers a one-stop solution for logistics, warehousing, and payment-settlement issues related to the import into Africa of products made in China.²⁶

The invocation of the Shekou model and the narrative praising it as the origin of Chinese economic development are designed to provide African countries with an industrial park model that, far from replicating the Chinese success story in Africa, would instead ensure the continuation of Chinese development through the creation of quasi-extra-territorialized industrial parks. In short, there is a whiff of nineteenth-century foreign concessions in China—that is, the leased territories that the great powers wrested away under unequal treaties to open China and its ports to their trade.²⁷

The Economic Rationale of OECCZs

OECCZs are actually not SEZs of the type that ensured the so-called Chinese miracle, but are a special avatar of SEZs, as their logic is reversed. In a series of articles, journalist He Jia reports clearly on the reason for this inversion: OECCZs are extensions abroad of SEZs created in China and dedicated to export industries. The former stem from the same Chinese political will as the latter, but in a changed global environment.²⁸

²⁵ State Council (PRC), "Guowuyuan guanyu tongyi zai Xiong'an xinqu deng 46 ge chengshi he diqu sheli kua jing dianzi shangwu zonghe shiyan qu de pifu" [Approval of the State Council on the Establishment of Comprehensive Pilot Zones for Cross-border Electronic Commerce in 46 Cities and Regions Including Xiong'an New Area], May 6, 2020; State Council (PRC), *Guojia waihui guanli ju guanyu zhichi maoyi xin yetai fazhan de tongzhi* [SAFE Circular on Supporting the Development of New Trade Businesses], May 20, 2020; and State Council (PRC), *Guanyu zai quanguo haiguan fuzhi tuiguang kua jing dianzi shangwu qiye dui qiye chukou jianguan shidian de gonggao* [Announcement Regarding the Expansion of the Pilot Program on Oversight of Business-to-Business Export in Cross-border e-Commerce at Customs Offices Nationwide], June 22, 2021.

²⁶ "Jibuti guoji zi mao qu zaixian jiaoyi pingtai shangxian, yu Qianhai Shekou zi mao qu shixian 'shuang qu liandong'" [The Online Trading Platform of Djibouti International Free Trade Zone Is Launched, Realizing "Dual Zone Linkage" with Qianhai Shekou Free Trade Zone], *China Daily*, April 29, 2020.

²⁷ In alphabetical order, these great powers were Austria, Belgium, France, Germany, Great Britain, Italy, Japan, Portugal, Russia, and the United States.

²⁸ The *21st Century Business Herald* website is no longer open access, but it is still possible to find these articles on other Chinese websites for free. He Jia, "Jingwai jingmao hezuo qu: 'Yidai Yilu' shuangying pingtai" [OECCZs: "One Belt, One Road" Win-Win Platform], *21st Century Business Herald*, February 20, 2017; He Jia, "Jianzhi ziyuan youhua zhenghe 16 jia Yidai Yilu jingwai hezuo qu jiemeng" [16 OECCZs along the New Silk Roads Join Forces to Optimise and Integrate Resources], *21st Century Business Herald*, April 1, 2017; He Jia, "Pojie ke chixu fazhan nanti—jingwai jingmao hezuo qu shangye moshi jidai chuaxin" [Facing the Challenge of Sustainability—OECCZs Business Model Needs to Innovate], *21st Century Business Herald*, December 18, 2017; and He, "2017 Jingwai jingmao hezuo qu shengtai diaocha."

Li Chunding, a professor at China Agricultural University, has explained very blatantly the objectives of these OECCZs, the promotion of which was the subject of a February 2008 regulation that has not been made public but on which Li reports.²⁹ To sum up, he states that OECCZs are a strategy for Chinese companies to go out, are conducive to the formation of industrial clusters, and alleviate the implementation of subsidy policies. They allow Chinese companies to group together and join forces to invest abroad. When such zones are established, and after an audit has been carried out, the Chinese government may grant public aid of up to \$40 million per company and long-term loans of up to \$350 million per company. However, the government eventually suspended these subsidies in 2016 due to the large number of projects.³⁰

An obvious example of these objectives is provided *a contrario* by the failure of the Jiangling OECCZ in Algeria (2007–8). Undoubtedly, the Algerian government has always shown a great reluctance to create an industrial park, but it is certainly the Chinese intention to become the land rights holder and bring in a hundred Chinese subcontractors instead of turning to Algerian companies that best explains why the project to create an OECCZ failed.³¹ For the Algerian authorities, the coming of a foreign investor should allow for the impetus of local industrialization with local partners, the consolidation of local production, and the betterment of local employment opportunities, as well as the promotion of local economic development as it occurred in China.

