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Closing Africa's Infrastructure Gap: Innovative Financing and Risks

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KEY POINTS

- Accelerating Africa's growth hinges on closing its vast infrastructure gap, which will require innovative financing. The innovative financing sources for infrastructure that have emerged across Africa so far include local and foreign currency bonds, private equity, sovereign wealth funds, and last but not least emerging South partners.
- African countries can do more to attract private and innovative funds on favorable terms. For example, public-private partnerships can be made more effective and remittances better utilized for development purposes.
- At the same time, there are limits to what the private sector can do in closing the infrastructure gap, especially in rural areas. The public sector has a role to play through strengthening domestic resources and catalyzing private investments. Both private and public resources need to meet the debt sustainability criterion.
- Since infrastructure investments on the continent are often perceived as 'high risk', mitigation instruments adapted to Africa's context, such as partial credit guarantee with concessional resources, should be employed.
- With abundant natural resources, Africa can pursue 'clean' infrastructure financing. The AfDB helps African countries embark on clean growth path; it is setting up Africa Green Fund to receive and manage resource for climate change adaptation and mitigation.

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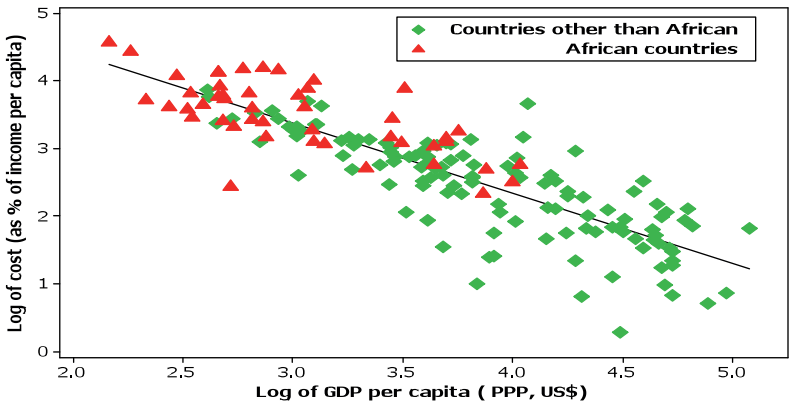
I – Background

Africa's underdeveloped infrastructure has been a major obstacle for the continent's development and its efforts to achieve a strong, sustained and in rural and marginalized areas also shared growth (Figure 1, and Figure 1, Annex). Africa, especially sub-Saharan Africa (SSA), ranks consistently on the bottom of developing regions in access to infrastructure services (Table 1 and Table 1, Annex). According to Africa Infrastructure Country Diagnostic (AICD) estimates, Africa's total infrastructure financing needs amounted to $93 billion a year in 2008, with only $45 billion financed. Even if all inefficiencies such as inefficient management, poorly targeted subsidies or tariffs were eliminated, a $31 billion a year gap would remain. Closing it will require innovative financing resources.

The brief discusses innovative financing for Africa's infrastructure – both already adopted in Africa and potential ones. As investment in most countries on the continent, other than several middle income countries such as South Africa and Mauritius, is perceived as 'high risk', several mitigating instruments are covered. For Africa's growth to be sustainable, all financing should adhere to debt sustainability criteria and where possible be also 'climate-proof'.

Figure 1: Cost of getting electricity and GDP per capita, 2009 1/



Source: Authors' calculations based on the African Development Bank database, Doing Business database and IMF WEO.
1/ Cost required for a business to get a permanent electricity connection for a newly constructed warehouse, expressed in % of income per capita. Correlation coefficient is -0.85 at 1% significance level.

[1] Comments and inputs were given by Hela Cheikhrouhou, Mafalda Duarte, Gilbert Mbesherubusa, Alex Rugamba, Tim Turner, Désiré Vencatachellum, Peter Walkenhorst, and Rolf Westling.

