

“How to Spend It”

Financing Africa’s Infrastructure Gap

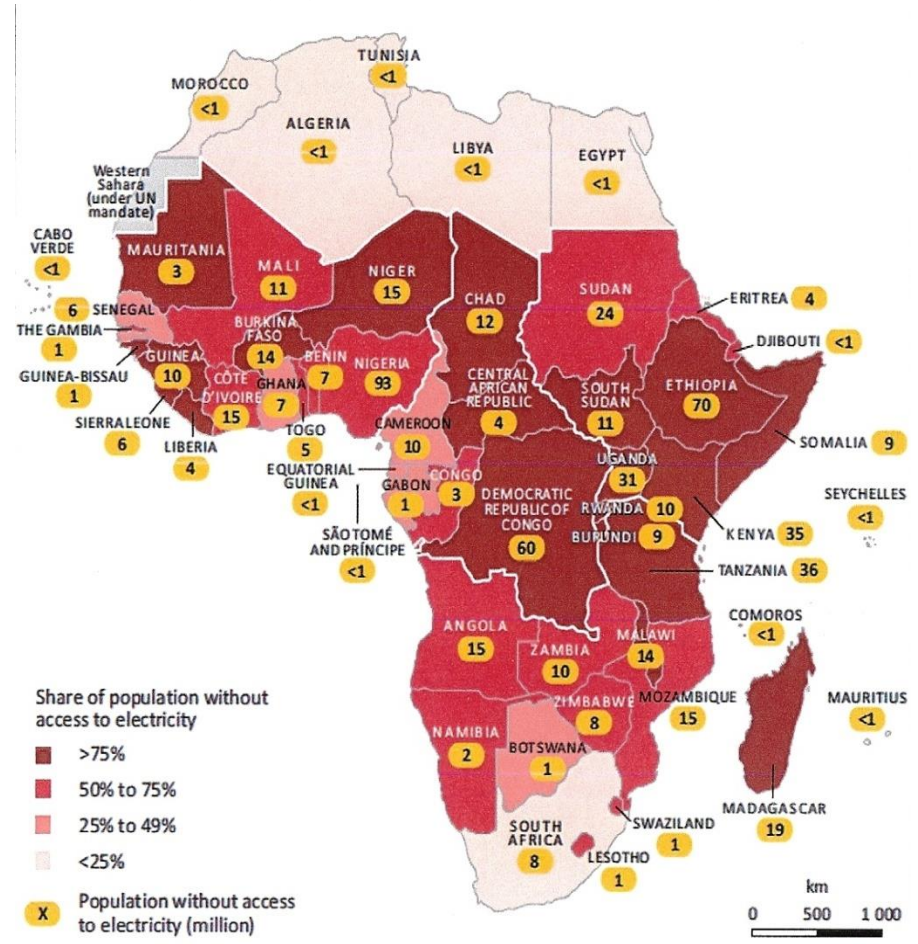
John Page
The Brookings Institution

WIDER Development Conference
Maputo, Mozambique
5-6 July 2017

Africa Faces a Crisis in Power

- An estimated 600 million people have no electricity connection
- Thirty countries face regular power shortages, and many pay high prices for emergency power

Percentage of population without access to power



Lags in All Key Infrastructure Measures

Normalized units	Sub-Saharan African low-income countries	Other low-income countries
Roads		
Paved-road density	31	134
Total road density	137	211
Telecommunications		
Main-line density	10	78
Mobile density	55	76
Internet density	2	3
Electricity		
Generation capacity	37	326
Electricity coverage	16	41
Water and sanitation		
Improved water	60	72
Improved sanitation	34	51

Source: Yepes, Pierce, and Foster (2008) and reproduced in Foster and Briceño-Garmendia (2009: 1-2).

Note: Road density is measured in kilometers per 100 square kilometers of arable land; telephone density in lines per thousand population; generation capacity in megawatts per million population; electricity, water, and sanitation coverage in percentage of population with access to services.

