

**Unleashing Latent Potential in Africa:
Removing the Barriers in Financing Infrastructure**

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Abstract

Investment in infrastructure projects is critical if countries are to realize their economic development goals. Financing infrastructure projects and access to private capital are key obstacles for infrastructure-challenged countries in Africa. Large-scale infrastructure projects require massive foreign capital investment. Unreliable and costly telecommunications, poor roads, and unpredictable energy supply are constraints in attracting foreign investment and furthering economic development.

Infrastructure-challenged sub-Saharan Africa represents a fertile opportunity for a new approach that would attract needed financial resources for development and allow greater participation in the global economy. The cases of Nigeria, Mozambique, and Botswana will offer a perspective of an Africa which is changing, yet riddled with challenges.

A new approach to financing infrastructure projects is needed if there is to be real progress toward development goals and greater prosperity for developing countries in Africa. The existing approaches of Build-Operate-Transfer (BOT) and Private-Public-Partnerships (PPP) suffer the “plums” problem and have wasted substantial resources worldwide in their wake. Global capital markets’ invisible hand can infuse private capital for economic development in poor and developing countries in Africa as it has in advanced economies. Initial public offerings (IPOs) of project securities through global capital markets can provide the required capital with risk-sharing and diversification. Financial innovations in security design can enable infrastructure financing in a way that reduces bureaucratic regulations, information gaps, and improper incentives.

By financing infrastructure through global capital markets, the foundation will be laid for incremental business activity in Africa. Current methods of infrastructure project finance have worked, but at costs hidden to society. To attract the global capital required, a new approach with proper incentives is the key to unleashing latent potential in Africa.

Unleashing Latent Potential in Africa: Removing the Barriers in Financing Infrastructure

For economic development goals to be achieved—from the aspirations of countries to the United Nations Millennium Development Goals—investment in infrastructure projects is critical. Access to private capital and specifically, financing infrastructure projects, are key obstacles in furthering growth and realizing development goals in many countries around the world. In 1990-'92 nearly a third of the aid to the world's poor countries was distributed for infrastructure projects; in 2000-'02 it dropped to just under 18%. The use of aid has shifted from development enhancing projects to debt relief, from 8% in the earlier period to 22% in the latter. Aid resources have been further needed for health and education. How will the \$150 billion needed for infrastructure in sub-Saharan Africa over the next decade be raised?¹

The presence of infrastructure and foreign direct investment are synergistically related. Foreign direct investment (FDI) and other private capital flows are strongly influenced by a country's investment climate. Inadequate infrastructure—unreliable and costly telecommunications, poor roads, and unpredictable energy supply—is a key constraint to attracting FDI. At the same time, the nature and characteristics of infrastructure projects are inherently risky. Large-scale projects require massive capital investment with long completion times and many carry political and regulatory risk. In a study of large transport projects, numerous projects were poor performers with significant cost overruns and revenue shortfalls.² While many other projects have been successfully completed, a number of spectacular failures have occurred, which in turn sours the investment climate.

To fill the gap in funding development, private capital is most certainly needed. And with greater integration of capital markets, more globalized markets offer opportunities that benefit both developed country investment searching for returns and diversification and developing countries seeking funds. Financing infrastructure projects by way of global capital markets' invisible hand can infuse economic development in poor and developing countries as it has in advanced economies. Parts of the vicious cycle of infrastructure project finance can be turned more virtuous, supporting ends beyond simply funding the infrastructure project itself. Infrastructure-challenged sub-Saharan Africa represents a fertile opportunity for a new approach that would attract needed financial resources for development and allow greater participation in the global economy.

A New Vision for Africa

Africa is said to have turned a corner. Growth in sub-Saharan Africa reached 5.6% in 2005, and is expected to climb to 5.8% in 2006.³ New oil and gas production, diamonds and minerals, cotton crops, and textiles all contribute to economic growth in sub-Saharan Africa. But infrastructure development in Africa lags far behind other developing countries. In order to attract and support private sector activity, infrastructure is a key priority.

The following information offers a snapshot of sub-Saharan Africa's infrastructure needs alongside the next closest region, the runner up in need of infrastructure development.

Private sector firms reported the following challenges, which were captured in the World Bank’s Enterprise Surveys data:

	<u>Sub-Saharan Africa</u>	<u>Runner Up</u>
Electricity supply a major/severe obstacle	44.35%	38.13% (South Asia)
Water supply failure (days)	39.24	13.17 (Latin America)
Telecoms a major/severe obstacle	20.99%	11.01% (South Asia)

In addition to infrastructure’s role in attracting business activity, other areas impact firms’ decisions such as bureaucracy, corruption, and macroeconomic stability. These areas beg the question of how to reconcile existing infrastructure financing approaches with countries’ desire for better governance and more attractive business climates.

