TOPIC GUIDE:

Regional Infrastructure in Sub-Saharan Africa and South Asia: Unblocking Constraints and Enabling Effective Policy Intervention

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Abbreviations and Acronyms

ABMI Asian Bond Markets Initiative
ADB Asian Development Bank

AFD Agence Française de Développement

AfDB African Development Bank

AICD Africa Infrastructure Country Diagnostic
AIIB Asia Infrastructure Investment Bank
ASEAN Association of South East Asian Nations

BRICs Brazil, Russia, India, China

CAREC Central Asia Regional Economic Cooperation

CASA Central Asia and South Asia

CBTA Cross-Border Transport Agreement CLG Company Limited by Guarantee DBSA Development Bank of South Africa DFI Development Finance Institution

DFID UK Department for International Development COMESA Common Market for East and Southern Africa

EAC East Africa Community EC European Commission

ECOWAS Economic Community of West African States

EIB European Investment Bank

EU European Union

FDI Foreign Direct Investment

FMO Netherlands Development Finance Company

GDP Gross Domestic Product

GERD Grand Ethiopian Renaissance Dam

GMS Greater Mekong Subregion

HLP High-Level Panel

IAIDA Institutional Architecture for Infrastructure Development in Africa

ICA Infrastructure Consortium for Africa ICAI Independent Commission for Aid Impact

IFC International Finance Corporation
IFI International Financial Institution
IGC Inter-Governmental Council
IMF International Monetary Fund

IPPF Infrastructure Project Preparation Fund ITF EU-Africa Infrastructure Trust Fund KfW Kreditanstalt für Wiederaufbau KPI Key Performance Indicator

LIC Low Income Country

MDG Millennium Development Goals

MIC Middle Income Country

MIGA Multilateral Investment Guarantee Agency

NAO National Audit Office NDB New Development Bank

NEPAD New Partnership for African Development

ODI Overseas Development Institute

OECD Organisation for Economic Co-operation and Development

PAP Priority Action Projects

PBC Performance Based Contracts



PIDA Programme for Infrastructure Development in Africa

PIDG Private Infrastructure Development Group

PFG Project Financiers Group
PMT Project Management Team

PPDF Project Preparation Development Facility
PPI Private Participation in Infrastructure

PPIAF Public-Private Infrastructure Advisory Facility

PPP Public-Private Partnership
REC Regional Economic Community

RECCA Regional Economic Cooperation Conference for Afghanistan

RIPA Regional Infrastructure Programme for Africa
SAARC South Asia Association for Regional Cooperation
SADC Southern African Development Community

SAPP Southern African Power Pool

SARTIP South Asia Regional Trade and Integration Programme
SASEC South Asia Subregional Economic Cooperation Program

SPC Special Purpose Company
SPE Special Purpose Entity
SPV Special Purpose Vehicle
STAP Short-term Action Plan
SWF Sovereign Wealth Funds
TA Technical Assistance

TAPI Turkmenistan-Afghanistan-Pakistan-India

TMEA TradeMark East Africa
TMSA TradeMark Southern Africa

TUTAP Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan

UN United Nations

UNECA United Nations Economic Commission for Africa

WB World Bank

WEF World Economic Forum

USAID US Agency for International Development

UNECA United Nations Economic Commission for Africa



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Executive Summary

The development of infrastructure acts as an enabler for structural transformation, accelerating economic growth and reducing poverty. Regional infrastructure has the potential to deliver even greater benefits through the ability to support the development of regional markets, link production clusters with value chains and provide access to international trade. This is of particular importance in South Asia and Africa where the lack of regional infrastructure is acting as a constraint on economic growth (Jouanjean et al., 2015).

