Mobilizing Resources and Re-Conceptualizing Aid for Trade

Proposal to Achieve Scale and Coordination in Sub-Saharan Africa Infrastructure Investment

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Executive Summary

Sub-Saharan Africa’s infrastructure lags behind in both quality and quantity. The current infrastructure deficit is “holding back” Sub-Saharan Africa’s per capita economic growth. Therefore, the benefits of scaled up and coordinated infrastructure investment are clear. The resulting hard infrastructure will expand trade and foster development. However, there are specific characteristics of Sub-Saharan Africa that create investment constraints that prevent the large required investment in infrastructure.

Many emerging economies have accumulated large pools of savings. These provide a potential untapped source of needed moneys.

The proposed financing mechanism discussed in this report aligns the incentives of investors with the infrastructure needs of Sub-Saharan African countries, with the aim of boosting trade and development. The mechanism provides two products to investors – equity and debt. The mechanism uses this capital to make loans and equity investments in trade-related infrastructure projects in Sub-Saharan Africa.

The proposed model also aims to address the coordination constraints for development of infrastructure in Sub-Saharan Africa. Coordinated infrastructure projects are more attractive to investors, provide a platform for growth, and improve trade across varying sectors.

The G20 has been an increasingly influential decision-maker in the international landscape on many issues regarding trade and development. Thus, the G20 provides a platform for advocating the proposed mechanism.

Capstone Project Summary
The Development Research Group serves as the main research arm of the World Bank. The World Bank tasked the Capstone Group with formulating a policy proposal it can deliver to the G20 that supports trade and development.

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Introduction

This report seeks to assist the G20 in promoting trade for development. A main obstacle for trade in Sub-Saharan African countries is the lack of hard infrastructure. Investment in infrastructure that is directly linked to trade will promote development, but additional funding sources are required. One potential funding source is excess savings in emerging economies. This report assesses channels through which funds can be transferred from savings surplus nations to Sub-Saharan African countries.

Our proposal provides a vehicle to attract funds from excess savings nations, which can then be used to fund trade-related infrastructure investments in Sub-Saharan Africa. The G20 can promote, facilitate, and provide support for this new mechanism. The World Bank can serve as a leader and advocate at the negotiating table and has an important role in the operation of the proposed mechanism.

Trade-Related Infrastructure in Sub-Saharan Africa

Infrastructure is a crucial sector in which investment is needed. Investment in infrastructure could help close the gap between current growth rates and the 7% growth target sought by the Millennium Development Goals. Specifically, investment linked to trade will promote economic growth.

The Need: Infrastructure Deficits in Sub-Saharan Africa

Sub-Saharan Africa’s (SSA’s) infrastructure lags behind in both quality and quantity when compared with other low\(^2\) and middle-income\(^3\) regions of the world. The most significant gaps remain in paved road density, electricity generation, and fixed-line telecoms.\(^4\)


\(^2\) According to the AICD, low-income countries are defined as countries with GDP per capita below $745 and that are neither resource-rich nor fragile states.

\(^3\) According to the AICD, middle-income countries are defined as countries with GDP per capita between $745 and $9,206.

SSA countries exhibit particular characteristics that may explain the underinvestment, including low population densities, and low rates of urbanization combined with rapid rates of urban growth. Further, several countries have small economies and are located in landlocked regions.

Public and external sources are currently providing an estimated $45 billion per year of the $93 billion shortfall. Yet, an additional $17 billion of the annual shortfall could be addressed by using current infrastructure stocks more efficiently. The efficiencies to be gained include:

- Continuing or increasing current maintenance expenditures;
- Reforming institutions ($6 billion per year of the $17 billion can be saved if overstaffing, under-collection of revenues, and distribution loses are resolved);
- Tackling public expenditure deficiencies;
- Modernizing administrative and regulatory frameworks to reduce bottlenecks;
- Increasing regional coordination;
- Securing the benefits of economies of scale and positive externalities; and
- Leveraging lower cost technologies.

According to the latest African Infrastructure Country Diagnostics (AICD), this gap has widened with a current infrastructure investment shortfall of $93 billion per year. Many

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6 In this report, the AICD considers 24 Sub-Saharan African countries. Although, by phase 2 all of SSA is included.

7 Ibid n4, p.1.

8 Ibid n4, p.15.
Reforms would significantly increase the productivity of infrastructure in SSA. Yet, as identified by the AICD, there remains of gap $31 billion per year. This is mainly concentrated in capital expenditures (65%) and shortfalls in operations and maintenance (35%).

Geographically, the main gaps are in Central (road-density) and East Africa (electricity coverage and information and communication technologies). The AICD estimates that fragile states would bear the largest annual burden (around 37% of current GDP). Fragile states are followed by non-fragile low-income states (23%), resource-rich (12%) and middle-income countries.

Trade-Related Infrastructure

There are four primary areas of trade-related infrastructure: transport, storage, communications, and energy.

Transport

Improving the distribution network is key to increasing SSA’s intra-regional and international trade. There are 15 landlocked nations in SSA that need to connect to the continent’s main ports.

SSA’s railway networks have low spatial density when compared to other regions, with the exception of South Africa. In fact, there are 13 countries in SSA that have no operational railway. In general, service levels are low and lines are disconnected and in poor condition. Therefore, few rails are able to generate enough funds to cover investment.