Africa has undiscovered potential alongside obstacles to surmount. In a study comparing African textile producers to export processing zone producers in China, African firms perform almost as well or as well as their Chinese counterparts at the shop floor level, as reported by a senior official of the International Finance Corporation. He suggests that business environment issues, whether “hard” infrastructure constraints or “soft” regulatory environment constraints, may be what “actually matters quite a lot” in hindering private sector involvement. The global capital market solution can ameliorate some of the infrastructure project financing issues which in turn may catalyze a deeper process of reforms in the overall business climate.

The cases of Nigeria, Mozambique, and Botswana of sub-Saharan Africa will offer a broad brushstroke of an Africa which is changing, yet riddled with challenges. For this

analysis, Africa consists of 48 countries, 45 of which are sub-Saharan, with great differences in geography, political structures, economic environments, and human conditions.⁴ Thus, capturing the quintessential “African” economic and business environment is a misnomer.

Nigeria, Africa’s most populous country, is oil-rich but still relatively poor. Managers in Nigeria consider infrastructure problems, specifically power supply, to be two and a half times as large a problem as the next two largest problems, access to finance and general uncertainty. Corruption is perhaps Nigeria’s most debilitating problem, but the current government has made reducing corruption a priority. Nigeria is also credited with implementing reforms to reduce the complexity and burden of regulations on business to create a more hospitable climate. Nigeria is one of the top five sub-Saharan countries with \$5.4 billion invested (about 14% of the region’s total) in private participation infrastructure investment projects between 1990 and 2004; only South Africa surpasses Nigeria at roughly \$19 billion invested.

Nigeria has liberalized both the energy and telecommunications sectors to open its economy to private investment, as well as privatizing four state-owned oil refineries. As one of the largest African economies, gross domestic product (GDP) was an estimated \$132.9 billion in 2005. In addition to oil, new gas projects are expected to come on stream with large multinationals over the next few years in spite of the political risks posed with upcoming elections and new terrorist incidences. Non-oil FDI alone is greater than that of most other African countries. With respect to FDI, the telecom sector has

been attracting \$2 billion annually, according to the well-respected finance minister Ngozi Okonjo-Iweala. She indicated that Nigeria has grown from 450,000 landlines in 2000 to 16 million GSM cellular lines as of late 2005.

Second to Nigeria in private participation infrastructure project investment is Mozambique. Civil war from 1977-'92 left its scar, but since then Mozambique has climbed to be one of Africa's top twelve performers through sound economic policies and better governance. Official development assistance comprises 36% of Mozambique's GDP, estimated at \$25.6 billion in 2005. However, FDI flows have made a considerable impact for Mozambique, attracting \$586 million in 2003.⁵ Mozambique has a sizable aluminum smelter, its largest foreign investment project to date, and will regain its hydroelectric dam for the power needed to further economic development and growth. Railways and gas pipelines are also infrastructure projects on the books. Agriculture, however, supports the majority of the workforce. Mozambicans working abroad bring home \$69 million in remittances, as the country shares a border with its wealthier neighbor, South Africa.

In sharp contrast to its reviving country jewel, the Maputo Elephant Reserve, and burgeoning telecoms demand, Mozambique struggles with AIDs. Over 12% of its adult population is afflicted. This speaks to the health and educational needs of Africans. Lifting some of the burden of infrastructure financing can free up resources for greatly needed social programs.

As one of the poorest countries in the world, Mozambique was awarded \$6 million by the US-backed Millennium Challenge Corporation to lay the technical groundwork for future development. The proposal aims for improved access to water and sanitation and to provide business development assistance in four of its northern provinces, home to 52% of the country's poor. The development aid will serve as a catalyst for agriculture, forestry, eco-tourism, and light industry. However, financing the infrastructure will still be necessary. The aid is a floor or foundation upon which the real structures must be built.

Requiring a special mention is Botswana, heralded as Africa's exemplary democracy. Botswana became a middle-income country in one generation after discovering diamonds six years after its independence in 1966. The foreign investment which ensued boosted government revenues which were wisely used to create the infrastructure for more broad-based reform. The strong political leadership in Botswana has attracted the largest public-private partnership of its kind with the Gates Foundation and Merck Company Foundation to eradicate Botswana's AIDs problem. Botswana's progress illustrates what can be done when economic management is sound and policies allow the work to get done.