After the introductory chapter, Chapter 2 describes a range of regional experiences in infrastructure. The potential benefit from regional infrastructure integration in sub-Saharan Africa is high. The region includes 31 small countries with a GDP below USD10 billion and 15 landlocked countries. Intra-regional trade accounts for only 12% of total regional trade in Africa compared to 53% in emerging Asia. Regional integration can offer enlarged markets, leading to advantages in specialisation, economies of scale and increased competition. A reduction of 10% in transport costs for landlocked African countries would increase their volume of international trade by as much as 25% (Limão and Venables, 2001). In South Asia, regional infrastructure has the added potential for a 'peace dividend'. Creating economic dependencies and shared interests from a platform of regional infrastructure can assist in the stabilisation of intra-regional relations. This is of particular value for fragile countries or countries which are on the cusp of becoming fragile.

The rest of the Topic Guide (Chapters 3-5) is centred on the three key stages of regional infrastructure projects: planning, financing and implementation. In each stage, the challenges are significant. These include:

- planning: the need for coordination and governance of regional projects involving multiple stakeholders in one or more countries. Discussed in Chapter 3;
- financing: the need for large-scale and multi-year financing from multiple sources in both the public and private sectors where barriers to private-sector investments are high. Discussed in Chapter 4;
- implementation: the need for strong programme governance, which ensures integrity and efficiency and manages complex interdependencies within programmes. Discussed in Chapter 5.

There is a range of cross-cutting issues around regional infrastructure that run through the Topic Guide:

- harmonisation of hard and soft infrastructure;
- logistics management across different countries;
- sharing of costs and benefits across different countries and stakeholders.

Chapter 3 discusses a number of aspects of planning and governance for regional infrastructure. Creating a favourable political environment can be a long and often difficult process, requiring patience and a pragmatic approach, yet it is a crucial first step in developing regional infrastructure. Issues that need to be addressed include: undertaking a study, fostering discussion among governments, governments providing political support, designing regional institutions and formal agreements. The project preparation costs for regional projects are 5-10% of total project costs (ICA, 2014) and could be double the costs of national projects as national agencies have different procedures, capacities and administrative constraints. There are two main policy options for establishing an appropriate approach to regional governance: formal governance treaties and broader regional



institutional developments, and stand-alone special purpose entities (SPEs; also termed special purpose vehicles, SPVs). Examples of the former include regional agreements such as the Greater Mekong Cross-Border Transport Agreement and the South Asia Association for Regional Cooperation (SAARC) energy centre and other frameworks such as the Programme for Infrastructure Development in Africa. The M4 toll road, part of the Maputo Development Corridor, is a good example of regional infrastructure managed by an SPV.

Chapter 4 discusses the large capital requirements for infrastructure, and especially regional infrastructure, for sub-Saharan Africa (SSA) and South Asia. PIDA estimates needs at USD360 billion between 2011 and 2040, with significant investments required by 2020. The challenges to securing finance are exacerbated by the regional and cross-border complexities that exist in the sub-Saharan African and South Asian contexts (and the complexities of structuring finance for regional projects). Weak financial markets, including very weak domestic capital markets, and banks with low risk appetites and weak or no credit ratings, mean that the opportunities for raising funding from private sources are limited. The private sector only has a 9% share in the financing of infrastructure in SSA, for example. Typical steps in financing regional infrastructure include: approaching financiers, discussions between government and financiers on due diligence, agreement to collaborate and undertake common due diligence, formal agreements to mitigate risks, and legal agreements signed leading to financial closure. This guide discusses several options for securing finance: support for project preparation (e.g. the IPPF in Box 11), guarantees (e.g. Guarantco), equity (through Development Finance Institutions), and public-private partnerships (e.g. the MDC in Box 15).

Chapter 5 discusses the scale and long timeframes required to establish governance and financing for regional infrastructure projects. It identifies the challenges and complexity of the process of reaching the project implementation stage. Project management, procurement and construction, operation and management, and corruption are discussed as key issues in the implementation section.

The benefits and challenges of regional infrastructure projects need to be reflected in DFID business cases. Business cases that make the case for further engagement in regional infrastructure will, among other things, need to consider carefully the following three issues, to ensure the successful development and implementation of a regional infrastructure project:

- creating and maintaining a political space, e.g. by enhancing regional governance arrangements;
- financing needs to be sourced, likely to involve public- and private-sector actors;
- implementation and maintenance issues, which will involve setting up accountable management structures .