Table 1: SSA's Infrastructure Deficit

	SSA	South Asia	East Asia	SSA Oil Exporters	SSA Oil Importers
Transport					
Density of paved road network 1/	49	149	59	14	57
Density of total road network 1/	152	306	237	70	173
ICT					
Density of fixed phone line 2/	33	39	90	16	38
Density of mobile phone line 2/	101	86	208	118	97
Density of internet connections 2/	2.8	1.7	6.6	1.7	3.1
Energy					
Electrical generating capacity 3/	70	154	231	66	71
Access to electricity 4/	18	44	57	26	16
Water and sanitation					
Water 4/	63	72	75	59	64
Sanitation 4/	35	48	60	34	35

Source: Yepes et al. (2008). 1/ km/1000 km2 (2001). 2/ subscribers per 1000 people (2004). 3/ MW per 1 million people (2003). 4/ Percent of households with access (2002-2004).

II – Unlocking Potential of Innovative Financing Sources

In the past, the traditional partners and public sector predominated financing of Africa's infrastructure. Among the various infrastructure sectors (e.g., energy, transport, water supply and ICT), the role of the public sector is most prominent in water and sanitation and transport, where it accounted for about 90 percent of investment in 2007 (Biau et al., 2008). Most private investment has been in the information and telecommunication sector, which received 87 percent of all investment commitments in 2008 (OECD, 2010).

Confining infrastructure development in African low income countries (LICs) to mostly public financing sources has left their infrastructure needs unaddressed. The vast infrastructure gap has limited their growth potential and in some cases also impeded achieving the Millennium Development Goals. Nevertheless, the landscape of infrastructure financing in Africa has changed in recent years. Recognizing the infrastructure gap as an opportunity, both domestic private investors and emerging partners scaled up their investment in Africa's infrastructure. The increased private sector role in Africa's infrastructure has been accompanied by changes in lending and policy facilities of IFIs. The African Development Bank, for example, adapted its lending facilities to LICs to account for these new developments. The new framework allows for non-concessional borrowing by countries with solid debt indicators and debt management capacity – provided such borrowing does not jeopardize fiscal and external debt sustainability.

Going forward, a mix of sources – and increasingly private and innovative ones – will be needed to close the infrastructure gap in Africa. There is no 'one size fits all' solution. The 'right' mix will depend on a number of factors, including financial development, indebtedness, the business environment and preferences in each country. Box 1 discusses methods that Nigeria has been implementing or considering to implement. The sections below cover various innovative financing ways, both those that African countries already adopted and those they could consider.

II.1 – Expanding Scope of Public-Private Partner ships

In the past decade, public-private partnerships (PPPs) have emerged as financial instruments for infrastructure investments in Africa. PPPs are contractual arrangements that allow for private sector involvement in supply of infrastructure assets and services. PPP modalities include management contract, leasing, investment concessions, divestiture, de-monopolization and new entry and build-operate-transfer (AfDB, 1999). While not innovative as such, PPPs bring innovative private funds to infrastructure. At their best, they ease budget constraints and raise efficiency by leveraging private sector management expertise and innovation.

PPPs are not yet common across the continent, even though in recent years African governments have increasingly used them for financing infrastructure. For example, the largest ongoing South African transport project– the Gautrain – was structured as PPP (Deloitte, 2010). Examples of good practices emerged also at the municipal level. The Nelspruit Water and Sanitation Concession in South Africa helped raise access to water for households in Mmobela Municipality from 55 percent in 1999 to 94 percent in 2010 (Brenden and Gibson, 2010).

Country experiences point to several preconditions for successful financing or executing of PPP projects, such as an adequate institutional framework (e.g., political commitment and effective governance) and a transparent legislative and regulatory framework. Projects' ability to stay financially viable depends on the stability of the regulatory regime beyond its implementation. Instability impedes attracting high quality and irreversible investment. Adequate risk and reward sharing between the government and the private sector is also critical for

establishing effective PPPs. Pricing of infrastructure services in particular requires careful attention, given its impact on affordability of new services on one hand, and bankability of new investments on another. In addition, the need for imported technology – which often lacks local service providers – presents technology risk that requires development of local technical production sites and service centers, alongside secure and affordable supply of operating inputs.

Many African governments still lack skills needed for the successful implementation of PPPs (Box 2). In particular, sector ministries and sub-sovereign entities often do not have adequate investment, financial planning and coordination capacity. Experiences of countries that established well-functioning PPP units in their Ministries of Finance (e.g., Senegal, Kenya, and South Africa) point to positive impacts of such units as effective PPP enablers. Developing a comprehensive and transparent list of contingent liabilities, such as implicit and explicit government debt guarantees, is key for realistic assessment of fiscal risks stemming from PPPs.