It is hard to know the difficulties faced in negotiating the creation of an OECCZ. The issue of OECCZ control, and especially that of land rights, seems to be the main controversial point. In an August 2010 directive, MOFCOM expressed particular concern about land control.³² As for the Sino-Egyptian Suez Economic and Trade Cooperation Zone, the first discussions began as early as 1997 for a project that seems to have quickly stalled. They resumed in 2008 but quickly came up against land problems. Yet, unlike what happened in Algeria, these issues were apparently resolved in 2013 after five years of negotiations. The land rights are now held by the Chinese operator under the terms of a 93-year emphyteutic lease.³³ The Mauritius Jinfei Economic and Trade Cooperation Zone project also illustrates the difficulties encountered by an OECCZ project when the institutional framework is poorly defined at the outset. It was only in 2016, eight years after its creation, that a legal framework was agreed on, allowing the Chinese operator to be allocated the land necessary to carry out the project.³⁴ Asymmetries can also arise and further complicate negotiations or relationships. The Chinese operator controlling the OECCZ (a state-owned enterprise under the Shanxi provincial government) has invested less than 15%, while the Mauritian government is covering the rest of the costs, both directly (25%) and through its utilities (60%).³⁵ Presumably, the

²⁹ Li Chunding, “Jingwai jingmao hezuo qu jianshe yu woguo qiye ‘zouchuqu’” [OECCZ Establishment and China’s “Going Out” Policy], *Guoji jingji hezuo* 7 (2008): 25–28. Li Chunding refers to an “authorization,” the title of which is known (*Guowuyuan guanyuan tongyi tuijin jingwai jingji maoyi hezuo qu jianshe yijian de pifu*, or Authorization of the State Council for the Promotion of OECCZs), but not to the text itself, which appears to be impossible to access.

³⁰ Yan Bing and Jia Huihui, “Tuijin woguo jingwai jingmao hezuo qu gao zhihang fazhan” [Promoting High-Quality Development of China’s OECCZs], *Zhongguo Shehui Kexue Bao*, May 8, 2020, 3.

³¹ “Jiangxi jihua touzi 38 yi yuan zai A'erjiliya jian jiangling jingmao hezuo qu” [Jiangxi Province Plans to Invest 3.8 Billion Yuan in Algeria to Build an OECCZ], *Xinhua*, May 4, 2008.

³² Ministry of Commerce (PRC), “Jingwai jingmao hezuo qu yewu zhinan” [Business Guide for OECCZs], August 10, 2010, <http://fec.mofcom.gov.cn/article/jwjmhqzq/article02.shtml>.

³³ Liu Amin and Ma Xia, “Aiji Suyishi jingmao hezuo qu de chengxiao, kun nan yu duice” [Results, Problems, and Countermeasures of the Suez OECCZ in Egypt], in Zhang and Wang, *Feizhou fazhan baogao n°19 (2016–2017)*, 45–61; and Wang, “Zhong Fei gong jian chanye yuan de xianzhuang, wenti he duice.”

³⁴ “Analyse d’un échantillon de 15 zones économiques spéciales en Afrique” [Analysis of a Sample of 15 Special Economic Zones in Africa], *Observatoire Europe-Afrique*, June 30, 2017.

³⁵ Vinay Ancharaz and Baboo Nowbutsing, “Les zones économiques chinoises en Afrique favorisent-elles le développement ?” [Do Chinese Economic Zones in Africa Promote Development?], *Éclairage sur les Négociations* 10, no. 3 (2011): 12–14.

breakdown in January 2021 of negotiations between the Congolese government and the China Overseas Infrastructure Development and Investment Corporation for the establishment of an OECCZ in Pointe-Noire could have been caused by similar factors.³⁶

Asymmetries, misunderstandings, and miscalculations are immanent to the very nature of the OECCZs. This is not the result of an unforeseeable clash of divergent objectives between Chinese actors and a host country, but of the roadmap of the OECCZs as stipulated in a 2015 text.³⁷ The text clearly states that an OECCZ is an industrial park under the control of a Chinese-funded holding company incorporated in mainland China that, through a Chinese-owned entity incorporated abroad, invests in the construction of such an industrial park. As a result, these OECCZs are often referred to as “Chinese-funded overseas industrial parks” (*zhongzi haiwai chanye yuanqu*) and are expected to provide comprehensive infrastructure, clear industrial orientation, and comprehensive functional utilities and ensure the clustering and internationalization of Chinese enterprises.