These three issues are interrelated so that success in one area will depend on success in the other areas. Financing, implementing and maintaining regional infrastructure will be easier when regional governance arrangements are effective. However, regional governance arrangements are no guarantee that all regional infrastructure projects will achieve funding and reach successful implementation as there could be numerous other factors affecting the ultimate financing and success of a project.

Managing these complex interdependencies in the context of the DFID business case is the challenge that needs to be addressed.

Overall, regional infrastructure remains a challenging area for policy execution, but offers the potential for very significant economic and human gains. It is therefore important that



development agencies adopt successful strategies to address the challenges of regional infrastructure development.

The appendix includes an annotated bibliography including the key policies and approaches of the most important development agencies and suggested further reading.



SECTION 1

Introduction

1.1 Definition and key benefits of regional infrastructure

Regional infrastructure can be defined as any kind of infrastructure that facilitates the interaction between economic actors within defined regional and/or international markets.

Infrastructure is crucial for economic development and plays a pivotal role in enabling trade and investment, raising productivity and improving the general welfare of households (Jouanjean et al., 2015)¹. Regional infrastructure can enhance the potential benefits of economic development by facilitating regional integration and providing a platform that could help address the issues of regional fragmentation caused by national borders (see e.g. Haellert and Munro, 2009). These benefits could include:

- the creation and facilitation of regional and international trade with cheaper, faster and more reliable transport routes;
- the ability to link production to bigger consumer markets and connect landlocked countries to sea ports;
- increased productivity through more efficient production and cheaper access to inputs;
- increased resilience of households to external shocks by providing them with more options for livelihood strategies;
- increased political stability and cooperation (the 'peace dividend') from closer ties and interdependencies across national borders.

As an example, regional energy infrastructure has the potential to deliver significant benefits across the South Asia region. There are diverse resources and energy demands across the region; India and Pakistan account for the major natural gas and coal resources, while Bhutan and Nepal have the largest potential for hydropower generation. Sharing these resources could be accomplished by a better regional energy infrastructure within the entire region, creating greater regional interdependence and helping meet the varying energy demands. Key regional needs in this regard have been identified as development of a regional energy market, firming up the availability of energy supplies, provision of hard energy transfer infrastructure and soft energy harmonisation, such as legal and regulatory frameworks. Further information on the South Asia Association for Regional Cooperation (SAARC) energy centre is given in Box 8.

Together with numerous positive outcomes, regional infrastructure can have negative impacts as well. It is important that the potential benefits are balanced against the potential risks from improved regional infrastructure. Risks include (Jouanjean et al., 2015):

There is a significant body of research relating to the relationship between infrastructure and GDP growth including discussion of the causal links and interactive factors. Most research supports the case for a dependency relationship between infrastructure and GDP growth (Canning et al., 1994; Sanchez-Robles, 1998), but also highlights the need for institutional and economic reform to maximise the potential benefits to GDP from infrastructure (Esfahani and Ramirez, 2003).



- increased economic volatility with exposure of local markets to international markets and external influences on pricing;
- economic divergence between countries:
- reduced economic opportunities for vulnerable groups with niche markets developed on existing inefficiencies and regional barriers;
- increased inequalities within countries where poorer communities are unable to access regional trade opportunities and are left behind.

In assessing the viability of a regional infrastructure project, it is important to ensure that an appropriate balance can be achieved between the potential positive benefits and the possible negative impacts. Furthermore, the cost of mitigating against the negative impacts should also be taken into consideration.

The balance between the positive benefits and negative impacts is of particular relevance to sub-Saharan Africa and South Asia regions, where many smaller and landlocked nations remain isolated with restricted access to global markets.

DFID has recognised the role that regional infrastructure can play in the socio-economic development of both Africa and South Asia and has dedicated programmes to support regional integration and trade, based on improved roads and border crossings (e.g. TradeMark East Africa (TMEA) in Box 3 or support through Regional Infrastructure Programme for Africa (RIPA)) (see DFID, 2014). It has recently also put a new infrastructure policy in place (see DFID, 2015)².