And Infrastructure Gaps Are Growing

- Africa is expanding paved roads, telephone main lines, and power generation, much more slowly than other developing regions
 - Investment in power has not matched population growth
 - Over 80 percent of the road network remains unpaved
 - The road stock is actually contracting

Why Focus on Infrastructure?

- Poor infrastructure is strongly correlated with lower firm-level productivity (Escribano et al., 2010)
 - The production loss in percent of sales among African firms experiencing power outages is 7.7 percent, more than double of that of East Asia (World Bank, 2016)
 - Ugandan firms on average lost 1.8 percent of domestic sales and 1.1 percent of exports due to delays in transportation services
- And higher costs
 - Transport costs for most landlocked countries range from 15 to 20 percent of import costs
 - Currently, it is more expensive to transport cargo within Mozambique than to ship it to a different continent

Why Focus on Infrastructure?

- There is robust evidence that infrastructure development has:
 - A positive impact on long-run growth
 - Reduces income inequality (Calderon and Estache, 2011)
- By one estimate the current infrastructure deficits in Africa contribute to a loss of about 2 percentage points per year in GDP growth (NEPAD, AU, and AfDB, 2011)
- In short, the economic and social returns to *appropriate* investments are high

The Infrastructure Financing Gap

- The World Bank (2009) established a target of \$93 billion per year to meet infrastructure needs in energy, telecommunications, transport, water supply and sanitation
 - Forty percent of the total spending is for power alone
 - About one-third is needed for maintenance
- Spending on infrastructure by sub-Saharan African countries reached about \$51 billion (IMF, 2014)
- The financing shortfall is about \$42 billion (Sy, 2016)

The Infrastructure Financing Gap

- Financing needs vary widely:
 - In fragile states, infrastructure spending needs exceed 35 percent of GDP
 - Non-fragile states need to allocate about 23 percent of their GDP to build and sustain basic infrastructure (World Bank, 2010)
- The magnitude of the gap is most likely underestimated
 - The 2009 World Bank calculation underestimates some current needs, such as urban infrastructure
 - External financing commitments are not comparable to annual budget spending; they materialize unevenly over time

Domestic Financing of Infrastructure

- Domestic budget spending is the largest source of African infrastructure financing
 - African countries generate more than \$520 billion annually from domestic taxes
- National budget spending by sub-Saharan African countries was about 73 percent of total funding for infrastructure in 2012 (IMF, 2014)
- This includes financing by international financial institutions (IFIs) such as the World Bank and AfDB
 - Excluding IFI contributions, spending on infrastructure projects amounts to about 63 percent of total funding

Domestic Financing of Infrastructure

- This level of domestic public spending is still insufficient to close the infrastructure gap
- To do so many African governments will need to increase fiscal effort
 - Through improved tax administration and measures to broaden the tax base
 - And by appropriate revenue policies for natural resources

But, More Money Alone Will Not Solve the Problem

- Three major domestic policy goals:
 - Increasing the efficiency of infrastructure services
 - Improving the quality of public spending
 - Aligning investment effort and outcomes

Increasing Efficiency:

In some cases costs are high in others profits

- Power is the clearest example of infrastructure with higher costs in Africa than elsewhere.
 - Many smaller countries have national power systems below 500-megawatts and rely on small-scale diesel generation (Briceño-Garmendia, Smits and Foster, 2008)
 - There has been little progress on regional power grids and trade
- High costs of international telephone and internet services reflect a mixture of high costs and high profits.
 - Countries without access to a submarine cable must rely on expensive satellite technology for international connectivity
 - Countries with a monopoly on cable access have tariffs substantially higher than those without (Minges et al., 2008)

Increasing Efficiency:

In some cases costs are high in others profits

- High road freight tariffs in Africa have much more to do with high profit margins than high costs (Teravaninthorn and Raballand 2008)
 - Interventions targeted at increasing competition rather than improving paved roads are likely to be the most cost effective in some regions (for example Central and West Africa)
- Addressing inefficiencies could reduce the financing gap by about \$17 billion a year (Briceño-Garmendia, Smits and Foster, 2008)

