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The Chinese Model of Infrastructure Development in Africa

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The Centre for the Study of the Economies of Africa (CSEA)

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South Africa Institute of International Affairs (SAIIA)

Uzor Ezechukwu

1. Introduction

Infrastructural development is a key step in providing a competitive business environment for African economies. It provides the backbone for poverty reduction strategies and programmes designed to improve the livelihood of the poor. Africa is in dire need of infrastructural development. The absence of quality infrastructure in the continent holds back per capita economic growth by 2 percentage points each year and depresses firm productivity by as much as 40 percent (Escribano et al., 2008 and Kelly, 2012). Estimates suggest that around USD 90 billion is required to close Africa's infrastructure gap annually until 2020 (AICD, 2010).

The Chinese resource for infrastructure (RFI) loans presents the most promising source of funds for infrastructure development in Africa, given the constraints on the traditional Western sources of infrastructure finance. The emerging role of China as a major infrastructure financier can be understood in the context of the trade complementarity that exists between African countries and China: Africa is saddled with a huge gap in infrastructure, whereas China's fast-growing manufacturing economy requires crude oil, mineral inputs and agricultural raw materials abundant in Africa.

China uses the RFI model as the main strategy to engage with African countries in the provision of infrastructure projects. RFI swaps involve the exchange of natural resources like crude oil, mineral inputs and agricultural raw materials as collateral for loans designed to finance infrastructural development (Konijn, 2014). The Export-Import Bank of China (EXIM) and China's Development Bank (CDB) play a central role in providing the credit lines required for infrastructure projects, on a mostly concessional and 'no-strings' attached basis.

2. Benefits of RFI Financing Model

Within the past decade, China has financed infrastructure projects worth USD 28 billion in Africa (World Bank, 2013). In fact, from 2001 till the end of 2011, around 10 major RFI deals were either completed, or at the implementation stage in eight African countries: Angola, Congo-Brazzaville, Democratic Republic of Congo (DRC), Ethiopia, Gabon, Sudan, Nigeria and Zimbabwe, with a combined financial value of approximately USD 22 billion (Davies, 2010; China-Africa Economic and Trade Cooperation 2013; and Konijn, 2014).

The most attractive attribute of Chinese RFI loans for African countries is the competitive interest rates and 'no-strings attached' conditions provided by RFI swaps. On the part of China, RFI loans provide a way to secure export markets for Chinese goods and services, given that the approval of RFI loans by China's EXIM bank is tied

to the purchase of around 70 per cent of Chinese goods and services. Thus, the use of RFI loans in Africa actualizes China's economic objective of export promotion and the foreign policy of non-interference.

RFI loans benefit African countries in several ways. RFI swaps provide the needed infrastructure in Africa, particularly in the areas of power generation and distribution, Information and Communication Technology (ICT), transportation, and social services (education, health, and clean water). However, the volume of infrastructure finance approved by China's EXIM bank is biased towards the provision of hydro-power projects and railways. China's preference for power and transportation infrastructure projects over ICT and water projects reflects China's non-traditional view of infrastructural development, which is linked to resource extraction and investment in productive activities.

An instance of RFI swap in the power sector is the USD 660 million large-scale Bui dam in Ghana estimated to provide 400 MW of electricity, in exchange for 40,000 tonnes of cocoa for 17 years with an interest rate of 1 per cent above the London Interbank Rate (LIBOR) (see Davies, 2010 and Konijn, 2014). Given China's investment focus on Africa's power sector, the World Bank suggests that Chinese funded power projects will generate around 6000 megawatts, which is estimated to be more than a third of Africa's existing hydropower generating capacity.

Apart from energy, China has provided RFI concessional loans worth USD 11.3 billion for 92 infrastructural projects across Africa between 2010 and May, 2012. In ICT, RFI loans have been used to construct communications facilities like backbone fibre-optic transmission networks, mobile and fixed telephones lines, and internet facilities. A World Bank report (2008) suggests that Chinese telecommunications companies like ZTE and Hauwei Technologies have made investments worth USD 3.2 billion in Africa, especially in Ethiopia, Ghana, South Africa and Sudan. Similarly, RFI loans have been used to provide railways, bridges, flyovers, and water treatment plants across 35 African countries.