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9 Ibid n4, Table 1.4, p. 50.
10 According to the AICD, fragile states are defined as countries that score less than 3.2 on the World Bank’s Country Policy and Institutional Performance Assessment. Fourteen African are in this category.
11 According to the AICD, resource-rich countries are defined as countries in which primary commodity rents exceed 10% of GDP.
12 Ibid n4, Figure 0.3, p. 8.
13 Ibid n4, p. 252.
14 Spatial Density: track mileage to country size.
15 Ibid n4, Figure 11.2, p. 231.
SSA road density is also low when compared to other regions. SSA countries’ road density is 30% lower than South Asia’s (the next lowest region) and less than a third of the world’s average. The largest transport corridor is located in Southern Africa, with most of the trade volumes circulating along its roads.

According to the AICD, 75% of the main networks and 50% of the rural networks are in good or fair condition. However, this is not constant across the region due to: affordability, topography and climatic issues, financial framework, and road sector institutions. The AICD estimates that $9.6 billion (approximately 2% of the region’s GDP) is needed annually to make these roads operational. This requires a 40% increase above current levels ($6.9 billion), most of which falls on the public sector. The primary need is capital expenditures (1.5% of SSA GDP). This cost is not evenly distributed. For example, low-income countries must spend around 7% of their GDP.

SSA ports also suffer from similar problems. SSA port capacity is low and its performance is poor.

Ports are poorly equipped and inefficiently operated. Port management is primarily a public sector function. Ports have high tariffs in comparison with other

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**Table 1: Key Transport Corridors for International Trade in SSA**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Length (km)</th>
<th>Road in good condition (%)</th>
<th>Trade density (USD millions/road km)</th>
<th>Implicit velocity* (km/h)</th>
<th>Freight tariff (USD/ton-km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>2,050</td>
<td>72</td>
<td>8.2</td>
<td>6</td>
<td>0.08</td>
</tr>
<tr>
<td>Central</td>
<td>3,280</td>
<td>49</td>
<td>4.2</td>
<td>6.1</td>
<td>0.13</td>
</tr>
<tr>
<td>Eastern</td>
<td>2,845</td>
<td>82</td>
<td>5.7</td>
<td>8.1</td>
<td>0.07</td>
</tr>
<tr>
<td>Southern</td>
<td>5,000</td>
<td>100</td>
<td>27.9</td>
<td>11.6</td>
<td>0.05</td>
</tr>
</tbody>
</table>

* Includes time stationary at ports, border crossings, and other stops

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16 Ibid n4, p. 212. Africa’s average is 204 km/1000 km² and the world’s average is 944 km/1000 km².
17 Ibid n4, p. 147.
18 Ibid n4, p. 217.
19 Ibid n4, p. 151.
regions, yet container-handling rates are well below international standards.\(^{20}\)

Capacity is also a key issue. Most SSA ports cannot accommodate a significant increase in trade volume\(^{21}\) due to location (most ports are near urban areas, which limits capacity), equipment availability, maintenance, and poor navigation aids. In addition, the lack of an integrated distribution system (road network) impedes container traffic.

Security standards are also varied across the region.

These issues increase costs and result in losses in world trade shares. Therefore, expanding containerization, by using larger vessels, requires port facilities that can handle large vessels quickly and efficiently.

SSA airports also have low volumes and high costs due to a lack of airport concessions and low traffic volumes. Unlike rail, roads, and ports, capacity at airports is not a problem. The main challenge is related to a need for market liberalization, (i.e. a gradual elimination of air traffic restrictions). This requires a full implementation of the Yamousoukro Decision Routes\(^{22}\) to which most African countries agreed to in 1988. Further, modest spending and better scheduling would improve current capacity.\(^{23}\)

The issue of regional coordination is key to increasing the potential of current transport-related infrastructure stocks.

**Information & Communication Technology**

Information and communication technology (ICT) has been embraced across SSA. Mobile networks and pre-paid services have been adopted at a staggering pace. The number of mobile phone users in SSA grew from around 2 million in 1998 to over 400 million in 2010, with more than 65% of Africa’s population now living in reach of wireless networks.\(^{24}\) Mobile phone access in SSA (40%) is now better than in South Asia (33%) although it still trails East Asia and the Pacific (53%) and Latin America and the Caribbean (80%).\(^{25}\)

Building on this capacity, the Infrastructure Consortium of Africa estimates that it costs just $900 million\(^{26}\) ($200 million of public investment\(^{27}\) to provide wireless mobile broadband service to the entire continent. Such capacity might allow for significant growth in services exchange and reduce

\(^{20}\) Ibid n4, p. 254.
\(^{21}\) Ibid n4, Table 12.5, p. 255.
\(^{22}\) Ibid n4, p. 264.
\(^{23}\) Ibid n4, p. 259.
\(^{25}\) Ibid n24, p. 5.
\(^{26}\) Ibid n24, p. 27.
\(^{27}\) Private investment can cover 89% while the 11% remaining coverage gap requires public investment.
the transaction costs of trading with and between SSA countries.

**Figure 4: Africa’s Broadband Network**

However, access to fixed line telephones is below 3% compared to 19% in Latin America and the Caribbean and 16% in the Middle East and North Africa.  