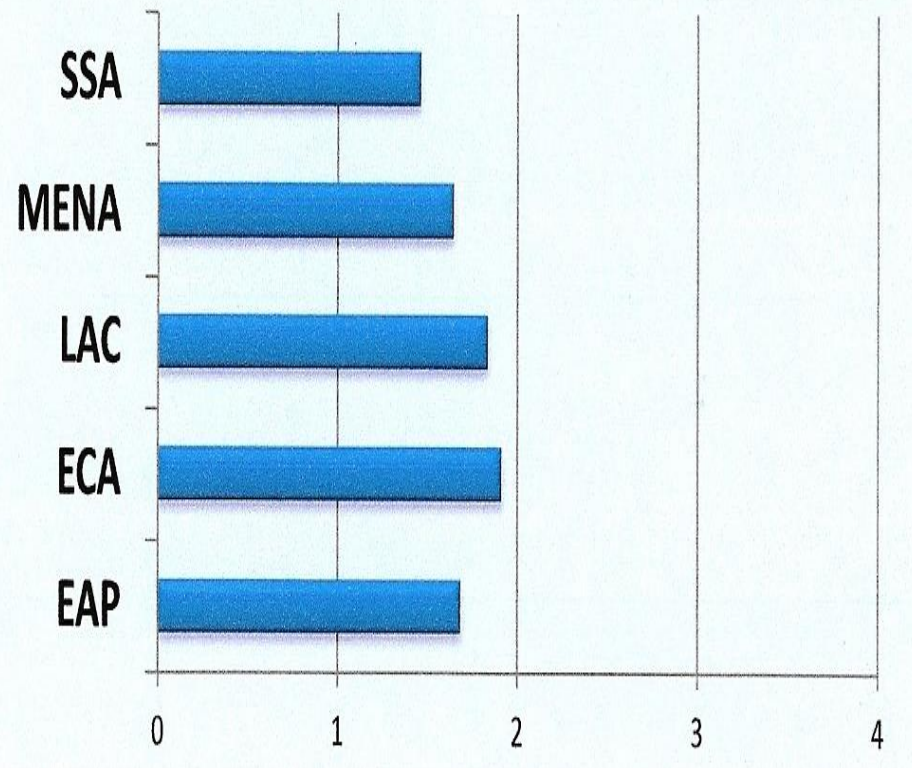
Some Cautionary Notes

- Few countries have developed a modern regulatory framework for infrastructure
 - The greatest progress has been in telecommunications
 - Transport lags furthest behind
- Cross-border institutional failures are widespread
 - Transnational infrastructure is underdeveloped (power, rail, road)
 - In East and Southern Africa, costs are severely affected by the cost of delays (at border crossings, weighbridges, and ports) and long custom procedures
 - If these delays (port, weighbridges, border) could be significantly reduced, vehicle yearly mileage would improve by at least 20,000 kilometers

Improving the Quality of Public Spending

Average IMF Public Investment Management Index

- One key to the appropriate quantity of increased public spending hinges on the *quality* of that spending
- Public investment efficiency in sub-Saharan Africa lags behind other developing countries. (Dabla-Norris et al, 2011)
- Better capacities are needed to design, select, implement and evaluate public projects



Improving the Quality of Spending: Better Project Appraisal

- Improving the quality of project appraisal
 - Project selection (and implementation) need protection from the influence of political patronage and prestige
 - Systematic use of project appraisal can be a political commitment technology to more efficient investment
 - This requires creating a cadre of economists with training in project appraisal responsible for project preparation across each spending ministry
- Getting the incentives right
 - Requires rewarding sound appraisals, and rejecting weak or inadequate appraisals
- The aid community can assist, but will need to raise its game

Some Cautionary Notes

- Even well-prepared project appraisals often fail to reflect externalities, particularly for major infrastructure investments
 - Failure to consider these runs the risk of underestimating benefits
 - Excessive credit for external benefits may be wishful thinking
- Failure to reflect broad network-type externalities is not a reason for not doing sound investment appraisal; it simply means that such exercises have to be put into a broader strategic context
- The economics profession has not met its social responsibility in terms of developing techniques