The use of RFI swaps in African countries curtails corruption by restraining government officials from embezzling funds designated for infrastructural development (Konijn, 2014). The ability of RFI loans to reduce corruption is the result of the model's payment mechanism. Disbursement of funds under the RFI model is made directly in China by Chinese policy banks (EXIM and CDB) to Chinese contractors in successive tranches throughout the life cycle of the infrastructure project. This process effectively bypasses transferring funds to the borrowing African government (Cassel et al., 2010).

Tying natural resource revenues to infrastructural development have provided other benefits to host countries. One of the benefits provided by RFI is the commitment mechanism generated by funding infrastructure projects with RFI loans. Another is that RFI loans allow for the use of local resources, although this is limited to around 30 per cent of the projects value. However, this part of RFI swaps has significantly improved in favor of host countries. Consequently, the localization rates of Chinese companies operating in Africa are now showing an upward growth. For instance, Chinese telecommunication firms have increased their localization rates above 65 per cent, and have cooperated with 1200 local subcontractors. This process has indirectly provided more than 10,000 job opportunities for local labour in the host countries (China-Africa Economic and Trade Cooperation, 2013). The RFI financing model therefore provides opportunities for significant short-term jobs; skills transfer, capacity building of local human capital, and development of host country's supply chain. More so, RFI loans can unlock the economic potentials of African countries by improving the ease of doing business in Africa, as the infrastructure gap closes. Thus, the use of RFI loans to bridge infrastructural gaps in Africa is likely to support economic growth in Africa at the pace required to reduce poverty.

3. The Problems with RFI Swaps

Despite the advantages of using RFI swaps in Africa, the approach presents some risks. The main areas of concern about Chinese RFI loans are: Corruption, poor quality of infrastructural projects, environmental damage, debt sustainability, a lack of technical and financial investment to maintain infrastructural projects constructed with Chinese money, and appropriate valuation of costs and benefits. Most of the problems associated with RFI swaps in Africa are interconnected with corruption and lack of transparency, which results to poor governance and weak regulatory control.

RFI loans are not *entirely* free from rent seeking by Africa's political elites, although rent-seeking behavior by Africa's political elite is reduced by the use of RFI loans, there are still reasons to be less optimistic about their mitigating effects on corruption and rent-seeking. Some authors argue that the ranking of China on the Corruption Perception Index raises concerns over rent-seeking behavior on the part of China, especially in collaboration with corrupt African government officials. There are several examples of corruption allegations involving Chinese contractors and Africa's government officials. A case in point is the report published by the Economist (31 August, 2011) on the suspicious role of China International Fund (CIF, also called China-Sonangol or Queensway Syndicate) in the oil-for-infrastructure swap between China and Angola. Investigations showed that CIF was a little known unaccountable

syndicate comprising 60 interlocking companies that operated in seven countries (including tax havens like Virgin and Cayman Islands), with links to Angola's political elites. The failed RFI swap agreements in Guinea, Gabon and Nigeria affirms that RFIs are not entirely immune to political patronage and the rent-seeking behavior of Africa's political elites.

African countries lack the capacity to set and enforce proper regulatory standards for processes and materials required for infrastructural development. Thus, there have been instances where infrastructures provided by Chinese companies were of poor quality. Two cases documented by Meyer (2012) and Konijn (2014) are noteworthy. First, the deep cracks and crumbling walls that developed four years after the completion of Luanda General Hospital constructed by COVEC (a Chinese company) in Angola; and second, the sub-standard road constructed from Lusaka to Chirunda that was partly destroyed by rains in Zambia.