Fixed line broadband penetration is also growing slowly. The rate of household coverage was just 2.5% in the first quarter of 2010. This is due mainly to a lack of broadband infrastructure and high prices. To enable high-speed web access, significant broadband infrastructure investments are needed.

The ITU estimates that the African continent requires at least an additional 52,000 kilometers (km) of “backbone” infrastructure for intra-and inter-country connectivity, including investments of $50-$500 million per country. Such projects present significant trade-enhancing, multilateral opportunities for SSA countries.

**Energy and Power**

Power is critical for trade, supporting communications, transport, and the production of goods and services. In SSA, it is the infrastructure sector with the greatest need. Current spending of $11.6 billion per year is roughly a quarter of what is needed to satisfy energy needs.

Many countries rely on small and expensive diesel generators costing $0.35 per kilowatt-hour, compared to an average generation cost of $0.12 in developed countries. SSA, with a population of 800 million, generates less power than Spain, with a population of 45 million. Thirty SSA countries suffer from chronic power shortages resulting in a loss of 1-2% of their GDP.

Energy investment flows are part of the challenge. For example, Nigeria, the second biggest economy in SSA, spends nearly $13 billion per year on small generator power. In contrast, the cost of developing a fully functional energy infrastructure is $10 billion per year.

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28 Ibid n4, p. 147.  
29 Ibid n5, p. 5.  
30 The United Nations Agency for Information and Communications Technology.  
31 Ibid n24, p. 27.  
32 Ibid n24, p. 9.  
33 Ibid n4, p. 5.  
34 Ibid n24, p. 9.
Generation capacity has remained almost stagnant in the last 30 years. However, future trends are equally concerning. Less than 40% of SSA countries are predicted to achieve universal electricity access by 2050.36

Under-collection of tariffs and under-pricing37 are two additional challenges to powering SSA. Under-collection continues to undermine the potential for sustainable energy production. Under-pricing costs the SSA energy industry $2.2 billion per year.38

Independent power projects (IPPs), of which there are currently 45 in 17 countries, provide a possible solution. IPPs have “remarkably low failure rates” and higher rates of investment return when compared with Latin America and Eastern Europe.39

However, a major challenge lies in policy harmonization and industry regulation. Significant institutional reform is needed to ensure large-scale trade enhancing investments.

The financing needs of SSA infrastructure are evident. However, it is also clear that institutional reform and regional coordination remain significant challenges to increasing the returns to infrastructure investment and the efficiency of existing capacity. Only by solving both the scale and coordination constraints will the infrastructure need be properly met.

**Unleashing Potential: The Benefits of Infrastructure Investment for Promoting Trade and Development**

SSA’s major development challenge is growth and reduction of poverty.40 Infrastructure development is not a goal in itself, but a critical ingredient to realizing growth and other development objectives.41 The widely discussed merits

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35 Ibid n4, p. 147.
36 Ibid n24, p. 10.
37 Ibid n24, p. 11.
38 Ibid n24, p. 10.
of soft infrastructure investment, such as education, healthcare, and other forms of human capital, are critical for development. However, our report focuses on hard infrastructure, which supports productive activities and the movement of goods. This is equally important.

For example, the role of transport infrastructure in fostering trade, investment, growth, and poverty alleviation has long been recognized. Transport infrastructure lowers the cost and reduces the time to move goods and services to where they can be used most productively and to where returns are highest.

This process results in larger markets, efficient division of labor, and economies of scale. This attracts private investment flows and fosters the development of the private sector. This virtuous feedback process results in higher per capita GDP. There is also evidence of a significant causal link between investment in ICT infrastructure and economic development in which ICT plays a key role in reducing transaction costs, improving efficiency, and fostering private investment and growth.

The current infrastructure deficit is “holding back” SSA’s per capita economic growth by 2% per year and reducing the productivity of firms by as much as 40% per year. Therefore, the benefits of scaled up and coordinated infrastructure investment are clear. The resulting hard infrastructure will expand trade and foster development. Currently, only 3.5% of the world’s trade is handled in SSA.

The Importance of Regional Integration

SSA must diversify its main economic activities to create opportunities for economic growth. However, many SSA countries continue to face challenges, which impede economic development. Coordinated organization of economic activity across the region can address these challenges.

There are many initiatives, supported by organizations including the World Bank, developing regional clusters capable of scaling up production capacity to compete globally. These key production centers must become regional infrastructure hubs with efficient ports.

49 Ibid n24, p. 23.
50 Ibid n41, p. 13.
and airports in order to connect SSA with the global market.

Developing regional infrastructure that encourages factor mobility leads to integration. Coordination of infrastructure investments and management at a regional level allows for efficient use of infrastructure stocks, larger markets, increased economic integration, and political stability. Coordinated infrastructure projects are more attractive to investors, provide a platform for growth, and improve trade across varying sectors.

**Power**

Regional electricity trade allows for pooling of energy resources and leveraging scale economies in the power sector of SSA countries. This could save $2 billion annually in power system development and operation. The 10 largest potential power-importing countries could reduce their long-run marginal cost by $0.02-$0.07 per kilowatt.

Yet, regional electricity trade levels remain low, accounting for only 16% of the region’s consumption. The Democratic Republic of the Congo, Congo, and Ethiopia comprise 74% of the power-export potential. These three countries must invest nearly $700 million a year to develop the generation capacity for exports (8% of their GDP).

