

# **Infrastructure Development in Africa: Eradicating Stumbling Blocks to Maximizing Investment Potentials**

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## **Abstract**

Infrastructure encompasses a wide range of inputs, industries and structural elements (including water, roads, sanitation, energy, telecommunication, schools and health services) which facilitate the flow of goods and services and as such, are an indispensable mainstay in many economies. Despite the undeniable function of infrastructure, its development and investment in Africa has been stagnant for decades. The reasons for this disquieting situation have been contemplated and solutions have been advocated or proffered in many studies. However, the problem persists. The current paper reports on findings from a panel discussion at an international conference on infrastructure development and investment held in 2014 in Livingstone, Zambia. The panel members comprised six experts, made up of consultants, developers and contractors, drawn from government departments in Zambia and South Africa. Further interrogative questions were raised by an audience of more than seventy readers of infrastructure in Africa. Findings revealed that poor planning and implementation, poor project packaging, non-compliance to H&S regulations and design specifications, and ineffective procurement strategies hinder realization of maximum benefits from infrastructure investments in Africa. The study also revealed that integrative training of built environment professionals as well as continental and regional integration will maximize infrastructural investment in Africa. The study provides evidence that could be useful to investors, developers and governments across Africa. The findings could aid in redirecting resources (human, intellectual and material) to improve the status quo regarding productivity, capacity and returns from foreign infrastructure investment and developments in Africa.

## **Keywords**

Africa, development, foreign investments, infrastructure

## **1. Background**

Infrastructure plays an important role in the development of cities, improvement in the quality of lives and overall socio-economic development and growth of economies (Smith, 2008; Ponce, 2011). Broadly, infrastructure encompasses basic services or capital of a country, which make economic and social activities possible (Brown-Luthango, 2011). They are structural elements of an economy, which facilitate the flow

of goods and services. According to the American Society of Civil Engineers (ASCE), 2013), infrastructure is the foundation that connects nation's businesses, communities and people, driving economic growth and improving quality of life.

Despite the undeniable function of infrastructure, its development and investment in Africa has been stagnant for decades. The reasons for this alarming situation have been contemplated and solutions have been advocated or proffered in many studies. However, the problem persists. There still exists a massive shortfall in infrastructure development and investment which limits Africa's productive capacity and global competitive advantage. The gap drags down economic growth in Africa by as much as 3 percent of GDP (Reuters, 2011). According to the African Development Bank Group (AfDB) (2010), the estimated financing requirement to close the infrastructure gap totals USD 93 billion annually until 2020. In most African countries, particularly the lower-income countries, infrastructure is a major constraint on doing business, and is found to depress firm productivity by around 40 percent. Power shortages are common in Africa and hinder investment, even though the world's poorest continent has abundant potential resources of solar, hydro, oil, gas, coal and geothermal power (Reuters, 2011). Africa's absolute and relative lack of infrastructure reflects the existence of untapped productive potential, which could be unlocked through up-scaling of investments in the sector (AfDB, 2010).

For most countries, the negative impact of deficient infrastructure is at least as large as that associated with corruption, crime, financial market and red tape constraints (World Bank, 2013). Achieving water security, defined as reliable water supplies and acceptable risks from floods and other unpredictable events, including those from climate change, will require a significant expansion of water storage capacity from current levels of 200 cubic meters per capita to levels of at least 750 cubic meters per capita, a level currently found only in South Africa (World Bank, 2013).

Participation in infrastructure finance and development has over the years been done by the West and China. China's banks, notably the People's Bank of China, the China Development Bank, and the Export-Import Bank of China (Exim Bank of China), have supported large-scale investments in African infrastructure, with more than 2,200 Chinese enterprises currently operating in sub-Saharan Africa, most of them private firms (Pigato and Tang, 2015). Diplomatic contacts and bilateral aid and cooperation initiatives have greatly expanded,<sup>1</sup> and the Forum on China-Africa Cooperation, formed in 2000 and convened every three years, has become the primary institutional vehicle for China's strategic engagement with sub-Saharan Africa (Pigato and Tang, *ibid.*). According to a white paper on China-Africa economic trade co-operation published by China's State Council in 2013, China's foreign direct investment in Africa grew at an annual rate of 20.5% between 2009 and 2012 (Economist Intelligence Unit, 2014).

However, the narrative in most parts of Africa is that ordinary citizens have not benefited from these massive investments in infrastructure which has been made over the years. For instance, a Ghanaian project in 2013 floundered due to loss in translation or different interpretations about what the government officials and a Chinese firm agreed on (Economist Intelligence Unit, 2014). According to this study, Chinese firms might just be investing in Africa, like everyone else, but might still need to make additional efforts to invest transparently and engage the communities in which they invest.

Against this background, it is pertinent to continuously revisit strategies to close Africa's infrastructure gap. The AfDB clearly presented the state of infrastructure supply in Africa and attributed this to rapid globalization and shortage of finance. The literature focused on financing options for closing Africa's infrastructure gaps and advocated broadening the sources of finance and a better allocation of public resources (domestic and donor funds) in the provision of power, transport infrastructure, ports, information and communication technology (ICT), rail infrastructure (AfDB, 2010).