These stipulations precede other provisions listing the conditions that these OECCZs must meet in order to be accredited by the Chinese authorities. Lin Yifu rather cynically describes their practice as “building a nest for the phoenix” (*zhu chao yin feng*).³⁸ This catachresis is significant because in China the appearance of the phoenix has political meaning.³⁹ The phoenix stands for China, which, far from exporting its model, is inventing a different model to use in developing countries. It is actually a distortion of the Chinese model with the World Bank’s endorsement, given that the World Bank has entrusted China with the status of a development model, and Lin Yifu with the role of a herald.

OECCZs as a Sinicized Ecosystem

A striking feature of Chinese papers on OECCZs is their implicit approach, which is not to address the needs and desires of African host countries but to see Africa as a place for Chinese companies to operate. This policy is only intended to encourage Chinese companies to go out rather than “internationalize” (*guojihua*). The purpose of these OECCZs is to provide Chinese companies with a cocoon, a Sinicized ecosystem. Even if most papers are satisfied with this state of affairs, some Chinese researchers have a more critical point of view. Three authors of an article published in 2017 clearly state that “overseas industrial parks must change their development philosophy...and move from the concept of ‘Chinese industrial parks abroad’ to that of ‘host country–China parks.’”⁴⁰

Few observers are as clear-sighted. At the second seminar on the development of OECCZs held in Tianjin at the end of June 2018, former vice minister of commerce Chen Jian pointed out the difficulty of implementing these parks and noted that problems would arise if Chinese companies

³⁶ Muriel Devey Malu-Malu, “La ZES de Pointe-Noire recherche développeur et investisseurs” [Pointe-Noire SEZ Seeks Developer and Investors], *Makanisi*, January 21, 2021.

³⁷ Ministry of Commerce (PRC), “Shangwu bu caizheng bu guanyu yinfa ‘jingwai jingji maoyi hezuo qu kaohe banfa’ de tongzhi” [Notice from the Ministry of Commerce and the Ministry of Finance on the Publication of Assessment Measures for OECCZs], August 14, 2015.

³⁸ Chen Xi, “Xin jiegou jingji xue zai fazhan zhong guojia de yunyong yu shijian” [The Application of New Structural Economics in Developing Countries], *Jingji Daokan* 3 (2017): 32–34. Lin Yifu is not the first to have officially used this image. A bilingual Chinese-English report from the Beijing office of the UN Development Programme was published on December 17, 2015, with two different titles. While the Chinese version clearly reads “If Africa builds nests, will it attract the phoenix?” (*Feizhou zhu chao, neng fou chenggong yin feng*), the English version is less straightforward and asks, “If Africa builds nests, will the birds come?”

³⁹ Jean-Pierre Diény, “Le fenghuang et le phénix” [The Fenghuang and the Phoenix], *Cahiers d’Extrême-Asie* 5, no. 1 (1989): 10.

⁴⁰ Yeerken Wuzhati, Zhang Wei, and Liu Zhigao, “Woguo zai Yidai Yilu yanxian haiwai yuanqu jianshe moshi yanjiu” [Study on the Construction Model of China’s Overseas Parks along the Belt and Road], *Zhongguo Kexueyuan Yuankan* 32, no. 4 (2017): 355–62.

operating OECCZs were to collaborate with the host-country authorities in managing the park. First, China would lose its grip over operations in these OECCZs; second, the contradictions between China's interests and objectives and those of the host countries would compound the problems so much that they could ruin the success of the project.⁴¹ Wei Jianqing, executive general manager of the Sino-Egyptian Suez Economic and Trade Cooperation Zone, infers that China should establish a consultation mechanism *guiding* (my emphasis) the host government in its policy directions (*jiyu zhengce yindao*), forgoing any concept of noninterference.⁴² And Luo Yuzhe, a researcher with the Development Research Center of the State Council, expresses the concerns of OECCZ operators, as reported by journalist He Jia.⁴³ According to Luo, many OECCZs would face political instability, poor industrial frameworks, obsolete infrastructure, considerable foreign exchange risks, lack of legal protections, and threats of terrorism. In most cases, the business environment would be drastically different from that in China. For instance, to attract investors, local governments in China would do a perfect job of building infrastructure, while foreign governments would do nothing. The work that local governments do in China would be the responsibility of the park operators abroad.