**Transport**

The specific geographic and economic characteristics of SSA countries require a regionally coordinated transportation system to increase the potential for international and intra-regional trade. A coordinated system could reduce border crossing and port delays. According to the AICD, a fully operational Trans-African Highway network could triple intra-African trade from $10 billion to $30 billion per year. The estimated cost of restoration is approximately $20 billion plus $1 billion per year in maintenance. The result is a cost-benefit ratio of 5 to 1 over the next 15 years. These figures are small when compared to the $200 billion per year in existing volumes of international trade.

**The Constraints: Why Infrastructure Investment Is Not Happening**

There are specific characteristics of SSA that create additional investment constraints.

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51 Ibid n4, p. 145.
52 Ibid n4, p. 145.
53 Ibid n4, Chapter 6.
54 Ibid n4, p. 149.
55 Ibid n4, p. 150.
<table>
<thead>
<tr>
<th>Risk</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Force majeure</td>
<td>War or natural disasters</td>
</tr>
<tr>
<td>2. Political</td>
<td>Unstable government, expropriation or nationalization of assets, poor public decision-making, and political opposition/hostility</td>
</tr>
<tr>
<td>3. Regulatory</td>
<td>Legislation, tax regulation, or industrial regulation changes</td>
</tr>
<tr>
<td>4. Environmental</td>
<td>Adverse environmental impacts and vulnerabilities</td>
</tr>
<tr>
<td>5. Technical</td>
<td>Design failures</td>
</tr>
<tr>
<td>6. Construction</td>
<td>Incorrect construction techniques, cost escalation, and delays</td>
</tr>
<tr>
<td>7. Operating</td>
<td>Higher operating and maintenance costs</td>
</tr>
<tr>
<td>8. Revenue</td>
<td>Shortfall or failure to extract resources, volatility of prices, and unstable demand for products and services sold</td>
</tr>
<tr>
<td>9. Financial</td>
<td>Inadequate hedging of revenue streams and financing costs</td>
</tr>
<tr>
<td>10. Project default</td>
<td>Failure of the project due to a combination of any of the above</td>
</tr>
</tbody>
</table>

**Financing Mechanisms**

Current infrastructure spending in SSA is $45 billion per year. The majority is publicly financed with the remainder provided by the sum of Official Development Aid (ODA) from OECD countries, non-OECD financiers (China, India, and Middle East), and the private sector.

However, the distribution of spending varies across capital expenditures and operations and maintenance costs. Almost all spending for operations and maintenance comes from the public sector. In contrast, external financiers (private sector, non-OECD financiers, and ODA) fund 62% of the current capital expenditures.

Geographically, the distribution also varies. External financiers contribute more than half of the total infrastructure spending in fragile states and low-income countries.

According to the AICD, the majority of investments are happening in the ICT industry and resource-rich countries. The largest financing gap is in fragile states (37%), specifically in energy, transport, and water.

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57 Ibid n4, Chapter 2.
The financing needs vary at the country level. For example, the needs of countries like Ethiopia, Madagascar, and the Democratic Republic of the Congo range from 26% to 70% of GDP.\(^{58}\)

According to the AICD, the distribution of current financing is as follows:

- **Private Participation in Infrastructure (PPIs):** PPIs invest in commercially lucrative opportunities in telecommunications.

- **Non-OECD financiers:** Their investments are mostly in productive infrastructure, such as power generation and railroads. Their investments are located in oil-producing countries.

- **ODA:** It focuses on public goods provision in countries lacking PPI and non-OECD country investment.

The shortfall between ODA and the required public goods expenditures demands domestic funding. The potential to increase domestic funding is minimal given the high debt burden and limitations to tax collection in several SSA countries. This decreases the available funds for infrastructure investment and maintenance.

Further, external funding sources may be affected by the recent global recession. OECD financiers face budget crises. The economic downturn is also likely to affect private investment flows.

Local capital markets may eventually play an important role in raising capital. However, they are still underdeveloped, small, and shallow.

Non-OECD financiers, namely China, India, and Middle Eastern countries, contributed $2.6 billion annually from 2001 to 2006. Many of these countries have a strategic interest in the financing of infrastructure investment, either in natural resources or export credits.

For the aforementioned reasons, existing financing sources for SSA infrastructure are unlikely to expand in the near future.

**Institutions**

Institutions play an important role in determining the impact of infrastructure development. In this way, institutional inefficiencies adversely affect trade.\(^{59}\) However, Africa’s institutional framework for infrastructure is no more than “halfway along the path to best practice”.\(^{60}\) State-owned infrastructure firms, in particular, display poor management, inadequate record keeping, lax monitoring, and informational chaos while there is limited customs

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\(^{58}\) Ibid n4, p. 59.


\(^{60}\) Ibid n59, p. 2. While the most institutionally advanced countries, such as Kenya, are 70% along the way, those furthest behind, such as Benin, have traveled only 30% of the way.
harmonization and inefficient tax-systems.  

Infrastructure projects involving private partners have also experienced difficulties. For example, 15% of electricity contracts have been canceled.  