Another problem with the use of Chinese RFI loans is the irreversible damage done to the environment by infrastructure projects. A combination of Africa's weak environmental regulatory standards and China's poor environmental track record raises plausible questions about Africa's environmental sustainability, given that China RFI loans focuses on extractive industries and construction of hydro-power dams (Corkin et al., 2008 and Cassel et al., 2010). Sudan's Merowe dam represents an example of an environmentally dangerous RFI project led by China

The rising debt profile of African countries as a result of Chinese RFI loans raises concerns about the debt sustainability of African economies. This is true for African countries that recently benefited from Western debt-relief programme. Although recent evidence show that some African countries show significant improvements in debt sustainability after RFI loans, it is however important to emphasize that non-productive and white elephant projects executed by African governments for political reasons can undermine debt sustainability in the long-run (see Reisen and Ndoye, 2008). Because politically motivated infrastructure projects are not conceived for economic reasons, project sustainability and maintenance becomes a problem after completion, as provisions for technical and financial resources needed for maintenance are usually not given consideration at project inception.

The complexity of RFI swaps and the high level of expertise required to appropriately value the cost and benefits of infrastructure projects presents a problem for the use of RFI swaps in African countries. Given that the financial details of RFI loans are shrouded in secrecy, there are concerns that the value of natural resources mortgaged against RFI loans is much larger. In this regard, African countries should develop effective regulatory frameworks needed for win-win RFI infrastructure deals.

4. Chinese Infrastructure Finance and Resource Poor in Africa

As discussed earlier, China is the biggest provider of infrastructure in Africa - providing about two thirds of Africa's infrastructure spending since 2007 (OECD, 2012). China's approach to infrastructure financing is multi-faceted, involving a mix of different financial instruments that are implemented by various Chinese institutions. China's official finance in Africa consists of RFI loans, grants, zero-interest loans, debt-relief, concessional loans, preferential export credits, market-rate export buyers' credit, and competitive commercial bank loans from Chinese banks (see Brautigam, 2011). Comparatively, resource rich African countries have benefitted more from China's infrastructure financing than their resource poor counterparts. However, despite this skewness in financing, China has been able to successfully engage with resource poor African countries by using other infrastructure financing mechanisms. A case in point is China's use of cocoa (40, 000 tonnes for 17 years) as collateral for an RFI swap worth USD 660 million for the construction of Bui dam in Ghana - a practice that is divergent from China's engagement with resource rich African countries like Angola, Sudan and Nigeria.

Apart from the other financing mechanisms used by China to facilitate infrastructural development in Africa, grants and zero-interest loans still represent a primary instrument for China's development aid. This is true considering the dominant share of grants and zero-interest in Chinese aid instruments that closely relates to Official Development Assistance (ODA). Chinese State Council (2011) report indicates that out of the entire USD 37 billion dispensed as aid in foreign countries, USD15.6 (41.4 per cent) comprised grants, USD 11.3 billion (29.9 per cent) were zero-interest loans, while 28.6 per cent (USD 10.8 billion) represented concessional loans. Interestingly, evidence suggests that grants and zero-interest loans are fairly distributed evenly across all African countries, irrespective of the country's resource endowment (Brautigam, 2011). These contrasts clearly from concessional loans which depends on a country's ability to pay, often tied to natural resource endowment.

5. Drivers of Chinese Investments in PIDA Programme Areas

The Programme for Infrastructure Development in Africa (PIDA) was established by the joint initiative of the Africa Union Commission, United Nations Economic Commission for Africa, African Development Bank, and the NEPAD Planning and Coordinating Agency. PIDA's objective is to promote socio-economic development in Africa by providing improved access to integrated regional and continental infrastructure networks and services. PIDA's intervention in infrastructure provision is expected to improve the competitiveness of African economies by reducing the cost of production and transportation. Given this objective, PIDA prioritizes investment in

four leading sectors: Energy, transportation, Information Communication Technology (ICT) and water.

