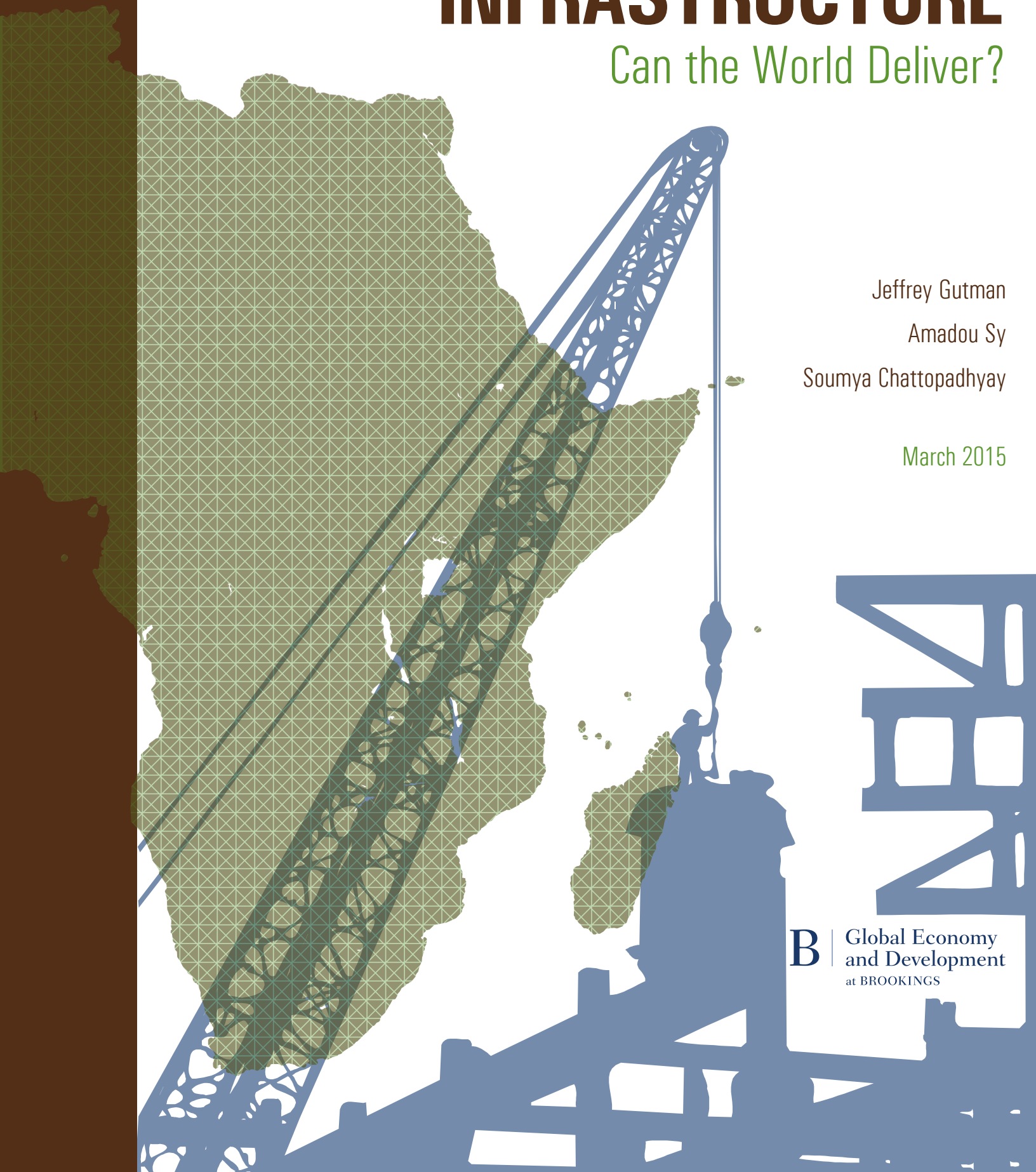
FINANCING AFRICAN INFRASTRUCTURE

Can the World Deliver?



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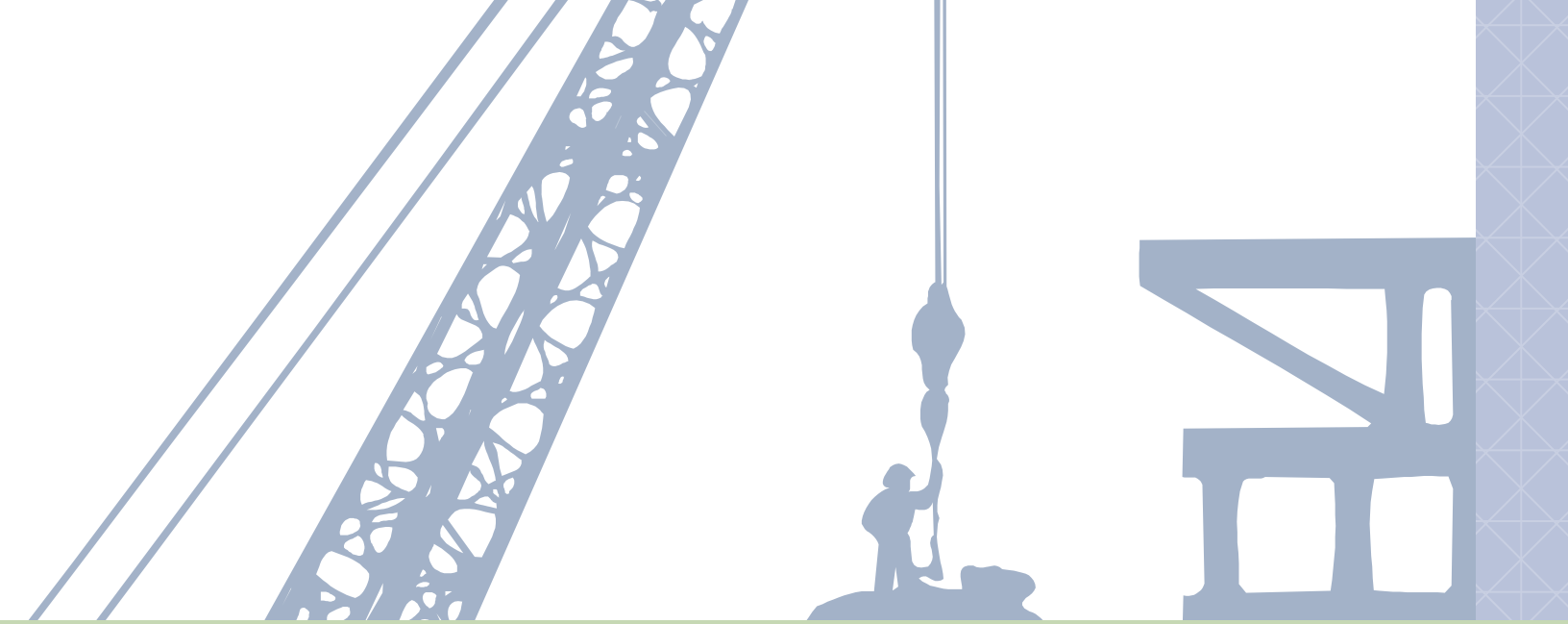


Executive Summary

Filling the Infrastructure Gap

The high profile of infrastructure and access to related services in the communiques of the World Bank and the International Monetary Fund (IMF) at their annual meetings in late 2014 underscores the importance of this issue for development worldwide. Nowhere is lack of infrastructure more crucial and potentially transformational than in sub-Saharan Africa. In 2009, the World Bank and major donors and multilateral institutions investigated this challenge of addressing the region's glaring infrastructure gap.[1] That comprehensive regional analysis aimed to establish "a baseline against which future improvements in infrastructure services can be measured" and guide priority investments and policy reforms. The analysis estimated that the region needed $93 billion per year to fill the infrastructure gap.

In the five years since the study, the response in tackling the infrastructure gap has been unprecedented, especially in terms of increased financing. Although it is too early to expect substantive results from these efforts, given the long gestation period of infrastructure investments, it is important at this time to review and analyze how this response is distributed across the countries of sub-Saharan Africa and the different infrastructure sectors/sub-sectors. Are there "orphan" sectors or countries that should be the subject of targeted emphasis? Is there an appropriate balance between regional, national, and sub-national infrastructure? Is there sufficient attention to global governance that would ensure strategic coordination, and to sectoral governance that would reduce additional financing requirements through increased efficiency and thereby better ensure sustainability? The purpose of this paper is to begin that conversation by analyzing how the main sources of infrastructure financing have evolved over the last eight years,[2] the distribution of that financing by country and sector, and how financing efforts have responded to the recommendations made in 2009. Thus, this paper offers recommendations on how to better exploit the political, technical, and financial synergies needed to address the infrastructure gap. It is not feasible in this analysis to assess specific investments against actual needs by country and sector, and so this report underscores the need for an update of the 2009 study.

1 This study, Foster and Briceno-Garmendia (Eds.) 2009, *Africa's Infrastructure: A Time for Transformation*, was a part of the Africa Infrastructure Country Diagnostic (AICD) project by the World Bank and co-sponsored by ICA partners; also referred to in this paper as the 2009 World Bank Report.

2 For reasons of data compatibility, this paper focuses on the 2005 to 2012 period. However when analyzing PPI investment trends in isolation, the paper includes 2013 data from World Bank PPIAF database.

The paper begins with an analysis of the three major sources of external financing: private participation in infrastructure (PPI) investments; official development finance (ODF) from multilateral institutions and most of the OECD-DAC donors; and official Chinese financing. Although there are challenges to compiling the financing data in a comparable manner, the information is sufficient to establish the pattern of support across countries and sectors. This analysis is followed by a review of domestic public funding. This paper also discusses the governance issues that are critical to ensuring the economic, social, and environmental sustainability of these investment outcomes.

The Surge in Financing

Composition of external financing is changing: Overall financing for infrastructure in sub-Saharan Africa across the three major external sources has tripled between 2004 and 2012 with few, if any, lingering signs of receding investments during the worldwide recession. During this period, while the level of ODF increased—especially from the World Bank and the African Development Bank (AfDB)—the dominance of ODF in infrastructure financing declined as private investment surged to over 50 percent of external financing, and China became a major bilateral source. The most striking feature of this surge is the changing share of financing offered by traditional and non-traditional partners and private sector sources, posing great opportunities as well as challenges for sub-Saharan Africa.

This funding increase, moreover, has benefitted a wide range of sub-Saharan African countries. Some countries get more and some less; but there are no clear "orphans" except for a limited number of fragile states facing serious governance issues. In absolute terms, the top recipients of external financing for 2009-2012 are concentrated in the five large economies—South Africa, Nigeria, Ghana, Kenya, and Ethiopia—although their order varies slightly depending on the financing source. However, a more interesting picture emerges when controlling for the size of the economy. Four of the top six recipient countries on the basis of external financing per dollar of GDP are classified as fragile states/situations. For example, support to Liberia between 2009 and 2012 exceeded 25 percent of its GDP.

Viewed from a sectoral perspective, the distribution of external finance illustrates the preference and criteria of the various sources. The energy sector has had the fastest growth across all external financing sources since 2009: It now attracts 45 percent of the total external finance. Although private investment is significant and serves a broad range of countries, historically it has been concentrated in the telecommunications (or ICT) sector. Excluding telecom, private finance for other sectors, especially energy, is highly concentrated in a few countries. Official Chinese investments are now expanding beyond the country's earlier focus on financing for resource-rich economies and is reaching sectors in which it has particular technical expertise—such as hydropower—and those that are not as amenable to the private sector—such as transport (especially road and rail). ODF offers support to a wide range of countries, given World Bank and AfDB allocation criteria, as well as across infrastructure sectors with the exception of telecom. ODF appears to be the only significant external financing source for water and sanitation projects besides public sector budgets.

Public sector budgets remain dominant: While the world's attention has been singularly directed at external financing, the primary source of funding for infrastructure, as elsewhere in the world, continues to be public sector budgets, which receive relatively little attention in discussions and reporting on sub-Saharan Africa's

infrastructure. In the absence of detailed data of public sector funding of infrastructure, the efforts to estimate its levels and distribution by the Infrastructure Consortium for Africa (ICA), IMF and others are limited to or built upon rather strong assumptions. Public sector budgets are critical as they establish the strategic framework within which support through external financing ought to be coordinated. Based on IMF estimates, countries in sub-Saharan Africa finance about 65 percent of their infrastructure expenditures—almost $60 billion (about 4 percent of sub-Saharan Africa's GDP)—from their public sector budgets (this amount excludes financing from multilateral institutions). In absolute terms, South Africa dominates these expenditures with about $29 billion (in 2012), with Kenya, the next country, only allocating about $3 billion.

Development practitioners advocate a benchmark or norm of 5-6 percent of GDP for infrastructure financing to sustain growth—although this number varies, understandably, by country needs and level of existing infrastructure. It is therefore not surprising to see wide variation across sub-Saharan Africa, with countries such as Lesotho, Cape Verde, and Angola investing over 8 percent of GDP and oil-rich Nigeria[3] and fragile South Sudan allocating less than 1 percent. There are no obvious patterns among the countries, and the results do not appear to reflect any direct relationship of budgetary allocation with either infrastructure capacity or needs.

The key finding is that, despite the progress in raising fiscal revenues, sub-Saharan African countries need to raise more domestic finance—and more generally create fiscal space—to meet the infrastructure gap. While tax revenues to GDP have increased across sub-Saharan Africa to over 20 percent more recently, this increase is mainly attributable to the resource-rich countries. However, tax revenue to GDP varies across the board—ranging from 25 percent in South Africa to 2.8 percent in the Democratic Republic of the Congo. In addition to raising tax revenues, sub-Saharan African countries have increasingly accessed international capital markets with 13 countries issuing $15 billion worth of international sovereign bonds since 2006.

Sub-national/urban infrastructure ignored: While financing flows seem to be relatively well-distributed across countries and sectors, infrastructure needs and financing options at the sub-national level, especially for growing urban areas, have been largely ignored in the various studies and reports. This lack of discussion was a weakness in the 2009 World Bank Report, and it remains a substantial blind spot in the infrastructure dialogue in sub-Saharan Africa. Compared to other regions, sub-Saharan Africa is still predominantly rural, but that is changing rapidly, with some estimates noting that by 2035 50 percent of the population will live in urban areas. In many cities, the challenge of urbanization and the need for critical infrastructure is already evident. One-third of urban residents in sub-Saharan Africa are located in 36 cities, each with more than a million inhabitants. The United Nations estimates that by 2025, the population in Lagos and Kinshasa will reach 18.9 million and 14.5 million, respectively (they are already among the 30 most populous cities in the world).

National data estimates capture energy and water investment needs of urban populations to an extent, but do not do so for urban transport needs. ICA metrics for transport accessibility are generally weak with a bias towards roads, and they are irrelevant for measuring urban transport requirements. This is not to say that investments are not being made in cities in sub-Saharan Africa, but rather that they are not planned within a forward-looking strategic framework. World experience illustrates how the lack of a strategic approach that takes into account the interaction of land use and infrastructure can have irreversible deleterious effects in terms of economic growth, social progress, and environmental preparedness.

3 The relatively low percentage for Nigeria could be due to the exclusion of sub-national expenditures.

As countries increasingly decentralize the responsibility for infrastructure services to local governments, they have also devolved fiscal responsibility and the capacity to raise revenues as well as explore new forms of financing. African efforts at functional devolution of responsibility for services and fiscal decentralization of fiscal authority, however, seriously lag behind other regions of the world. In this regard, within sub-Saharan Africa, South Africa is the most decentralized, with 60 percent of public expenditures handled by local governments, and illustrates the level of devolution that can be achieved. While Ethiopia and Uganda are at around 30 percent, Kenya is at the other extreme at 5 percent of public expenditures being handled by local governments.

Most countries in sub-Saharan Africa, even those that have decentralized infrastructure services and investment, still depend heavily on national government transfers, instead of permitting local governments to raise sufficient revenues. Attempts to broaden financing through public-private partnerships and bond issues are hampered by this unclear level of autonomy and the uncertainties of annual budget approvals. In addition, the World Bank and the AfDB have not been as active on such issues in sub-Saharan Africa, compared to the involvement of such multilateral agencies in other regions.

The Unfinished Agenda on Governance

Ultimately, the quality and sustainability of infrastructure and related services resulting from increased funding will depend on the political will and capabilities of national governments. It comes down to the broad issue of governance in which sub-Saharan African countries, while progressing, still face substantial challenges.

Focusing on the governance of transactions: The current policy focus by public officials and donors has been on finding ways to quickly fill the infrastructure financing gap and move projects from the design phase to their implementation. This project/transaction-oriented perspective focused on facilitating projects. This trend has led to efforts to support project preparation funding and to promote public procurement reform to foster new forms of financing such as public-private partnerships.

These initiatives are helpful and will most likely contribute to facilitating investments. Compared with the focus on bid and award in procurement, one issue at the level of the project/transaction that is not addressed by donors and sub-Saharan African countries is the problem of monitoring the quality of contract/project implementation. Infrastructure has been consistently cited as facing a high risk of corruption. Failures during implementation, whether due to construction uncertainties or corruption, have substantial impact on the quality of outcomes. Sub-Saharan African countries and the multilaterals, in their ongoing discussion of procurement reform, need to focus on the downstream issues of contract management and implementation.

Increasing attention to sectoral governance: The 2009 World Bank Report posed 10 recommendations of which only one pertained to the mobilization of new financing. The other nine rightly focused on sectoral governance issues and overcoming inefficiencies through, *inter alia*, better maintenance of existing infrastructure, institutional reform of utilities and service providers, administrative and regulatory reform, and improved subsidy policies and practices. The report estimated that addressing these issues could save $17 billion of the estimated $93 billion required per year to fill the infrastructure gap.

While many reports, including the recent Africa Progress Panel Report (2014), have referred to the sectoral governance issues, there is no equivalent effort in sub-Saharan Africa to address them compared with the

efforts on mobilizing financing. Resolving the infrastructure gap requires more than just building infrastructure. What good is power generation if the delivered price of generated power is not affordable? How effective is increased access to water if the water quality does not meet standards? Will railway investments deliver without the critical institutional reforms to manage operations? Can a road investment meet expectations without addressing the conditions of the connecting road network? Each sector and sub-sector raises a series of particular issues. The multilaterals' approach to investment has evolved over time, recognizing the important interactions of sectoral governance issues as essential preconditions to successful outcomes and recognizing that each sector and sub-sector raises particular governance issues. As the funding sources widen, it is important that such issues not be left for later.

Adapting global aid governance to an evolving world of finance: As the sources of external financing continue to evolve with increasing overlap and complexity (involving both traditional and non-traditional sources) and countries are faced with a widening range of public finance options, the current institutional governance structures on aid flows, globally and regionally, face serious challenges with regard to purpose and role. One might conclude from the discussion above and the analysis in the paper that infrastructure financing is pretty well distributed across countries and sectors overall with a complementarity among the sources. But an alternative worrisome conclusion shared by the authors is that this complementarity is serendipitous and not due to any strategic coordination or collaboration. For decades, the multilateral development banks have played a number of key roles through development of sector strategies, assistance in the design and funding of projects, establishment of standards for evaluating and contracting investments, and, importantly, promoting coordination among donors.

A key finding of this paper is that the multilateral development banks' role has been and remains substantial in the context of infrastructure in sub-Saharan Africa but this will require adapting to the changing context of Africa. They continue to represent an important financing source especially for the lower-income countries, and they are critical for establishing ways of leveraging other types of financing where the risks preclude other options. They play an important role in having the capacity and capability to set standards for economic and social evaluation of investments, environmental sustainability, and integrity. Finally, they serve as key potential sources for coordination and monitoring. Non-traditional sources of financing such as China and other emerging economies will continue to grow, and new institutions, such as the BRICS' New Development Bank or Chinese infrastructure initiatives, such as the China-led Africa Growing Together Fund (AGTF), will enter the field. These initiatives should be seen as a positive contribution to African development. The multilateral banks will need to find opportunities and new ways to collaborate and work with them.

Recommendations

The following recommendations are offered to policymakers spanning the global, regional, and national levels. They are designed to *build upon existing institutional structures and functions rather than invent* new institutions; they are based on the progress made over the past five years in mobilizing financing for infrastructure in sub-Saharan Africa:

- **Enhance collaboration and coordination across traditional and non-traditional sources of finance:** When traditional financing sources were limited, the main participants had an established structure for coordination that served those conditions. But as sources of funding—for example, traditional and non-

traditional sources and agencies as well as the private and public sectors—become increasingly diversified and complex, the global and regional opportunities for coordination and collaboration are less clear-cut. This evolving financing context, together with a primary focus by sub-Saharan African countries and financiers on the individual project/transaction, creates serious risks for effectively addressing infrastructure needs of sub-Saharan Africa. The AfDB has played a central role in promoting collaboration among sub-Saharan African countries and among traditional donors through the ICA, Africa 2050, and Programme for Infrastructure Development in Africa (PIDA). As the AfDB continues this role, it is important for it to provide leadership in engaging African policymakers, regional infrastructure experts, traditional donors, and non-traditional donors. African stakeholders and traditional multilateral agencies should respond positively and constructively to the opportunities offered such as the BRICS' New Development Bank and the Chinese-led AGTF. It is only through genuine collaboration across the sources that Africa will benefit.

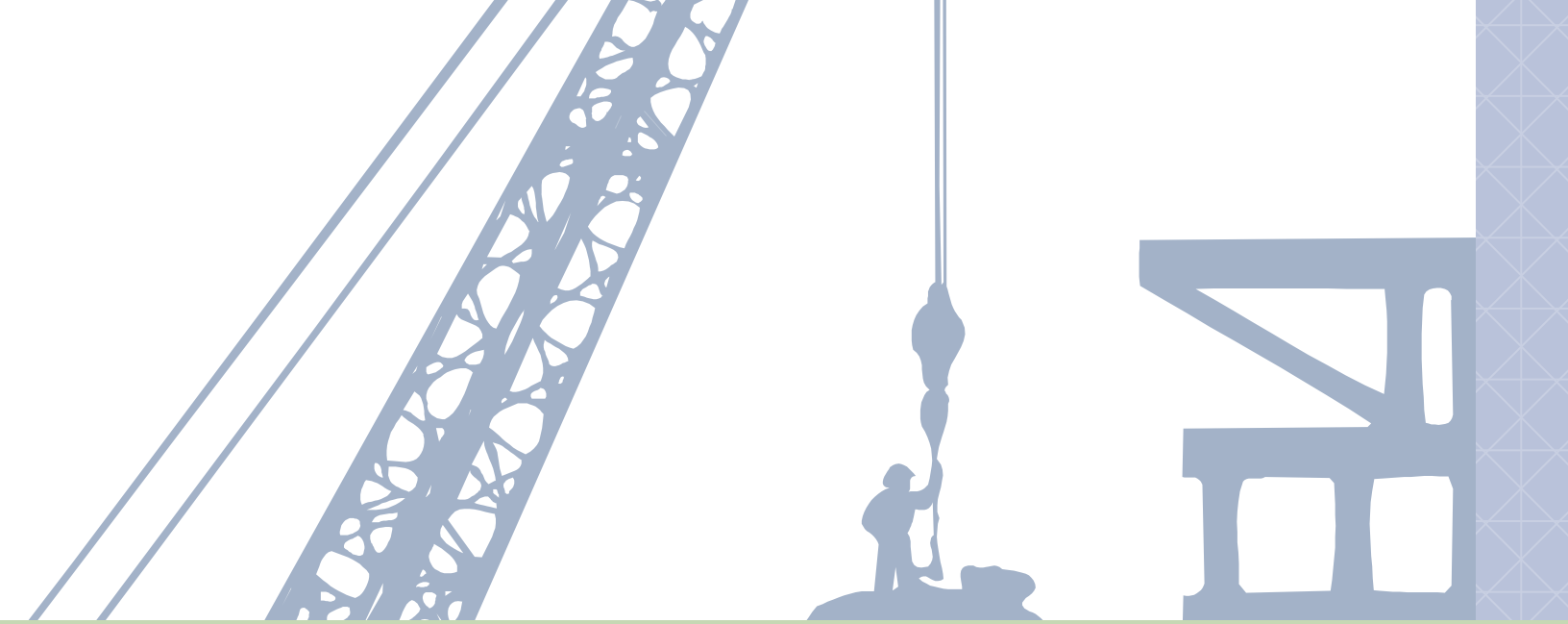
- **Guide infrastructure investment practices in terms of economic, social and environmental sustainability:** Related to the issue of coordination and collaboration is the issue of standards for infrastructure investments, especially regarding economic, social, and environmental sustainability as well as integrity. Again, this has been simpler when the sources of financing were limited. Many lessons have been learned and incorporated by the multilaterals in the evolution of infrastructure projects and finance beyond the original "bricks and mortar" engineering-oriented approach. Clearly the World Bank has played a critical, though sometimes controversial, role in setting standards for investment design, evaluation, and implementation. It should continue as a key contributor, evaluator, and independent monitor of progress in sub-Saharan Africa. Ultimately, however, it is the African nations that must agree on the standards and principles that they will apply. What is needed is a regional discussion of those lessons, the principles, and the standards needed to guide infrastructure investment based on worldwide best practices.