II.2 – Developing Domestic Capital Markets

Local Currency Infrastructure Bonds

Kenya's issuance of government infrastructure bonds, i.e. longer-term bonds funding infrastructure projects, during the global financial crisis (to finance roads, water, and energy projects) is an example for governments in other countries with sufficiently developed domestic bond markets to follow. Besides supporting aggregate demand during the crisis, the issuance aimed at removing supply-side bottlenecks to growth. Since February 2009, Kenya has successfully issued 3 infrastructure bonds with a total value of USD 1 billion. This issuance has also paved way corporate bonds issues by private or state-owned companies, for example the electricity utility KenGen and mobile phone company Safaricom.

Kenya's success with infrastructure bonds is partially attributed to the use of incentives. Holders can use the bonds as collateral to acquire bank loans while the banks can pledge them as collateral for their repo operations. To boost corporate issuance in local currency, incentives including an exemption of bond investors from tax on interest were adopted. Further on the innovative side, the issuance of government bonds with a sukuk (Sharia-compliant) portion facilitated participation by investors adhering to Islamic banking such as the Gulf African Bank.

Commodity-linked Bonds

The commodity-linked debt instruments recently emerged in South Africa, where in August 2010 the Standard Bank Group offered investors Rand-denominated commodity-linked exchange traded notes (ETNs). ETNs are listed at the Johannesburg Stock Exchange, with a specific redemption date and returns linked to the performance of precious metals.

Commodity-linked bonds, which are yet to develop across Africa, can help commodity-exporters raise finds and hedge against unexpectedly large drops in commodity prices. They are 'capital-protected', i.e. at maturity the investors get at least the nominal principal invested in the bond.

II.3 – Venues for Accessing International Capital Markets

Several African emerging and frontier markets (e.g., Cape Town, Kenya, South Africa) have successfully adopted inno-

Box 1. Innovative Financing of Nigeria's Infrastructure: Experiences and Options 1/

Both the Nigerian government and the private sector have recognized that closing the enormous infrastructure gap – estimated at $15 billion a year for the next 6 years -- that hampers the country's social and economic development cannot be left to the public sector alone. With ODA financing from traditional donors constrained after the crisis, poorly functioning subnational government expenditure programs, limited fiscal revenue raising capacity and weak implementation of projects by the public sector, participation of the private sector is needed not only for financing, but also for efficiency and transparency reasons.

According to some Nigerian commercial banks, the following methods can be used to close the infrastructure gap: private equity; project-based finance; asset-backed finance, privatization, PPPs, bond issues and of course private capital inflows. In the fall of 2010, sovereign wealth fund (SWF) -- financed with oil revenues and partly earmarked for infrastructure spending -- has emerged as an option that the government intends to pursue. Recently, the Central Bank of Nigeria has announced its plans to finance the power sector and other critical infrastructural projects through pension funds.

Since the credit available to African countries including Nigeria is more limited after the crisis due to higher perceived risks, capacity to prepare bankable proposals is crucial for success in competition for scarce funds. Moreover, the government has adopted measures to incentivize the private sector in infrastructure financing, also through establishing adequate and transparent legal framework. Specifically, in recent years Infrastructure Concession Regulatory Commission (ICRC) was established to regulate and identify potential PPP projects in the infrastructure sector and set guidelines and processes that would promote PPPs as a tool for infrastructure financing.

ICRC's enabling role is crucial given the limited awareness of PPPs in Nigeria. A particularly notable PPP project that the ICRC facilitated was the contract for rehabilitation and upgrade of the Lekki-Epe Expressway (approximately 50 km long road in one of the fastest growing areas in residential and commercial areas in Lagos). The public funding was provided by the Lagos State government; the African Development Bank put in $85 million of 15-year debt. Among the private sector financiers, the largest share (with 15-year maturity) was covered by the Standard Bank Plc, which also acted as a financial advisor. This project was the largest PPP deal reached in Nigeria as of end 2010 and also the first PPP for toll road in West Africa.