1.2 Key challenges for regional infrastructure

Despite the huge potential benefits of regional infrastructure projects, the financing gaps for undertaking them are often large. PIDA has estimated that USD360 billion will be needed between 2011 and 2040 for investment in sub-Saharan Africa's infrastructure (ICA, 2014). Development agencies have taken an active role in promoting regional infrastructure, recognising the large potential gains and the lack of finance (e.g. by establishing the EU-Africa Infrastructure Trust Fund³). There is an emphasis on regional infrastructure in water. electricity and transport and in addressing the challenges of climate change through adaptation and mitigation (World Bank, 2014a).

This Topic Guide distinguishes three key stages of regional infrastructure development that play an important role in ensuring the successful accomplishment of any regional infrastructure project. These are (i) adequate planning and appropriate governance, (ii) suitable financing and (iii) effective and efficient implementation (See Figure 1 The three stages of regional infrastructure projects). Each of these stages poses a different set of challenges, including the following.

Planning and governance: regional cooperation and appropriate governance structures are essential not only for the initial conception, but also for the financing and subsequent implementation of a regional infrastructure project. However, it can be difficult to establish and maintain a cooperative environment for any particular regional infrastructure project between the national governments over a longer period of time, due to political and economic changes within the countries that are party to the project;

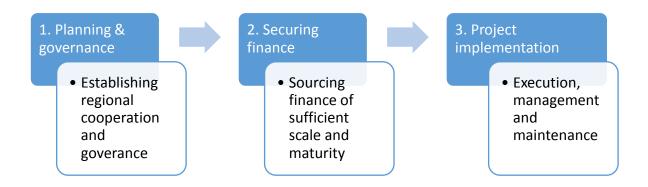
http://www.eu-africa-infrastructure-tf.net/



² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/398543/Infrastructurepolicy-framework-summary.pdf

- **Securing and structuring finance:** regional infrastructure projects can require large-scale financing with long maturities that can be difficult to secure and structure (e.g. who should take on the loan, the equity or the guarantee); and
- **Project implementation:** execution and maintenance of projects can be complex, requiring high-level management competence (World Economic Forum, 2014).

Figure 1 The three stages of regional infrastructure projects



There are various other ways to group these issues. Indeed, the World Economic Forum (WEF) (2014) groups the challenges that development agencies driving regional infrastructure projects are facing as financial, technical, human and governance. Before discussing the main challenges in greater detail (planning and governance in Chapter 3, securing finance in Chapter 4, and project implementation in Chapter 5), a number of key cross-cutting issues around regional infrastructure are discussed.

1.2.1 Harmonisation of hard and soft infrastructure

Realising the benefits from regional infrastructure, especially for developing efficient intraregional trade, requires the simultaneous development of both hard and soft infrastructure. Harmonisation of these across countries can be an extensive process, often requiring national regulatory changes to be made involving multiple stakeholders at all three stages of regional infrastructure projects identified above.

Physical or 'hard' infrastructure harmonisation often focuses on technical issues and the agreement and adoption of technical standards. The type of integration required depends upon the sector. For example, in transport, harmonisation requires improvement and expansion of regional transport networks to connect to national networks and extend them to key trade or other economic hubs. Transport systems also need to be improved in terms of efficiency, which requires modernisation and expansion of existing facilities. The harmonisation of standards, such as road design or air freight regulation, may need to be agreed regionally. In order to build a regional network in transport that will facilitate trade, hard infrastructure needs to be coordinated and harmonised, as well as constructed. For example, rail gauges, signalling systems or heavy vehicle specifications may need to be harmonised before construction can commence.

Hard infrastructure, however, requires complementary soft infrastructure to be effective. Soft infrastructure refers to the legal and regulatory systems and processes relating to customs' management, the business environment and institutions. Problems in soft infrastructure can often result in the inefficient use of hard infrastructure and/or the under-utilisation of assets, limiting their contribution to economic growth. For example, inefficient customs processes



and practises can stifle competition through restrictive regulations, queuing systems and quotas. There are many examples of such practises, including monopolies and cartels in transport services; irregular payments at roadblocks (Bromley, 2011; World Bank, 2012); and regulations prohibiting international trucks from taking domestic freight. These problems result in high costs and poor services (Porto et al., 2011) and tackling the soft infrastructure could facilitate intra-regional trade⁴.