- **Extend opportunities for private investment:** The various multilateral and bilateral agencies involved in promoting private infrastructure investment should take a critical look at the mechanisms available to support private investment beyond the telecom sector—particularly in countries and sectors that have not been able to attract such investment. A substantial review is required of the use of guarantees and related risk-mitigation instruments that assesses the application and extent of leveraging achieved through these efforts and how they can be better applied and monitored in the future.

- **Intensify efforts to improve public financing support for infrastructure and launch an initiative for sub-national/urban finance and investment:** The lack of information on infrastructure-related public sector budget issues is evident across the region as is the relative infancy in discussing sub-national devolution. The IMF, World Bank, and AfDB should develop and monitor a program of analytical work directed at strengthening public finance for infrastructure in sub-Saharan African countries. This work should pay particular attention to sub-national expenditures and revenue-raising opportunities. They should also explore the formulation of innovative financing models to enhance their support specifically to sub-national and urban entities. Such an effort could be initiated in time for the next replenishment cycle for the concessional lending of the World Bank (International Development Association, IDA), and the AfDB (the African Development Fund, ADF).

- **Redirect attention to the broader sectoral governance reform opportunities:** It remains unclear whether sub-Saharan Africa is achieving the potential efficiency benefits of $17 billion as estimated in the 2009 World Bank Report. The major attention given to increased financing and to projects/transactions needs

to be broadened to include efforts to reform sectoral governance. However, this is a complex task as it requires a focus on individual sectors and how they operate in specific countries. Power Africa is attempting this task in its target countries, and there are additional reform efforts in various countries. What is needed is a more robust monitoring capability, equivalent to what is being done by ICA with finance. Ultimately, given the amount of years since the 2009 Report and the nature of the changes on the ground, it would be important to update the report.



1. Introduction

The pronouncements of the World Bank and the International Monetary Fund (IMF) at the 2014 Annual Meetings[4] together with those of the G-20 at the 2014 Heads of Government Summit[5] have converged on the importance of infrastructure to the world economy and to the sustainable and equitable growth of nations. Infrastructure is an asset that is often taken for granted in developed countries—until you are stuck in traffic or you lose power in a storm or your drinking water gets contaminated. Developing countries, however, face the unreliability or, indeed, total lack of access to these and related essential services on a daily basis. For sub-Saharan Africa, lack of infrastructure serves as one of the most significant obstacles to sustaining and distributing the trajectory of growth and poverty alleviation on the continent (NEPAD, 2014). In response to this challenge, the world and the region have launched an unprecedented series of reports, conferences, and financing initiatives. The purpose of this paper is to provide a perspective on how well these efforts will be able to meet the expectations that have been raised.

It has been 20 years since the World Bank published its 1994 World Development Report (WDR 1994), *Infrastructure for Development.*[6] The report laid out the development case for supporting infrastructure and identified new approaches for financing and operating/maintaining infrastructure and related services. It also recognized that the "bricks and mortar" approach, with limited focus on mostly engineering and construction that characterized much of development lending for infrastructure before 1990, had proven insufficient—and that the more complex and difficult issues of implementation and operation required serious attention and rethinking. The timing of the report, however, entered the development dialogue just as there was increased "pushback" against infrastructure financing by the development banks—especially the World Bank—arguing that more attention and financing needed to be directed towards human development issues, including education and health, and towards macroeconomic and fiscal policy reforms. Many policymakers and development experts had then argued that private finance and other regional banks could increasingly fill the investment gap (See Ingram, Kiu, and Brandt, 2013: 348).

With the financial crisis of the 1990s, the flow of private finance quickly disappeared. Ten years after the WDR 1994, development institutions and their stakeholders were once again arguing for more infrastructure investment. The success of China and South Korea, based on a heavy emphasis on infrastructure, added to this

4 See World Bank and IMF Annual Meetings Communiques, October, 2014 in IMF, (2014a).

5 See the conference paper titled "G-20 Agenda for Growth and Resilience in 2014" in G-20 (2014).

6 See World Bank (1994).

renewed attention. However, despite the successes of East Asia and Latin America in mobilizing funding for infrastructure during the first decade of the millennium, sub-Saharan Africa continued to lag behind.

The dire position of sub-Saharan Africa was explained in extensive detail in the World Bank's 2009 report, *Africa's Infrastructure: A Time for Transformation*.[7] Sub-Saharan Africa's infrastructure deficit compared to that of other low-income countries elsewhere is summarized from the 2009 report in Table 1 (based mainly on 2005 data) and the findings of the report are outlined in Box 1 below.

Table 1: Infrastructure Deficit in Sub-Saharan Africa

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.**

7 See Foster and Briceño-Garmendia (Eds.) (2009).

Box 1: Main Findings of the 2009 World Bank Report

- Infrastructure has been responsible for more than half of sub-Saharan Africa's recent improved growth performance and has additional untapped potential.
- Sub-Saharan Africa's infrastructure networks increasingly lag behind those of other developing countries.
- Sub-Saharan Africa's economic geography presents a particular challenge for infrastructure development.
- Sub-Saharan Africa's infrastructure services are twice as expensive as elsewhere, reflecting diseconomies of scale in production and high profit margins due to lack of competition.
- Power is by far sub-Saharan Africa's largest infrastructure challenge, with 30 countries facing regular power shortages.
- Sub-Saharan Africa's infrastructure needs are around $93 billion a year, about one-third of which is for maintenance.
- The infrastructure challenge varies greatly by country type—fragile states face an impossible burden and resource-rich countries lag despite their wealth.
- A large share of sub-Saharan Africa's infrastructure investment is domestically financed, driven primarily by central government budget allocation.
- Even if major potential efficiency gains are captured, sub-Saharan Africa would still face an infrastructure funding gap of $31 billion a year, mainly in power.

Source: **Foster and Briceño-Garmendia (2009).**

The World Bank's comprehensive analysis established the target of $93 billion per year to meet the infrastructure needs of sub-Saharan Africa. The shared concern for the infrastructure deficit in this region has led to a proliferation of global and regional initiatives. Among the various initiatives are the following:

- The New Partnership for Africa's Development (NEPAD)[8], established in 2001 under the African Union (AU), supported the Programme for Infrastructure Development in Africa (PIDA)[9] in 2011 as one of its flagship initiatives to identify and assess key cross-border infrastructure investments over the period 2012-2040.

- The World Bank, in partnership with the African Development Bank (AfDB), developed the Africa Infrastructure Country Diagnostic (AICD) that provided a detailed series of infrastructure investment needs by sub-region in 2011.[10]

- The G-8 Summit at Gleneagles in 2005 established the Infrastructure Consortium for Africa (ICA) to promote public and private investment in infrastructure.[11] Its members include the G-8 member countries, the World Bank, the AfDB, the European Commission, the European Investment Bank, and the Development Bank of South Africa. Its secretariat is situated in the AfDB and publishes an annual report on the state of infrastructure finance in Africa as well as other key studies in infrastructure finance.[12]

8 For details of the New Partnership for Africa's Development (NEPAD) at the African Union (AU), see http://www.nepad.org/about.

9 For details of the Programme for Infrastructure Development in Africa (PIDA) of the African Development Bank (AfDB), see http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/programme-for-infrastructure-development-in-africa-pida/.

10 For details of Africa Infrastructure Country Diagnostic (AICD), see World Bank (2011).

11 For details of the Infrastructure Consortium for Africa (ICA) of the AfDB, see http://www.icafrica.org/en/about-ica/

12 See ICA Annual Reports: ICA (2013) and ICA (2014a).

- The AfDB launched the Africa50 Infrastructure Fund in 2013 as a platform to mobilize resources and support the development of key projects.[13] It is structured as "a development-oriented yet commercially-operated entity."

- The Private Infrastructure Development Group (PIDG) was started in 2002 with European and Australian partnership and the World Bank.[14] Its various "facilities" such as InfraCo Africa[15] and The Emerging Africa Infrastructure Fund[16] are designed to develop commercially viable projects and provide long-term finance to private sector infrastructure projects.

- In 2013, the United States launched its Power Africa initiative to mobilize investment and reform and enhance access to electricity.[17] With government and private sector partners, this initiative is described as "a new model of development and diplomacy, aimed at advancing catalytic transactions, supporting policy reforms and improved governance and mobilizing financing to bring projects to fruition," (Power Africa, 2014: 31).

- Most recently, in 2014 the World Bank launched the Global Infrastructure Fund (GIF) as a "platform" for identifying, preparing, and financing large complex infrastructure projects.[18] This facility will thus also cover infrastructure financing in Africa.

In addition, traditional bilateral and multilateral development flows to African infrastructure have increased overall, and there is a growing amount of non-traditional bilateral flows (from China, Brazil, and India). Finally, there are substantial opportunities from the establishment of a BRICS' New Development Bank and new Chinese infrastructure financing initiatives.[19]

With so many players in the field, you would think that we are well on the way to delivering on the African infrastructure challenge. In fact, in many fora, panelists from governments, the private sector, and multilateral institutions argue that there is "a wall of money" waiting to be unleashed and that the efforts now must be focused on what is required to release and direct such resources to African infrastructure (Humphrey, 2015). But the analysis raises serious doubts.

To be fair, it is still too early to expect any substantive results from these efforts, given the long gestation period of infrastructure investments. However, it is time to review and analyze whether the scope of the response will cover the range of infrastructure needs in specific countries or sectors/sub-sectors. Are there "orphan" sectors or countries that should be the subject of targeted emphasis? Is there an appropriate balance between regional, national, and sub-national infrastructure? Is there sufficient attention to global governance that would ensure strategic coordination, and to sectoral governance that would reduce finance requirements through increased

13 For details of the Africa50 Infrastructure Fund, African Development Bank, see http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/africa50-infrastructure-fund/.

14 For details of the Private Infrastructure Development Group (PIDA), see http://www.pidg.org/what-we-do.

15 For details of InfraCo, see http://www.infracoafrica.com/.

16 For details of Emerging Africa Fund, see http://www.emergingafricafund.com/.

17 For details of Power Africa, USAID, see http://www.usaid.gov/powerafrica.

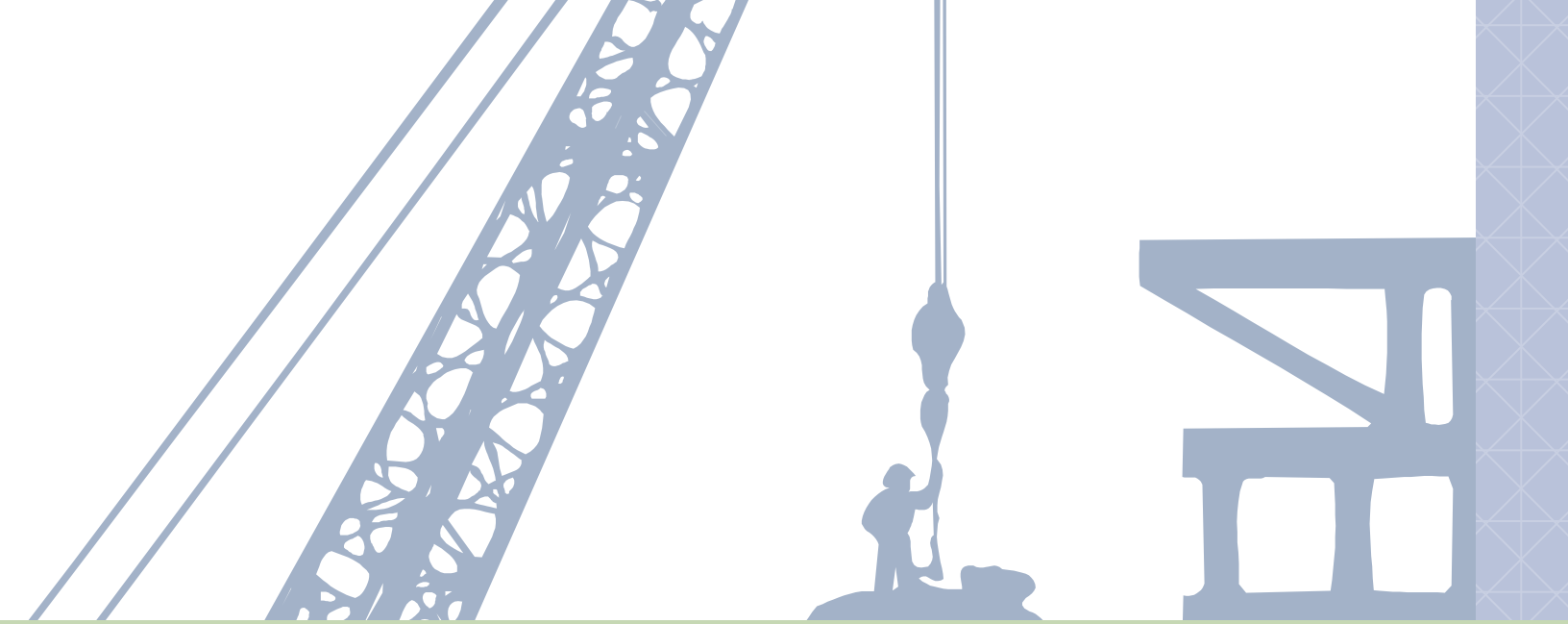
18 For details of GIF (World Bank), see http://www.worldbank.org/en/topic/publicprivatepartnerships/brief/global-infrastructure-facility.

19 This includes official development flows from Brazil, Turkey, Russia, as well as consortiums such as Arab Fund for Economic and Social Development, Islamic Development Bank, Abu Dhabi Fund for Development, Arab Bank for Development in Africa, Islamic Development Bank (IDB), and Saudi Fund for Development, among others.

efficiency and thereby better ensure sustainability? The purpose of this paper is to begin that conversation by analyzing how the main sources of infrastructure financing have evolved over the last eight years, their distribution by country and sector, and how these efforts have responded to the recommendations made in the 2009 World Bank Report. Based on this analysis, the paper offers recommendations to capture the synergies needed to better address the infrastructure gap.

This paper builds its analysis by following the evolution of infrastructure financing in sub-Saharan Africa by principal sources of finance. Infrastructure includes energy, telecommunications, transport and storage, and water supply and sanitation. Section 2 covers the data and methodology. Section 3 presents the trends and developments of external financing, including PPI partnerships, Chinese development finance, and ODF from multilateral development banks such as the World Bank and the AfDB, and major OECD-DAC countries.[20] It assesses the countries and sectors that have attracted the most (and the least) infrastructure investments from each finance source, how the flows have evolved over the recent years, and, consequently, the key issues, opportunities, constraints, and future directions. Similarly, Section 4 analyzes the role of domestic financing at both national and sub-national levels through public sector budgets. Section 5 then addresses the role of governance in ensuring strategic focus and synergy; economic, social, and environmental sustainability; integrity; and operational efficiency. And finally, Section 6 summarizes our conclusions and recommendations.

20 ODF in this analysis follows the definition used by OECD. It relates to bilateral Overseas Development Assistance (ODA) as well as concessional and non-concessional financing by the World Bank and AfDB. See OECD (2012): 5.



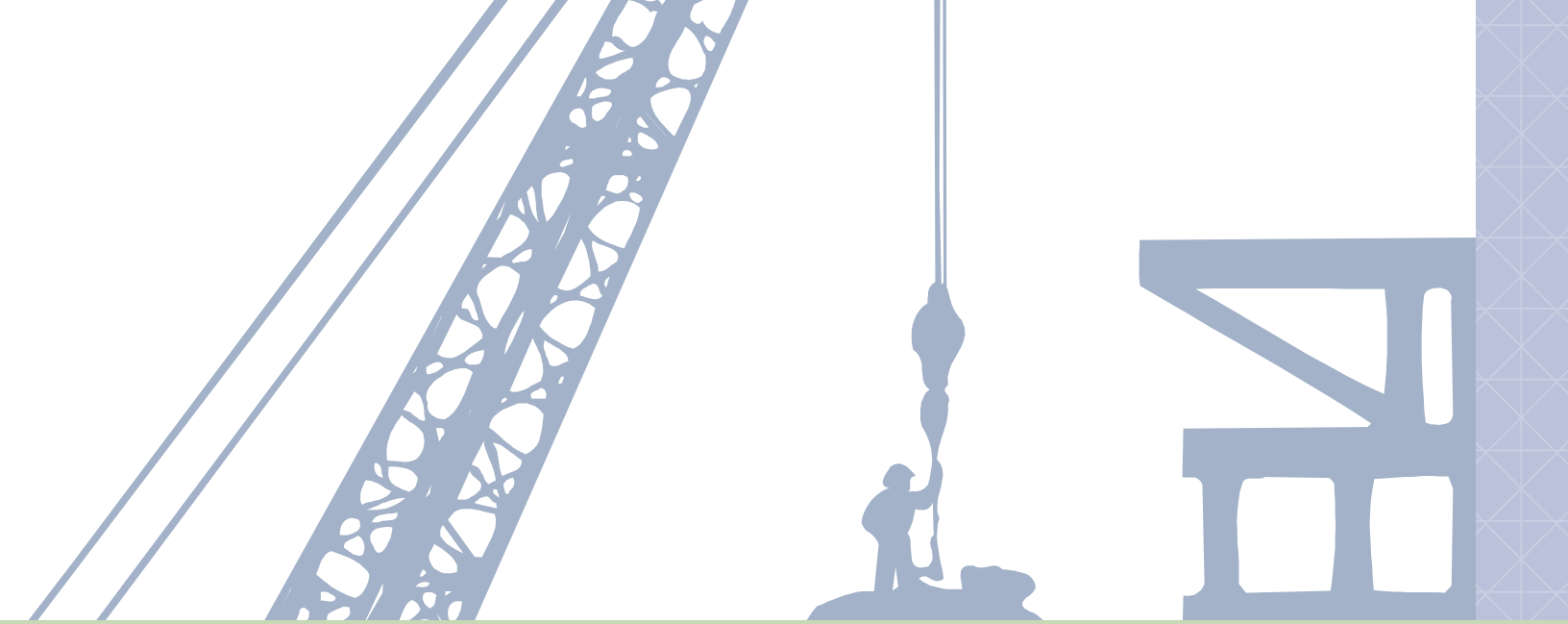
2. Data and Methodology

This paper is not intended to provide a total estimate of all sources of financing against estimated requirements, but rather to reflect on the relative scale and shares as an indication of how different sources of financing have responded to varying country and sector contexts. The analysis accounts for more than 97 percent of total external financing.[21] Though the statistics cover a wider period of time, the starting point for much of the analysis is the 2009 World Bank Report. The paper discusses how the situation has evolved since that report and how the world and the region have responded to its recommendations.

The data present substantial challenges (see further details in the Annex). Definitions are often not consistent across financing sources, such as what constitutes a commitment and what is just a pledge. Since investments by China are not officially reported, this report uses data compiled by combing different official and unofficial sources with varying levels of reliability. Despite these challenges, the findings are considered robust for the purposes of this paper.

Finally, the nature of infrastructure investments and their "lumpiness" make it necessary to look carefully at trends over several years. Single year snapshots can be highly misleading and distorted by one or more large projects. Similarly, one must be careful to avoid sectoral generalizations. It is clear that within a sector, the pattern between sub-sectors may require further detail. For example, within the transport sector, each subsector of airports, roads, railroads, and seaports raise a different pattern, trend, and distribution by the type of financing and country.

21 ODF from sources excluded from this analysis accounts for an average of 7 percent of total ODF and 2.3 percent of total external financing for the period 2000-2012. For an analysis of the new and emerging sources of ODF for infrastructure in Africa-in particular, that of Brazil, China, India, Korea, Malaysia, Russia, and Turkey, see NEPAD (2015). This paper does include official infrastructure commitments from China.



3. External Financing: A Changing Landscape

This section analyzes the level and distribution of the main external sources of financing for African infrastructure. These include private participation in infrastructure (PPI), official bilateral and multilateral development financing (ODF), and official Chinese financing. Together these sources represent 97 percent of external financing. Other financing sources, such as the Arab States and emerging market countries such as Brazil and India, are still relatively small or variable from year to year and are not included in this report, but could become potentially important sources in the future.

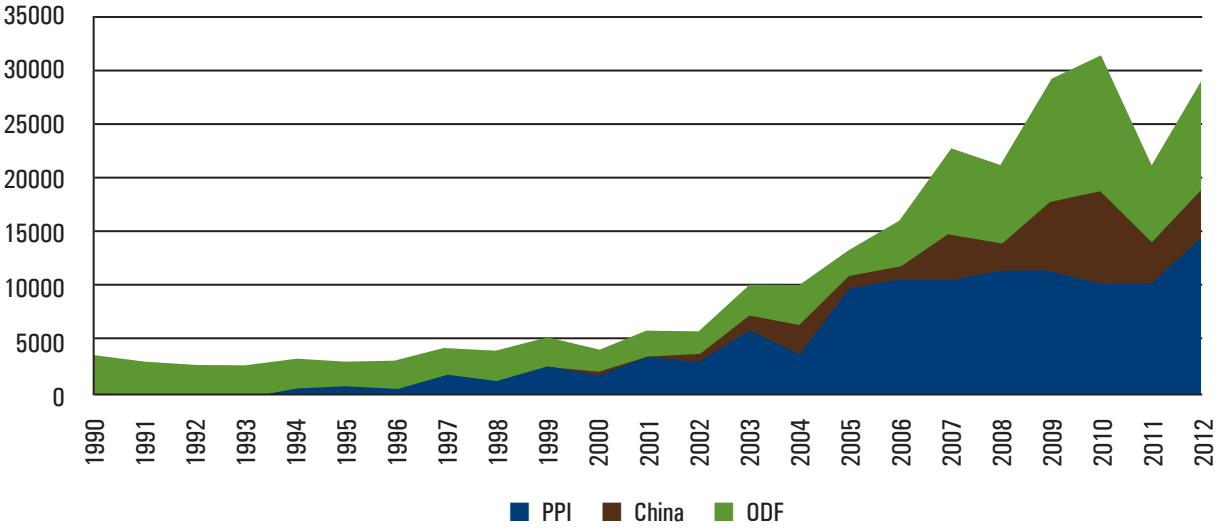
3.1 External Financing Trends

The overall numbers indicate four significant trends:

- All major sources of external financing have appreciably increased their annual commitments. From $5 billion in 2003, commitments have risen to almost $30 billion per year in 2012.
- ODF investments, though not as dominant a source of infrastructure financing in sub-Saharan Africa as in the 1990s, have grown appreciably since 2007 and represents 35 percent of external financing.
- PPI has been the largest financing source since 1999—accounting for more than 50 percent of all external financing. Its overall level has remained remarkably stable and unaffected by the recession in 2008.
- Official investments from China have increased from what was virtually insignificant to about 20 percent of these three main sources of external finance.[22]

22 PPI and China commitment estimates in this paper differ substantially from those by ICA. ICA estimates are much higher for China and much lower for PPI. See Annex: Data Sources, Methodology, and Challenges for explanation of assumptions.

Figure 1: External Infrastructure Investment Commitments in Sub-Saharan Africa, by Sources, 1990-2012, in US$ Millions (Current)



Source: **Authors' calculations using OECD, World Bank PPIAF, and AidData databases.**

Although these data represent significant growth in all major sources of infrastructure finance, the question remains as to how these resources are distributed by type of finance source across countries and sectors. This is the focus of the following sub-sections.

3.2 Private Participation in Infrastructure (PPI) Financing

The current debate on filling the African infrastructure investment gap centers on ways to attract more private sector financing. This is not surprising as PPI in sub-Saharan Africa accounts for more than half of total external financing and has been increasing.

Global Perspective

PPI to sub-Saharan Africa is continuing to grow robustly even as global PPI to low- and middle-income countries is falling. PPI in sub-Saharan Africa grew by 9.5 percent on average over the past 10 years—almost double the region's GDP growth rate of 4.5 percent. PPI accounts now for almost 1 percent of regional GDP. In 2013, PPI in all of sub-Saharan Africa grew by 16 percent to reach $14.9 billion (from $12.8 billion in 2012), its highest level since the financial crisis in 2008. In contrast, PPI in low- and middle-income countries fell 24.1 percent to $150.4 billion in 2013 from $181.3 billion in 2012. The decline in PPI was mostly driven by reduced investment in the two largest countries, Brazil and India.