1/ Source: Zenith Bank (2008), and the authors' discussions with the Nigerian authorities, the ICRC staff and the private sector representatives during the December 2010 mission to Abuja.

vative methods utilizing domestic resources such as infrastructure and municipal bonds, pension funds, syndicated loans. Still, given the underdeveloped local capital markets in most African LICs and also some small middle income countries (e.g., Swaziland), access to international capital markets is key for securing stable and longer term financing.

Sovereign External Bonds

Ghana's issue of an external sovereign bond of $750 million in late 2007 was another innovative infrastructure financing among African LICs. It also set the benchmark for sovereign and private sector borrowing on the international capital market by other frontier market countries. Due to the tight credit conditions stemming from the global financial crisis, most sovereign debt issuances by SSA governments were deferred in 2009 and 2010. Given Africa's resilience during the crisis, demand for Africa's bonds is expected to rise in 2011. Ghana's experience highlights the importance of structural reforms, macroeconomic stability, credit rating and preparation before accessing international markets. Its debt accumulation shows the challenges to debt sustainability that may arise. Another lesson for African governments accessing the international capital markets is that macroeconomic frameworks need to be robust to swings in capital flows.

Diaspora Bonds

When it issued its Millennium Corporate Bond, Ethiopia was a pioneer in Africa on issuing diaspora bonds to finance infrastructure. The Millennium Corporate Bond, which targeted both Ethiopians at home and abroad, aimed at raising capital for the state-owned Ethiopian Electric Power Corporation. Across the continent, diaspora bonds thus constitute an untapped way to mobilize resources in frontier markets with a large diaspora population (e.g., Ethiopia). The World Bank estimates that SSA countries could raise up to $5-10 billion per year through such bonds. They are thus a potential source of longer term financial resources for infrastructure, complementing remittance flows that are typically used for consumption or social expenditures.

Private Equity Funds

Private sector participation in Africa's infrastructure increased also due to rising presence of private equity funds (PEFs). Both multi-sector and specialized infrastructure funds have participated in green- and brown-field infrastructure projects, the latter being more recent and still small in number. Specialized infrastructure funds were pioneered by established infrastructure firms such as Macquarie Group, which sponsored the South Africa Infrastructure Fund as early as 1996. To date, at least ten specialized infrastructure funds have reached financial closure on the continent, mobilizing almost US$3 billion in direct financing.

PEFs invest in various infrastructure sectors including upstream industries, with national, regional or pan-African geographic reach. A mix of financing instruments – equity, senior debt, subordinated debt or mezzanine finance – is employed,; amounts range from US$5 to 120 million per project. Besides foreign currency financing, PEFs have also provided longer tenors, (e.g., 15 years in the SSA Emerging Africa Infrastructure Fund). Infrastructure PEFs mobilize financing both from private institutional investors (e.g, pension funds and insurance firms), and traditional financiers (e.g., DFIs).

II.4 – Utilizing Other Innovative Sources

Tapping Reserves in 'Excess-Savings' Countries

Many African countries, especially oil importers, have low savings rates (Figure 2). Overall rates are notably below the average of emerging market and developing economies. Hence capital flows, especially private ones, constitute an indispensable source of financing. Key policy issues in this context are: (i) how to attract additional capital flows to Africa's infrastructure from developing Asia (e.g., countries with high savings and investment rates), and (ii) how to utilize savings in African resource rich countries, where savings rates are high but investment rates remain low. Emerging partners, and especially China, have been

Box 2. Capacity Building for PPPs in Infrastructure in Nigeria

The Nigerian government has resorted to more extensive use of PPPs to close huge deficits in the power and transport sectors. However the country's public service has a very low capacity to appraise and implement PPP projects. This low capacity has already manifested itself in incomplete project preparation, lack of bankability studies, inadequate financial models and business plans, unfamiliarity of staff legislation, lack of experience to ensure quality at entry and concession contract monitoring, among others. In addition to capacity related limitations, there are issues related to lack of transparency in the bidding process.