Despite these failures, overall gains have been recorded. Private participation brings higher labor productivity, particularly in the development of ports and electricity. However, a lack of independent regulation is a major disincentive to private participation. Railways’ lack of regulation provides little protection for operators from the “erratic behavior of governments”. Further, many infant regulatory bodies lack the financial support, expertise, and credibility to intervene. Regulatory budgets are limited, varying from $300,000 to $3 million. In comparison, The United Kingdom Office for Gas and Electricity has a budget of £74 million and 300 employees.

**Regional Coordination**

The economic and geographic composition of SSA makes regional coordination important. Yet, there are still challenges. The planning, construction, and operation of regional infrastructure requires significant political consensus. In addition, it is important to develop a regulatory framework and regional institutions that allow for efficient facilitation of regional infrastructure.

**Savings Surplus in Emerging Economies**

As previously discussed, there is an infrastructure funding deficit in SSA. Many emerging economies have accumulated large pools of excess savings. These provide a potential untapped source of needed moneys.

**Overview of Sovereign Wealth Funds**

Sovereign Wealth Funds (SWFs) are special purpose investment funds owned by governments. SWFs’ assets are established out of fiscal and balance of payments surpluses, official foreign currency reserves, and profits from commodity exports.

In many cases, the wealth held by SWFs was originally accumulated to serve as emergency sources of liquidity in the

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61 Ibid n59, p. 117.
62 Ibid n4, p. 111.
63 Ibid n4, p. 111.
64 Ibid n4, p. 120.
65 Ibid n4, p. 120.
66 Ibid n4, Chapter 6.
event of a macroeconomic crisis. However, given the vast pools of liquidity acquired, these funds have transitioned to chasing investment objectives.

In 2010, assets under SWFs totaled $4.2 trillion, of which nearly two-thirds originated from commodities exports ($2.7 trillion).68 The top five funds account for about 70% of the total assets.

<table>
<thead>
<tr>
<th>Country</th>
<th>Total assets (billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Arab Emirates</td>
<td>$738.90</td>
</tr>
<tr>
<td>China</td>
<td>$732.50</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>$436.30</td>
</tr>
<tr>
<td>Norway</td>
<td>$395.00</td>
</tr>
<tr>
<td>Singapore</td>
<td>$332.50</td>
</tr>
<tr>
<td>Russia</td>
<td>$219.90</td>
</tr>
<tr>
<td>Kuwait</td>
<td>$202.80</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>$193.40</td>
</tr>
<tr>
<td>Libya</td>
<td>$65.00</td>
</tr>
<tr>
<td>Qatar</td>
<td>$62.00</td>
</tr>
</tbody>
</table>

Current infrastructure spending in SSA is $45 billion. Compared to this, SWF assets of $4.2 trillion present a significant opportunity.

An additional $6.8 trillion is held in sovereign investment vehicles such as pension reserve funds, development funds, and government investment funds. These are potential additional sources of funds. However, this report focuses on SWFs for their large untapped pools of moneys.

**Overview of Fund Strategies**

There are two types of SWFs relevant for the purposes of this report: those with strategic objectives and those with financial objectives.

Strategic SWFs select investments based on a number of considerations, including non-economic reasons. In contrast, financial SWFs make investment choices purely based on financial returns and risk characteristics. The model proposed in this report targets financial SWFs only.

Financial SWFs traditionally invest disproportionately in U.S. Treasuries. Given the large size of these funds, this strategy is sub-optimal, including because it unnecessarily exposes SWFs to the U.S. economy. Further, SWFs would benefit from longer-term and more diverse investments. This is particularly true during periods of low T- Bill rates. Recognition of this need is reflected in the broadening investment strategies and mandates of SWFs.

Between 2010 and 2011, the proportion of SWFs investing in infrastructure grew from 47% to 61%. The proportion of SWFs investing in publicly listed equities also increased from 79% to 85%. Utilities accounted for 19% of investment by SWFs in the first half of 2010. Thirty-three percent of investment was designated to banking, insurance, and

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69 Simon, Johnson “The rise of Sovereign Wealth Funds”, 2010, International Monetary Fund
trading and 12% to coal, petroleum and natural gas.\(^{70}\)

**Figure 6: % Share of SWF Investments by Sector in First Half of 2010\(^{71}\)**

Financial SWFs can also be divided into commodity and non-commodity SWFs as defined by their main source of income. This provides a form of a natural hedge over the aggregate pool of SWF resources. Commodity SWFs suffer during periods of low commodity prices, but non-commodity SWFs (commodity-importing nations) benefit during these periods.

The large pools of capital held by financial SWFs are seeking new targets for investment. While there is currently some SWF money being invested in SSA, it is relatively small and lacks the coordination to make a development impact.\(^{72}\)

**Proposed Model**

The proposed model aims to address the coordination and funding constraints for development of infrastructure in SSA.

**Overview of the Model**

The proposed financing mechanism aligns the incentives of investors with the infrastructure needs of SSA countries, with the aim of boosting trade and development. Traditionally, development institutions and multilateral banks have financed infrastructure deficits in SSA. The proposed financing mechanism uses traditional aid flows to attract large untapped pools of funds, particularly from savings surplus nations, to finance infrastructure development in SSA. The Fund is open to all investors. However, the Fund’s design focuses on the large pools of liquidity held by SWFs.

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\(^{70}\) Ibid n108.

\(^{71}\) Ibid n108.