Table 2: PPI Infrastructure Investment Commitments by Regions, Comparing 2013 to 2012, in US$ Billions (Current)

Regions	2013		2012		
	PPI Investment US$ Billions	Percentage of Total	PPI Investment US$ Billions	Percentage of Total	Increase in 2013 over 2012
Latin America and the Caribbean	**69.3**	**46%**	**87.0**	**48%**	**-20%**
Europe and Central Asia	28.5	19%	22.5	12%	27%
East Asia and Pacific	19.4	13%	17.2	9%	13%
Sub-Saharan Africa	**14.9**	**10%**	**12.8**	**7%**	**16%**
South Asia	13.8	9%	35.1	19%	-61%
Middle East and North Africa	4.5	3%	6.7	4%	-33%
Total	**150.4**	**100%**	**181.3**	**100%**	**-17%**

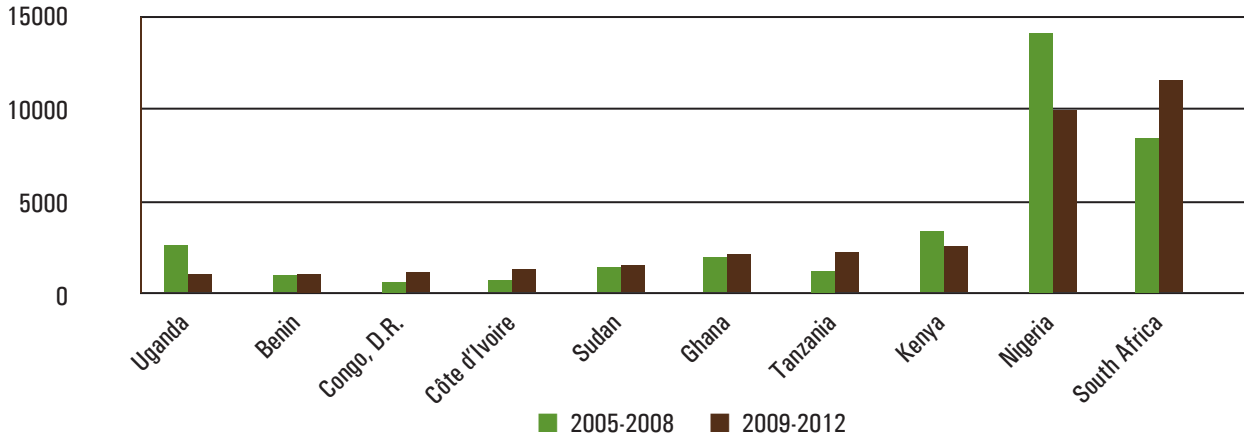
Sources: **World Bank (2013b) and World Bank (2014).**

Thanks to this robust growth in PPI, sub-Saharan Africa is now the fourth-largest recipient of PPI, accounting for about 10 percent of global PPI investments. Global PPI is highly skewed towards projects in Latin America, which accounts for 46 percent. Notably, PPI in sub-Saharan Africa compares well with East Asia and South Asia, although it is still about half the level in Europe and Central Asia.

Country Trends

Globally, six countries attracted about 60 percent of PPI to all developing and emerging market economies in 2013—Brazil, Turkey, India, Mexico, Russia, and China. Just like global investment, PPI in sub-Saharan Africa goes mainly to a few countries—especially South Africa and Nigeria, which rank eighth and ninth globally, respectively. In fact, over the 2009-2012 period, South Africa and Nigeria received PPI worth $11.6 billion and $10.0 billion, respectively (and $9.3 billion and $14.5 billion, respectively, in 2005-2008). Kenya is the third-largest PPI recipient in the region, receiving much less—$2.6 billion—over the same period.

Figure 2: Top 10 Infrastructure PPI Recipients in Sub-Saharan Africa, 2005-2012, in US$ Millions (Current)



Source: **Authors' calculations using World Bank PPIAF database.**

Similarly, South Africa and Nigeria dominate investments in all sectors, and their dominance has only grown. For example, in recent years, these two countries have accounted for over 80 percent of PPI investments in the energy sector, 95 percent in transport, and about 60 percent in telecommunication.

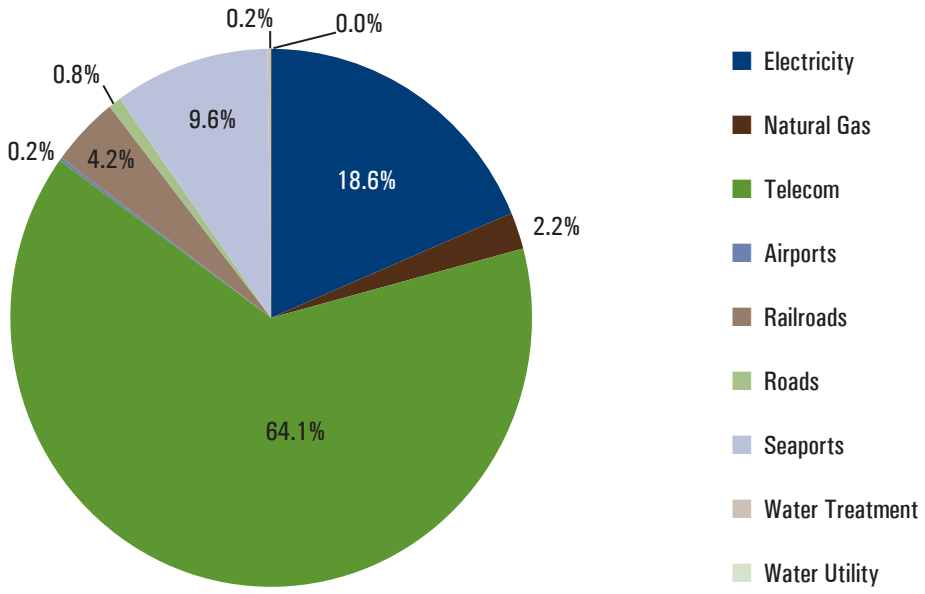
Actually, sub-Saharan African countries other than South Africa and Nigeria have not been able to attract significant PPI outside the telecom sector. The peak of PPI to sub-Saharan Africa was about $17 billion in 2013; of this, less than $2 billion went to countries other than South Africa and Nigeria and to sectors other than the telecom sector.

Sectoral Trends

The increase in PPI in sub-Saharan Africa since 2005 can be broadly segregated into three major phases that coincide closely with the episodic investment upsurges in different sectors.

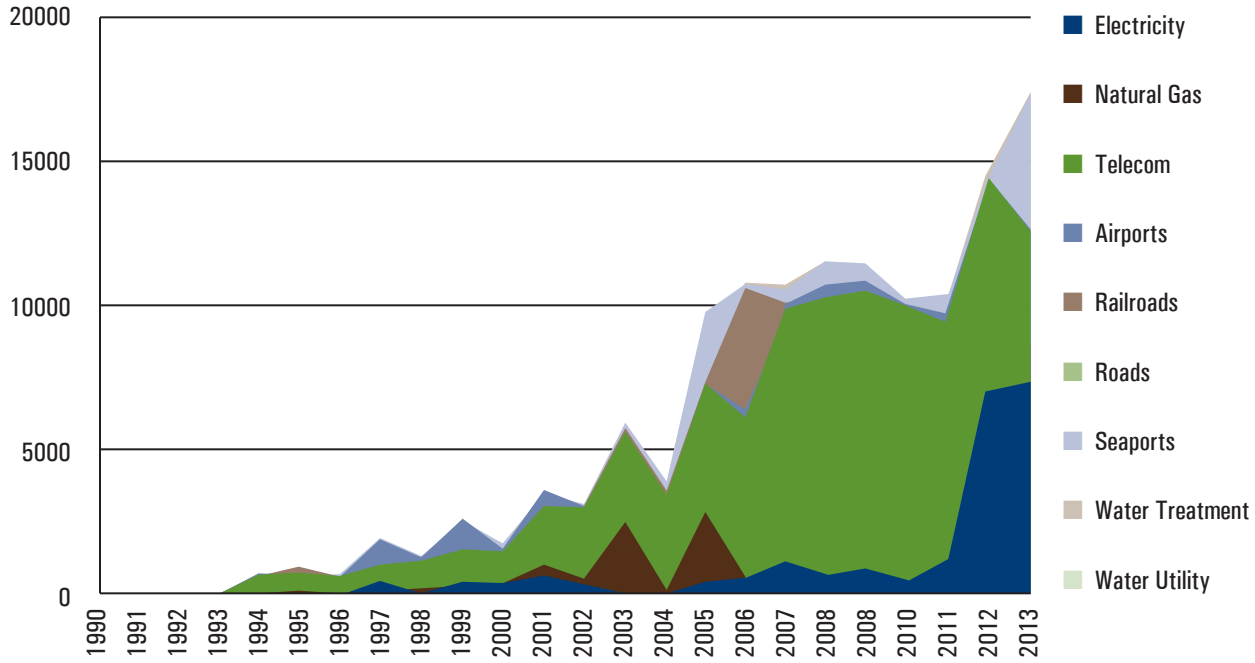
As noted above, the telecom sector has been historically the main recipient of PPI in sub-Saharan Africa, but private investment in this sector has been leveling off since 2012. During 2005-2013, a little less than two-thirds of total PPI in sub-Saharan Africa (64.1 percent) went to the telecom sector. Most of the remaining investment went to the energy and transport sectors and, in particular, to sub-sectors like electricity, which accounted for 18.6 percent of sub-Saharan Africa PPI during the same period.

Figure 3: PPI Infrastructure Investment Commitments in Sub-Saharan Africa, by Sub-sector, 2005-2013, Proportions



Source: Authors' calculations using World Bank PPIAF database.

Figure 4: PPI Infrastructure Investment Commitments in Sub-Saharan Africa, by Sub-sector, 1990-2013, in US$ Millions (Current)



Source: Authors' calculations using World Bank PPIAF database.

Implications Going Forward

Factors that facilitated private investment in the telecom sectors and made public finance less needed include discrete revenue streams and clear costs, low risk during the development or construction phase, easy securitization of potential revenue streams, and private sector management of the undertaking (McKinsey, 2013).

Going forward, the key obstacles to increasing PPI in sectors beyond telecom need to be identified. So far, PPI to the energy sector is growing the fastest. However, within this sector, investments are targeting generation, leaving the distribution sector to other stakeholders (Foster and Briceño-Garmendia, 2009). The water sector and, to some extent, the transport sector appear to face significant obstacles in attracting PPI. In the telecom sector, it will be important to see whether the initial success of PPI—which saw significant investments in mobile phone technology—will be replicated in the next stage. PIDA stresses the need to complete Africa's land fiber optic infrastructure, installing internet exchange points in countries that do not have them yet and connecting each country to two different submarine cables to take advantage of the expanded capacity (NEPAD, 2010).

In light of challenges to expanding the scope of PPI beyond the telecom sector, a consensus is emerging. For instance, a recent survey of private sector investors (ICA, 2013) finds that their top considerations when making investment decisions in African infrastructure projects were (i) project feasibility; (ii) country/political risk; and (iii) profitability; and (iv) the legal/regulatory environment. We focus on the following issues, which we feel deserve particular attention from all stakeholders:

Project preparation: There is a consensus that the lack of a strong pipeline of well-prepared, bankable projects is one of the key constraints to the development of African infrastructure. In the case of project preparation, lack of technical capacity in the continent is compounded by the lack of funding. The ICA (2014b) estimates that project preparation can reach 5-10 percent of the total project costs for large regional projects in Africa.[23] Recommendations to enhance the effectiveness of project preparation in Africa stress the importance of national ownership and accountability. Obtaining political and bureaucratic support for projects, anchoring their preparation in the relevant line ministries and agencies, and contributing to the preparation costs help increase efficiency and accountability, and send strong signals to the private sector. In the context of regional projects, regional economic communities can provide oversight and coordination across countries (ICA, 2014b). A number of significant initiatives to improve project preparation for Africa's infrastructure development are underway. Attempts to include the coordination of these initiatives include the Project Preparation Facilities Network (PPFN) that was launched by ICA in 2014.

Risk mitigation: There is scope to increase risk mitigation mechanisms. The World Bank Group in particular offers a number of risk mitigation tools to investors,[24] like the IDA Partial Risk Guarantees (PRG) that cover private lenders or investors against the risk of an IDA-eligible government or government-owned entity failing to perform its contractual obligations with respect to a private project. The International Financial Corporation (IFC) offers credit enhancement mechanisms for bonds and loans issued by the private sector, such as Partial Credit Guarantees (PCG) in both local and foreign currencies. The Multilateral Investment Guarantee Agency (MIGA) offers guarantees against non-commercial risk mainly in the infrastructure sector (44 percent of its portfolio) and its operations in Africa have increased to account for one-quarter of its overall portfolio. MIGA's gross exposure was $12.4 billion in June 2014 (of which $5.3 billion was ceded to its reinsurance partners). Two sub-Saharan African countries, Côte d'Ivoire and Angola, were among the top 10 largest exposures, accounting for 6.8 percent and 4.4 percent of total gross exposures. The AfDB's Currency Exchange Fund (TCX) helps investors hedge currency and interest rate risks associated with financing in local currency. Nonetheless, the Africa Progress Panel (2014) warns that there is no systematic analysis of the type of risk instruments needed to unlock private investment or the specific risks holding back investments. Expanding existing risk mitigation options such as those described above could help spur PPI to the continent. In addition, the G-20's multilateral development bank working group is well placed to offer policy guidance in this matter.

Innovative financing: The thinking about appropriate innovative financing solutions is also evolving. So far, private sector investment has focused on areas such as mobile telephones, thermal power plants, and container terminals because the risk and net cash flows associated with such assets are less difficult to estimate. In other areas, such as power, water, and railways, the private sector has preferred the use of concessions and other types of contracts. Financing infrastructure projects remains challenging, however, because of the large size, long maturity, and complexity of projects. Establishing infrastructure as an asset class could be one way to target dedicated investors such as impact investors or crossover investors such as sovereign wealth funds. So far, however, project bonds that focus on specific investments have been easier to market and distribute to institutional investors.

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23 The Concept Paper (ICA, 2014b: 6) presents range for project preparation costs based on different data and methodologies used by NEPAD, the World Bank, and Infraco.

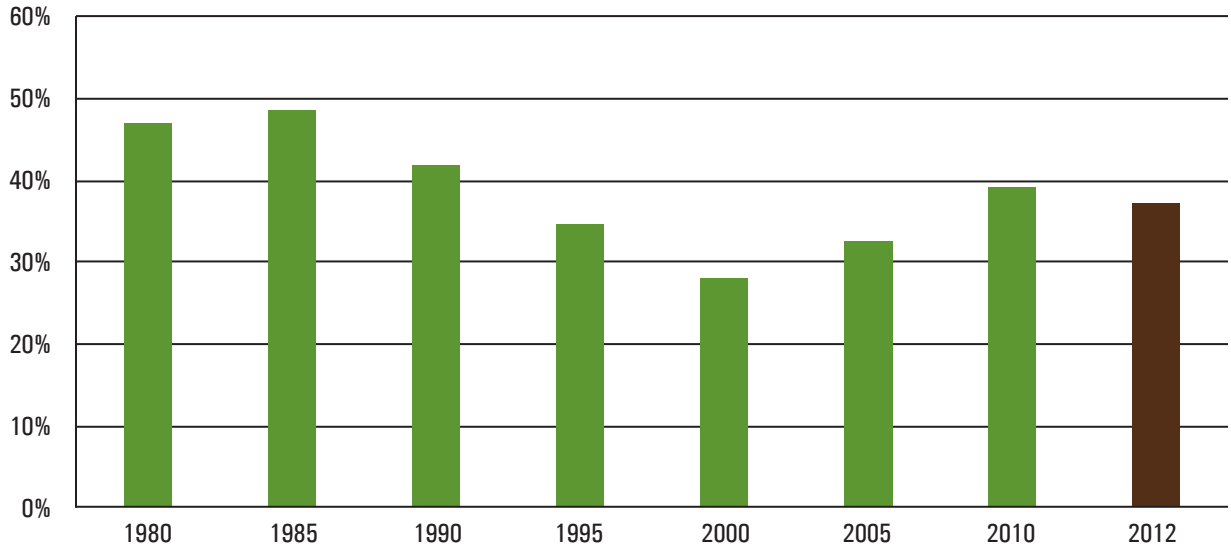
24 See the World Bank's Risk Mitigation Tools at http://web.worldbank.org/external/default/main?menuPK=64143540&pagePK=64143532&piPK=64143559&theSitePK=3985219

3.3 Official Development Finance (ODF)

Global Perspective

Traditional multilateral and OECD bilateral assistance has represented the principal external funding source for infrastructure in developing countries for decades. The World Bank and the regional development banks have been central to that effort. At the World Bank, infrastructure lending represented 47 percent of all global lending in 1980.[25] Over time, however, infrastructure as a target sector for such aid has varied. During the late 1990s and early 2000s, the Bank's emphasis on policy lending and human development funding left infrastructure to the regional banks and the private sector, which lowered infrastructure as a share of lending to below 30 percent. That downward trend ended around 2005, as infrastructure's importance to growth and poverty alleviation received greater recognition, and the role of multilateral assistance, in particular, began to be considered essential. Figure 5 below illustrates the shift in lending at the World Bank. By 2012, infrastructure represented 37 percent of lending.

Figure 5: Infrastructure Commitments in World Bank Lending, 1980-2012, Percentage



Source: **Author's calculations using World Bank Annual Reports 1980 – 2012.**

Note: **Infrastructure includes energy, telecommunications (information and communications), transportation, water supply and sewerage (water, sanitation, and flood protection), and urban development (urbanization).**

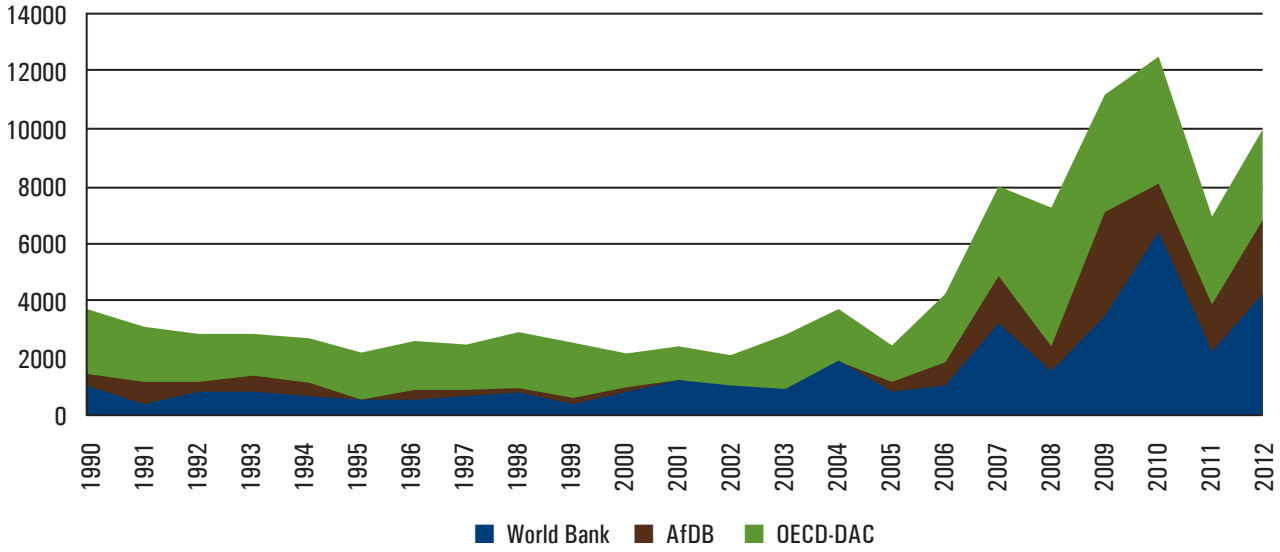
Regional Perspective

Sub-Saharan Africa remains one region where traditional multilateral and bilateral efforts still represent a critical source of funding. ODF infrastructure investments were on a slight declining trend through the 1990s. During this period, OECD-DAC commitments remained the dominant source of ODF funding to sub-Sa-

25 Our analysis in this paper excludes Agriculture and Rural Development investments.

haran Africa[26] at a little less than $2 billion a year (which constituted between 50 to 75 percent of total ODF financing). Meanwhile, World Bank lending was less than $1 billion a year, and the AfDB financed less than $500 million a year. Since 2005 and renewed attention to the importance of infrastructure, OECD-DAC commitments have risen to more than $4 billion each year (Figure 6). But World Bank and AfDB financing has grown even faster during this same period. In 2012, the World Bank lent $4.3 billion, and the AfDB increased its share to $2.6 billion, thereby together contributing to about 70 percent of the total ODF financing portfolio of over $10 billion a year (and 24 percent of the total external financing of nearly $30 billion per year) (Figure 7).

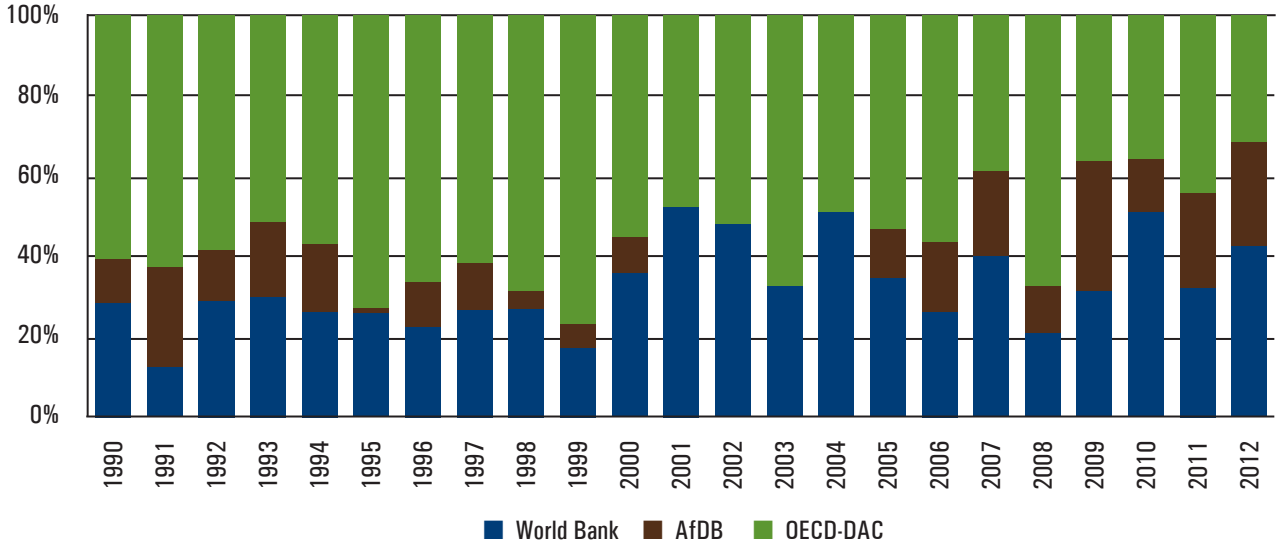
Figure 6: ODF Infrastructure Investment Commitments in Sub-Saharan Africa, by Financing Sources, 2000-2012, in US$ Millions (Current)



Source: **Authors' calculations using OECD database.**

26 OECD-DAC commitments constitute about 97 percent of ODF to sub-Saharan African countries.

Figure 7: ODF Infrastructure Investment Commitments in Sub-Saharan Africa, by Financing Sources, 2000-2012, Proportions



Source: **Authors' calculations using OECD database.**

Analysis by Country

During the period 2005-2008, the distribution of ODF across countries was relatively even, primarily due to the prevalence of multilateral concessional funding that is allocated on the basis of a formula under IDA and ADF guidelines.[27] For the period 2009-2012, however, South Africa and Kenya received relatively high shares of ODF (Figure 8). In the case of Kenya, this rapid increase is more attributable to previous constraints to aid earlier on, which, once lifted, created the increase in flows. In the case of South Africa, the new trend is due to a few large-scale projects.[28]

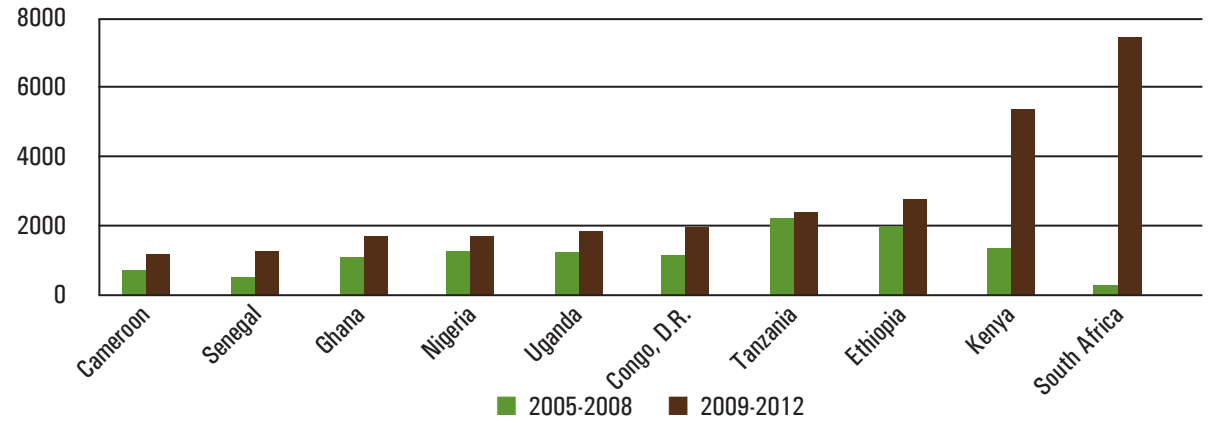
The benefit of such financing, especially by the World Bank and the AfDB, is the flexibility to address countries and contexts that are beyond the risk appetite of the private sector. Thus, while PPI beyond the telecom sector is relatively concentrated in a certain number of "darling" states, multilateral financing is more dispersed across sub-Saharan Africa. While there is some overlap among the top recipients, there is more fluctuation year by year for the highest recipients of aid compared with PPI. For example, whereas over the past eight years, South Africa and Nigeria are consistently the top recipients of PPI; Kenya, Tanzania, and Ethiopia are among the top recipients of ODF. More significant, though, is the role of ODF for low-income fragile states that represent 18 of the 53 states in sub-Saharan Africa.[29] ODF accounted for more than 37 percent of total external commitments to these fragile states during 2009-2012. ODF is the single largest source of external commitments to these countries if telecom sector investments are excluded.