The Chinese documents also point to specific Chinese shortcomings alongside those of the host countries. In the aforementioned nineteenth Yellow Book of Africa, one of the authors, Wang Hongyi, reveals the shadows of the picture and points to Chinese operators and investors.⁴⁴ Chinese banks do not provide Chinese operators with the indispensable financial support they need because the banks lack experience beyond China's borders. This weakens the operators, especially since they have little knowledge of the political, economic, and social environment of the country where the parks are located and have only limited management skills. Only the Sino-Egyptian Suez Economic and Trade Cooperation Zone appears to have an adequate team to fulfill its mission. The author notes that Chinese investors are totally unprepared for internationalization and unable to forget their traditional behaviors such as "greed for profit, failure to keep their word, and neglect of ethics," and that they are "indifferent to respect for the law and neglect their social responsibility."

These critical and acrimonious remarks on Chinese business practices in Africa were all made by a Chinese government think tank researcher and published in an official report. It was perhaps to tackle this trend that an "upgrading" (*shengji*) of the OECCZs was decided on. The statements made on March 9, 2019, by Vice Minister of Commerce Qian Keming at a press conference give an insight into this so-called upgrading:

The construction of OECCZs should follow the principles of marketization and internationalization, meet the economic development needs of the host countries and neighboring countries, and open up the international market to introduce enterprises from developed regions and countries such as Europe, America, and Korea. At the same time, it is necessary to strengthen policy communication and people-to-people contact with the countries and locations where the overseas cooperation zones are located, and to set up intergovernmental communication and coordination mechanisms at the ministerial level to solve various conflicts

⁴¹ Xia Xutian, "Zhongguo jingwai jingmao hezuo qu gaosu fazhan yuanqu—kaifa qiye yingli moshi xu duoyuanhua" [China's OECCZs Are Growing Rapidly—Developers Need to Diversify Their Profit Model], *21st Century Business Herald*, July 3, 2018.

⁴² He, "Jianzhi ziyuan youhua zhenghe 16 jia Yidai Yilu jingwai hezuo qu jiemeng," 4.

⁴³ He, "2017 Jingwai jingmao hezuo qu shengtai diaocha," 6.

⁴⁴ Wang, "Zhong Fei gong jian chanye yuan de xianzhuang, wenti he duice," 19–24.

and problems in the daily operation of the overseas cooperation zones, such as labor, environment, land, taxation, and exchange.⁴⁵

In other words, the OECCZs become instruments not only of the go-out policy but also of the implementation of the new silk roads global strategy. Shen Minghui and Shen Chen (both with the Chinese Academy of Social Sciences), in discussing in 2021 the various “institutional mechanisms of development cooperation” under the new silk roads strategy (“*yidai yilu fazhan hezuo de jizhi gongji*”), identify the OECCZs as a mechanism of “encrustation” (*qianru*).⁴⁶

Zhang Yongpeng, a researcher at the Institute of West Asian and African Studies at the Chinese Academy of Social Sciences, clearly shows how China-Africa economic relations—albeit unbalanced—have given each of the actors in the Sino-African partnership unsuspected political weight.⁴⁷ Thus, China has insensitively shifted from a discourse on the way and means of economic development to a discourse on the way of political development and international governance in which the ultimate goal of the OECCZs is to encourage African countries to embrace the Chinese model (*Zhongguo moshi*), to adopt the Chinese path (*Zhongguo daolu*), and to follow the Chinese experience (*Zhongguo jingyan*). This is not so much for the sake of their development, industrialization, or, in short, their emergence. Rather, in the words of Liu Hongwu, the director of the Institute of African Studies at Zhejiang Normal University, this new discourse is focused on “the promotion and improvement of China’s global image and influence.”⁴⁸ For his part, Liu Jianbo, who is affiliated with the Institute of International Strategic Studies at the Central Party School, argues emphatically that the Chinese model “has thus become a major component of China’s soft power and a crucial contribution of China’s own values to the international community.”⁴⁹ Finally, for many Chinese authors (mainly Africanists), the idea of a development model based on OECCZs is above all political, since it is a question of teaching that China’s success rests on a model that opposes the Western one—that of the former colonizers—and that will revolutionize the world.