Figure 7: Proposed Model
The proposed mechanism involves the creation of a supranational infrastructure fund (the Fund). The Fund’s mandate is to promote trade flows in and around SSA by financing trade-related infrastructure projects. The G20 nations will establish the Fund. The G20 members, and any other interested nations, are encouraged to participate in the Fund. The G20 will mandate the World Bank to create an interim taskforce to initially administer the Fund.

As a G20 member, the World Bank will provide personnel to manage the Fund. Other multilateral institutions, among them the African Development Bank, will also commit to providing personnel with appropriate expertise to manage the Fund. Management fees charged to the projects will cover administrative costs. The Fund’s participating nations do not make day-to-day decisions on behalf of the Fund.

The Fund is responsible for:

1. Raising of funds;
2. Due diligence on projects;
3. Selection of projects to receive loans/equity;
4. Distribution of funds to projects;
5. Risk management;
6. Distribution of returns to investors;
7. Management of guarantees; and
8. Management of investor relations.

The Fund provides two products to investors – equity and debt. The Fund uses this capital to make loans and equity investments in trade-related infrastructure projects in SSA.

The Fund’s due diligence activities will, amongst other objectives, ensure projects focus on financing trade-related infrastructure, including transportation, storage, energy, and communications.

**Debt Financing**

The Fund provides long-term, interest-free loans for trade-related infrastructure projects in SSA. Potential projects apply to the Fund for financing. The Fund reviews proposals and conducts due diligence to determine the project’s viability. The Fund’s mandate includes consideration of the project’s economic returns, including financial and social benefits. The Fund also considers the project sponsors’ alternative sources of finance, and prioritizes projects unable to raise funds from traditional sources.

The Fund executes its role best when dealing with a single counterparty. Therefore, where there are multiple governments involved in a single regional project, the governments will form a special purpose vehicle (SPV) to deal directly with the Fund. The Fund may provide assistance in forming the SPV.

In order to finance these loans, the Fund issues interest-bearing bonds to investors. Interest on the bonds is paid by the G20 and other participating nations. These payments come out of the G20 and participating nations’ ODA budgets. Therefore, aid flows do not increase, and
the G20 and participating countries are not required to increase their ODA budgets. Net 2010 ODA flows from OECD-DAC\(^3\) countries total nearly $130 billion and are more than four times the estimated funding gap of $31 billion. The required interest payments are a small portion of current total ODA flows.

**Table 4: Net ODA from OECD-DAC Countries in $ Millions\(^{74}\)**

<table>
<thead>
<tr>
<th>Country</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>3,849</td>
</tr>
<tr>
<td>Austria</td>
<td>1,199</td>
</tr>
<tr>
<td>Belgium</td>
<td>3,000</td>
</tr>
<tr>
<td>Canada</td>
<td>5,132</td>
</tr>
<tr>
<td>Denmark</td>
<td>2,867</td>
</tr>
<tr>
<td>Finland</td>
<td>1,335</td>
</tr>
<tr>
<td>France</td>
<td>12,916</td>
</tr>
<tr>
<td>Germany</td>
<td>12,723</td>
</tr>
<tr>
<td>Greece</td>
<td>500</td>
</tr>
<tr>
<td>Ireland</td>
<td>895</td>
</tr>
<tr>
<td>Italy</td>
<td>3,111</td>
</tr>
<tr>
<td>Japan</td>
<td>11,045</td>
</tr>
<tr>
<td>Korea</td>
<td>1,168</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>399</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6,351</td>
</tr>
<tr>
<td>New Zealand</td>
<td>353</td>
</tr>
<tr>
<td>Norway</td>
<td>4,582</td>
</tr>
<tr>
<td>Portugal</td>
<td>648</td>
</tr>
<tr>
<td>Spain</td>
<td>5,917</td>
</tr>
<tr>
<td>Sweden</td>
<td>4,527</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2,295</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>13,763</td>
</tr>
<tr>
<td>United States</td>
<td>30,154</td>
</tr>
<tr>
<td><strong>TOTAL OECD-DAC</strong></td>
<td><strong>128,728</strong></td>
</tr>
</tbody>
</table>

In addition, these countries provide guarantees on the bonds against any case of default. The G20 and participating countries provide money into a reserve account to be used as a buffer to pay guarantees in any year in which they are required. The G20 and participating countries contribute to the Fund based on a fixed proportion. This proportion may be determined by existing ratios in multilateral agreements, e.g. the United Nations or the World Bank funding commitments, GDP, or other metrics.

The loan recipient is responsible for repayment of the principal. Should the recipient default, the guarantee covers the portion of the debt service that cannot be recouped. The World Bank estimates the current default rate for International Development Association countries to be less than 5%. \(^{75}\) Therefore, expected default is low. Further, the Fund’s portfolio diversification strategy minimizes the risk of correlated defaults.

**Equity Financing**

Projects are selected based on the same principles as previously described.

The Fund issues equity units to investors. The G20 and other participating countries do not subsidize any portion of the equity return. The equity units are redeemable.

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\(^{73}\) Organization of Economic Cooperation and Development – Development Assistance Committee.

\(^{74}\) “ODA in 2010”, 2011, OECD-DAC

only after a specified period of time, to be determined by the Fund managers.

The pool of capital raised by the Fund’s issuance of equity units is used to make direct equity investments in projects. Again, the Fund’s diversification strategies minimize the risk of correlated defaults.