27 International Development Association (IDA) is the part of the World Bank credits and loans reserved for the poorest countries. Similarly the African Development Fund (ADF) of the AfDB offers concessional loans to low-income countries, including states that "remain fragile and need special assistance for basic levels of service delivery." See http://www.worldbank.org/ida/financing.html and http://www.afdb.org/en/about-us/african-development-fund-adf/about-the-adf/ for eligibility criteria. In short, both IDA and ADF offer eligible low-income countries highly concessional loans and credits, with low or no interest charges.

28 For instance, in 2009-2010, the World Bank and AfDB non-concessional financing of Eskom energy projects in South Africa dwarfed ODF financing to remaining sub-Saharan Africa. (Details of World Bank financing for Eskom is at: http://www.worldbank.org/projects/P116410/eskom-investment-support-project?lang=en and that of AfDB financing is at: http://www.afdb.org/en/news-and-events/article/afdb-eskom-sign-usd365m-renewable-energy-loans-8385/).

29 Excludes Reunion, for which no data was available in the databases used.

Figure 8: ODF Infrastructure Investment Commitments in Sub-Saharan Africa, Top Recipient Countries, 2005-2012, in US$ Millions (Current)

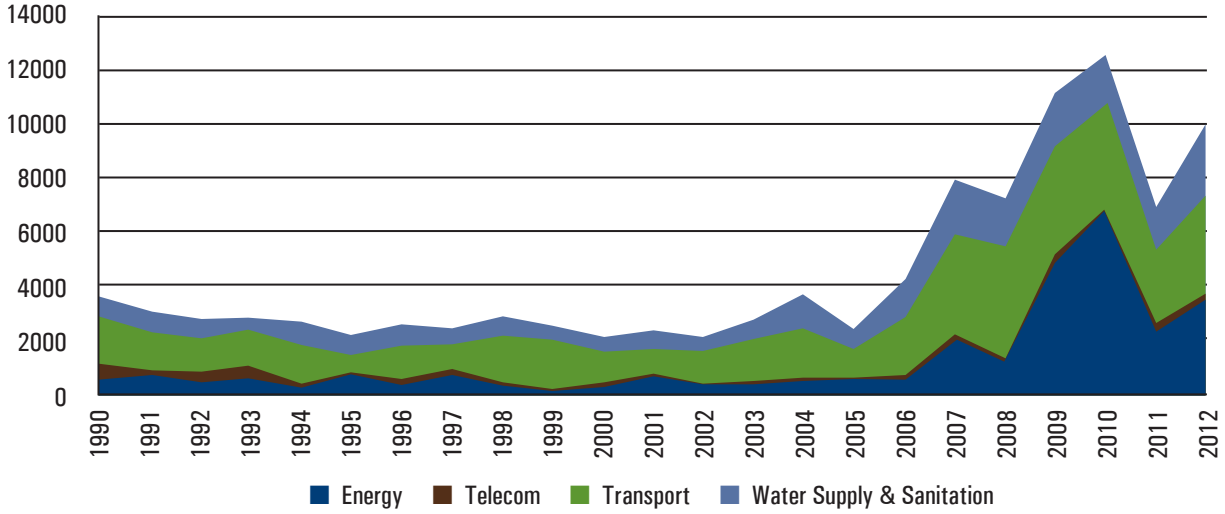


Source: Authors' calculations using OECD database.

Analysis by Sector

In contrast to PPI, ODF has consistently supported transport investment and contributed significantly to water and sanitation. Since 2006, however, there has been a dramatic increase of support to energy projects (Figure 9) from an average of $540 million a year to $3.5 billion in 2012—almost 35 percent of all ODF commitments. Even when financing for Eskom in South Africa is deducted, this increase remains consistent across the region. While both the water supply and sanitation and transport sectors continue to receive larger amounts of investments ($2.7 billion and $3.6 billion, respectively, in 2012), their shares of the total have declined due to the upsurge in financing for energy sector projects. ODF commitments for the telecom sector remain insignificant, receiving less than $100 million in most years.

Figure 9: ODF Infrastructure Investment Commitments in Sub-Saharan Africa, by Sector, 1990-2012, in US$ Millions (Current)



Source: Authors' calculations using OECD database.

Implications Going Forward

One of the main findings of this analysis is that declarations of the demise of ODF are premature. ODF continues to play an important financing role, particularly for the states and sectors that are not attractive to the private sector. In the case of countries, the willingness and ability of ODF to fund projects in higher risk situations is clear. Similarly, ODF is also effective in sectors and sub-sectors that are less amenable to private sector sources, such as roads and railways as well as water and sanitation because the multilateral banks are able to address broader policy and institutional issues.

This does not mean that the ODF financial model is sufficiently adapted to sub-Saharan Africa's infrastructure needs. Questions have been raised in recent years over whether the simple delineation between countries eligible for concessional versus non-concessional financing is still the most appropriate, especially with the advent of new finance sources with a varying range of concessionality such as that from China-led initiatives. There may be a case for making countries eligible for a mix of concessional and non-concessional sources depending on the sector or type of investment. The next replenishment cycle for IDA and ADF will need to consider new approaches.

The other challenge is the use of ODF financing to leverage and generate private sector funding as discussed in Sub-section 3.5. The various initiatives—including PIDG, GIF, and Africa 2050—over the last several years should provide important lessons for when such leveraging is more appropriate, by assessing the costs and benefits to sub-Saharan Africa.

As ODF does seem to fill an important gap in terms of countries, it is also important in addressing sectors that are not as amenable to private finance. Thus, there is very little of such funding for the telecom sector, given the interest of private finance. It is, however, the primary source for funding of water and sanitation as well as transport, particularly roads. ODF funding in energy projects has increased in recent years. This is the sector where ODF and PPI appear to be evolving in their relative roles.

3.4 Chinese Financing

Regional Analysis

There is no debate over whether or not China is a major source for financing for African infrastructure but most analysts have struggled in identifying the scale of the amounts and deciphering the strategy behind the observed trends. There are two caveats needed before discussing the level and distribution of China financing. First, there is no reported centralized database recording these flows. Agencies such as the World Bank and ICA have compiled their data from reviewing official Chinese statements and media reports. Second, determining when a project represents an actual commitment, or is subject to further negotiations, and how much of the project is funded by Chinese sources remains a challenge in such second-hand reporting. This is opposed to PPI financing, which is based on financial closure for a project, and ODF, which is mainly based on projects once they are officially negotiated and formally approved (such as by the boards of the multilateral banks). As a result, there is a wide variation in the estimates of Chinese financing.

The first question is how much infrastructure support China provides to sub-Saharan Africa. One of the most comprehensive efforts to compile this information was by the World Bank and its Public Private Infrastructure Advisory Facility (PPIAF). Its report, *Building Bridges: China's Growing Role as Infrastructure Financier for Sub-Saharan Africa*, provided estimates through 2007 (Foster, Butterfield, Chen, and Pushak, 2009: 1-2). The results indicate substantial growth in Chinese support, from less than $1 billion annually before 2004 to over $4 billion by 2007. This growth included projects "agreed," "under implementation," "completed," and "under reconsideration." The lack of agreement of inclusion or exclusion of "projects under reconsideration" illustrates the difficulties discussed above, as it represented 34 percent of the projects including a number of major power and rail projects in Nigeria worth $5.5 billion in 2006.

Unfortunately, the World Bank did not publish an update of this report, and one has to go to other sources to get a view of more recent trends. A key source of information from 2000 through 2012 is provided by the College of William and Mary (See the Annex for additional details and methodology). In this paper, by focusing on projects "completed," "being implemented" or "pipeline commitments" (excluding "pledges"), the approach used for 2008-2012 aligns with those of the 2009 World Bank Report with data for 2001-2007 (Foster and Briceño-Garmendia, 2009). Chinese financing commitments in sub-Saharan Africa have been growing appreciably from $313 million in 2000 to $4.4 billion in 2012.[30] Within this period, the average annual flow between 2007 through 2012 was about $5 billion, well beyond any other single bilateral or multilateral source, with a particular surge in 2010.

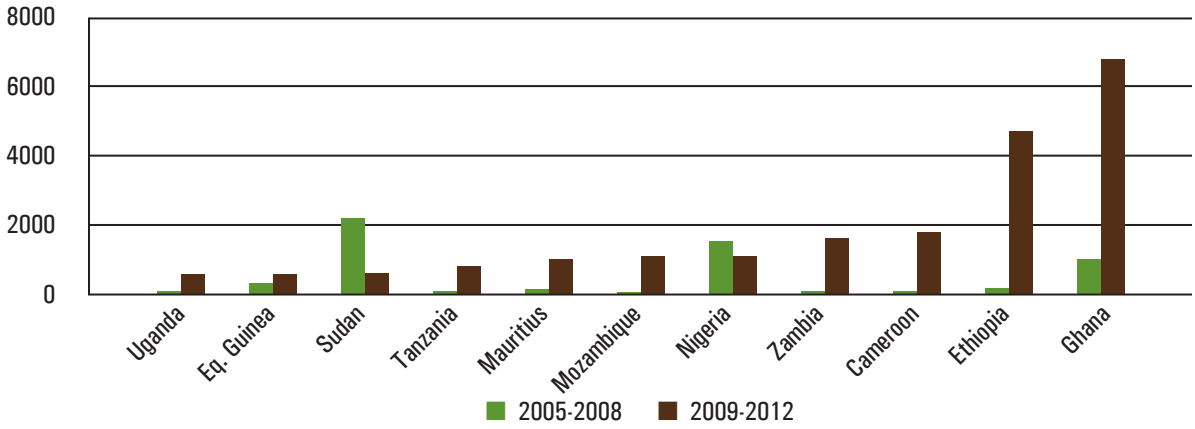
ICA (2014a), however, reports much higher flows: $14.9 billion for 2011, $13.4 billion for 2012, and $13.4 billion for 2013—all for sub-Saharan Africa. It is not clear why there is such a substantial difference, and the data are not publically accessible. The difference could be from the filtering by what constitutes an effective commitment and/or it could be on account of a broader definition for infrastructure. If these estimates are validated, then China is clearly the main source for infrastructure financing in sub-Saharan Africa outside of national budgets.

Analysis by Country

Ghana and Ethiopia have been the largest recipients of Chinese infrastructure financing over 2009-2012, receiving more than $6.7 billion and $4.7 billion, respectively. They have replaced the oil-rich Sudan, the largest recipient during 2005-2008. Other notable recipients of Chinese financing are Cameroon, Zambia, and Nigeria—each, however, receiving less than $2 billion over 2009-2012.

30 The surge in 2009-2010 was due to Ghana transport commitments in 2010 ($5.9 billion) and Ethiopia hydropower in 2009 ($2.55 billion).

Figure 10: Chinese Infrastructure Investment Commitments in Sub-Saharan Africa, Top Recipient Countries, 2009-2012, in US$ Millions (Current)



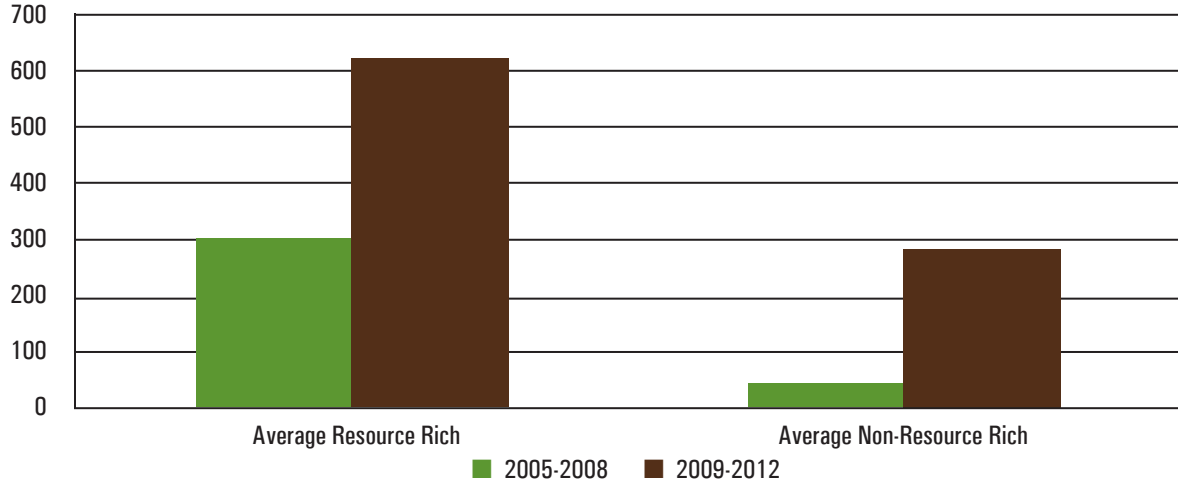
Source: **Authors' calculations using AidData database.**

A notable finding is that China plays a major role in sub-Saharan African infrastructure financing by filling the gaps that are not met by either the private sector or ODF. But why does China invest in these specific countries? The assumption in the past has been that China directs its funding towards countries with natural resources (the "Angola model"). In fact, the 2009 World Bank Report, while recognizing that 35 counties received support from China, stated that the largest support was for resource-rich countries (Foster and Briceño-Garmendia, 2009: 78). Similarly, the ICA (2013) report declared, "Chinese funding follows opportunities across the continent's energy and extractive industries," (ICA, 2013: 31).

Since 2010, however, the reach of Chinese investment has broadened. While Chinese financing in resource-rich countries (using IMF classification)[31] is still double the average volume of those the flowing to the non-resource-rich countries, this gap has sharply diminished over time. The cumulative average of Chinese financing to resource-rich countries doubled from $300 million to over $622 million between 2005-2008 and 2009-2012. But over the same period, Chinese commitments to the non-resource-rich countries leapt from $43 million to $285 million—a 550 percent increase!

31 See the Annex for the listing of resource-rich countries in sub-Saharan Africa, using IMF classification in http://www.imf.org/external/np/pp/eng/2012/082412.pdf (Appendix 1: Tables 1 and 2).

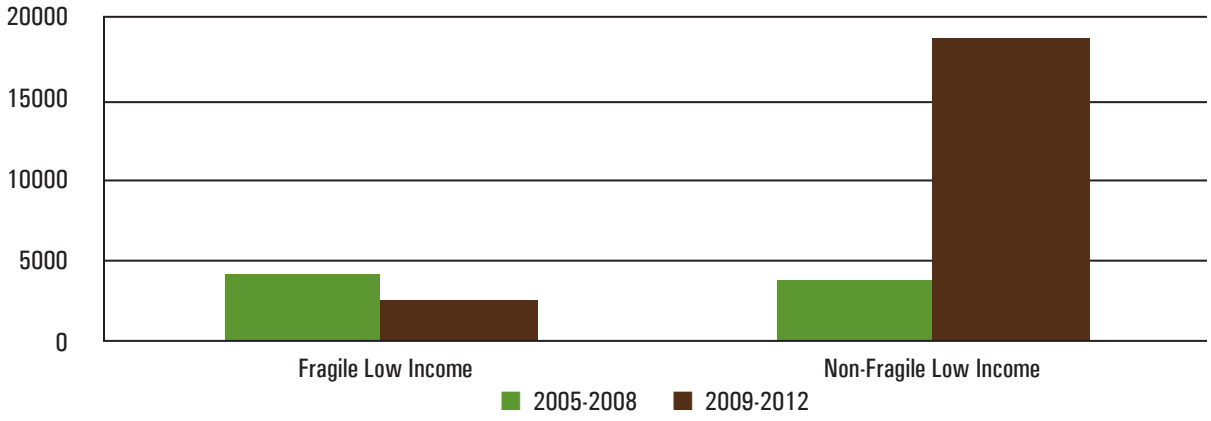
Figure 11: Chinese Infrastructure Investment Commitments to Resource-Rich Versus Non-Resource-Rich Sub-Saharan African Countries, 2005-2012, in US$ Millions (Current)



Source: **Authors' calculations using AidData database.**

In fact, between 2009 and 2012, Chinese infrastructure investments increased dramatically for low-income non-fragile countries (using World Bank 2014 classification[32]), suggesting a shift in emphasis. Commitments to non-fragile low-income countries in sub-Saharan Africa grew from a total of $3.8 billion for the period 2005-2008 to $18.9 billion for the period 2009-2012—an almost fivefold increase. China has also invested in infrastructure in fragile low-income states, but to a much lesser extent, and commitment levels have remained stable through 2005-2012.

Figure 12: Chinese Infrastructure Investment Commitments to Fragile Versus Non-Fragile Condition in Low-Income Sub-Saharan African Countries, 2005-2012, in US$ Millions (Current)



Source: **Authors' calculations using AidData database.**

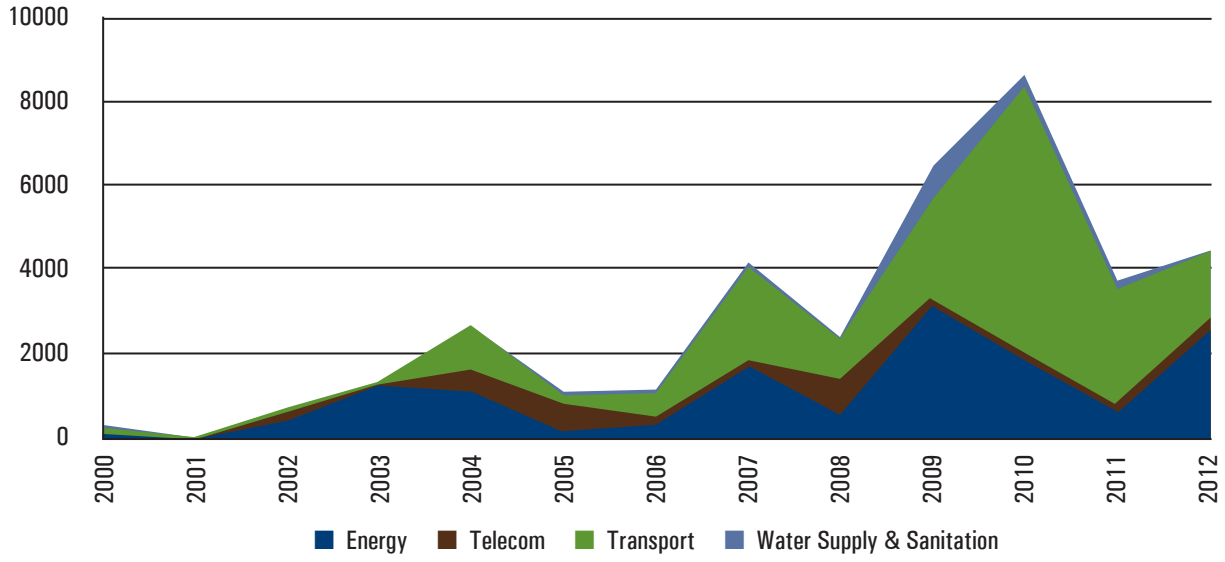
32 See Annex for the listing of low-income countries in sub-Saharan Africa facing fragile conditions, using the World Bank classification in http://siteresources.worldbank.org/EXTLICUS/Resources/511777-1269623894864/HarmonizedlistoffragilestatesFY14.pdf.

Discussions with staff at the World Bank suggest that there has been a shift in the country distribution of Chinese infrastructure funding such that the natural resource connection is not as much of a determinant as had been perceived. Tracking country destinations for Chinese foreign direct investment in natural resources does not seem to correlate closely with its infrastructure investment. Other elements of trade and agriculture seem to be guiding investment decisions. A relevant case is that of Ethiopia. The most recent ICA (2014a) also notes the broadening of Chinese support and argues that investments also reflect a strategy to support Chinese firms in countries with projects for which Chinese expertise is relevant (such as road and rail construction). Deciphering a clear strategy for Chinese funding that might help in longer-term aid distribution projections, thus, continues to elude infrastructure analysts. Ultimately, it is probably a combination of various strategic objectives.

Analysis by Sector

Besides investing in countries that are not receiving major private sector investments, China is especially targeting the transport sector, particularly railways and roads (Figures 13 and 14). These are sub-sectors in which Chinese firms have particular experience and successfully compete for contracts under multilateral financing.[33] They are also sub-sectors that have received less interest from private investment in sub-Saharan Africa. More recently, Chinese financing has increasingly targeted the energy sector and hydropower in particular. Here China is joining the efforts of PPI and ODF to close the energy gap in sub-Saharan Africa.

Figure 13: Chinese Infrastructure Investment Commitments in Sub-Saharan Africa, by Sector, 2000-2012,* in US$ Millions (Current)

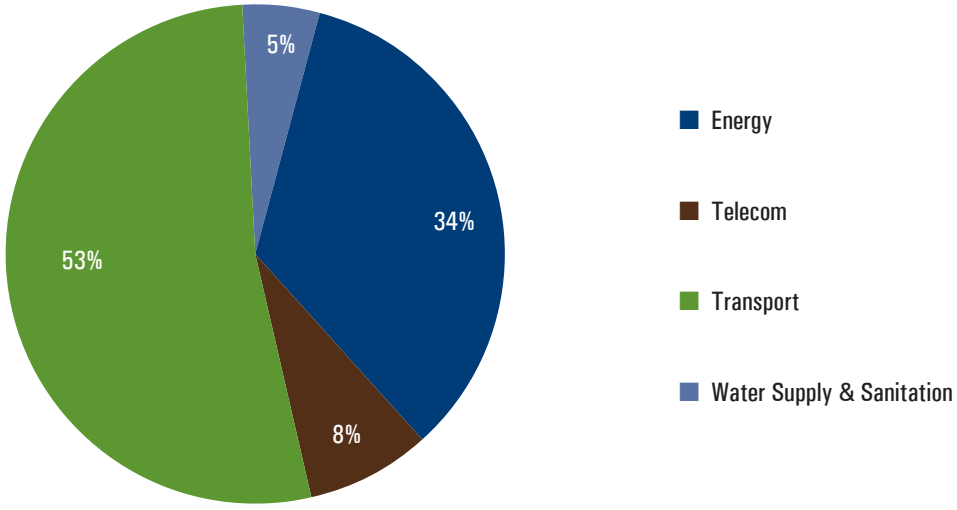


Source: **Authors' calculations using AidData database.**

Note: *** Data was not available for investments prior to 2000.**

33 See Gutman (2014) for a discussion on procurement reforms at IFIs.

Figure 14: Chinese Infrastructure Investment Commitments in Sub-Saharan Africa, by Sector, 2005-2012, Proportions



Source: **Authors' calculations using AidData database.**

Implications Going Forward

Chinese funding has been a significant complement to other forms of financing (even if unintended) in terms of both countries served and sectors supported. The consistent high level of financing and its broad geographical scope underscores the importance of ensuring that its efforts are well-coordinated and well-aligned with other efforts in the region. Moreover, criticism has been raised from certain stakeholders that China's approach is a traditional "bricks and mortar" focus on building the infrastructure with little attention to the institutional and operational considerations; and it has not applied the environmental and social safeguard standards adopted by others such as the World Bank.[34]

While it is beyond the scope of this paper to give a view on these criticisms, it should be recognized that China has reached out to other donors and the multilaterals recently regarding its establishment of the BRICS' New Development Bank as well as a collaborative fund with the AfDB—the Africa Growing Together Fund.[35] These openings offer opportunities to better integrate and engage China at a strategic level.