The harmonisation of 'soft' infrastructure is often challenging because of the need to agree and implement harmonised legal and regulatory frameworks. In particular, in relation to trade, there is a need to simplify and harmonise complex and lengthy trade and customs procedures, remove restrictive 'rules of origin', and tackle corruption and other informal trade barriers (African Development Bank, 2012). For example, regional trade corridors require legal and regulatory frameworks to be revised, harmonising and integrating customs requirements and processes, preparation of the legal status of trade corridors and coordination of border checkpoints (Jouanjean et al., 2015).

1.2.2 Logistics management

Logistics management is another area that could pose specific challenges to the effective use of any regional infrastructure asset. Inefficiencies in domestic and regional value chains can limit a country's ability to meet the requirements of buyers and retailers for 'just-in-time' delivery and product quality. This extends to transport, storage and inadequate support systems that result in poor intermediate logistic infrastructure and services (USAID, 2011; Raballand et al., 2008; Jouanjean, 2013). Various regional value chain analyses (for instance USAID, 2011, in West Africa) have found that lack of effective logistics infrastructure is a major bottleneck in the development of value chains for food staples in Africa; a key opportunity for growth in trade in Africa.

1.2.3 Sharing of the costs and benefits of regional infrastructure

How to share the costs and benefits of a regional infrastructure project can be difficult to negotiate and could affect all stages of the project. Identifying and measuring the actual costs and benefits for the different stakeholders is complex. Negotiating the distribution of those risks and benefits between the different stakeholders can be challenging. This is exacerbated in the absence of national and regional political integration, which can allow individual parties to seek to promote their own agendas.

The costs associated with a regional infrastructure project can include project preparation, construction and operation/maintenance. These costs need to be measured and a method to allocate them to the parties established. Similarly, the potential benefits need to be identified, quantified and assigned to the various parties to the satisfaction of the key stakeholders. For some projects, this could be a relatively easy process as there could be clearly identifiable risks and revenues that can easily be assigned. A methodology to share such costs can usually be mutually agreed, for example proportional allocation based on the respective investments of participating countries.

Measurements of benefits can be more complicated, particularly where regional connectivity will benefit some participating countries more than others. There can be particular challenges with cross-border energy and water projects (see example of a complex initiative shown in Box 1 below). Issues include: agreeing allocation of output and purchase prices for each country; agreeing maintenance of take-off levels; and sharing costs of maintenance and upgrades during lengthy life cycles (World Economic Forum, 2014). The existence of

For example, Cadot et al. (2010); Hettige (2006); Teravaninthorn and Raballand (2009); Cantens et al. (2011).



regional institutions, such as the Regional Economic Commissions, often proves extremely valuable in the allocation of shared costs and benefits.

Similarly, cross-border corridor projects may deliver greater benefits to landlocked or other geographically remote countries, than coastal countries whose main benefits are derived from externalities relating to trade rather than tolls or other revenues. This makes the sharing of costs and benefits more difficult because of the need to identify and measure these externalities as well.

Box 1. Challenges in sharing the costs and benefits in the Nile Basin

An example of a complex regional infrastructure initiative

As the longest river in the world, the Nile River passes through 10 countries all of which see it as a valuable resource. There is considerable risk of regional conflict from the lack of equitable distribution of the Nile resources. For example, an estimated 85% of the river waters originate in Ethiopia, but it currently makes little use of this volume. Building dams upstream in Ethiopia could bring an estimated annual added benefit to Ethiopia of USD600 million, but with an equivalent estimated loss to Sudan and Egypt of USD300 million each.

Historically, Egypt and Sudan have controlled the waters of the Nile; the 1959 Nile Waters Agreement allocated the total annual flow to Egypt and Sudan and made no allowance for use of water upstream by any of the other riparian countries. The Nile Basin Initiative, launched in 1999, aimed to address this imbalance and promote sharing of the socioeconomic benefits and promote regional peace and security.