In 2010, with financing from the African Development Bank, the Infrastructure Concession Regulatory Commission of Nigeria launched a US$31 million capacity building program. The program aims to (i) familiarize stakeholders in public service, civil society and the private sector on PPP processes; (ii) provide specialized training to key public sector personnel; (iii) prepare project feasibility studies; and (iv) provide hands-on technical support in procurement processes and project management. The program will also facilitate the setting up of mechanisms for competitive procurement processes and establish rules for handling unsolicited proposals.

Capacity development programs of this scope demand an extensive pipeline of projects. If successful, Nigeria's capacity development program will result in the processing of key projects out of the country's long list of potentially viable projects in power and transport, including 7 major highways and bridges, commuter rail lines in Lagos and Abuja, and the 32 independent power projects already licensed by the electricity sector regulator. The key risk to success is staff retention in core public sector functions.

Source: African Development Bank.

particularly active in Africa since mid-2000s, providing FDI, in addition to official aid and non-concessional loans. According to the Infrastructure Consortium for Africa (ICA), Chinese total commitments to Africa's infrastructure in 2009 amounted to $5 billion. Confirmed Chinese infrastructure financing in SSA is highly concentrated in resource-rich countries such as Nigeria, Angola, Sudan (72% over 2001-2007).

Some projects are backed by natural resources or future revenue flows. For example, Chinese investments in Sudan, Angola and Nigeria are backed by oil, investment in Gabon by iron, and in Ghana by cocoa. The development benefits from these types of investments could be enhanced by ensuring that the government negotiates equitable deals where the right economic values for resources is assigned, environmental externalities accurately valued, and the share of royalties and dividends robust to price fluctuations. Moreover, the developed infrastructure should not be captive to the resource extraction operations. On a more positive side, only part of Chinese-financed infrastructure investments is directly linked to natural resource extraction.

Other emerging markets have shown interest in Africa's infrastructure projects. India has scaled up finance for infrastructure projects in the region, with committed funding averaging $0.5 billion a year in 2003–07. Arab and Islamic funding institutions also finance infrastructure in Africa, with $2.4 billion invested in 2008 and $1.7 billion for 2009. Their coverage of recipient countries is wide (31 African countries benefitting in 2009) but in terms of the committed amount, there is a tendency to concentrate in North Africa (60% in 2009) followed by East Africa with (13%). Arab partners' finance has also been concentrated on specific sectors: 34% to road construction, 24% to the power sector and 6% to dam construction (ICA, 2009).

Establishing Sovereign Wealth Funds

When well designed and implemented, sovereign wealth funds (SWFs) can be an important source of finance in resource-rich countries. Accordingly, Nigeria announced plans to establish a Sovereign Wealth Fund (SWF) of about $1 billion. The investment resources will be owned and managed by the government. An infrastructure fund will be one of the three components of the SWF, which is expected to manage (i.e. save and invest) the country's volatile oil revenues, and will replace the currently existing excess crude fund.

Securitizing Remittances

While this way of utilizing remittances for development has so far not been utilized in Africa, several governments (e.g., Ghana, Sierra Leone) have been exploring this option. However, securitization of remittances has been applied in Latin America and Turkey, for example. Feature which is of the greatest interest in remittance securitization is the possibility of tapping into the foreign exchange component of remittances, without interrupting the actual transfer. Under securitization, inflows from foreign bank (in foreign currency) are matched with corresponding payments of the domestic bank in local currency. For remittance securitization be feasible in Africa, several preconditions would need to be met, including supportive legislation and skills.

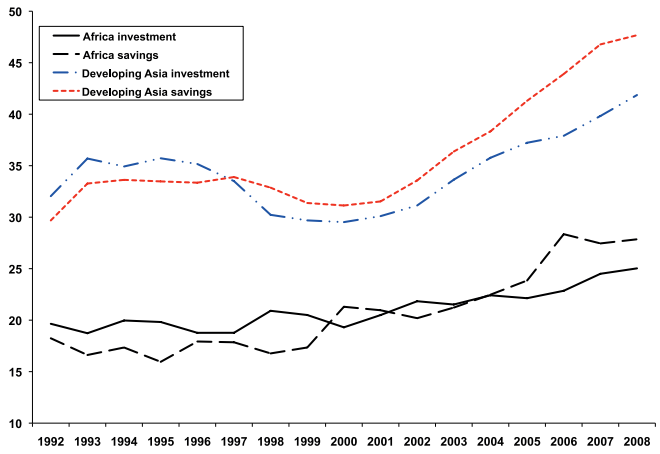
III – Leveraging the Public Sector

While the private sector has become indispensable and increasing important in financing Africa's infrastructure, there are also limits to what it can achieve. This applies especially in projects with high social but low financial returns such as areas of rural infrastructure. The public and private sectors will need to work together to address the infrastructure challenge in Africa. The sections below focus on the role of the public sector.