3.5 Distribution of External Financing by Country and Sector

Analysis by Country

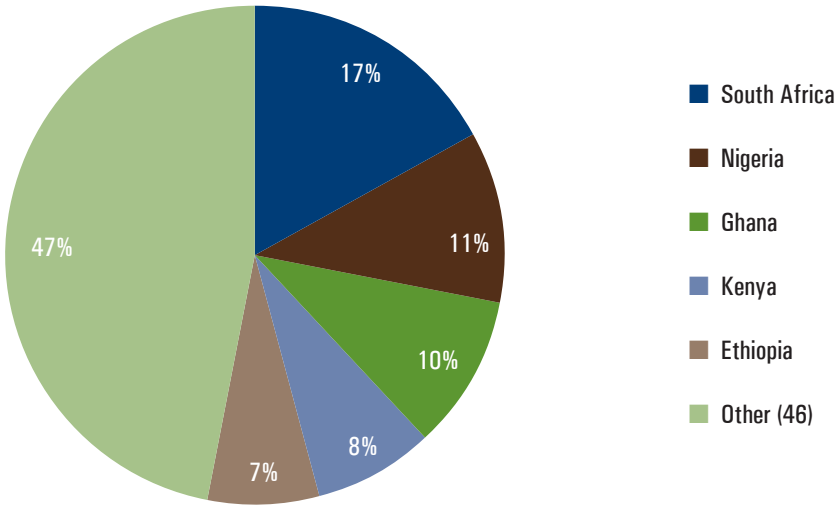
While there has been significant growth in external financing of infrastructure in sub-Saharan Africa, these financing commitments continue to remain concentrated in the large economies. South Africa and Nigeria together account for about 29 percent of the total for all of sub-Saharan Africa in 2009-2012. Overall, the top

34 See Bosshard (2008) for a critique of Chinese investments in Africa in "China Environmental Footprint in Africa."

35 The announcement of AGTF was made in May, 2014 (see http://www.afdb.org/en/news-and-events/article/afdb-announces-us-2-billion-fund-with-china-13165/). This is separate from the China-Africa Development (CAD) Fund that was established in 2007 as an equity investment fund focusing on Chinese investments in Africa (with a $1 billion initial investment by the China Development Bank).

five recipients have attracted more than 52 percent of total sub-Saharan African external financing (Figure 15). Despite this consistency, however, due to the different objectives/criteria of different sources, different sources prioritize different countries within that group (Table 3).

Figure 15: Concentration of External Infrastructure Investment Commitments in Sub-Saharan Africa, 2009-2012, Proportions



Source: **Authors' calculations using OECD, World Bank PPIAF, and AidData databases.**

Table 3: Top 10 Country Ranking in Sub-Saharan Africa by External Infrastructure Investment Commitments, by Source, 2009-2012

Ranking	PPI	ODF	China	Overall
1	South Africa	South Africa	Ghana	South Africa
2	Nigeria	Kenya	Ethiopia	Nigeria
3	Kenya	Ethiopia	Cameroon	Ghana
4	Tanzania	Tanzania	Zambia	Kenya
5	Ghana	Congo, D.R.	Nigeria	Ethiopia
6	Sudan	Uganda	Mozambique	Tanzania
7	Côte d'Ivoire	Nigeria	Mauritius	Cameroon
8	Congo, D.R.	Ghana	Tanzania	Congo, D.R.
9	Benin	Senegal	Sudan	Uganda
10	Uganda	Cameroon	Eq. Guinea	Zambia
10		Zambia	Uganda	
10		Burkina Faso		

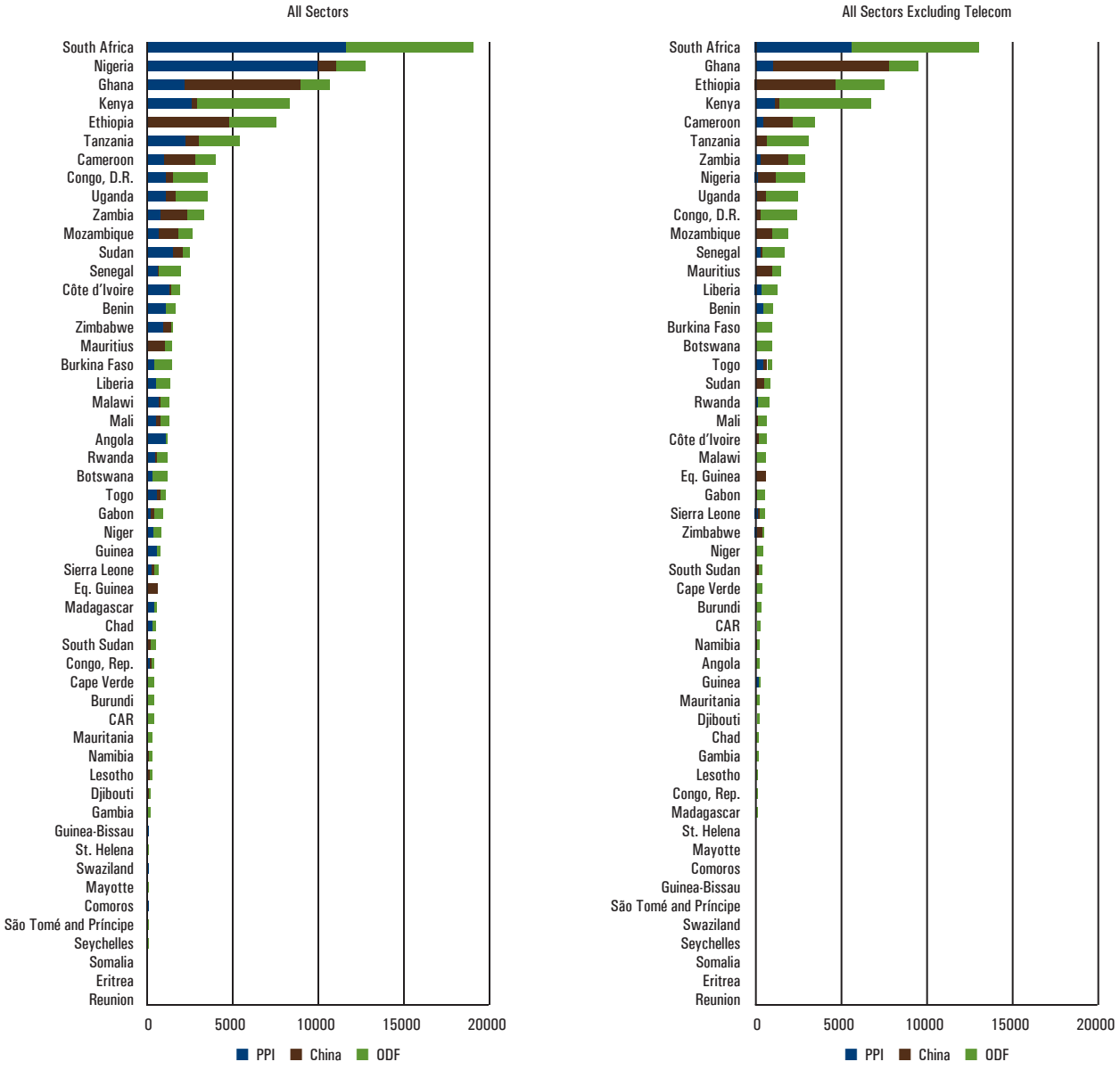
Source: **Authors' calculations using OECD, World Bank PPIAF, and AidData databases.**

At the opposite end of the distribution are countries that have not received substantial external financing that have each received less than $600 million over the entire eight-year period of 2005-2012 (Figure 16a). This group of countries includes countries that may have relied on their own domestic financing sources such as

the Seychelles, crisis countries such as Somalia, Guinea-Bissau, and Eritrea, and small countries such as the Gambia, Comoros, and Swaziland.

When excluding telecom sector, the two facets of the distribution pattern become more pronounced. First, the concentration of financing to the top recipient countries increases. Second, there are more countries who have limited, if any, access to financing at the other end of the distribution (Figure 16b).

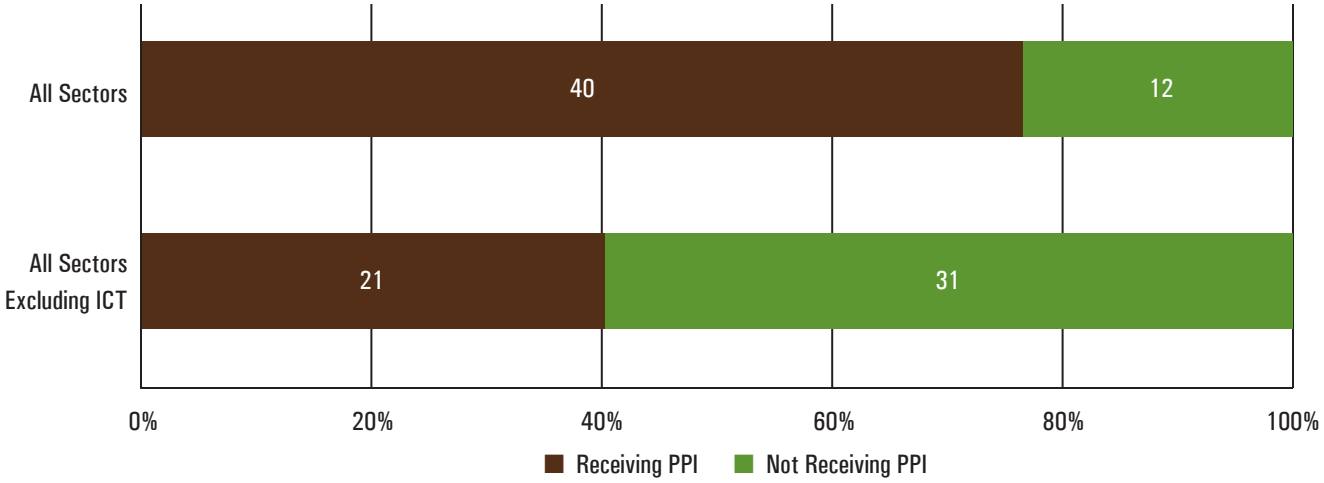
Figures 16a and 16b: Cumulative Infrastructure Investment Commitments, All Sectors Versus All Sectors Excluding Telecom, 2009-2012, in US$ Millions (Current)



Source: **Authors' calculations using OECD, World Bank PPIAF, and AidData databases.**

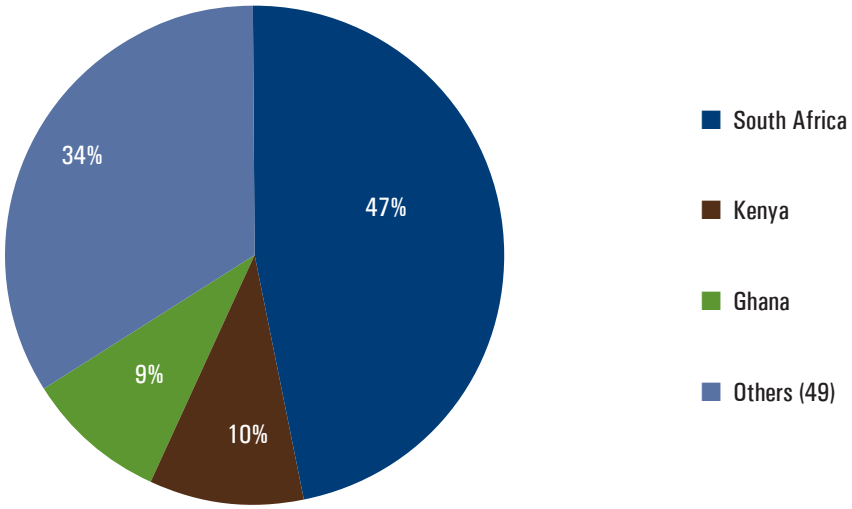
For instance, as Figure 17 highlights, the number of sub-Saharan African countries receiving PPI drops from 40 to 21 when telecom sector commitments are excluded. While PPI for other sectors, especially energy, has recently grown, it has been concentrated in a few countries. Another interesting trend is that the cumulative share of PPI in 49 countries has been less than that of South Africa during 2009-2012 (Figure 18).

Figure 17: PPI Commitments Concentration in Sub-Saharan Africa, by Count of Countries, 2009-2012



Source: Authors' calculations using World Bank PPIAF database.

Figure 18: Non-Telecom PPI Commitments Concentration in Sub-Saharan Africa, by Countries, 2009-2012, Proportions



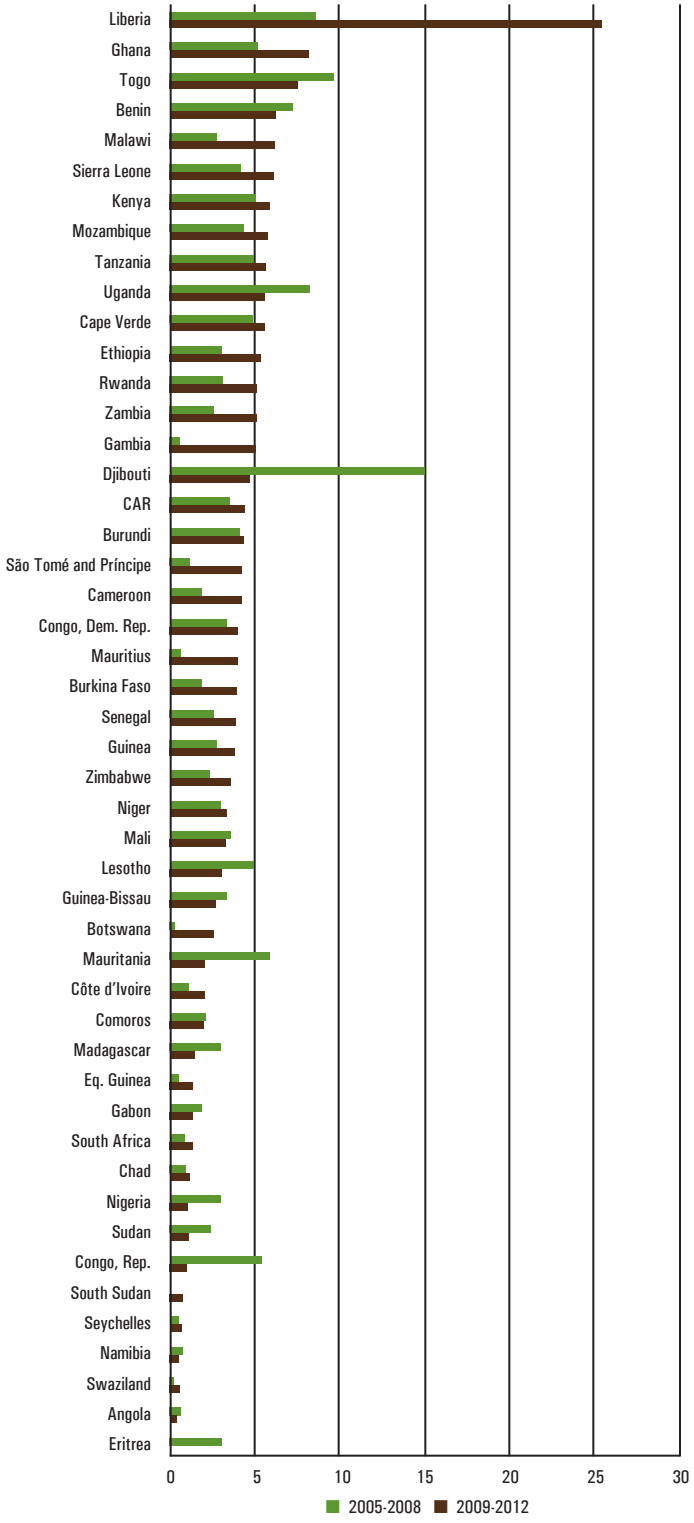
Source: Authors' calculations using World Bank PPIAF database.

The scale of external financing controlled for by the size of the local economy, however, provides an optimistic yet complex picture of the distribution of external financing. For the 48 countries in sub-Saharan Africa for which we have data, the average external financing commitments of a country constituted 3.3 percent of its GDP during 2005-2008, and increased to about 3.9 percent over 2009-2012. As shown in Figure 19,

four of the top six recipients of external financing (as a percentage of GDP) are low-income fragile states (Liberia, Togo, Malawi, and Sierra Leone). Liberia particularly stands out with its level of 2009-2012 external commitments at more than 25 percent of its GDP. Then again, not all countries with high commitments as a percentage of GDP are small economies: Ghana, Kenya, Tanzania, and Uganda, which all rank in the top 10, are relatively large economies that have received substantial external investment amounting to between 5 to 8 percent of their GDP.

Similarly, when ordered as a percentage of GDP, the lowest recipients of external financing represent a mixture of large economies such as South Africa and Nigeria; resource-rich economies such as Angola; and a number of states facing fragile conditions such as Eritrea, South Sudan, the Republic of the Congo, and Chad. Thus, it is difficult to discern a clear pattern between country conditions and commitments as a fraction of its GDP. It is apparent that there are a number of factors at work. Looking ahead, it would appear that the most productive analysis would be to understand the strengths and weaknesses of the countries in the middle ranges—such as Senegal, Lesotho, the Democratic Republic of the Congo, Cameroon, and Côte d'Ivoire—that may offer more opportunities for enhancing access to financing.

Figure 19: External Infrastructure Investment Commitments in Sub-Saharan Africa, 2005-2012, Percent of GDP



Source: **Authors' calculations using OECD, World Bank PPIAF, and AidData databases.**

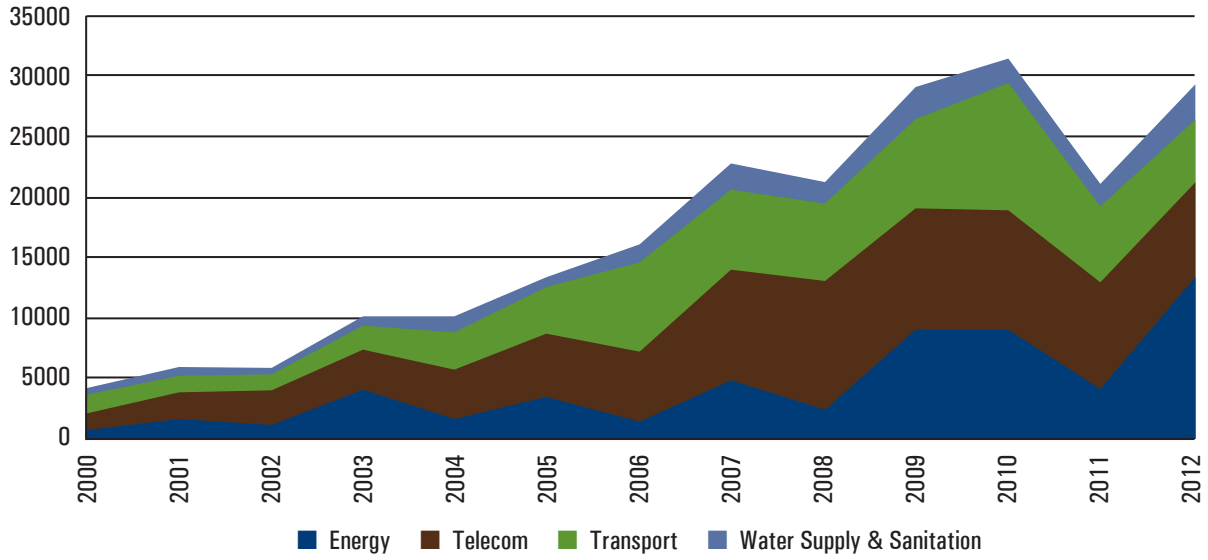
Analysis by Sector

All four sectors have had growth in investment levels. Energy has increased the most, particularly since 2009, now representing more than 45 percent of the total in 2013 (from less than 20 percent in 2000) (Figure 20). It is unsurprising that energy has seen the biggest increase, as policymakers and development specialists have identified access to energy as the main infrastructure gap.

Telecom has been the largest recipient of external investments, accounting for about 40 percent of total financing for most years between 2000 and 2011. Its share, however, has been declining as the energy sector has been gaining in importance and basic telecom infrastructure has been put in place (Figure 21).

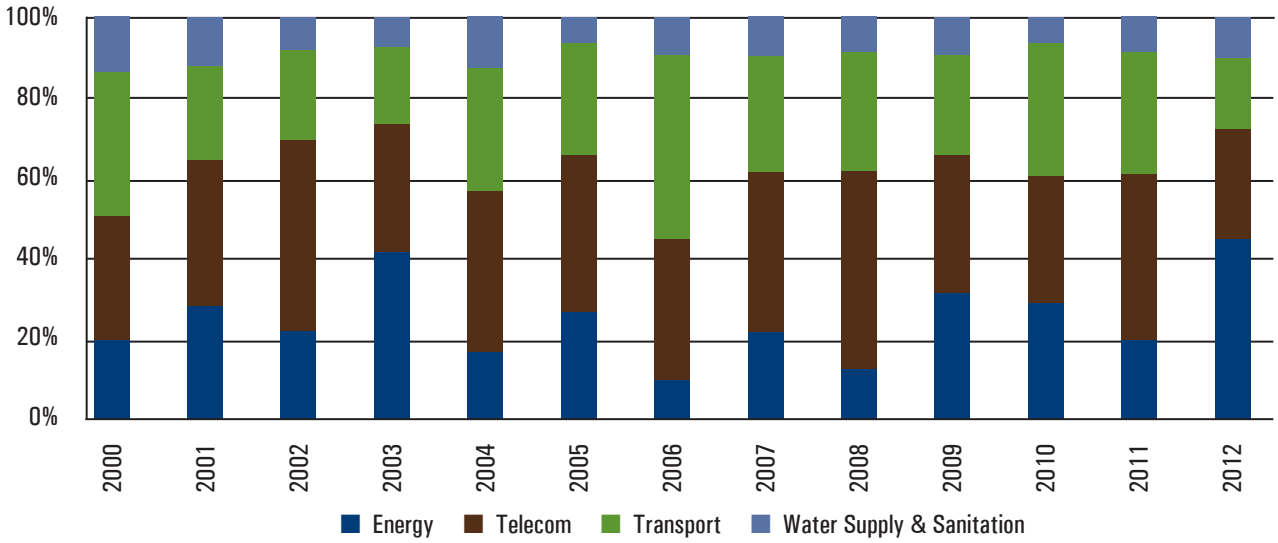
The striking trend is that the energy, telecom, and transport sectors together account for nearly 90 percent of all external financing commitments for each year in 2000-2012. Of that 90 percent, transport sector investments—consistently at or below 30 percent—have grown the slowest over 2000-2012. The water supply and sanitation sector consistently receives less than 10 percent of total external commitments.

Figure 20: External Infrastructure Investment Commitments in Sub-Saharan Africa, by Sector, 2000-2012, in US$ Millions (Current)



Source: **Authors' calculations using OECD, World Bank PPIAF, and AidData databases.**

Figure 21: External Infrastructure Investment Commitments in Sub-Saharan Africa, by Sector, 2000-2012, Proportions



Source: Authors' calculations using OECD, World Bank PPIAF, and AidData databases.

Within these trends there is significant variation between sources of external financing sectoral share of commitments. Telecom sector projects have been financed primarily through private sources while water and sanitation has been financed through ODF and government funding. Energy, as mentioned above, is receiving attention from all sources. Transport, however, requires a sub-sectoral analysis to understand the past and potential financing sources. Private financing in sub-Saharan Africa has been attracted to the port and airport sectors mainly, while ODF and Chinese financing have focused on roads and railways (Table 4). This traditional sectoral preference is now evolving. For example, there are cases of private financing of roads and bridges in sub-Saharan Africa and, to a much greater extent, in other regions of the world. But it is important to understand the different nature of the various sectors and sub-sectors to be able to develop a credible financing strategy.