Improving the Quality of Spending: Budgeting Recurrent Costs

- Timely attention to maintenance reduces the expenditure needed to sustain infrastructure (Harral and Faiz, 1988)
- Recurrent costs of maintenance are often underfunded
 - Half of the African countries sampled by the World Bank (2009) are not devoting adequate resources to maintain their infrastructure stock
- Capital spending is frequently delinked from O and M expenditures in the budget process.
 - Botswana used a rule of thumb that 18 percent of the capital cost needed to be budgeted operate any asset
 - When planners found that the ratio was a bit higher they cut back the public investment program

Some Cautionary Notes

- Pro-investment bias is due partly to the bias in aid towards new construction (Briceno-Garmendia et al., 2008)
- Locking in to spending on infrastructure maintenance has often fallen foul of IMF rules on integrated budgets
 - The rationale for avoiding earmarking is that marginal equivalences can be maintained between all components of expenditure
- Commitment devices such as road funds, which earmark some road-usage generated revenues for maintenance, while potentially distorting, may in practice be helpful (Gwilliam and Kumar, 2002)

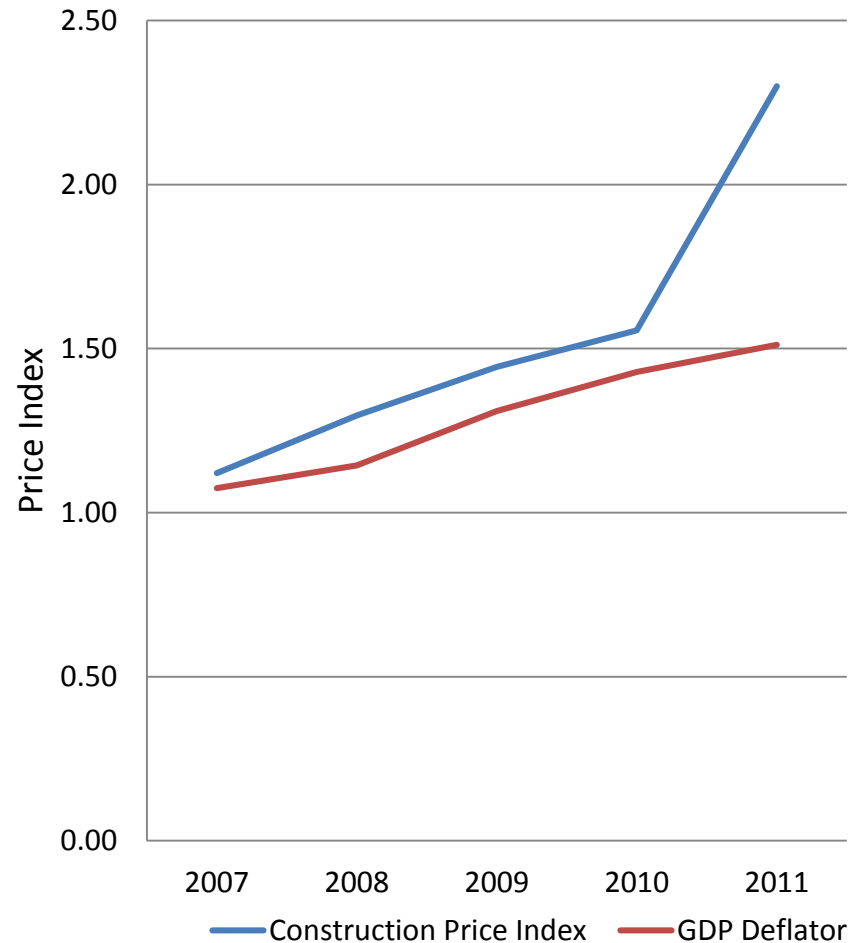
Aligning Investment Effort and Outcomes

- The ability of the construction sector to respond to increases in demand will determine the ability of the economy to transform “investment effort” into “investment outcomes”
- Government policies may be needed to shift down and flatten the supply curve of construction
- Collier has termed this “Investing to Invest”