III.1 – Strengthening Traditional Sources

The role of the private sector and new financing sources has been rising, the public sector – traditional financier of Africa's infrastructure – is still important, both as a direct financier and as a catalyst of private investment. It is also instrumental in addressing inefficiencies and ensuring maintenance of infrastructure

Figure 2. Africa and Developing Asia: National Savings and Investment Rates (% of GDP)



Source: Authors' calculations based on the African Economic Outlook and the IMF WEO databases.

assets. Among the different traditional financing sources (ODA, budgets), African policymakers have turned their attention to domestic resource mobilization amid uncertain prospects about the ODA in the aftermath of the global financial crisis. Hence increasing tax revenues and stimulating private and public savings is crucial for meeting Africa's infrastructure challenge, together with finding new and innovative financing sources.

Low tax-to-GDP ratios (below 15 percent) persist in many African countries, including lower middle income ones such as Ghana. Instead of raising tax rates, countries can increase revenues by removing exemptions and strengthening tax administration. In LICs, where the large informal sectors impede effective direct taxation, excises, VAT and other indirect taxes can be relied on, provided that they are designed with consideration for poor households.

Public resource mobilization is particularly challenging in post-conflict countries, who utilize trade taxes and other simplified direct structures, before reaching a balance between indirect and direct taxes. Liberia achieved high tax revenues to GDP ratio gives an example of good practices in this area of what can be in other post-conflict countries.

To increase public savings, government spending – including on infrastructure – needs to be more efficient. This can be in part achieved by planning for timely delivery of projects to avoid costly emergency measures, maintenance of existing infrastructure to limit expensive rehabilitation, improving efficiency of utilities, and strengthening medium-term expenditure frameworks, accounting frameworks and auditing procedures.

Given their low private savings rates, especially in SSA's oil importers, African countries need to develop banking sectors, mobilize untapped private savings, and channel them into productive use. Formal financial institutions could offer long term saving instruments, and incentivize their purchases through tax benefits. African governments can also unlock regulatory barriers that discourage institutional investors such as pension funds' from utilizing long term savings instruments. They can help diversify capital markets by developing the institutional frameworks that foster participation of, for example, Islamic finance institutions and private equity funds.

III.2 – Mitigating Risks

In the aftermath of the crisis, private investors have become more risk averse than in early-mid 2000s. Nevertheless, the concurrent shift in investors' interests from highly leveraged products in advanced economies to real growth possibilities in selected emerging and developing countries is an opportunity for Africa. African countries can attract private investors by presenting infrastructure gaps on the continent as 'growth investment' opportunities.

Through risk mitigation instruments the public sector can catalyze additional private investments in infrastructure, raising the total available finance sources. These instruments need to be accompanied by reforms and institutional changes to eliminate the underlying sources of risks themselves. Specific examples of risk-mitigating instruments include:

- **Commercial and political risk premium** can be covered by both debt and equity insurance and guarantee instruments. While commercial instruments exist, concessional ones such as partial risk guarantees offered by IDA and ADF and political risk insurance offered by MIGA are more suitable for LICs. Political risk management instruments incentivize governments to implement reforms that address performance risk. For middle income countries, commercial risk management instruments help develop capital markets and enable enterprises and countries to borrow externally on more competitive terms.

- **Country risk premiums** can be covered by first loss guarantees for a portfolio of transactions. For example, the First Loss Investment Portfolio Guarantee (FLPG), currently being developed by the AfDB, would facilitate scaling-up of private sector investments in infrastructure in African LICs, by mitigating their country risk premium. The FLPG is an innovative instrument that would guarantee a portion (up to 10 percent) of the first loss of a defined portfolio of non-sovereign projects financed by the AfDB in LICs. This option allows African LICs to leverage at least five times the value of the guarantee in additional financing from the non-sovereign pool of lending resources.