Table 4: Sector Versus Financing Source Matrix

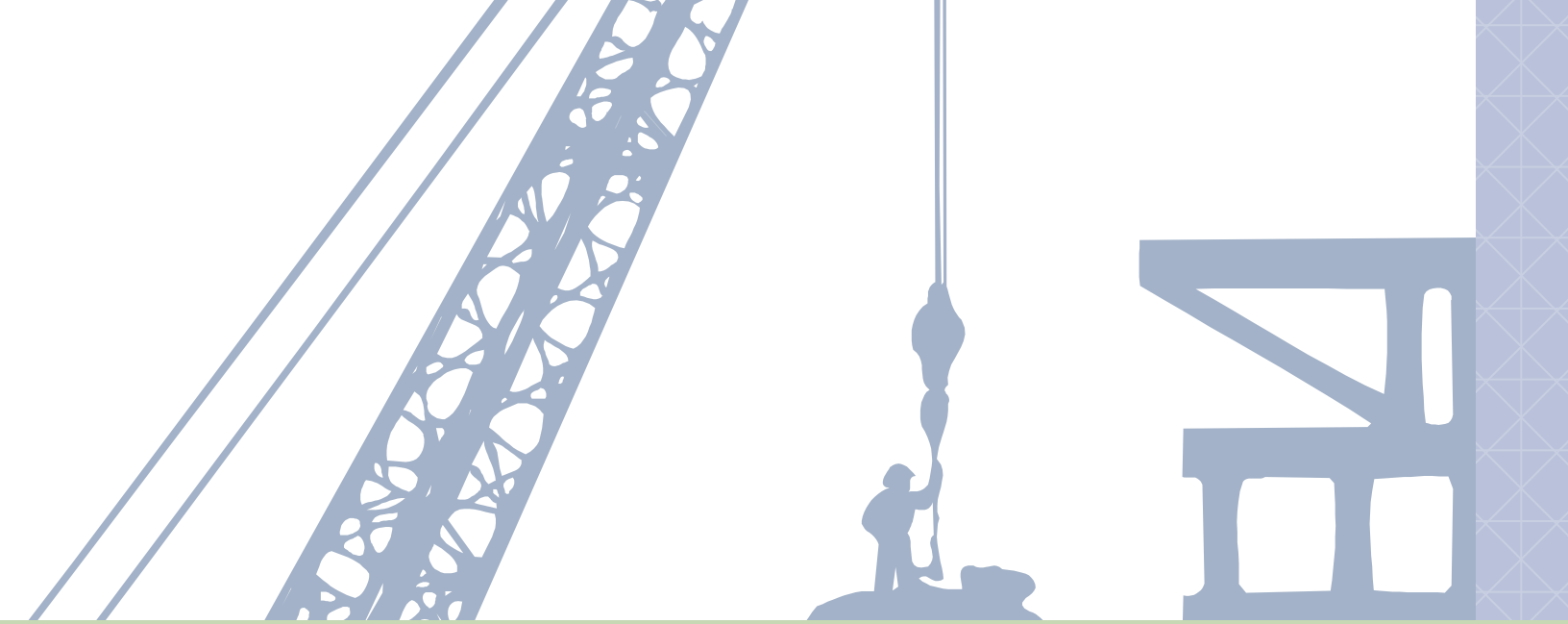
Sector	Government	ODF	China	PPI
Energy	✓	✓	✓	✓
Telecom				✓
Transport	✓	✓	✓	✓
Water	✓	✓		

Transport Sector	Government	ODF	China	PPI
Seaports	✓			✓
Airports	✓	✓	✓	
Railroads	✓	✓	✓	
Roads	✓		✓	✓

Source: Authors' analysis.

The most worrisome finding in this section is that external financing has generally been driven by a project/transaction approach. While major regional cross-border projects have the strategic underpinnings of the PIDA, it is not clear that other infrastructure projects are guided by an overall sectoral strategy. And while there does appear to be a broad distribution of financing by country and sector through the efforts of the various financing sources, any complementarity or synergy would seem serendipitous.

The next section, then, looks at the main source for infrastructure funding in sub-Saharan Africa, domestic public finance. The final section focuses on governance at the project, country, and global/regional levels. Both domestic public finance and governance are key to ensuring the strategic focus in the application of external financing.



4. Domestic Finance: The Overlooked Element

The current debate on sub-Saharan Africa's infrastructure gap often overlooks the role of domestic finance in financing infrastructure, instead focusing on the rising importance of the external finance sources discussed above. One reason may be that accurate figures on how much these governments spend on infrastructure are hard to find. Another reason may be that governments may not have a single or unified strategy when it comes to domestic infrastructure financing: Countries differ widely in the amounts they spend and the sectors they target. A more basic reason may be that African governments are just not the most vocal actors in this space.

Nonetheless, a few stylized facts are worth highlighting. First, national governments in sub-Saharan Africa are the main single source of infrastructure financing, and this role is increasing. Second, these governments spend most of their resources on two sectors: transport and energy. That said, the level of public finance is still insufficient to cover the large infrastructure needs: They need to raise more domestic revenues and diversify their sources of revenues. Importantly, though, they need to recognize that new money is not the only way to meet the infrastructure gap as, currently, they have not fully exploited potential efficiency gains. Finally, these governments often lack a strategic approach to infrastructure and pay little attention to sub-national infrastructure needs, which are increasing quickly with the rapid pace of urbanization.

4.1 National-Level Finance

Although data on government spending on infrastructure are not readily available, some recent estimates are. IMF (2014b) estimates that national budget spending by sub-Saharan African countries reached about $59.4 billion, or 72.9 percent of total funding for infrastructure in 2012.[36] These figures include financing by international financial institutions (IFIs) such as the World Bank and AfDB (that are part of ODF financing) of about $8 billion. Excluding IFI contributions from national government budget estimates, spending on infrastructure projects amounts to $51.4 billion (63 percent of total funding). Comparable estimates are also available from ICA (2014a).[37]

36 IMF (2014b) assumes that countries allocate 75 percent of total public investment to infrastructure. This assumption does not take into account infrastructure spending executed by public utilities and local governments.

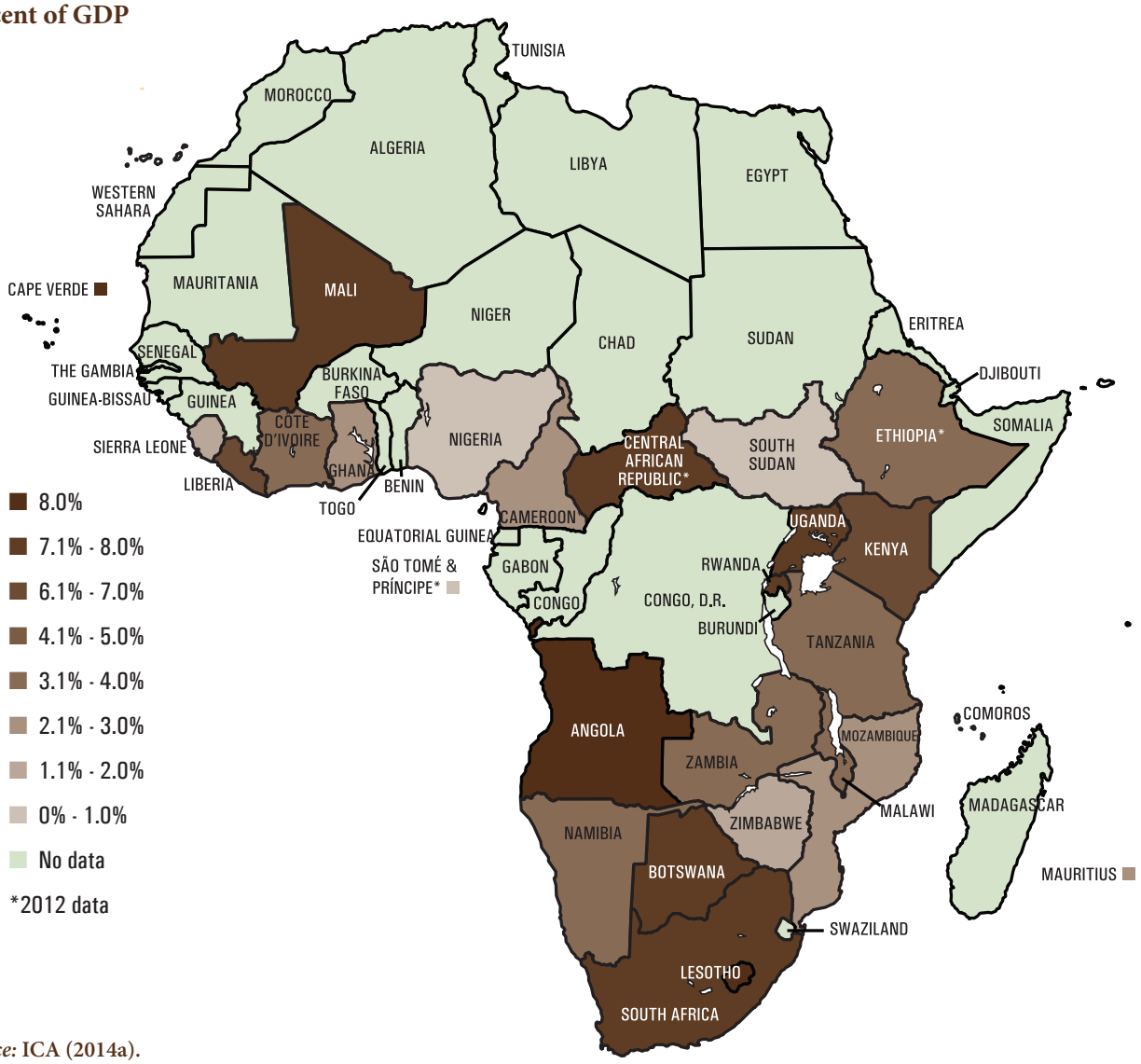
37 Using survey data for 21 countries, ICA (2014a) estimates that national budgets accounted for $46.7 billion in 2013, up from $42.2 billion in 2012. ICA (2014a) data on budget allocations for infrastructure projects are collected from the national budgets of 21 African countries (Morocco, Cape Verde, Mali, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, São Tomé and Príncipe, Cameroon, Central African Republic, South Sudan, Ethiopia, Uganda, Kenya, Rwanda, Tanzania, Namibia, Botswana, Zimbabwe, South Africa, and Lesotho). The amounts allocated to budgets may differ from amounts actually spent.

Analysis by Country

Aggregate figures mask large differences among countries. South Africa continues to dominate the continent in terms of absolute national budget allocations. At about $29.1 billion, South African infrastructure spending in 2012 was by far the largest in sub-Saharan Africa. After South Africa, Kenya and Namibia spent the most with about $3.0 billion each in 2012. Tanzania and Ethiopia spent about $1.7 billion each. South Africa will likely continue to be the country with the largest absolute infrastructure allocation funded through its domestic budget.

As a benchmark, Fay, Toman, Benitez, and Csordas (2011) estimate that developing countries need to invest 5-6 percent of their GDP in infrastructure to sustain their economic growth. In sub-Saharan Africa, there is no clear pattern between the country condition or its resource endowment and the extent of public bud-

Figure 22: National Budget Allocation to Infrastructure in Sub-Saharan Africa in 2013, Percent of GDP



Source: ICA (2014a).

get spent on infrastructure. In the sample of 25 countries in sub-Saharan Africa in the ICA (2014a) report, countries facing "fragile situations" such as the Central African Republic and Mali allocated a relatively high proportion of their GDP on infrastructure (in the 7-8 percent range), just as other fragile states such as Sierra Leone, Zimbabwe, and South Sudan allocated a negligible proportion.[38] Conversely, among non-fragile states, there were countries like Angola and Cape Verde that apportioned more than 8 percent of their GDP, just as resource-rich countries such as Cameroon, Ghana, and Nigeria allocated much smaller proportions (Figure 22 and Table 5).[39]

Table 5: Percentage of GDP Allocated to Infrastructure and Country Condition in Sub-Saharan Africa

Country	Percentage of GDP Allocated to Infrastructure[1]	Country Facing Fragile Situation[2]	Resource-Rich Country[3]
Angola	8.0% +		Resource Rich
Cape Verde	8.0% +		
Lesotho	8.0% +		
Botswana	7.1% - 8.0%		Resource Rich
Central African Rep.	7.1% - 8.0%	Fragile Situation	Resource Rich
Mali	7.1% - 8.0%	Fragile Situation	Resource Rich
South Africa	7.1% - 8.0%		
Uganda	7.1% - 8.0%		Resource Rich
Rwanda	7.1% - 8.0%		
Kenya	6.1% - 7.0%		
Liberia	6.1% - 7.0%	Fragile Situation	Resource Rich
Côte d'Ivoire	4.1% - 5.0%	Fragile Situation	Resource Rich
Malawi	4.1% - 5.0%	Fragile Situation	
Mauritius	4.1% - 5.0%		
Tanzania	4.1% - 5.0%		Resource Rich
Zambia	4.1% - 5.0%		Resource Rich
Ethiopia	3.1% - 4.0%		
Namibia	3.1% - 4.0%		
Cameroon	2.1% - 3.0%		Resource Rich
Ghana	2.1% - 3.0%		Resource Rich
Mozambique	2.1% - 3.0%		Resource Rich
Sierra Leone	1.1% - 2.0%	Fragile Situation	Resource Rich
Zimbabwe	1.1% - 2.0%	Fragile Situation	
Nigeria	0% - 1.0%		Resource Rich
São Tomé and Príncipe	0% - 1.0%		Resource Rich
South Sudan	0% - 1.0%	Fragile Situation	

Source: **Authors' analysis based on data and classifications of: 1- ICA (2014a), 2 - The World Bank, 3 - IMF.**

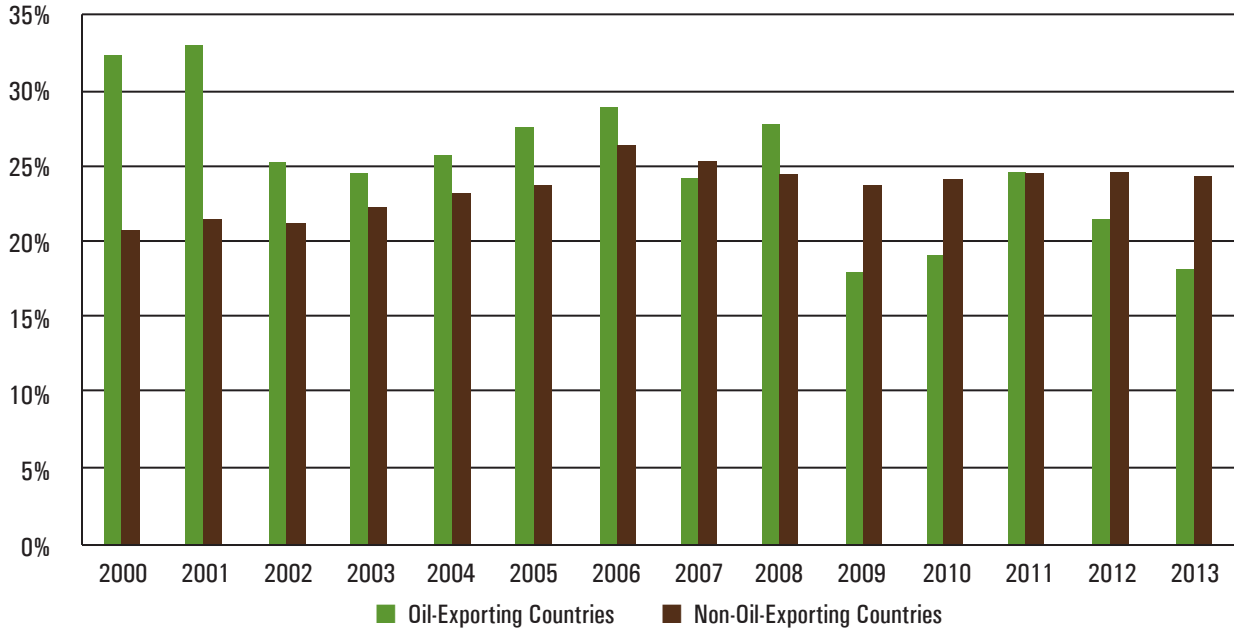
Domestic resources in sub-Saharan Africa have increased thanks to debt relief, increased revenue collection, gains from the commodity price boom and, more generally, improved macroeconomic and institutional poli-

38 The ICA (2014a) report uses 2013 national budgets and GDP levels.

39 As a share of budget, Cape Verde, Uganda, and Botswana allocated the most to infrastructure. Average spending on infrastructure in 2013 ranged from $8.64 to $548 per capita with Botswana and South Africa at the top end of the range and Nigeria and South Sudan at the bottom (ICA, 2014a).

cies. The average tax-to-GDP ratio has remained over 20 percent for the period 2000-2013.[40] However, increased tax mobilization has been driven by resource-rich countries and resource-related taxes. Oil-exporting countries have higher volatility in tax mobilization driven by fluctuations in international petroleum prices (as was the case of high prices in 2000-2008, followed by a relative slump since 2009). The same pattern held for other resource-rich countries and their respective commodity price trends. Tax mobilization, although more stable, remains low in spite of significant efforts and recent reforms in non-resource-rich countries (Bhushan, Samy, and Medu, 2013). For instance, the ratio of general government tax revenues to GDP in 2013 ranged from 2.8 percent in the Democratic Republic of the Congo to 25 percent in South Africa (one of the highest among all developing countries). Thus, in spite of good progress in raising fiscal revenues, African countries need to raise more domestic finance to meet their infrastructure gap.

Figure 23: Total Government Revenue in Sub-Saharan Africa, 2000-2012, Percent of GDP



Source: **IMF World Economic Outlook, October 2014 and African Development Bank Database.**

Given the wide disparity among sub-Saharan African countries of tax-to-GDP ratio, many African governments still need to raise their fiscal revenues to meet the infrastructure gap. However, increasing tax mobilization over a certain threshold does not necessarily lead to adequate spending on infrastructure and revenue, and spending reforms may be needed. For instance, Ahmad (2014) notes that although Brazil's tax-to-GDP ratio was relatively high at 24 percent in 2013, taxes are heavily earmarked, and, as a result, spending on infrastructure is just 1.5 percent of GDP (both public and private).

African countries also need to complement fiscal revenues and diversify their source of domestic financing. African governments are increasingly accessing international capital markets. Before 2006, only South Africa had issued a foreign-currency denominated sovereign bond in sub-Saharan Africa (Figure 24). From 2006 to 2014, in all, 13 countries have issued a total of $15 billion in international sovereign bonds.

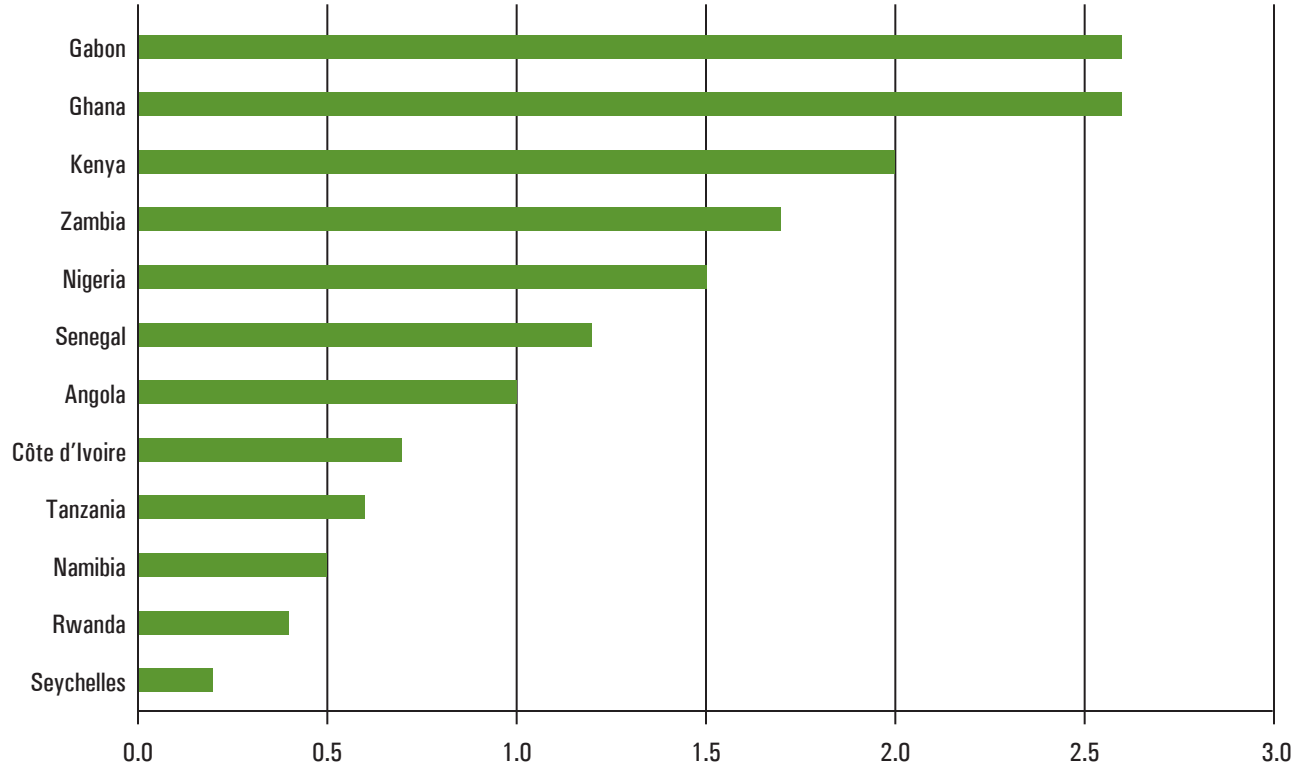
40 In comparison, Ahmad (2014) notes that a rule of thumb for calculating the amount needed to meet the financing requirements for the 2014 MDGs was a tax-to-GDP ratio of around 18 percent, which would cover the provision of the MDGs as well as operations and maintenance spending, and new investment in infrastructure.

This sudden surge in external borrowing in a region that contains some of the world's poorest countries is due to a variety of factors, including rapid growth and better economic policies in the region, high commodity prices, and low global interest rates. Whether sub-Saharan governments will be able to rely on external borrowing in the future over the medium-to-long term, however, is open to question. The low interest rate environment is set to change at some point—both raising borrowing costs for countries and reducing investor interest—and oil prices are falling, which makes it harder for countries to service or refinance their loans. In the medium term, heady economic growth may not continue if debt proceeds are only mostly used for current spending and debt is not adequately managed.

There is scope to develop domestic capital markets, as existing markets are not conducive to infrastructure finance. Except for a few countries, such as South Africa, local capital markets remain dominated by commercial banks with a short-term focus. Kenya has managed to tap its local investor base to issue over $1 billion (in local currency) of infrastructure bonds since 2009 by offering incentives such as the possibility to use these bonds as collateral to acquire bank loans, which banks could count as regulatory reserves.

Untapped sources of funding are also being considered. The use of diaspora bonds (like those issued by Ethiopia) and the placement of infrastructure bonds to the diaspora (like those in Kenya) are being explored by other African countries. Islamic financial instruments such as *sukuk* have been used to finance infrastructure projects in countries such as Malaysia, Indonesia, and others in the Middle East, and could attract investors from such countries. This option is being explored by the government of Senegal.

Figure 24: Cumulative Sovereign Bond Issuance in Sub-Saharan African Countries (Excluding South Africa), 2006-2014, in US$ Billions (Current)



Source: Dealogic.

Analysis by Sector

African governments have been increasing their investment in a number of sectors. Infrastructure budgets grew 8 percent per year over 2011-2013 while general expenditure budgets increased by 3 percent per year (ICA, 2014a). In particular, allocations to the energy sector grew by 5 percent over the period. The water and telecom sectors experienced 11 percent and 7 percent growth rates, respectively, while transport grew by 1 percent. IMF (2014b) estimates that public infrastructure investment grew even faster than the ICA figures at 15.8 percent per year in 2007-2012 to reach $59.4 billion in 2012 (almost double its 2007 level of $28.5 billion).

Transport and energy dominate sub-Saharan African governments' budget allocations to infrastructure. The two sectors had the highest budget allocations in 2011-2013, accounting for 41 percent and 37 percent of total infrastructure budgets, respectively (ICA, 2014a). The transport sector received an average annual allocation of $17.1 billion over 2011-2013 for the 21 countries surveyed compared to $685 million per year for the telecom sector (ICA, 2014a). In contrast, budget allocations for water and telecom were lower—at 20 percent and 3 percent of the total, respectively. These results are quantitatively similar to those in the 2009 World Bank Report.

Compared to other sources of finance, governments play a key role in the financing of the airport sub-sector and the water sector. As noted above, governments play a reduced role in the financing of the telecom sector, which is particularly amenable to private sector financing.