“Investing to Invest”

- In some countries construction costs are high and have been rising rapidly
- Cost overruns on multilateral projects are rising
- Unit costs of road construction in all other regions are significantly lower than costs in Sub-Saharan Africa
 - Differences range from 49 percent in East Asia to 20 percent in Latin America and the Caribbean. (Collier, Kirchner and Soderbom, 2016)

Construction Price Index versus the GDP Deflator Uganda



“Investing to Invest”: Some Areas for Action

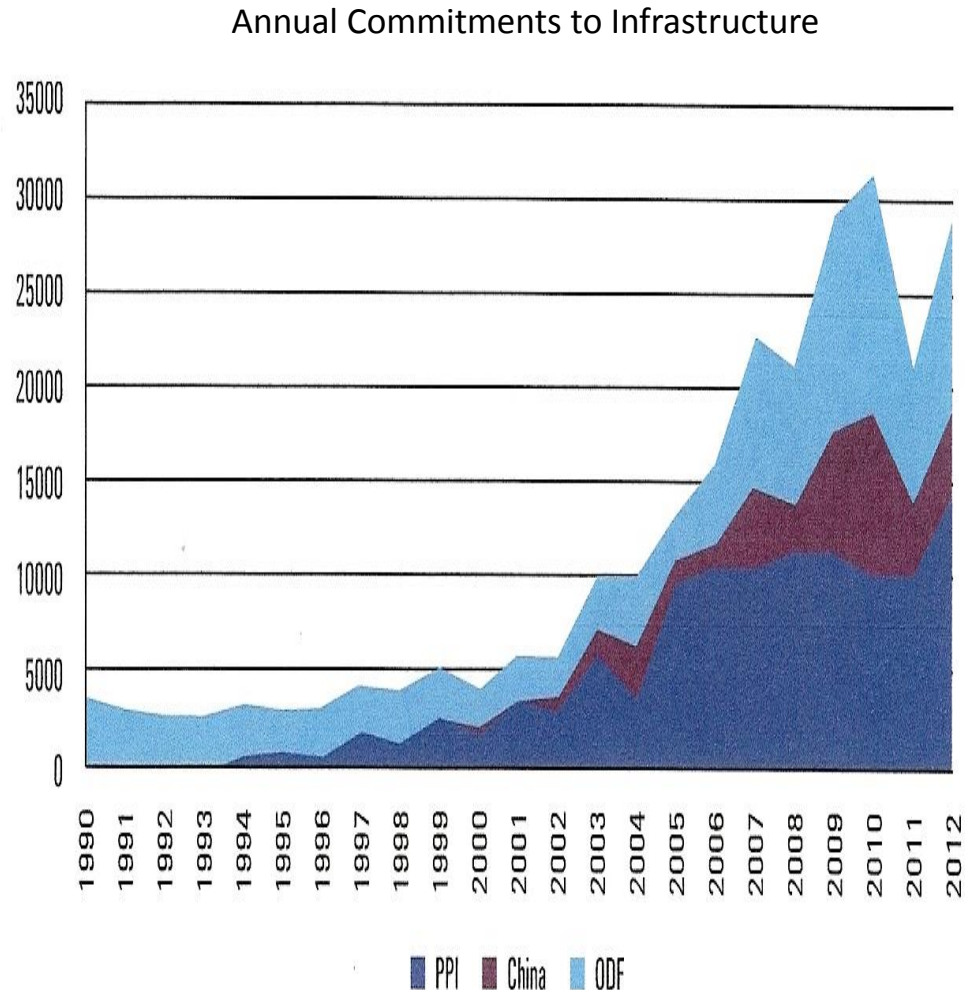
- Identify bottlenecks to construction
 - Review regulations and institutions that may slow construction projects (land rights; zoning; planning permission)
 - Reduce the cost and economize on the use of high cost inputs
 - Expand training programs in construction skills
 - Allow temporary location of services providers (a role for the RECs?)
- Adjust the pace of public investment to construction costs