- **The risk of foreign exchange volatility** (prevalent in some LICs) can be addressed through currency hedging, government exchange rate guarantees, and devaluation liquidity schemes, among others. However, much greater attention needs to be paid to affordability of these instruments in the African context.

- **Financial risks** can be mitigated through viability gap financing, (e.g., public subsidies in the form of, for example, partial capital cost financing for up-front investment needs). This method allows for private sector implementation of critical infrastructure projects with high economic benefits but low financial returns. By leveraging the limited public funding to attract greater private participation, governments thus can fast-track key infrastructure developments. Competition in the bidding process and hence competitive pricing of the viability gap are key for success of this approach. In addition to subsidies, lowering financing costs for the private sector can also improve bankability of projects.

The African Development Bank supports its regional member countries (RMCs) in

their efforts to access long-term financing for infrastructure, including through risk mitigating instruments. For example, the innovative Currency Exchange Fund (TCX) helps investors to hedge interest rate risks associated with infrastructure financing in local currencies, mainly through pooling market risks from different investors with geographically diversified business. Through local currency financing, TCX reduces foreign exchange rate risk. The Bank also supports development of local currency bond markets in RMCs with issuance of bonds in local currencies. Finally, the AfDB supports private sector-financed infrastructure through the African Legal Support Facility, which strives to improve contractual terms and legal environment for the private sector by building countries' capacity to negotiate complex commercial contracts.

IV – Special Challenges for Infrastructure Financing

Due to additional risks or externalities, financing regional and sustainable infrastructure projects encounters special challenges, which typically cannot be overcome by the private sector alone, but require involvement also of the public sector.

IV.1 – Financing Regional Infrastructure

Regional, cross-border infrastructure projects promote regional integration and fuel regional trade and growth. Such projects pose special challenges though, such as markedly higher transaction costs and complex risk factors for the private investors than single-country projects. Financing regional infrastructure requires effective cooperation and coordination among countries. Innovative institutional arrangements for funding the regional infrastructure are needed, either through an expanded role for multilateral development banks (i.e. higher share of regional infrastructure projects) as is already the case for the AfDB, or through establishing specialized sub-regional banks/funds. The latter would allow drawing on the high reserves that some of the resource rich African countries have accumulated.

To overcome the high risks and transaction costs of private investment in regional infrastructure projects, some regional economic communities (e.g., ECOWAS and SADC) are establishing bilateral or multi-lateral special purpose vehicles (SPVs). The SPVs are mandated to identify, prepare, and manage regional infrastructure projects and negotiate with private investors. The recent AU initiative aims at identifying political champions to ensure implementation of priority regional integration projects or national projects with regional significance. A prioritized sub-regional PPP project list, as proposed by the COMESA, could help regional economic communities to engage investors and leverage their efforts to mobilize infrastructure investment.

Sub-regional PPP units (as advisory centers) could be set up especially in countries with shallow pool of skills. Scaling up technical assistance to government for project preparation activities would also help "right-size" the now disproportionately high upfront risk borne by private investors. Coordinating PPP regulatory frameworks across sub-regions would facilitate the implementation of regional infrastructure projects. The African Development Bank and other institutions with capacity to extend technical assistance can help in this area.

IV.2 – Sustainable Infrastructure Financing

Africa, and especially SSA, is the most vulnerable region to the effects of climate change, even though it has contributed the least to past emissions (and contributes less than 4% to global warming now). Nevertheless, a key challenge for the continent is to finance investment in low-carbon, climate-proof infrastructure, i.e. infrastructure that would both mitigate and adapt to climate changes. Given the other vast development challenges that the continent faces, resources for sustainable infrastructure financing need to be mobilized outside of national budgets. This need calls for innovative forms of financing that would be additional to the existing mechanisms.

Given its abundant natural resources and the innovative financing instruments available, Africa can embark on a low-carbon, clean growth path. Carbon finance can contribute to co-financing sustainable infrastructure. As a market-based (and legally enforceable) mechanism, it is more predictable than budget aid and can help generate efficiency gains and bring down cost of renewable energy and other forms of sustainable infrastructure. So far though, access to Carbon Credit by Clean Energy projects in emerging markets and developing countries has had mixed results across regions, with Africa lagging substantially behind the others.