Again, average figures mask differences across countries, each of which prioritizes different sectors in their budget allocations. In 2013, Malawi, Namibia, and Zambia each allocated over 70 percent of infrastructure expenditure to the transport sector (ICA, 2014). In Mozambique, Botswana, and Lesotho, more than 30 percent of their infrastructure budgets went to water and sanitation. In Ghana and Tanzania around 50 percent of their budgets went to the energy sector. With the exceptions of Zimbabwe, Sierra Leone, and South Sudan, no other country among the 24 surveyed by ICA allocated more than 10 percent of their infrastructure budget to the telecom sector.

4.2 Sub-national- and Municipal-Level Finance

The discussion of public finance reveals one of the major blind spots in the discussion of financing the African infrastructure gap: the lack of attention to sub-national needs and financing, particularly related to urban infrastructure. Sub-Saharan Africa—with about two-thirds of the population living in rural areas—continues to be predominantly rural compared with the other continents (Foster and Briceño-Garmendia, 2009: 127). Urbanization, though, is increasing rapidly, and some project that it will represent 50 percent of the continent by 2035 (U.N.-Habitat, 2014: 23).

As indicated in the World Bank African Urban Strategy, "Africa is less than halfway through the urbanization process," (World Bank, 2013: ix). However, in many cities of Africa the challenge of urbanization and the need for critical infrastructure is already evident. One-third of urban residents are located in 36 cities, each with more than a million inhabitants (Foster and Briceño-Garmendia, 2009: 128). The U.N. State of African Cities Report for 2014 projects that megacities such as Lagos and Kinshasa will host 18.9 million and 14.5 million people, respectively, by 2025. Other cities such as Dar-es-Salaam, Abidjan, Nairobi, and Kano have the potential to do so within the next generation (U.N.-Habitat, 2014: 23). The report further identifies "mega-urban

regions" which incorporate cities with their outlying but connected towns in virtual "megacities." Megacities, together with the mega-urban regions, pose serious infrastructure challenges. Another complicating factor for African infrastructure development is the relatively low income level of this urban growth relative to other regions, and the prevalence of informal settlements in them (World Bank, 2013a: 13).

A key lesson learned from the urbanization of the rest of the world is the importance of pro-active measures in planning and investing in the necessary infrastructure before the challenges of land use and settlement become overwhelming.

Table 6: Projected Population Dynamics of Sub-Saharan Africa's 10 Most Populous Cities (2015), 1985-2025, in Thousands

Urban Agglomeration	1985	1990	1995	2000	2005	2010	2015*	2020*	2025*
Lagos	3,500	4,764	5,983	7,281	8,859	10,788	13,121	15,825	18,857
Cairo	8,328	9,061	9,707	10,170	10,565	11,031	11,944	13,254	14,740
Kinshasa	2,722	3,520	4,493	5,414	6,766	8,415	10,312	12,322	14,535
Khartoum	1,611	2,360	3,088	3,505	3,979	4,516	5,161	6,028	7,090
Abidjan	1,716	2,102	2,535	3,028	3,545	4,151	4,923	5,896	6,971
Dar-es-Salaam	1,046	1,316	1,668	2,116	2,683	3,415	4,395	5,677	7,276
Johannesburg	1,773	1,898	2,263	2,732	3,272	3,763	4,114	4,421	4,732
Nairobi	1,090	1,380	1,755	2,214	2,677	3,237	3,958	4,939	6,143
Kano	1,861	2,095	2,339	2,602	2,895	3,271	3,902	4,748	5,724
Cape Town	1,925	2,155	2,394	2,715	3,100	3,492	3,810	4,096	4,388

Source: **World Urbanization Prospects: The 2011 Revision, UNDESA, New York, 2012.**

Note: *** indicates projections.**

The extensive efforts by the World Bank and the AfDB to estimate sub-Saharan African infrastructure needs and monitor financial flows provide little if any guidance on sub-national requirements and related flows. The little guidance that is provided is in "Facilitating Urbanization" (Foster and Briceño-Garmendia, 2009: 132-133), which estimates that of the overall infrastructure needs in sub-Saharan Africa of $93 billion per year, 34 percent of it will be needed for national infrastructure, 32 percent for urban infrastructure and 34 percent for rural infrastructure. However, there is little detail or guidance on the distinct nature of urban versus other types of infrastructure.

This lack of attention on sub-national needs is most pronounced for the transport sector. The situation is exacerbated by the lack of a credible internationally recognized indicator for urban transport access. While there are metrics for access to electricity, telecom, and water and sanitation, there are none for transport. The Africa Infrastructure Development Index (AIDI)[41] (managed by the AfDB) does apply two indicators for transport: paved road km per 10,000 inhabitants; and total road km, paved and unpaved, per square km of exploitable land. However, neither of these indices relate to urban transport accessibility.

41 For details, see African Development Bank. Africa Infrastructure Development Index (AIDI) 2000-2010 http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Economic_Brief_-_The_Africa_Infrastructure_Development_Index.pdf.

As with sub-Saharan African urbanization more generally, the level of delegation of infrastructure services and investment is in flux, with wide ranges between countries and even some reversals of earlier decentralization. It is clear, however, the extent of decentralization in the region is much less than that in Latin America, and South and East Asia. Even where decentralization occurs, there is a wide variation of fiscal autonomy and the ability to raise revenues locally. The U.N. Habitat reported in 2010 that the percentage of public expenditures by decentralized governments (recurrent and capital) for four countries range from a high in South Africa of 60 percent, Ethiopia at 31 percent, Uganda at 28 percent, and Kenya at 5 percent (U.N.-Habitat, 2014: 12).

The heavy dependence on national government transfers to fund expenditures as opposed to raising local revenue through taxes and fees generally constrains local governments' ability to make investment decisions without national input and can also create unpredictability from year to year. Without a predictable continuing source of revenue, the ability of local governments to seek other forms of revenue and investment capital through bonds or borrowing is limited. Understandably, national governments have been reluctant to encourage sub-national entities borrowing, and some have not allowed it at all. Among sub-Saharan African countries, metropolitan governments in South Africa borrow from a range of sources including municipal bonds, commercial papers, and medium-term notes. In 2014, the city of Dakar, with technical assistance from the Gates Foundation, plans to issue the first non-sovereign-backed municipal bond in all of sub-Saharan Africa outside of South Africa. The $41.8 million bond will be backed by a guarantee from the USAID Development Credit Authority. This will raise funds for the construction of a marketplace for more than 3,500 street vendors.[42]

Sub-national financing, especially for infrastructure, represents an important challenge for development finance and is in a serious need for funding and technical assistance from ODF, especially the IFIs. There are many lessons from decentralization efforts in developing countries and different donor urban finance efforts. A review by Kharas and Linn (2013), however, concluded that the donor community's involvement, despite extensive recognition of the social, economic, and environmental issues surrounding urban growth, has neither been consistent nor comprehensive, especially in Africa. As a percentage of bilateral and multilateral aid worldwide, the share allocated to urban infrastructure has been consistent at best: For sub-Saharan Africa, it has been even less (Kharas and Linn, 2013: 397). One part of the problem is the mode of financing, as serving a particular urban area may not be a political priority, and IFI lending requires national guarantees. Efforts by the World Bank to create a specific financing mechanism with IFC participation have not proceeded beyond the concept stage.

4.3 Implications Going Forward

The discussion of national and sub-national budgets underscores the importance of raising awareness of these critical areas as high priorities for addressing infrastructure finance and the quality of related services. The following are key considerations for future efforts:

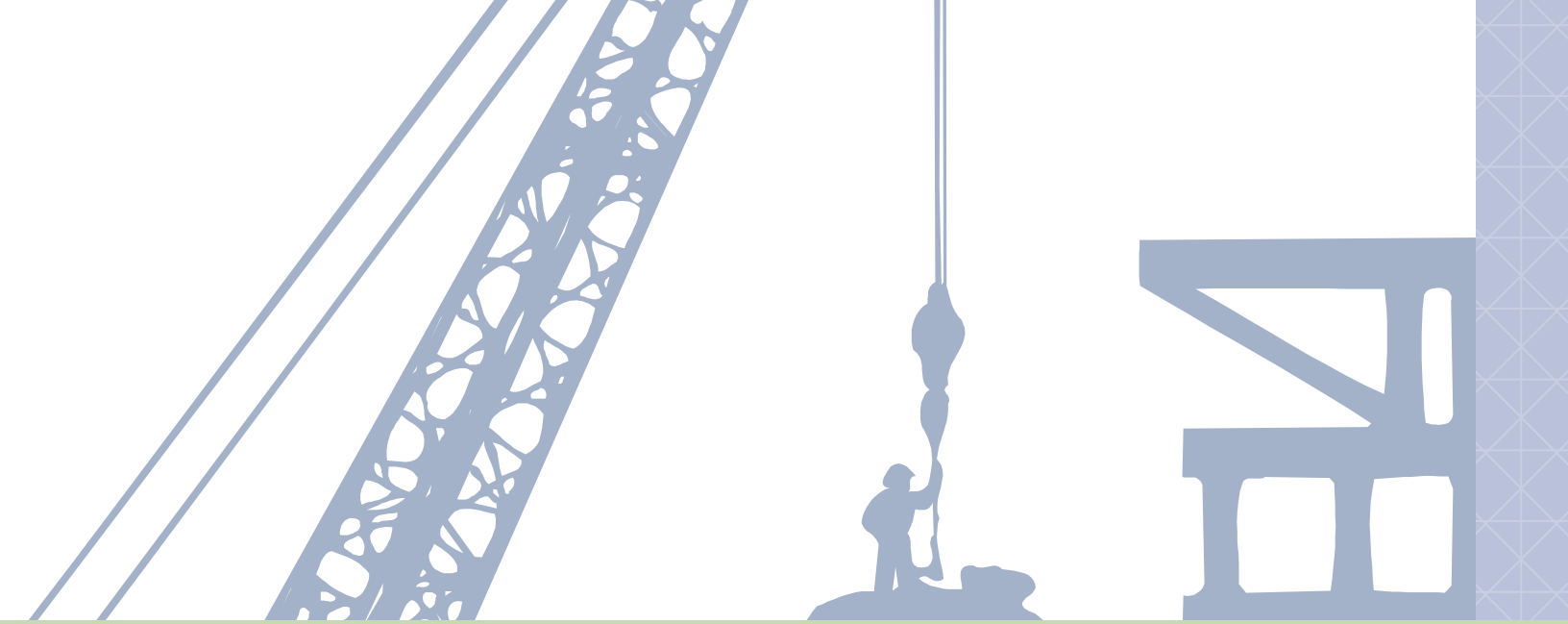
- In the case of national budgets, it is important to better link the broader public finance reform agenda with the requirements of the infrastructure sectors. This includes: (i) creating stronger budgetary institutions; (ii) raising more revenues from countries' own tax bases; (iii) improving spending efficiency, especially

42 Recent reports indicate that this bond issue has been delayed until disagreements between the finance ministry of the national government and Dakar city officials are resolved: http://citiscope.org/story/2015/how-dakar-almost-got-its-first-municipal-bond-market.

investment project selection and management as well as the maintenance and rehabilitation of existing infrastructure; and (iv) undertaking comprehensive medium-term debt management strategies that would include quasi-fiscal liabilities (Moreno-Badia and Presbitero, 2014). As the infrastructure sectors include state-owned enterprises (SOEs) as well as government agencies, it is important to address these entities and the quasi-fiscal liabilities that they raise.

- Developing appropriate financing plans requires a good understanding of the nature of specific sectors and sub-sectors. Sectoral specialists need to advise on the issues of maintaining the network economics, pricing and affordability issues, and operational challenges that affect the ability and cost of attracting private finance. Often the social net benefits outweigh private net benefits to the extent that it is not feasible to attract private financing (McKinsey, 2013), but such projects may be amenable to other forms of public private partnerships without private financing (Sabol and Puentes, 2014).

- In the case of sub-national budgets and related infrastructure requirements, there is an urgent need for a broad-based effort to assess urban infrastructure needs, the particular social, economic, and environmental issues associated with serving those needs, and the local governance and fiscal frameworks that are required.



5. Governance: An Unfinished Agenda

Filling the Infrastructure Gap: The Role of Governance

While most of the attention given to the 2009 World Bank Report has focused on the mobilization of external and domestic financing, there has been less attention by policymakers and donors to the estimated amounts that could be saved through governance-related reforms. Of the 10 recommendations offered in the report, nine relate to such measures (Box 2) including maintenance and rehabilitation, operational, institutional, and regulatory efficiencies, better-targeted subsidy policies, and improved budget execution. Of the $93 billion required annually, the 2009 Report estimates that $17 billion could be achieved through governance-related reforms (Foster and Briceño-Garmendia, 2009: 15). However, global and regional efforts to address the infrastructure gaps mentioned throughout this paper, and related monitoring, have been directed mainly at the project/transaction level and raising or unleashing financing. Given the scope and scale of the infrastructure gap in 2009, it was impractical for the investor community and national governments to wait for such reforms to precede infrastructure financing. But after five years of significant increases in financing, it is time to redress this imbalance.

Project/Transaction Level

In terms of governance, public officials and donors are currently focusing on finding ways to quickly fill the continent's infrastructure financing gap through better project preparation, improved procurement procedures, and innovative finance. Although private financing is available, it is not being allocated to African infrastructure projects due to a "market failure." The consensus among African policymakers is that project preparation and finance are the key priorities to resolving this market failure. The Africa Progress Panel (2014) report also recognizes the critical importance of better project preparation. Therefore, the goal of the 2014 Dakar Financing Summit was to provide "a platform to find practical ways to enhance project preparation and identify innovative financing structures that involve both public and private funding."

Box 2: Main Recommendations of the 2009 World Bank Report

Nine out of the 10 recommendations in the 2009 World Bank Report focus on reaping the "efficiency dividend" and only one targeted raising new financing. They all remain very relevant for sub-Saharan Africa and focus on a diverse set of issues, including:

- **Prioritize overcoming inefficiency:** Almost $17 billion (18 percent of $93 billion in infrastructure needs of sub-Saharan Africa) can be financed just through improving the efficiency of existing resources. Across each sector there are systemic design flaws, operational bottlenecks, poor allocation of resources, and coordination failures. Overcoming these inefficiencies offer low-cost sources of revenue and generates higher returns on any new investment.
- **Maintain existing infrastructure:** Safeguarding maintenance expenditures will help avoid wasting resources on the repeated rehabilitation of existing assets. One-third of Africa's infrastructure may need rehabilitation, and the AICD estimates that $1 of maintenance can provide a savings of $4 to the economy
- **Institutionally reform utilities and other service providers:** In many African countries, utilities are often state-owned monopolies. Inefficiencies, including distribution losses, under-collection of revenues, and overstaffing by African power and water utilities may cost taxpayers about $6 billion a year. Utilities typically collect only 70-90 percent of billed revenues, and distribution losses can easily be twice the technical best practice.
- **Improve public expenditure framework:** Line ministries take the lead in sector planning, participate in the formulation of the public budgets, and execute investments. Weak sector planning, poor project screening, and inadequate procurement can lead to inefficiency losses reaching $3.3 billion per year. Low budget execution could prevent a further $1.8 billion a year of public investment funds from being spent.
- **Modernize administrative and regulatory frameworks:** In the transport sector, for instance, the regulation and market structures of the road freight industry are the major bottlenecks for the relatively good quality international corridors. Modernizing customs administration, including the use of modern information technology and cargo handling, a better integration of port and land distribution infrastructure, and overall strengthening of transport chains can help reduce inefficiencies.
- **Enhance regional integration:** Regional collaboration in continental fiber-optic submarine cables can reduce internet and international call charges by half, relative to national reliance on satellite communications. Collaborative management of rail corridors and cross-border river basins can also reduce costs. Regional power trade would reduce imports by more than half.
- **Improve urban-rural economic integration:** Economic integration of rural and urban areas would need to address deficiencies in land policies and planning, and the lack of urban infrastructure and poor urban institutional set-up, including financing sources.
- **Reform subsidies:** High infrastructure costs in many African countries are not covered by relatively high tariffs (by international standards). Revenues uncollected because of underpricing of power and water reach as much as $4 billion per year. This implicit subsidy to infrastructure consumers does not include the sizable subsidies that many African governments offer to large industrial customers. Subsidies are often highly regressive and not well targeted and, as a result, do not benefit the poorest segment of the population. Cross-subsidization among users can help better target subsidies.
- **Foster demand for infrastructure services:** Lower-cost technologies can provide reasonable levels of service at a price that is affordable to the consumers without damaging fiscal sustainability. Lowering charges for initial connection can make market entry affordable, and payment arrangements such as prepayment schemes can lower credit risk and give consumers more control over their spending.

Source: **Foster and Briceño-Garmendia (2009).**

Similarly, at the project/transaction level, traditional procurement procedures, for bid and award, are considered inadequate for new forms of project finance for infrastructure. The World Bank and the African Development Bank are in the process of proposing major overhauls to the policies that guide procurement for the projects they finance. One element of that reform is to modify the policies to include public-private investments as well as other new approaches to infrastructure procurement.[43]

Despite this focus at the project level, there remains a significant governance-related blind spot: the lack of attention and monitoring of project/contract implementation. Infrastructure has been consistently cited as a sector facing high risks of corruption (OECD, 2014). While much of procurement reform has been directed at the bid and award stage, it is well documented that corruption during project implementation represents an equal or higher risk to project outcomes (Kenny, 2007) whether due to corruption or to the uncertainties of construction. Yet in the current discussions by the multilaterals in sub-Saharan Africa and elsewhere on procurement reform, there is little substantive effort by policymakers to address the risks during implementation and the need for greater efforts at contract management (Gutman, 2014).[44]

Sectoral Level

To address the proposed reforms set forth by 2009 World Bank Report, it is crucial that policymakers look beyond individual projects and focus on sectoral strategy.[45] Commendable efforts to create coordinated sectoral strategies have targeted regional cross-border investments by PIDA, identifying 51 regional programs and projects through a strategic planning exercise for each infrastructure sector. However, efforts at the national level have been more sporadic.

Resolving the infrastructure gap requires more than just building infrastructure. What good is power generation if the delivered price of generated power is not affordable? How effective is increased access to water if the water quality does not meet standards? Will railway investments deliver without the critical institutional reforms to manage operations? Can a road investment meet expectations without addressing the conditions of the connecting road network?

Each sector presents its own set of governance challenges and technical operational complexities. The success of the private sector's involvement in financing the telecom sector in sub-Saharan Africa shows that the restructuring of the sector (including through the breaking up of the monopoly of state-owned companies and deregulation) was sufficient to reduce governance constraints and attract private participation. As mentioned in Section 4.1, the combination of low risk during the development or construction phase, and easy securitization of potential revenue streams made the telecom sector particularly amenable to private sector investment. To some extent, these characteristics explain private participation in certain sub-sectors such as power generation and ports. In contrast, the challenges in other sectors such as roads, rail, power distribution, and water include issues related to pricing and operations that have discouraged private sector investment.

43 See World Bank (2013c) and World Bank (2013d). These reports review existing public procurement procedures for infrastructure projects and new proposals.

44 There are other initiatives such as the Construction Transparency effort (CoST) that are mobilizing stakeholders in different countries but are still receiving priority from policymakers.

45 The distinction between upstream sectoral strategic planning versus project planning is described in the ICA (2014a) study on Project Preparation (ICA, 2014a: 36-37).

The more detailed the strategic framework for the sector, the better the framework for mobilizing alternative financing models.

The experience of the IFIs and the evolution of their infrastructure lending since the 1980s further underscores the need to focus on sectoral governance issues if one is to achieve the desired outcomes. The lessons of this experience are of particular importance as financing sources expand beyond the traditional sources. Early IFI infrastructure support was heavily focused on "bricks and mortar"—the engineering view on infrastructure of "just build it." Prior to the 1980s, extensive efforts were made to establish open and transparent public procurement procedures and to develop analytical cost-benefit approaches for prioritizing and evaluating investments. By the 1980s there was a serious concern in the development community for the sustainability and operational efficiency of infrastructure investments and related services that led to efforts on maintenance in the road sector and on operational effectiveness in water and energy. For example, the World Bank learned to take a more critical look at railway lending following a review of serial loans to publicly managed railways that failed to achieve projected outcomes. Another involved energy lending, particularly large-scale dams, which came under critical review after the 1991 Narmada Dam controversy over the application of environmental and social safeguards. And, in urban transport, the high cost and problematic affordability issues around mass transit limited the World Bank's appetite for supporting such systems. Thus, lending for those investments was significantly constrained, especially through the 1990s. In response to these lessons, the IFIs have taken a more comprehensive approach to project development with an eye on the governance issues critical to the performance of each sector.[46]

Global and Regional Level

At the global and regional level, the growth of new institutions and non-traditional sources of finance are beginning to challenge the central role of organizations such as the World Bank and the African Development Bank. As a result, the issue of global and regional governance has come under question. Both the Dakar Agenda (NEPAD, 2014) and Africa Progress Panel (2014) report have raised similar concerns. A key question, then, is whether new institutions are needed to address strategic coordination between this growing number of stakeholders or whether existing institutions can be adapted in the new context. The general conclusion is that the AfDB should play the key leadership role in coordinating traditional and non-traditional infrastructure financing for sub-Saharan Africa. The AfDB already plays a significant role through its leadership and its support to Africa2050, NEPAD, and ICA. The earlier discussion of external financing in this paper indicates that there is complementarity between sources in terms of countries and sectors supported but that the alignment is unintended and non-strategic. There are two challenges going forward:

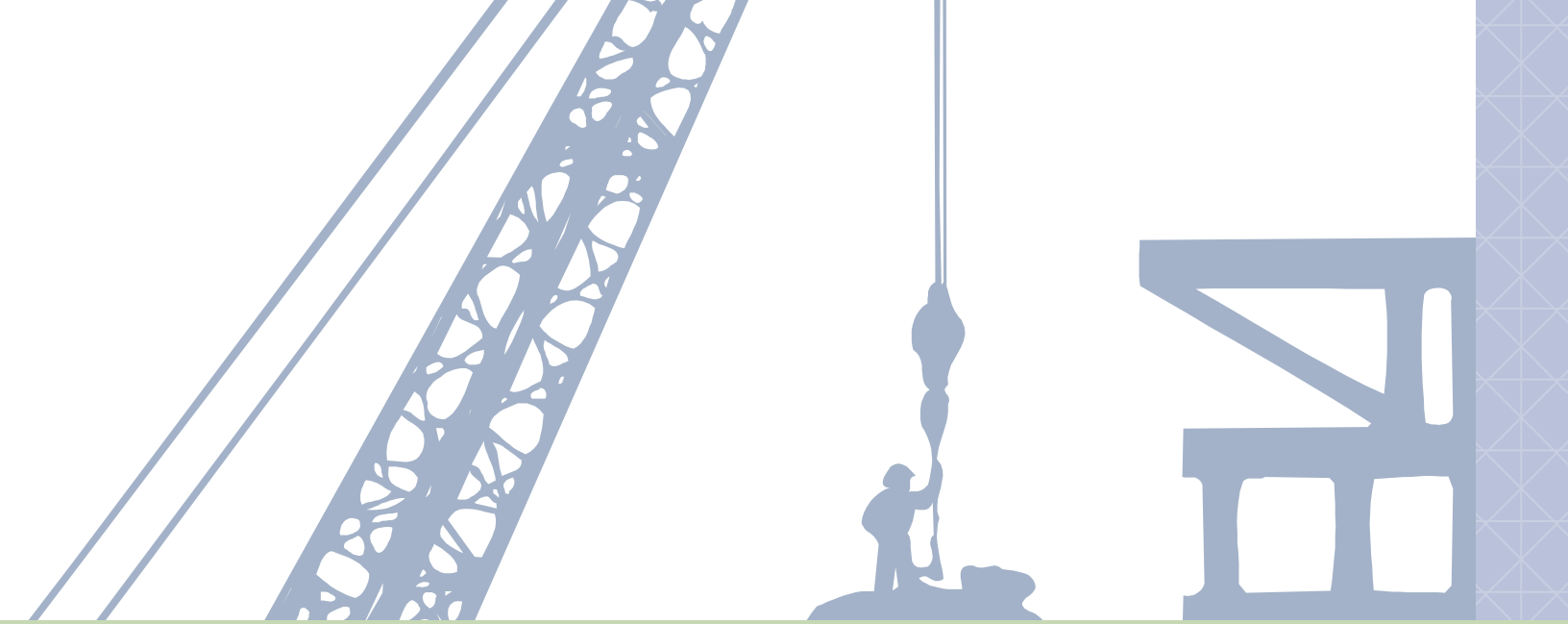
- How to incorporate non-traditional stakeholders and promote dialogue, coordination, and collaboration;
- How to broaden the focus beyond finance to sectoral strategy, reform operations, and related institutional capability.