Some Cautionary Notes

- There is lack of effective competition for civil works contracts
 - There are a small number of bidders and wide price spreads across bids
- Construction is the sector with the highest incidence of bribes to officials and other firms, especially in public works contracts (Transparency International, 2011).
 - World Bank and bilateral donor financing is associated with lower unit costs than government financing (Collier, Kirtchberger and Soderbom, 2016)

External Financing: ODA, China and The Private Sector

- ODA has grown appreciably since 2007
 - Represents 35 percent of external financing
 - The primary source for funding of water, sanitation and transport
- Official financing from China has increased since 2000
 - Between 2007 - 2012 about \$5 billion per year
 - Exceeds any other bilateral or multilateral source
- Private finance (PPI) has been the largest financing source since about 2000
 - Accounts for more than 50 percent of external financing

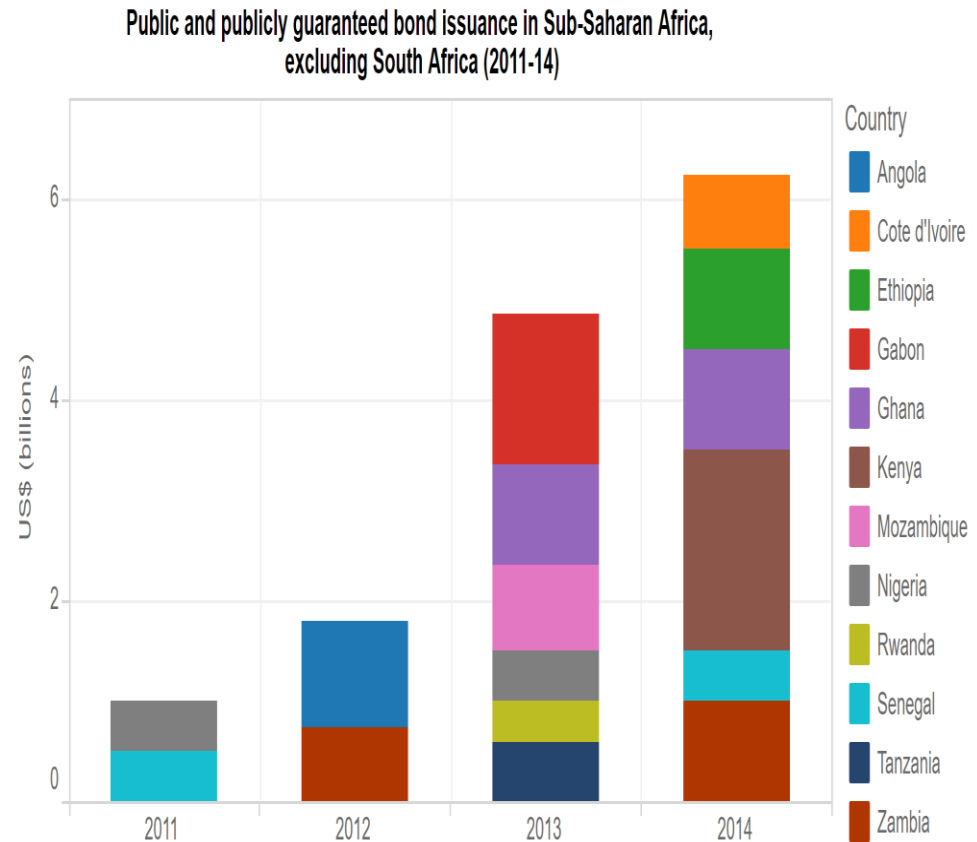


Private Provision of Infrastructure Is Highly Concentrated

- Private investment has focused on mobile telephones, thermal power plants, and container terminals
 - PPI to power generation is growing the fastest
 - Transport and water supply face significant obstacles in attracting private investment (Foster and Briceño-Garmendia, 2009)
 - Countries other than South Africa and Nigeria have not been able to attract significant PPI outside the telecom sector
- Five countries have attracted more than half of total sub-Saharan African PPI commitments
 - South Africa and Nigeria alone accounted for about 29 percent of the total for all of sub-Saharan Africa in 2009-2012
- Private funding generally comes against a concession contract which assigns future project revenues to the provider.
 - This further limits choice of sectors and network components