With investments into clean energy solutions, Africa can tap into concessional financing sources and thus reduce the costs and risks of such investments. For example, Clean Technology Fund, will leverage at least five times their value in clean energy solutions, including energy efficiency, renewable energy, and sustainable transport investments. Private sources will play a greater role in financing clean energy projects, but low returns to private sector investors so far imply that a majority of expenditures will need to be covered from public sources (Duarte et al., 2010).

Africa's perspectives must be taken into account when decisions on disbursements of global funds for climate change adaptation and mitigation are made. To help facilitate access to these funds, the AfDB is setting up the Africa Green Fund to receive and manage resources to address climate change on the continent.

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V – Conclusions

In the aftermath of the crisis, a key issue for Africa is to close its vast infrastructure gap, which would also help the continent to reach the path of strong, sustained and shared growth. The substantial financial needs present will require that countries increasingly rely on innovative financing. They are also an opportunity for private investors and emerging partners to benefit from Africa's growth take-off, provided that the overall financing arrangements meet debt sustainability criteria. Given the relatively high risk perceptions associated with infrastructure investment in Africa, risk mitigation instruments are needed. Taking a broader view of sustainable growth (i.e. one encompassing also social and environmental aspects), it is also important that African countries shift as much as possible to 'clean energy financing'.

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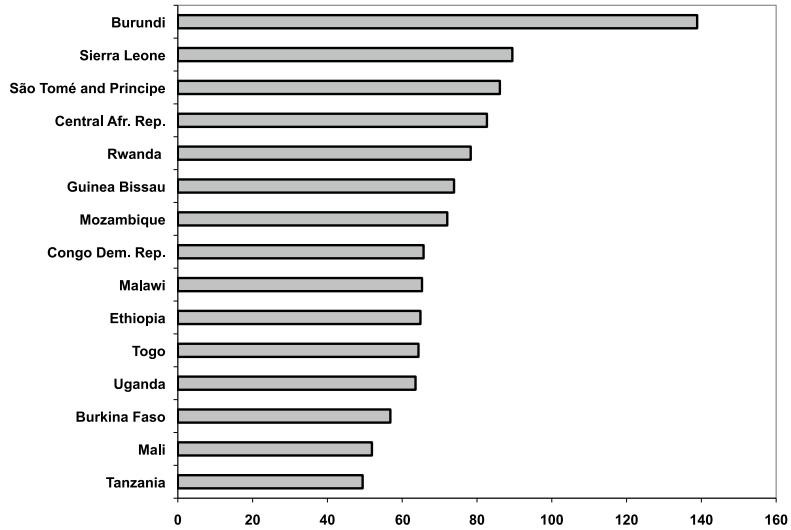
ANNEX: TABLES AND FIGURES

Figure 1: Annex – ODA as percent of total fiscal expenditures in 2008 – Top 15 countries 1/



Source: Authors' calculations based on the African Economic Outlook database.
1/ Eritrea, Somalia and Zimbabwe were excluded because of the lack of data.
Liberia received ODA in excess of 400 percent of fiscal expenditures.

Table 1: Annex – Infrastructure Deficits in SSA's and other LICs and across SSA's sub-regions

	SSA's - LICs	Other - LICs	ECOWAS	EAC	SADC	Central
Transport						
Density of paved road network 1/	31	134	38	8	92	41
Density of total road network 1/	137	211	144	105	214	132
ICT						
Density of fixed phone line 2/	10	78	28	6	74	13
Density of mobile phone line 2/	55	76	72	54	180	74
Density of internet connections 2/	2	3	2.4	2.1	5.5	1.7
Energy						
Electrical generating capacity 3/	37	326	31	24	175	44
Access to electricity 4/	16	41	18	7	21	18
Water and sanitation						
Water 4/	60	72	63	64	71	58
Sanitation 4/	34	51	35	45	43	28

Source: Yepes et al. (2008). 1/ km/1000 km2 (2001). 2/ subscribers per 1000 people (2004). 3/ MW per 1 million people (2003). 4/ Percent of households with access (2002-2004).