China's RFI approach has been a strategic way to finance infrastructural development in Africa, especially in the leading sectors of PIDA. Chinese investments in these sectors are driven by some key factors. First, the complementarity in the needs of Africa and China, which is, in terms of infrastructure and natural resources respectively (Konings, 2007). Second, Africa's large population presents an enormous opportunity for China to expand its exports. Third, and largely political, China's aspiration to be a strong political influence in global politics has facilitated the desire to invest in Africa. Given China's economic status as one of the biggest economies in the world, it equally desires to gain such recognition politically; hence, a strategic partnership with Africa will boost its political influence (Haroz, 2012). As Morris and Hanauer (2014) notes, since African states make up more than one-quarter of the United Nations General Assembly, it is plausible that China requires the support of African countries to wield its influence in the UN.

China's infrastructure investment in Africa has been fostered by the establishment of 'Special Economic Zones,' competitiveness of bidding price for infrastructure projects financed by multilateral organizations like the International Development Association (IDA), access to cheap capital from Chinese policy banks, and the political support from China. China's investments in energy, transportation, ICT, and water are in line with PIDA's objectives to transform Africa's deficient infrastructure.

5.1 Energy

In the area of energy, PIDA's focus on developing efficient and cost-effective power generation and distribution infrastructure across Africa has been promoted by huge Chinese investment in the sector. In fact, Africa's energy sector has received the highest volume of Chinese infrastructure investment. Between 2000 and 2012, China committed 41 per cent (USD 16 billion) of Development Finance to the energy sector, compared to the 18 per cent (USD 7 billion) from the European Union and 1 per cent (USD 500 million) from the United States (see Giorgio et al, 2014). This makes China the highest development partner in Africa's energy sector, especially in hydro-power projects.

5.2 Transportation and ICT

China has contributed immensely to the realization of PIDA's vision to increase connectivity and modernize Africa's transportation and ICT sectors. Nigeria and Ethiopia are good examples of Chinese investments in transportation and ICT sectors. The World Bank estimates that between 2001 and 2007, China invested approximately

USD 3.2 billion in Nigeria's transportation sector, while in Ethiopia; China provided export sellers' credit to ZTE for the supply of equipments to Ethiopia's Millennium Project worth USD 1.5 billion. Thus, Chinese investments in Africa's ICT are in line with PIDA's ICT vision 'to enable Africa build an information society and an integrated digital economy in which every government, business organization and citizen has access to reliable and affordable ICT networks' (PIDA: 6).

5.3 Water

When compared to other sectors like energy and transportation, Chinese infrastructure investments in water projects are small. However, transboundary water programmes such as the construction of dams and strengthening the capacity of River Basin and Lake Organizations to address the problem of food security in Africa has been given attention. China's investments in water projects include the construction of small dams for water supply in Cape Verde and Mozambique, and the USD 200 million invested in Angola's water sector as part of China-EXIM bank's credit line of 2004.

6.0 Conclusion

The volume of Chinese ODA channeled into infrastructure development in Africa has grown sharply in recent years, compared to other donors like the Organisation for Economic Co-operation and Development (OECD) countries. To finance infrastructure projects in Africa, China's policy banks use financial instruments that link Africa's natural resources and agricultural raw materials to its development. However, China's engagement in Africa is not limited to resource-rich countries. As the brief indicated, China also engages resource-poor African countries with untapped potentials to service future debts, particularly when borrowings are designated for productive projects. Overall, China has financed infrastructure projects worth around USD 28 billion within the past decade in Africa.

Despite the enormous progress that has been recorded in Chinese infrastructure financing across Africa, some authors still suggest that China's interest in Africa is not altruistic. A case in point is China's commitment to construct a new railroad system that links East African countries like Kenya, Uganda, Rwanda, and South Sudan believed to be a way of facilitating natural resource exploitation, by reducing the transportation and freight cost from 20 US cents to 8 cents (Schiavena, 2014). Other concerns include the poor quality of infrastructure provided by the Chinese, debt sustainability of African countries, particularly, the Highly Indebted Poor Countries (HIPC), appropriate valuation (cost and benefits) of RFI swaps and post-project completions management. Going forward, it is likely that China's official aid and the

use of RFI swaps for infrastructure projects will continue to increase in the coming years.

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