**Stakeholders**

**Investors**

While the Fund is open to all investors, SWFs are targeted for their large pools of untapped liquidity. The Fund’s structure provides risk-mitigated exposure to infrastructure investments in SSA, which complements SWFs’ current direct investment activities in the region. It also provides SWFs exposure to the region without triggering backlash from recipient countries regarding issues like poor treatment and transfer of control.

Because the interest-bearing bonds issued by the Fund are guaranteed by the G20 and participating countries, they provide returns with minimal risk.

Equity units in the Fund support a pool of diverse projects. This diversification minimizes the risk of correlated defaults while still providing attractive exposure to this sector.

**The G20 and Other Participating Nations**

The G20 is focused on trade-promoting development. It is actively seeking innovative methods to finance development.

The G20 and participating nations provide guarantees and pay interest on the bonds issued to Fund investors. In the event that the bonds cannot be repaid (e.g. due to substantial defaults on project debt), the guarantees cover the portion of the debt service that cannot be recouped. It is unlikely that the guarantees will be called on each year. Therefore, the reserve fund for guarantees can be rolled over each year, reducing ongoing G20 and other participating countries’ financial commitments. Further, the full amount of the guarantee obligations remains a contingent liability on the balance sheets of countries, but does not have to be provisioned at 100%.

The guarantees and interest payments allow the G20 and participating nations to leverage their aid budgets to mobilize untapped large pools of money. Thus, the G20 and participating nations’ role scales up financing for infrastructure projects.

**SSA Public Sector**

A lack of infrastructure, such as ports and roads, constrains trade flows and subsequent development. By investing in trade-related infrastructure, SSA nations will benefit from increased trade resulting in economic growth.
Most of the borrowing governments do not have access to private sector lending and rely on multilateral aid and loans from international banks, like the World Bank and African Development Bank. The Fund addresses SSA country needs by providing them with opportunities to scale up their borrowing.

In addition, the Fund coordinates regional projects that create network complementarities and economies of scale. This increases both the financial and social returns to infrastructure investment.

**SSA Private Sector**

The SSA private sector has limited access to traditional sources of capital. In addition to sovereign risk, asymmetric information and fears of moral hazard make provision of capital at affordable rates unlikely.

The benefits of the Fund’s coordinated investments result in network complementarities and economies of scale. This increases the private returns to investment and also has beneficial social spillover effects.

**Multilateral Banks**

Multilateral banks are unable to expand their operations due to capital constraints. The Fund provides another vehicle for raising large pools of capital to be channeled towards development.

The Fund is solely focused on trade-related infrastructure investment in SSA. This complements the current activities of multilateral development banks, such as the World Bank’s institution-building efforts.

As part of their contribution to the Fund, the World Bank and the African Development Bank provide investment expertise and development experience.

**How does the model address the constraints of infrastructure investment in SSA?**

The proposed mechanism seeks to address the two key obstacles to effective trade-related infrastructure investment: scope/scale and coordination.

**Scope/Scale**

There are several factors associated with investment in infrastructure in SSA. These constrain current volumes of investment. The model addresses these issues assuaging investor concerns and incentivizing the large investments required.

**Sovereign Risk**

There is sovereign risk including: political, regulatory, foreign-exchange, and default risk. Investors are reluctant to invest large amounts in countries with heightened sovereign risk. Further, they require a high return on any invested capital.
The proposed model addressed both of these problems. First, the guarantees provided by the G20 and other participating countries eliminate the sovereign risk faced by investors. Second, the concessional interest rates on loans from the Fund are not burdensome for borrowers.

Project Risk
Infrastructure project development can be complex, including technical, construction, and operating risks. These risks may be higher in developing countries due to inexperience and lack of existing infrastructure. Investors are reluctant to bear the full burden of these risks, which prevents the large required investments. Individual investor due diligence can mitigate these concerns, but is expensive and may require regional expertise.

First, the guarantees in the proposed model eliminate the bondholders’ exposure to project risk. Second, the Fund provides exposure to the sector plus risk diversification for equity unitholders. Third, the Fund offers and centralizes due diligence operations and the necessary expertise.

Poor Returns
Small-scale investments do not benefit from economies of scale and network complementarities. This limits financial returns to investors and economic returns to the host country(ies).

The proposed model provides centralized decision-making to coordinate projects and find possible synergies. This not only enhances the development goal, but also increases financial returns.

Further, the proposed model provides a new product with a novel risk/return profile. The Fund is attractive to investors because it complements their existing portfolios.

Coordination
In addition to the volume of capital lacking in SSA, there are unilateral and multilateral coordination failures, which limit the efficacy of infrastructure investment. For example, construction of a functioning port will not increase trade flows without a complementary road network.

By centralizing decision-making into a single framework, the Fund’s managers are able to identify synergistic, multilateral, and complementary investment opportunities. One key foundation of this role is creating a centralized information platform. The Fund’s coordination role captures the benefits from positive externalities.

Constraints, Limitations, and Issues of the Model

There are limitations to our proposal. These can be divided into problems specific to the proposed mechanism and high-level, systemic problems.
Limitations of the Proposed Mechanism

SWFs are the primary investors. There is a danger of unsavory optics. It may appear that the G20 and participating countries are channeling aid money to the Middle East and Asia. The Fund must be careful to focus on changing the paradigm and re-conceptualizing aid for trade. Instead of direct aid flows from developed to developing countries, which lack scale and coordination, these same flows are used to mobilize resources of the required scale to make coordinated, trade-related infrastructure investments.