Fatal Attraction: Sovereign Debt

- Before 2006, only South Africa had issued a foreign-currency denominated sovereign bond in sub-Saharan Africa
- From 2006 to 2014, 13 countries issued \$15 billion in international sovereign bonds, much of it for infrastructure
- Sovereign bonds and borrowings from foreign commercial banks now amount to more than 40 percent of outstanding public debt in Ghana, Senegal, and Zambia (Vellos, 2016)



Fatal Attraction: Sovereign Deb

- Funding through debt adds to foreign liabilities and complicates debt management
 - Sovereign borrowing can involve high costs and short maturities
- Ultimately the sustainability of the country's debt depends on the growth rate and management of domestic saving and investment rates.
- In many cases this turns on tax policy
 - HIPC was not due to failed projects
 - Governments failed to appropriate social benefits from private agents

Avoiding Fatal Attraction: Some Innovations in ODA

- Allow creditworthy countries to borrow from the non-concessional windows of the World Bank and other multilateral development banks.
 - Terms are typically less than 1 percent over Libor compared to 5-7 percent in private debt markets
 - Longer grace and repayment periods
 - Use blend financing – concessional and non-concessional loan packages
- Subsidize the political risk insurance of projects
 - Shift the IFC subsidy from IDA to political risk
- Align activities with non-traditional donors (perhaps through the IFIs)

Avoiding Fatal Attraction: Domestic Markets and the Diaspora

- Kenya has managed to tap its local investor base to issue over \$1 billion of local currency infrastructure bonds since 2009
 - Allowing bonds to be used as collateral for bank loans, which banks can count as reserves
- Diaspora bonds (Ethiopia) and placement of infrastructure bonds to the diaspora (Kenya)
 - Diaspora investors have a lower risk perception toward their country of origin
 - Priced off the retail deposit rate as benchmark
 - Less sensitive to external shocks

Avoiding Fatal Attraction: Tapping Institutional Investors

- Institutional investors -- pension funds, insurance companies and mutual funds – and sovereign wealth funds hold around *\$100 trillion* in assets under management
- Infrastructure assets are compatible with the liability structure of many institutional investors
 - Long and stable income streams (post development)
- The issue is how to make investments into African infrastructure at least as attractive in terms of risk and return as infrastructure projects in other developed and developing regions

Avoiding Fatal Attraction: Tapping Institutional Investors

- Low income countries have mainly turned to PPPs for infrastructure project finance
- Most PPPs are too small for large long-term institutional investors
 - Most institutional investors are only comfortable holding (preferably) guaranteed debt instruments in infrastructure assets
- The Development Banks can facilitate the development of large scale projects and reduce risk
 - The traditional mode of operation of IFC and its counterparts has been to wait for private sector proposals to be submitted, rather than to catalyze them

Avoiding Fatal Attraction: Tapping Institutional Investors

- To do this will mean transforming two-way public-private partnerships – public agency and private developer/operator – into four-way partnerships with development banks and institutional investors (Arezki et al., 2017)
- Requires a new, active role for development banks as project initiators and coordinators
- The development banks can create pools of infrastructure assets that are the basis for asset backed securities sold to investors

Summing Up

- Africa's infrastructure gap is growing, as are its financing needs
- Most infrastructure finance will come from domestic tax effort, but money alone will not solve the problem
- Increasing the efficiency of infrastructure services, improving the quality of public spending and aligning investment effort and outcomes are essential complements to revenue effort

Summing Up

- Foreign finance – ODA, PPI and China – has filled part but not all of the financing gap
- This has led a growing number of countries to issue sovereign debt
- Avoiding the fatal attraction of a “second HIPC” will need:
 - Sound domestic fiscal policy
 - Some creative thinking by the IFIs
 - Making African infrastructure more attractive to institutional investors

Thank You