Many African countries are diligently trying to implement the policies which will allow greater participation in the global economy. The continent is rich in natural resources and untapped human resources. Botswana shows how proper management can bring prosperity to the resource-rich within an uncorrupt environment. Africa also highlights

the need for a healthy and educated population in order to be productive. Investment in the human being is also needed to accompany soft infrastructure such as economic, legal, and financial systems—the structures which people and business need to realize potential. Are existing approaches for financing infrastructure projects capable of meeting the capital requirements of Africa over the next decade?

Shortcomings of Existing Financing Approaches

In the past two decades, the primary approaches of Build-Operate-Transfer (BOT) and Private-Public Partnerships (PPP) have been widely applied for hundreds of large-scale infrastructure projects worldwide. These two existing approaches are inherently flawed and have led to substantial amounts of wasted resources in this regard. Infrastructure projects with private participation which were canceled or distressed amounted to \$79 billion between 1990 and 2004, with larger projects more prone to distress or cancellation.

Infrastructure project financing is structured in a way which creates the problem of “plums” in contrast to Akerlof’s illustrious ‘lemons’ problem. The plums problem arises when the buyer (bidder or firm providing capital) knows more about the quality and economic value of the project than the seller (government agencies). Under the existing approaches of BOT and PPP, a small number of project companies that provide capital often have better knowledge of the project’s costs and value. Project companies have incentives to play political games which gives rise to corruption and waste. In the case of the lemons problem, buyers are disadvantaged about the information of a project’s value,

risks, and costs in relation to sellers. Project sponsors and investors may then be deterred from future projects in the host country or even the region.

When initiating an infrastructure project, a project company is formed under the BOT and PPP approaches. The project company constructs and operates the project for 25 to 35 years before transferring it back to the government. Under the PPP model, the government buys services from the project companies. Even the State-Build-Own-Operate (SBOO) approach has led many countries down the path of privatization—Mexico, the UK, China, Nigeria, and many more. The private sector's ability to attain efficiency in operations and management and profitability has been needed for numerous financial and economic reasons in the privatizing country.

The major shortcomings of the BOT and PPP approaches are several, creating severe agency costs and failures for large-scale projects. First, the bidding process is inefficient. The influence of domestic politicians, and possible bribery and corruption, may weigh heavily in the bidding process. Direct investment by firms is subject to the bureaucratic red tape and political risk of host countries' politicians. Former Philippine President Estrada was offered \$14 million for a hydropower BOT project by a bidding firm, which he declined. The deal was later consummated in the following administration, taking only two days to conclude.⁶

Inefficiencies in contract finance show up in negotiations and bidding processes which require vast amounts of time and effort for completion. The \$3.6 billion financing of the

Baku-Tbilisi-Ceyhan pipeline project signed February 2004 took ten years to negotiate; it required 208 finance documents and 17,000 signatures from 78 parties. There are better ways to conduct large-scale infrastructure projects in the future. Onerous red tape and overly political project approval processes will create obstructions for countries needing to attract foreign firms for infrastructure projects.

While governments have tried to increase efficiency and lower project costs through “limited” public tenders, other problems have surfaced. Specifically, the bidding process suffers the plums problem wherein a small number of sponsoring companies with sufficient equity capital and know-how of infrastructure projects can offer and receive low bids for projects. The many cases of cost overruns observed around the world could be the result of low bids by sponsors to secure projects. Indonesia and the Philippines incurred some \$10 billion and \$6 billion in bad debt, respectively, from BOT investments. The World Bank pointed to bad negotiations in BOT investment projects as the source of billions of dollars lost during the Southeast Asian financial crisis. A recent example of inefficiency includes the Chinese government committing \$4 billion for infrastructure in Nigeria in exchange for four oil-drilling licenses. The pact includes the building of a railroad, power stations, a cement factory, and other public facilities. In another case, a Chinese company head told a South African reporter that Beijing orders were to bid low, regardless of profitability. Unfair competition for contracts will not yield the longer-term goals of sustainable growth and development and better governance records.

Second, these approaches are subject to unenforceable project contracts which can be nullified, posing significant political risks to private firms. Hong Kong-based Hopewell Holdings' \$4 billion BOT road and rail project in Thailand went under due to the “mood” of the country; the project was seen as a foreign project rather than domestic, with public sentiment working against it. In 2000, Turkey adopted the BOT approach in its electricity sector and three years later a new Turkish government moved to cancel 30 BOT projects.