OECCZs vs. SEZs

The observations above do not call into question the development benefits of establishing SEZs, provided that they are not distorted in the way that OECCZs are. To summarize the argument:

- If the development strategy of African countries hosting Chinese companies in these Chinese industrial parks does not tightly define their entrepreneurial strategy, the gain for these countries is likely to be more social (income distribution) than economic (developmental industrialization).

⁴⁵ Ministry of Commerce (PRC), “Jingwai jingmao hezuo qu shengji mubiao mingque” [Clear Targets for Upgrading of Offshore Economic and Trade Cooperation Zones], March 12, 2019.

⁴⁶ Shen Minghui and Shen Chen, “Jizhi gongji yu Yidai Yilu fazhan hezuo” [Institutional Supply and the Belt and Road Initiative Development Cooperation], *Waijiao Pinglun* 38, no. 1 (2021): 1–23.

⁴⁷ Zhang Yongpeng, “Zhong Fei guanxi youli tisheng Feizhou guoji diwei” [Sino-African Relations Benefit the Strengthening of Africa’s International Status], *Ya Fei Zongheng* 6 (2014): 103–13.

⁴⁸ Liu Hongwu, “La Chine et le développement de l’Afrique” [China and Africa’s Development], trans. by Thierry Pairault in *Chine-Algérie: Une relation singulière en Afrique* [China-Algeria: A Unique Relationship in Africa], ed. Thierry Pairault and Fatiha Talahite (Paris: Riveneuve Éditions, 2014), 230.

⁴⁹ Luo Jianbo, “Feizhou guojia de zhili nanti yu Zhong Fei zhiguo lizheng jingyan jiaoliu” [African Governance Issues and the Governance Experience Exchange between China and African Countries], *Xiya Feizhou* 3 (2015): 74–97.

- If firms' selection is up to the Chinese operator and fosters the creation of labor-intensive, low-technology, and resource-based manufactures, the risk is that the host country will not be able to generate inclusion into the global economy, technologically catch up, or climb up the value chains. At best, it will obtain a place behind China in the international division of labor.
- If the Chinese operator gets a full transfer of ownership of the land used for the industrial park as advocated by MOFCOM and the Chinese government, then the host country will lose any control and leverage it would have had under a concession contract (public-private partnership) over both the entrepreneurial choices and the internal regulation of these parks.
- If the Chinese industrial parks are specifically outward-looking enclaves with no real link to the local economy and no insertion into the local industrial fabric, then the spillover effects would be insignificant, while the potential for extra-territorialization would be significant.

Conversely, if a host country imposes its developmental choices on foreign (whether Chinese or not) companies that set up in the SEZs it has initiated and manages, only then can this country hope to emulate a Chinese model of its own. This implies that the host country elaborates a development strategy not only in terms of objectives but also in terms of territorial planning, and that a good balance is sought between the development of exports and the promotion of import-substitution. It is therefore necessary to set up a local team specifically trained in the management of SEZs and to find financing that does not burden the state budget without losing control. This still implies the creation of joint ventures and subcontracting links with national small and medium-sized enterprises located outside the SEZs, as well as partnerships with national research networks in order to build an ecosystem of integrated and technologically innovative clusters. In addition to these general principles, and more specifically with regard to relations with China, companies setting up in SEZs should sign a contract not with an intermediary (such as a Chinese operator) but with the host country's authority. The latter could then directly ensure that the company is working within the framework of the national development strategy and is respecting the commitments it has to make. These companies producing in SEZs also could be required to meet specific criteria—emulating the Qualifying Industrial Zone protocol—so that their products could be labeled “made in Africa.”

The United States, the European Union, and their allies cannot compete head on with China, which remains in many ways a command economy. The best solution has been provided by Morocco, which manages its SEZs in the same way as China does at home, and where Western companies have naturally found their place without being forced by their respective country governments. In other words, if the United States, the European Union, and their allies want to contribute to Africa's industrialization and development—and not just offer African production zones limited to an offshore logic—they must deepen economic rapprochement through productive activities (coproduction and insertion into U.S.-African and Euro-African value chains), not just commercial ones, and enrich their policies to encourage U.S. and European direct investment in Africa.



Seattle and Washington, D.C.

1414 NE 42ND STREET, SUITE 300
SEATTLE, WASHINGTON 98105 USA
PHONE 206-632-7370, FAX 206-632-7487

1819 L ST NW, NINTH FLOOR
WASHINGTON, D.C. 20036 USA
PHONE 202-347-9767, FAX 202-347-9766

NBR@NBR.ORG, WWW.NBR.ORG