The 2010 Entebbe Agreement has begun to shift control of the Nile waters away from Egypt allowing upstream countries to construct dams and make greater use of the flow through their boundaries. To date, six countries have signed the agreement: Ethiopia, Rwanda, Uganda, Kenya, Tanzania and Burundi. Neither Egypt nor Sudan have signed the framework agreement. Water is a matter of national security in Egypt, which relies on the Nile for both power generation and water supply; the Nile provides 97% of Egypt's water needs.

The situation could be addressed by transfer agreements with a commitment by 'gainers' to distribute some of their benefit to the 'losers'. This is challenged by a lack of trust by the potential 'losers', but recent initiatives indicate this could be overcome. In March 2015 Ethiopia, Sudan and Egypt signed the Declaration of Principles on the Grand Ethiopian Renaissance Dam (GERD). It is hoped that the declaration will help to build trust among stakeholders and provide assurances for equitable gain from Africa's largest dam. There remains, however, concern that the declaration will not translate into a balanced technical agreement and that, ultimately, Egypt will lose.

Sources: Nunzio, 2013; Schiff and Winters, 2002; Tawfik, 2015; <u>UNECA, 2012; *The Guardian*, 2015.</u>



SECTION 2

Regional experiences in infrastructure development

Sub-Saharan Africa and South Asia have high concentrations of low income countries (LICs), many of which rely on neighbouring countries for access to global markets. The potential benefits from integrated regional infrastructure development are great, but there are also significant blockages to achieving this, with geo-political, financial and technical challenges. This section discusses the background and challenges specific to each of the two regions and provides the context for later sections that discuss principal blockages and possible policy interventions for regional infrastructure projects.

2.1 Sub-Saharan Africa

The potential benefit from regional infrastructure integration in sub-Saharan Africa is high. The region includes a large number of small countries (31) with a GDP below USD10 billion and a high number of landlocked countries (15). Regional integration could offer enlarged markets, leading to advantages in specialisation, economies of scale and increased competition. The potential benefits, coupled with potential returns on investment, have led to an increased focus of policy on regional infrastructure development. This has included greater focus on inter-regional trade and energy and water infrastructure that crosses national borders (World Bank, 2014b). These areas are discussed in more detail below.

The current state of national and regional infrastructure across sub-Saharan Africa is limiting the potential of the region to grow intra-regional trade (see for example, OECD, 2014). This situation, affecting both hard and soft infrastructure, is reflected in the low levels of intra-regional trade and differences in product prices across national borders currently seen across sub-Saharan Africa. Intra-regional trade accounts for only 12% of total regional trade in Africa compared to 53% in emerging Asia (World Trade Organization, 2013). Landlocked countries pay up to 84% more to export goods than coastal countries (DFID, 2013). Transport costs can be up to 100% higher (ICA, 2014), with prices affected by the 'physical' cost of transporting goods and the lack of competition⁵.

Improved regional infrastructure has the potential to make a significant contribution to growth in trade, which in turn would contribute to regional economic growth and market efficiency (World Bank Group, 2014c). Limão and Venables (2001) estimated that a drop of 10% in transport costs for landlocked African countries could increase their international trade volume by as much as 25%. Bouët et al. (2008) showed that poor transport and communication infrastructure accounts for half of the transport costs, which explains part of Africa's underperformance in trade. According to Behar and Venables (2010), being landlocked increases trade costs for countries by 50% and reduces trade volumes by 30–60%.

There are significant potential benefits to be gained from developing regional infrastructure for energy and water, which can lead to direct improvements in living standards and

Raballand and Macchi, 2008; Raballand et al., 2010; Bromley, 2011; Porto et al., 2011.



economic growth by enabling manufacturing, trade and agriculture. Current levels of access to power and water in sub-Saharan Africa are low; only 30% of the population has access to electricity, compared to 70–90% in other developing countries, and only 5% of agricultural land is under irrigation (PIDA 2013). Where there is access, the costs of services are high; road freight, water and electricity services in African countries are twice as expensive as those of other developing countries (World Bank, 2010, p. 5). This reflects both diseconomies of scale, supply shortages and high profit margins resulting from weak competition and systematic inefficiencies (World Bank, 2010).