Post-contract opportunism can cut both ways however. Project companies can engage in managerial misdeeds and self-serving behaviors (agency costs) before they turn the project back to a government. Over the life of a contract, managers may have an incentive to transfer resources to themselves before the handover occurs. With many existing large-scale BOT and PPP infrastructure projects launched less than two decades ago, it is too early to assess any managerial incentive problems.

The third flaw of the two approaches is the lack of diversification and liquidity in the project's finances. Project sponsors with concentrated equity bear almost all the risks—both financial and political—and also lack diversification in these risks. The number of participants in project finance is usually small, giving rise to illiquidity and concentration risk. The number of leading banks in a syndicated project-lending consortium is also usually quite small. Thus, sharing in project risk for equityholders and creditors is limited.

Given the severe shortcomings of the infrastructure project finance approaches of BOT and PPP, the time has come for a new approach which utilizes the best of the private sector alongside the financial innovation it brings. With vast infrastructure needs and heightened interest in Africa as a global energy producer, a progressive approach is needed that levels the playing field and develops more efficient market mechanisms. If there is to be real progress toward development goals and greater prosperity, this evolution is vital.

Innovative Approaches to Financing Infrastructure in Africa

Infrastructure development is a way forward to attract the capital needed for developing economies to grow. It is too vital to be left in the hands of politicians and to the devices of current “contract finance” approaches. The experiences with privatizations and securitizations suggest that creating immediate private ownership of public investment projects among diverse groups of investors may lead to more efficient and successful infrastructure development.

The financing of projects should be guided by global capital markets’ invisible hand to determine the economic value of an infrastructure project and provide the necessary resources for construction, operations, and maintenance. Project securitizations (PS) or initial public offerings (IPOs) of project securities can be designed with financial innovations for any new large-scale infrastructure project. This would create diversification, liquidity, and eliminate the plums problems that accompany the existing BOT and PPP approaches in financing infrastructure projects.

The tools available in today's globalized world will allow developing countries to benefit as advanced economies have in raising capital and promoting projects or companies. This approach would bring true private sector participation for economic development and legitimize further business activity. It would ensure ample funding, strong interest, and awareness of the project on a global scale. Domestic capital markets could participate as well and ensure greater community interest, thus avoiding countries' public opinion "mood swings." The market's oversight would foster efficiency and liquidity for future claims on the project's cash flow. Managerial incentives would be more aligned with productivity, thus reducing the widespread problems of cost overruns and inefficiency. Governments in host countries could be allocated project securities to achieve true public-private ownership.

The process of infrastructure project globalization begins with a sufficient number of project securities such as project stocks and project bonds being issued to establish reasonable unit prices and encourage broad foreign and domestic participation. Making large PS or IPO issues in different equity and bond markets around the world would increase liquidity for project securities. Transparent economic information of an infrastructure project and due diligence analysis of the project's future cash flows would establish the market values of project securities with the varying claims on future cash flows.

Well-capitalized project companies would show great interest in investment opportunities brought by new project securities. By virtue of their participation in PS or IPOs, fair market values of project securities would result. Other investors worldwide might naturally be concerned about having inadequate knowledge or information associated with investing in project securities of specific infrastructure projects. They might demonstrate less interest in investing in project securities due to lemons problems. Therefore, unlike traditional stock and bond offerings, new innovations in security design would be utilized to reduce investment risk and allow for unanticipated gains. Conceptually, this is similar to the familiar protection of “lemon laws” or the warranty on a pre-owned car.

The lack of information or the lemons problem faced by investors can be re-dressed by using available financial innovations. One such innovation involves issuing puttable stocks, a common stock which can be “put” back to the issuer. It is essentially a money-back guarantee that would mitigate downside risk. This would resolve the problem of underpricing in an IPO and from incomplete information on the investors’ side.

Conversely, investors can participate in upside potential by way of security design innovations. For example, combining project stock with contingent value rights (CVRs) would attract investors seeking to reap rewards on the upside. CVRs permit investors to reap the benefits of upside appreciation while maintaining downside protection. Risk-averse foreign investors in an environment of marked information asymmetries, such as in sub-Saharan Africa, might find this more attractive than simply puttable stocks.

Additionally, offering redeemable and convertible project preferred stocks would attract certain types of preferred stock investors in domestic and global capital markets.