The objectives of the current paper is to identify barriers to achieving maximum benefits from infrastructure development in Africa and ways to improve the status quo regarding delivery of infrastructure in Africa, especially as financed and developed by the West and China. The study provides evidence that could be useful to investors, developers and governments across Africa. The findings could aid in redirecting resources (human, intellectual and material) to improve the status quo regarding productivity, capacity and returns from foreign infrastructure investment and developments in Africa.

Infrastructure has played a significant role in Africa's recent economic turnaround, and will need to play an even greater role if the continent's development targets are to be reached (World Bank, 2013).

## **2. Methods**

A review of literature relating to infrastructure development in Africa was conducted to determine reasons for the stagnation in infrastructure development in terms of capacity and productivity. Questions were then drawn up from themes and concepts emerging from the literature for discussion at one of the development and investment in infrastructure conference series (DII), which has been holding panel discussions since 2014 on how African governments can maximize social and economic benefits from investments in infrastructure across Africa. The objective of these panel discussions is to identify key impediments to the realization of desired outcomes (maximum benefits) as well as to establish current narratives, processes and strategies that need to be transformed to improve the status quo regarding infrastructure development in Africa.

Further questions were raised by the panel. The panel comprised role players in infrastructure in South Africa and Zambia, who were specially invited on the basis of their expertise. Six experts were drawn from government departments in Zambia and South Africa, consultants, developers and contractors. The audience exceeding 70 readers of infrastructure in Africa raised interrogative questions to panelist's responses. This approach provided the much needed in-depth interrogation of the questions which were put to the panelists, namely:

- a) what are the barriers to achieving maximum benefits from infrastructure development in Africa
- b) What narrative could shape the acceptance and successful delivery of infrastructure development in Africa (financed and developed by the West and China).

Thematic analysis was thereafter used to identify common themes from the deliberations. The panel discussion findings are discussed hereunder.

## **3. Barriers to realising maximum benefits from past decades of infrastructure investments**

### **3.1 Poor maintenance culture and corruption**

It was indicated that lack of maintenance culture constituted a hindrance to maximizing benefits (in the Zambian construction industry). Findings suggested that Chinese documents translated to English may be questionable as there was no way of verifying adequacy of the terms in a contract which has undergone

such translation or transformation. This has resulted in inconsistency between on-site H&S practices and contract H&S specifications. Personal protective equipment for instance, are mandatory but contractors do not comply. In addition, corruption and lack of quality assurance were found to hinder maximization of benefits. Works were sometimes handed over with a lot of defects. Even when works are well done, no maintenance exists to follow through, and thus leading to early failure, which is a barrier to realizing maximum benefits from the assets. A possible explanation for this lack of maintenance culture is that in Africa, performance-based contracts are common, while in the East, specification contracts are used. However, it was pointed out that the responsibility of managing and maintaining contract specifications rests on the citizenry.

### **3.2 Poor quality of procurement strategies**

It was indicated that the procurement methods, which were currently employed, lacked quality assurance and thus maximum benefits were not being realized. Corruption was also noted as a hindrance to maximization of benefits as technocrats rarely adhered to specifications. It was suggested that imported materials be strictly monitored to ensure that quality and acceptable standards are met in all aspects of infrastructure investment.

There was a general feeling that current procurement methods were too rigid and inflexible and thus unproductive. This gives rise to a problem of funding, especially with the high costs involved in infrastructure maintenance. For example, the Livingstone to Zambia road which is 72Km had a lowest bid of 25m Euro. The tender was cancelled and re-advertised one year later and 32Km of the same road now cost 21m Euro. It was therefore suggested that innovative and contemporary procurement methods and a cadre of quality procurement experts be developed to achieve maximum benefits from procurement systems.

It was reiterated that the proportion of Chinese to Zambian ownership, which was estimated to be 80 to 20 percent, in infrastructure investment was disturbing. Moreover, the Chinese undercut prices and so competition is difficult. Chinese products are usually less expensive than similar products imported from the European Union or the United States, which makes the products attractive to firms and individuals, and Chinese-financed infrastructure projects frequently include country-of-origin procurement rules (Pigato and Tang, 2015).

### **3.3 Poor planning and implementation of infrastructural projects**

It was indicated that numerous projects fell through as a result of poor implementation of plans. Poor planning at the tendering stage results in project failure as contractual conditions are not met or honoured, for instance, payments are delayed.

### **3.4 Lack of capacity**

It was contended that there was a gap between knowledge and practice. This is probably because the universities curricular do not mesh with the capacity in the industry. It could also be that students do not study to gain knowledge, but to pass examinations. This has led to worrying concerns about performance and capacity of built environment professionals.

### **3.5 Poor project packaging**

It was evinced that poor packaging of projects, sometimes owing to change in government, leads to cancellation or abandonment of projects. When so many projects are started all at the same time, there is insufficient funding to complete them. Hence, benefits are not realised due to projects being left incomplete.