Similarly, the evolution of World Bank financing described above illustrates the important role that such in-

46 The U.S. initiative Power Africa takes a broad-based approach as presented in its 2014 Annual Report (USAID Power Africa, 2014). It remains to be seen if the focus will go beyond that project's financial closure and provide equal attention to key reforms. It is also unclear whether the coordination among agencies be effective, always a problem of national visibility in bilateral efforts.

stitutions can and do play beyond traditional project finance. The World Bank has been an honest independent broker, and as a catalytic agent for investments, it has played a key finance and governance role in major sectoral initiatives. It has supported efforts on institutions, regulatory and pricing policies, anti-corruption, decentralization, and public-versus-private finance and management through its worldwide experience and its analytical strength. Moreover, it continues to play a role in setting the standards for addressing integrity concerns, and economic, social, and environmental issues.

It is clear the World Bank will be important in addressing issues of urban infrastructure and in designing appropriate sub-national financing instruments. The challenge will be in how it chooses to engage and collaborate with other financing sources within this new context.



6. Conclusions and Recommendations

This paper set out to trace the financial response to the infrastructure gap in sub-Saharan Africa since the 2009 World Bank Report and to analyze the scope and distribution of the response by country and sector. The data show that there has been an unprecedented increase in financing for sub-Saharan Africa's infrastructure from almost all sources—traditional and non-traditional bilateral and multilateral institutions, the private sector, and the public sector. While the scale of the investment response grows, however, the question now is whether it will culminate in an appreciable filling of the gap in terms of overall economic, social, and sustainability objectives across the various countries and sectors. The paper raises concerns in this regard, arguing that the current emphasis on raising funding and individual projects/transactions has come at a cost in terms of strategic planning and broader governance issues essential to the quality of investment outcomes. It then challenges policymakers inside and outside Africa to strengthen their efforts at strategic coordination, oversight, and support beyond the focus on project-level finance.

Key findings

- The overall distribution of infrastructure finance by major external sources indicates a substantial dispersion of financing across sub-Saharan African countries. Although in terms of absolute amounts there is a high concentration in about five countries, as a percentage of GDP the distribution appears more balanced with four of the top six countries representing fragile states. The countries that benefit the least are a combination of states with substantial own-financing capabilities or those that face the most serious issues of fragility and conflict.

- Similarly, there is broad coverage over the infrastructure sectors with the most recent growth being directed at energy by all three major external financing sources. The source of financing for the other sectors varies, with the water sector being mainly served through the public sector and ODF.

- When one delves more deeply, this seemingly balanced picture, however, appears to be a serendipitous result of country and sector preference and criteria by each of the major sources of external finance. Private sector finance, which had been rather broad-based across countries when directed at telecom sector investments, is highly concentrated in a limited number of countries when directed at other sectors, especially energy. In parallel, China's considerable financing supports countries and sectors, such as road and rail, that are not targeted by the private sector. But it is not clear what guides the Chinese strategy and other non-traditional sources.

- ODF, especially from the World Bank and the AfDB, continues to represent an important source of finance with a broad country distribution guided by the allocation criteria for their most concessional window (IDA/ADF). Notions of the demise of the importance of these institutions arise from confusion over their changing relative financial weight, especially in middle-income countries. The continued financial role of IFIs in lower-income countries, as well as the broader role these institutions do and should continue to play in leveraging other finance and in strategic coordination, standard setting, and governance, remain significant for effectively addressing sub-Saharan Africa's infrastructure gap.

- Public finance continues to be the major source of funding for infrastructure but has received much less attention in the discussion by sub-Saharan African countries, the IFIs, and the donor community. While there has been an increase in infrastructure funding as a number of countries dedicate more than 5-6 percent of GDP to infrastructure investment, there is a strong case for more resources through higher tax revenues and domestic capital markets when compared with countries outside sub-Saharan Africa.

- Relatedly, one element of public finance for infrastructure that is virtually absent in the dialogue is sub-national public finance and related infrastructure needs. While sub-Saharan Africa is still considered a predominantly rural continent compared with other regions, urbanization clearly represents a key emerging challenge—with serious infrastructure implications. A number of African cities are already facing issues of highly inadequate infrastructure; yet urban development and related sub-national fiscal concerns do not appear high on the infrastructure agenda. In terms of fiscal decentralization, sub-Saharan African nations—with their continued dependence on national government transfers posing major constraints on the opportunities to guide investments, raise revenues, and seek financing at the local level—lag behind other developing countries. Even ODF support at the sub-national level has been sporadic at best.

- Finally, the findings above point to the need for greater attention to overall governance at the global and regional levels as well as at country and sectoral levels. There has been significant emphasis on governance at the level of the project or transaction that has led to increased efforts on project preparation, financing innovations, and procurement/contracting reforms but this has not been matched at the broader strategic level. Efforts at the global and regional level by the World Bank and the AfDB have not reached beyond the traditional funding sources and the private sector from OECD countries. The growth of non-traditional sources of financing requires a broadening of the tent. Moreover, of the 10 recommendations of the 2009 World Bank Report, nine involved governance reforms at various levels of government addressing maintenance, operational efficiency, pricing, and regulatory policy that could contribute $17 billion in savings to the estimated $93 billion required annually for infrastructure. Although there are examples of a more comprehensive sectoral approach that includes a focus on operations as well as finance, it has been sporadic and has not been monitored. This paper sees a very significant risk to achieving quality outcomes without redressing this imbalance.

Recommendations

The following recommendations are offered to policymakers spanning the global, regional, and national levels. They are designed to *build upon existing institutional structures and functions rather than invent* new institutions. They are based on the progress made over the past five years in mobilizing financing for sub-Saharan African infrastructure:

- **Enhance collaboration and coordination across traditional and non-traditional sources of finance:** When traditional financing sources were limited, the main participants had an established structure for coordination that served those conditions. But as sources of funding—for example, traditional and non-traditional sources and agencies as well as the private and public sectors—become increasingly diversified and complex, the global and regional opportunities for coordination and collaboration are less clear-cut. This evolving financing context, together with a primary focus by sub-Saharan African countries and financiers on the individual project/transaction, creates serious risks for effectively addressing infrastructure needs of sub-Saharan Africa. The AfDB has played a central role in promoting collaboration among sub-Saharan African countries and among traditional donors through the ICA, Africa 2050, and Programme for Infrastructure Development in Africa. As the AfDB continues this role, it is important for it to provide leadership in engaging African policymakers, regional infrastructure experts, traditional donors, and non-traditional donors. African stakeholders and traditional multilateral agencies should respond positively and constructively to the opportunities offered such as the BRICS' New Development Bank or Chinese infrastructure initiatives, such as the China-led AGTF. It is only through genuine collaboration across the sources that Africa will benefit.

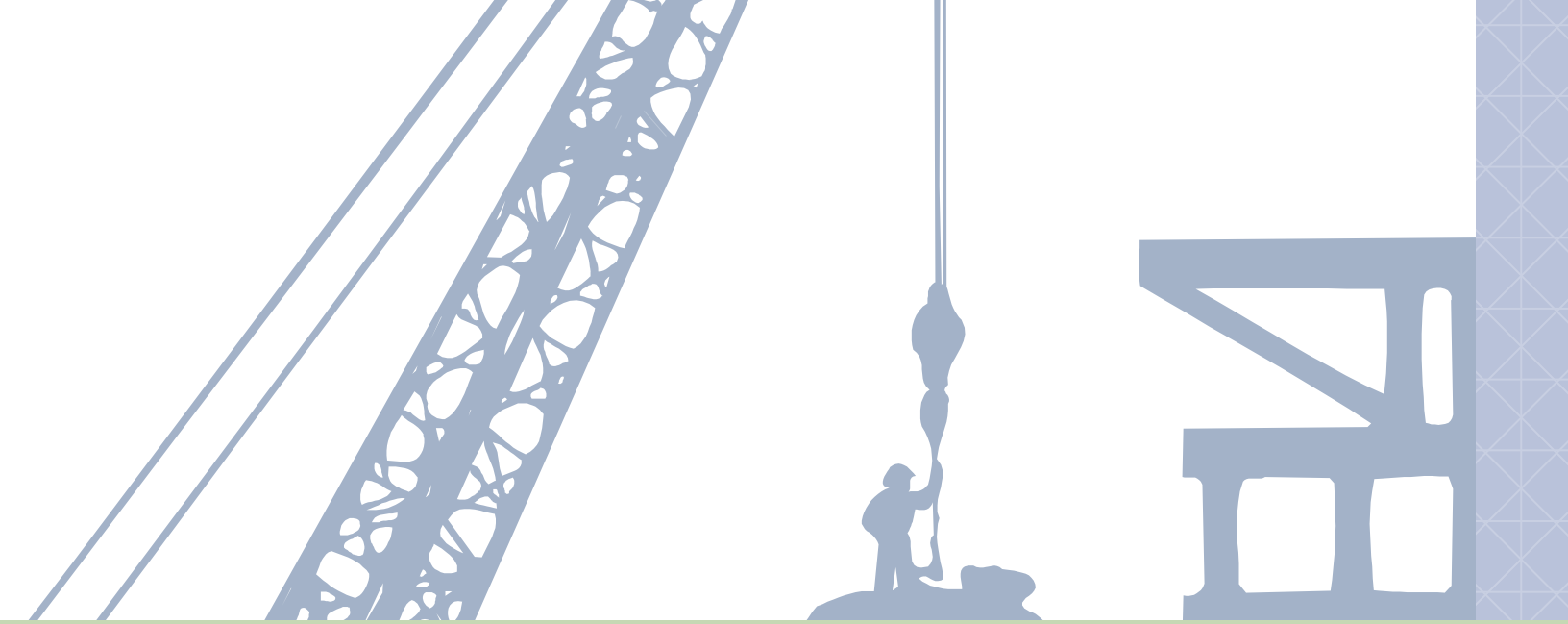
- **Guide infrastructure investment practices in terms of economic, social, and environmental sustainability:** Related to the issue of coordination and collaboration is the issue of standards for infrastructure investments, especially regarding economic, social, and environmental sustainability as well as integrity. Again, this has been simpler when the sources of financing were limited. Many lessons have been learned and incorporated by the multilaterals in the evolution of infrastructure projects and finance beyond the original "bricks and mortar" engineering-oriented approach. Clearly the World Bank has played a critical, though sometimes controversial, role in setting standards for investment design, evaluation, and implementation. It should continue as a key contributor, evaluator, and independent monitor of progress in sub-Saharan Africa. Ultimately, however, it is the African nations that must agree on the standards and principles that they will apply. What is needed is a regional discussion of those lessons, the principles, and the standards needed to guide infrastructure investment based on worldwide best practices.

- **Extend opportunities for private investment:** The various multilateral and bilateral agencies involved in promoting private infrastructure investment should take a critical look at the mechanisms available to support private investment beyond the telecom sector—particularly in countries and sectors that have not been able to attract such investment. A substantial review is required of the use of guarantees and related risk-mitigation instruments that assesses the application and extent of leveraging achieved through these efforts and how they can be better applied and monitored in the future.

- **Intensify efforts to improve public financing support for infrastructure and launch an initiative for sub-national/urban finance and investment:** The lack of information on infrastructure-related public sector budget issues is evident across the region as is the relative infancy of discussing sub-national devolu-

tion. The IMF, World Bank, and AfDB should develop and monitor a program of analytical work directed at strengthening public finance for infrastructure in sub-Saharan African countries. This work should pay particular attention to sub-national expenditures and revenue-raising opportunities. They should also explore the formulation of innovative financing models to enhance their support specifically to sub-national and urban entities. Such an effort could be initiated in time for the next replenishment cycle for the concessional lending of the World Bank (International Development Association, IDA), and the AfDB (the African Development Fund, ADF).

- **Redirect attention to the broader sectoral governance reform opportunities:** It remains unclear whether sub-Saharan Africa is achieving the potential efficiency benefits of $17 billion as estimated in the 2009 World Bank Report. The major attention given to increased financing and to projects/transactions needs to be broadened to include efforts to reform sectoral governance. However, this is a complex task as it requires a focus on individual sectors and how they operate in specific countries. Power Africa is attempting this task in its target countries, and there are additional reform efforts in various countries. What is needed is a more robust monitoring capability, equivalent to what is being done by ICA with finance. Ultimately, given the amount of years since the 2009 Report and the nature of the changes on the ground, it would be important to update the report.



7. Annex: Data Sources, Methodology, and Challenges

Private Participation in Infrastructure (PPI) Financing: The Public-Private Infrastructure Advisory Facility (PPIAF) and the Infrastructure Economics and Finance Department of the World Bank jointly host a comprehensive database (commonly referred to as the **PPI database:** http://ppi.worldbank.org/) of private participation in infrastructure projects across the world. Among these projects, we include only the concessions (management and operation contracts with major private capital commitments) and greenfield projects involving actual investment funding whether in new projects or as expansions to existing ones.[47] We thereby exclude the PPI projects that are management and lease contracts, and divestitures. The concessions and greenfield projects are those that have reached financial or contractual closure. They are recorded for the year that the concession is signed, and, in the case of greenfield projects beginning with partial funding, the year by which at least 25 percent of the project construction has been completed. We omit cancelled projects and those still in their development phase.

Chinese Financing: As China is a major and growing source of investment for infrastructure development in Africa, we capture its contribution using the China-oriented database, **AidData**—a consortium of international development research initiatives (http://china.aiddata.org/).[48] This database includes some of the early data on Chinese Development Finance by the World Bank that were used in the publication: Africa's *Infrastructure: A Time for Transformation*. In the absence of a composite and unified source of information of Chinese development finance, AidData (and the World Bank before it) has relied on media reports and third party sources for much of the project and investment data. As a consequence, not all of the projects reported can be verified for accuracy or for status updates. In addition, this database lists projects only up to 2012.

Official Development Financing (ODF): These investments include official development assistance (ODA) grants and loans, other official flows (OOF), and equity investments by the major multilateral development institutions—such as the World Bank and the regional development banks and Development Assistance Committee (DAC) members from within the OECD. We use the **OECD International Development Statistics** (IDS) online databases (http://www.oecd.org/dac/stats/idsonline.htm) that record the infrastructure investments by these institutions and countries. The main infrastructure investors in Africa from within this group are the World Bank and the African Development Bank, including their concessional funding elements, IDA,

47 As defined by the PPIAF: http://ppi.worldbank.org/resources/ppi_glossary.aspx (see section o*n "Sub-Type of Private Participation in Infrastructure")*

48 AidData is a consortium comprising of Development Gateway (Washington, DC), College of William and Mary (Williamsburg, VA) and Bringham Young University (Provo, UT).

and the African Development Fund respectively. We also include investments by these prominent DAC members: the European Commission, Belgium, Japan, France, Germany, Spain, the U.K., the U.S., Norway, Finland, Sweden, Denmark, and Switzerland. The investments recorded are the project commitments (and not actual disbursements) in current U.S. dollars.

Other data sources: The **World Bank World Development Indicators** (WDI) are our source for population and GDP data in this paper. Conforming to the World Bank and OECD DAC practice, we use the World Bank's **Country Policy and Institutional Assessment** (CPIA) indicators to quantify the institutional quality of the sub-Saharan IDA countries, and to identify IDA countries that are additionally deemed to be "low-income countries under stress" (LICUS) or "fragile states." Of the different components of CPIA, we use the Public Sector Management and Institutions Cluster Average for 2012,[49] and the harmonized list of fragile situations, 2014.[50] The Africa Infrastructure Development Index (AIDI) by the AfDB provides additional data for evaluating infrastructure service quality across countries and over the period 2000-2010.[51] This metric thereby captures the investment outcome of both external and internal financing in the sectors. The **World Economic Outlook** database of the IMF is the source for data on government revenue—both in absolute terms and as a proportion of national GDP.

49 See http://data.worldbank.org/indicator/IQ.CPA.PUBS.XQ

50 See http://siteresources.worldbank.org/EXTLICUS/Resources/511777-1269623894864/HarmonizedlistoffragilestatesFY14.pdf

51 African Development Bank. *Africa Infrastructure Development Index (AIDI) 2000-2010*

Table 7: Sub-Saharan African Countries in Fragile Situation and/or Rich in Natural Resource(s)

Country	Fragile Situation	Resource Rich	Natural Resource
Algeria		Resource Rich	Oil
Angola		Resource Rich	Oil
Botswana		Resource Rich	Diamonds
Burundi	Fragile Situation		
Cameroon		Resource Rich	Oil
Central African Rep.	Fragile Situation	Resource Rich	Diamonds and Gold
Chad	Fragile Situation	Resource Rich	Oil
Comoros		Resource Rich	
Congo, D.R.	Fragile Situation	Resource Rich	Minerals & Oil
Congo, Rep.	Fragile Situation	Resource Rich	Oil
Côte d'Ivoire	Fragile Situation	Resource Rich	Oil and Gas
Equatorial Guinea		Resource Rich	Oil
Eritrea	Fragile Situation		
Gabon		Resource Rich	Oil
Ghana		Resource Rich	Gold and Oil
Guinea		Resource Rich	Mining Products
Guinea-Bissau	Fragile Situation		
Liberia	Fragile Situation	Resource Rich	Gold, Diamonds, and Iron Ore
Libya		Resource Rich	Oil
Madagascar	Fragile Situation	Resource Rich	Oil/gas
Malawi	Fragile Situation		
Mali	Fragile Situation	Resource Rich	Gold
Mauritania		Resource Rich	Iron Ore
Mozambique		Resource Rich	Gas and Bauxite
Niger		Resource Rich	Uranium
Nigeria		Resource Rich	Oil
São Tomé and Príncipe		Resource Rich	Oil
Sierra Leone	Fragile Situation	Resource Rich	Diamonds
Somalia	Fragile Situation		
South Sudan	Fragile Situation		
Sudan	Fragile Situation	Resource Rich	Oil
Tanzania		Resource Rich	Gold and Precious Stones
Togo	Fragile Situation	Resource Rich	Phosphate
Uganda		Resource Rich	Oil
Zambia	Fragile Situation	Resource Rich	Copper
Zimbabwe			

Source: **For Countries in Fragile Situations: The World Bank, 2014. http://siteresources.worldbank.org/EXTLICUS/Resources/511777-1269623894864/HarmonizedlistoffragilestatesFY14.pdf. For Natural Resource Rich Countries: IMF, 2012. http://www.imf.org/external/np/pp/eng/2012/082412.pdf (Appendix 1: Tables 1 and 2).**

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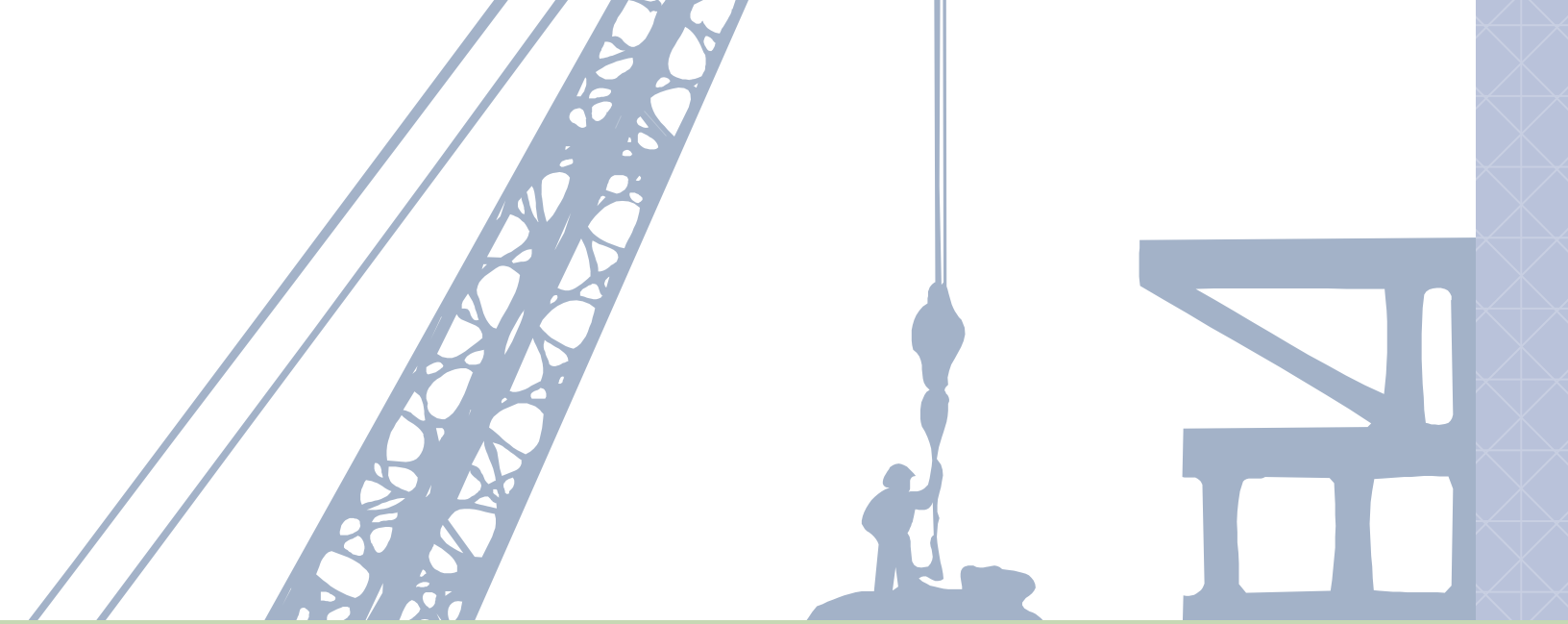
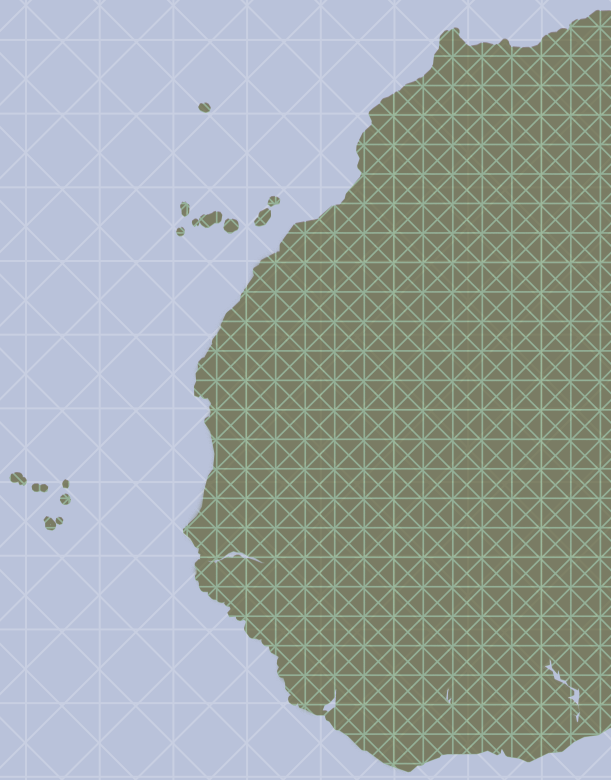


9. Acronyms and Abbreviations

ADF	African Development Fund (African Development Bank)
AfDB	African Development Bank
AGTF	Africa Growing Together Fund
AICD	Africa Infrastructure Country Diagnostic (World Bank)
AIDI	Africa Infrastructure Development Index (African Development Bank)
AU	African Union
BRICS	Association of five major emerging national economies: Brazil, Russia, India, China and South Africa
CAR	Central African Republic
Congo, D.R.	Democratic Republic of the Congo
DAC	Development Assistance Committee
G-8	The group of eight highly industrialized nations
G-20	The group of 20 important industrialized and developing countries
GDP	Gross Domestic Product
GIF	Global Infrastructure Fund (World Bank)
ICA	Infrastructure Consortium for Africa
ICT	Information and communications technology (used interchangeably with telecommunications, or telecom)
IDA	International Development Association (World Bank)
IFC	International Financial Corporation
IFI	International financial institutions
IMF	International Monetary Fund
MIGA	Multilateral Investment Guarantee Agency
NEPAD	New Partnership for Africa's Development
NEPAD-IPPF	New Partnership for Africa's Development – Infrastructure Project Preparation Facility
ODA	Official Development Assistance
ODF	Official Development Finance
OECD	Organisation for Economic Co-operation and Development
PCG	Partial Credit Guarantees (IFC)
PIDA	Programme for Infrastructure Development in Africa
PIDG	Private Infrastructure Development Group
PPI	Private Participation in Infrastructure
PPIAF	Public Private Infrastructure Advisory Facility
PPFN	Project Preparation Facilities Network (ICA)
PRG	Partial Risk Guarantees (World Bank)
TCX	Currency Exchange Fund (African Development Bank)
U.N.	United Nations
USAID	United States Agency for International Development
WDR	World Development Report (World Bank)



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