There are two potential problems with the guarantees over the payments back to the SWFs: moral hazard and massive defaults. Moral hazard is hidden action. In the proposed mechanism, recipients of capital from the Fund are aware that the returns to the ultimate investors are guaranteed. Therefore, there are diluted incentives to provide optimal effort. The interposition of the Fund attempts to address this issue. Due diligence provides a degree of monitoring. Further, the participation of multilateral banks in the Fund’s operations may provide a credible threat of withdrawal of other aid flows.

The Fund’s diversification strategy should minimize the risk of serial defaults. However, it’s possible that there is an event that triggers massive defaults across countries and projects. All the guarantees would be called upon simultaneously. There is a risk that the G20 countries either will not or may not be able to fulfill their obligations.

The currency of the flows into and out-of the Fund are not specified. Some stakeholders will be exposed to foreign-exchange risk. The foreign-exchange risk should be borne by those most able to bear the risk. We suggest that the risk is not borne by the projects themselves as this may increase vulnerability to financial and currency crises.

The creation of any new agency is problematic. Funding, management, and mandate are all vulnerable to competing interests of stakeholders. Cooperation and communication among stakeholders is imperative.

Internal management structure of the Fund has yet to be finalized. Personnel issues, governing board, and tenure of experts on secondment from the World Bank and African Development Bank must be determined.

There is a significant burden placed on the due diligence activities of the Fund. Due diligence of projects must address the financial viability, as well as the development potential of projects. Further, project viability may rely on technology transfers, capacity-building, and technical assistance which need to be carefully managed. Governance issues may also arise. In addition, a decision must be made as to whether due diligence is ongoing or occurs only at project inception. If due diligence is ongoing, the performance metrics must be carefully
determined to avoid creating their own problematic incentives.

The uncertain timeframes of infrastructure project development, with issues such as potential construction delays, may cause problems with repayment of principal and equity returns. The Fund must be diligent with its asset and liability matching to minimize these problems.

These are all issues that can be resolved by a working group of experts during the initiation process.

**Systemic Problems**

Efficacy of infrastructure investments is difficult to define and guarantee. Specifically, once capital flows to the recipients, moral hazard issues related to achieving the trade-related development goals arise. Additionally, past experience demonstrates that pure capital accumulation without careful project selection results in infrastructure incapable of driving growth.

There are layers of market failures in addition to the lack of hard infrastructure. For example, a well-designed and executed road project will fail to generate economic returns if there are market failures in the trucking industry.

The Fund is set up and predominantly managed by developed countries and their institutions, e.g. the G20 and the World Bank. This may appear to have overtones of "Washington Consensus"-style prescriptions. The participation of the African Development Bank and other regional experts assuages these concerns.

**Role of the G20**

The G20 promotes open and constructive discussion between industrial and emerging market countries on key issues related to global economic stability. Since its establishment a decade ago, the G20 has been an increasingly influential decision-maker in the international landscape on many issues regarding trade and development.

The 2010 Seoul Summit reaffirmed the G20's commitment to free trade and emphasized its focus to resolve the most significant bottlenecks to inclusive, sustainable, and resilient growth in developing countries, low-income countries in particular. At the Seoul Summit, the G20 countries also requested that the regional development banks and the World Bank work jointly to prepare action plans that increase public, semi-public, and private finance and improve implementation of...
national and regional infrastructure projects.\textsuperscript{78}

In the following February 2011 meeting in Paris, member finance ministers and central bank governors discussed methods for implementing the Seoul Development Consensus on Shared Growth and its Multi-Year Action Plan.\textsuperscript{79} They appointed 17 members to the High Level Panel for Infrastructure Investment (HLP). This panel aims to scale up and diversify infrastructure financing and identify a list of concrete regional initiatives with input from multilateral development banks.

The HLP demonstrates the G20's commitment to closing the infrastructure deficits in developing countries. The proposed model provides a concrete proposal, which supports the HLP's goals, for the G20 to initiate.

Therefore, the G20 provides a platform for advocating the proposed mechanism, which leverages current aid flows to employ the untapped large pools of liquidity in savings surplus nations.

\textbf{Conclusion}

The proposed mechanism provides the scale and coordination currently lacking in infrastructure funding in SSA. The mechanism fills the infrastructure funding gap. It also increases the social and financial benefits of investment by exploiting network complementarities and economies of scale. SSA nations can then provide the unilateral and multilateral public goods essential for promoting trade.

However, there are remaining challenges. The mandate of the Fund must be properly preserved to prevent mission creep, capture by special interests, and the setting of poor priorities. The mechanism internalizes the first-order externalities by bringing the stakeholders within a single decision-making framework. Yet, perverse incentives at the micro-level remain. The World Bank's current institution-building work provides an essential complement to the proposed mechanism in building a comprehensive solution to the development problem.

\textsuperscript{78} “Multi-Year Action Plan on Development”, 2010, G20 Development Working Group Seoul Summit, Annex II

\textsuperscript{79} “Communiqué: Meeting of Finance Ministers and Central Bank Governors”, 2011, \textit{The G20 Paris Meeting}