### **3.6 Non-compliance with H&S regulations**

The panel reports revealed that cases of non-conformance to regulations on infrastructure projects had to do with H&S, with 90% of the incidences attributed to Chinese contractors. It was indicated that most construction tenders were won by Chinese contractors who were not H&S-minded, especially in foreign lands (they usually comply with H&S in China). This could be simply as a result of laziness or greed for money. In addition, it was revealed that consultants were nonchalant about H&S culture and therefore do not monitor or ensure compliance with H&S regulations.

## **4. Shaping the acceptance and successful delivery of infrastructure in Africa**

The role of continental and regional integration in maximizing infrastructural investment in Africa was emphasized. It was suggested that development partners put emphasis on regional integration. Taking consideration of developments by other regions and their potential impact while planning for infrastructure will help in evaluating benefits from investments in the long run. For instance, the positive impact of constructing a rail line where there is a bridge, or the negative impact of other developments, for instance, the condition of the road on either side of the Kazungula bridge. African institutions could be used to drive the agenda for change and facilitate synergy between countries. Integration will also make funding of investments more feasible. The EU-Africa Partnership on Infrastructure's strategy is an example. It aims at enhancing regional integration and interconnectivity, among other things (AfDB, 2010). Regional integration can help build the supply capacity and competitiveness of Africa through targeted regional infrastructure to fill vital missing links, interconnect the continent and undertake cross-border investments, financial flows and migration (Mbekeani, 2013).

Concerning poor maintenance culture, in addition to the citizenry taking charge and responsibility of infrastructure management and maintenance, there should be an asset management system in place. Namibia for example, has a good system which shows consequences of new construction versus maintenance and the effects of failure to maintain, and thus not allowing contractors to perform poorly and therefore giving citizens maximum benefits from infrastructure. Government funding could also be a solution to the problem of maintenance. However, the solution lies not only on government funding but all should be involved. It is everyone's responsibility to maintain the infrastructure.

With regard to poor quality of procurement strategies, it was suggested that mind-sets be altered and laws defining a level below which no expatriate will be required should be enacted to reduce over-reliance on Chinese investors. This is especially important in aspects relative to H&S, which the Chinese were unconcerned about. There is need to put in place a H&S manager answerable to the client to alleviate corruption and ensure compliance with H&S specifications. There was a consensus that Africa needed political goodwill to overcome neocolonialism. Strategic ways to influence politicians need to be discovered. Governments have a key role to play in the development of systems that work for Africa, by Africans.

Regarding planning and implementation of infrastructure, it was suggested that for plans to be followed through to the implementation stage, there should be an integrated approach whereby long term plans are

made and clients abide by laws to see projects through instead of “thinking business as usual”.

For built environment professionals’ capacity improvement, it was suggested that capacity building was paramount in order to bridge the gap between university knowledge and performance in the industry. Construction companies should train fresh graduates to enable them to transit and transfer their acquired knowledge in any environment they find themselves. Designing programmes which are fit for purpose will facilitate capacity building and enable the graduates to fit into the industry. In addition, a think-tank was suggested to have a further discourse on the issue of educating professionals as human resource performance of any nation partly depended on these professionals. Application of acquired knowledge was also found to be paramount in strategies to maximize benefits from the procurement process. It was argued that there was shortage of critical skills and wisdom required to overcome corruption. Academics and technocrats need to be part of the political system. We do not have the human rights based approach. Including academics and professional associations will enable creation of a multi-disciplinary think tank to foresee and plan for infrastructure delivery on a preferably long-term basis. Moreover, the academics and professional associations need to be equipped and competent in order to develop capacity and skills that support infrastructure development.

It was suggested that for the status quo regarding poor H&S implementation to be altered, contractors and clients must be aware of the need to strictly enforce and adhere to H&S regulations. To ensure compliance with H&S specifications, prequalification is important, with leading indicators predicating H&S compliance. Sustainable tender documents with clauses mandating environmental, H&S issues should be put in place, and increased penalties for breach of H&S contract imposed. H&S should be part of contract evaluation and contract administration from the tendering and design stages. In this way, after contracts are awarded, H&S can be monitored easily and effectively. In addition, there is a need to spearhead the drive to include H&S plans in the Bill of Quantities through a detailed H&S Preliminary and General Items such as H&S plans etc with a detailed breakdown of what the contractor has allowed.

## **5. Conclusion**

The study explored the perspectives of infrastructure experts on hindrances or impediments to realizing maximum benefits from Africa’s infrastructure investments and development. It was revealed that poor planning and implementation, non-compliance to H&S regulations and design specifications, poor project packaging and ineffective procurement strategies hinder maximization of benefits from infrastructure investments in Africa. Integrative training of built environment professionals, good asset management systems and regional integration would maximize infrastructural investment in Africa. Ultimately, mind-sets need to be altered. In addition, stringent measures should be put in place to tackle the problem of non-compliance with H&S regulations.

The study provides evidence that could be useful to investors, developers and governments across Africa. The findings could aid in redirecting resources (human, intellectual and material) to improve the status quo regarding infrastructure development, capacity and returns from foreign infrastructure investment and developments in Africa.

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