In addition to project stocks, a large number of project bonds and preferred stocks should be issued through IPOs. Project bonds should include tax-free status to attract private domestic and foreign bond investors. Like corporate bonds, project bonds should contain event-risk provisions or covenants for unforeseen adversities such as tsunamis, earthquakes, political upheaval, oil price shocks, or risks of concern given a particular country environment. Project bonds with bearish event-risk provisions can be viewed as a puttable bond which protects bondholders from losses due to some designated event occurring; some of the fallout from a decline in the project's value or a steep downgrade in the rating of project bonds can be attenuated in this manner. Alternatively, bonds may be issued with bullish event-risk provisions. A bullish event could trigger conversion of bonds into project stock shares due to a favorable event which increases the economic value of an infrastructure project.

The variety of ways in which securities are designed can attract different classes of investors at the initial stage of PS and IPO as well as in subsequent secondary markets. Projects having the characteristics of a natural monopoly may set up public services commissions to determine the prices of services which allow a fair return for stockholders. To improve incentives and productivity, construction workers and project operation employees could be granted stock options. One of the oldest, privately-operated water utility firms from Côte d'Ivoire listed its stock domestically in 1978. The firm's

story is one of continued market expansion, professional management, and a 97% collection rate from customers. Shares were held by workers, government, a French water multinational, and domestic investors.

Financial innovations in the IPO can serve as both deterrent and incentive. For example, including event-risk provisions in project bonds can deter politicians' attempts to make undesirable policy changes. This can foster a more investment-friendly environment, which many developing countries greatly need. Domestic and foreign bond investors will find the package of bonds and put/call options attractive. Managers and stockholders would be less likely to make decisions which enhance equity value at the expense of bondholders. Sound decisions and proper management will bring its own reward through enhanced project value and the value it brings to the community and economy at large. In the end, the explicit costs of debt financing for infrastructure would be lower. Of great consequence, the invisible hand may prove more capable in setting infrastructure project agendas which span varied administrations.

Newly developed financial instruments can be used to enable infrastructure financing in a way that reduces agency costs arising from bureaucratic regulations, information gaps, and improper incentives. Globalizing the infrastructure project's finances can help create the environment which will enable further private sector development and reduce the costs of doing business.

Laying the Groundwork

This approach to financing infrastructure is a way forward to realize development goals and greater prosperity. By financing infrastructure through global capital markets, the foundation will be laid for incremental business activity. The appearance of many new stakeholders—foreign investors, governments, and domestic investors and consumers—can further catalyze the reforms needed to infuse additional private sector activity. Prior methods of infrastructure project finance have worked, but at costs hidden to society.

Private sector financial innovation and methods can be utilized to contribute needed financial resources and expertise. This in turn would bring economic development in line with the growth prospects experienced in more efficient markets. With new sources of finance, institutions such as the World Bank and the African Development Bank can re-direct resources from certain types of infrastructure projects to other development or humanitarian projects. The financial community must gear itself to handle this type of arrangement through creating the financial architecture and processes to service projects' financing needs. This approach can bring new choices in social investment to individual and institutional investors. Access to global capital markets can further expand the mix and amount of resources available for development as in the case of Africa.

New incentives to attract capital and projects may emerge for economic and financial policymakers. Governments and policymakers can create conditions for projects to “go to market” with accompanying good information that would attract this type of project

investment. The market will impound information about value and risk in a manner similar to how aid is tied to performance on political and institutional indicators, investment in human resources, and transparency. Countries can leverage their value as a capital destination to attract the private sector, and market themselves as such when they secure projects. A more virtuous cycle of growth will be possible by the exposure to global capital markets.

Imagine the software designer in Bangalore owning shares in a nearby electricity plant or a village in northern Mozambique holding water utility shares for future generations. Couple these scenarios with the pension fund manager in New York desiring longer term investment horizons and willing to bear a certain degree of risk. This same manager just might be willing to invest a portion of the portfolio in a socially-oriented, emergent investment or simply have a stake in an emerging market power generation project. When these possibilities exist, as they do now in latent form, global business will take on a new meaning in different corners of the world.

¹ From a March 2005 Commission for Africa report (*Global Development Finance*, 2005, p. 103).

² Flyvbjerg et al. found that cost overruns of 50% to 100% and revenue shortfalls of 20% to 70% were not uncommon. (*Megaprojects and Risk: An Anatomy of Ambition*, Port Chester NY: Cambridge University Press, 2003.)

³ Economic Prospects and Policy Issues, *World Economic Outlook*, International Monetary Fund, 2006.

⁴ Number of African countries is based on 2005 International Monetary Fund World Economic Outlook Groups classification which includes Maghreb and sub-Saharan countries.

⁵ UNCTAD, *Economic Development in Africa*, 2005.

⁶ *Business World* (Philippines), 1/15/2003.