From a geographical and economic perspective, sub-Saharan Africa is suitable for regional integration of both power and water networks, which are often still in public ownership. Sub-Saharan Africa has 16 international river basins that could be used for hydroelectric power, from which more than 20 African countries could benefit from integrated national power grids and economies of scale. The creation of an integrated regional energy network could lead to large-scale, cost effective energy resources and could enable inter-regional power trading (OECD, 2012).

DFID is actively involved in cross-border water management with the Southern African Development Community (SADC). It is estimated that 85% of the annual run-off in the SADC region is of a transboundary nature. The SADC transboundary water programme represents an ongoing commitment to the establishment and operationalisation of river basin organisations in line with the Regional Strategic Action Plan. Similar activity is taking place in the energy sector, as discussed in Box 2.

Box 2. The Southern Africa Power Pool

Demonstrating the challenges and opportunities in regional energy projects

The Southern Africa Power Pool (SAPP) was established within the framework of the Southern African Development Community (SADC) energy protocol. It was created in 1995 and includes the national power companies of 12 Member States. It aims to optimise the use of energy resources across the region. Several countries are connected through bilateral contracts. SAPP has experienced power shortages due to lack of investment owing to low tariffs and a weak enabling environment. But it has managed to reduce the total reserve margin requirement from 20 to 10%.

There are big challenges: low tariffs, high technical losses, lack of maintenance of existing infrastructure, managerial weaknesses and illegal electricity connections. This makes it difficult to attract financial resources and independent power producers. In addition, there are weak implementation bodies and no regional bodies that can match bankable projects with financing resources. Regional transmission projects face challenges and implementation is stalled, including the Zambia—Tanzania—Kenya and the Mozambique—Malawi interconnection projects. SAPP has, however, seen achievements, such as the development of the Pool plan, completion of a tariff report and improving the regulatory environment.

Source: UNECA, 2012; SAPP, 2014

The financing need for sub-Saharan Africa infrastructure development is large, but despite the need, the available financial systems and capital markets remain small and underdeveloped, and domestic financing options appear not to be able to allocate sufficient resources to infrastructure. There is, as a result, a high dependency on public and external financing, including from international finance organisations (IFIs) and private capital (World



Bank, 2014a) in the sub-Saharan African region. Private finance is far lower in Africa than in other regions and has so far primarily financed the telecommunications sector, although most of this finance is national rather than international. There has been some private financing of power plants (which also tend to be national in nature) and some container terminals. Further effort is needed to leverage private capital (World Bank, 2014a).

The policy focus of a number of IFIs in sub-Saharan Africa has attempted to address the recognised gaps in governance and regional cooperation. Attempts have been made to strengthen the capacity of subregional organisations to engage in regional infrastructure work, however, there have been significant challenges. There are a large number of subregional organisations, such as regional economic communities, regional power pools, river basin organisations and transport corridor authorities. A key issue has been in agreeing on priorities among these organisations, given the overlapping memberships, overlapping mandates and limited authority over their member states. There have been successful examples, such as in the governance of trade corridors, as presented in Box 3 on TradeMark East Africa (TMEA). TMEA illustrates a successful approach to programme execution of sub-Saharan Africa trade corridors. Key aspects of its success are operation at scale and implementation at national level involving all stakeholders.

Box 3. Sub-Saharan Africa Trade Corridors - TradeMark East Africa

Illustrating the successful implementation of a complex and multi-component trade corridor project

Trademark East Africa (TMEA), launched in 2011, supports trade facilitation and regional infrastructure in the East Africa region. It has a budget of USD540 million for the first phase (2011–2016) and is being implemented through a special purpose vehicle, a company limited by guarantee (CLG), funded by a pool of eight donors (Belgium, Canada, Denmark, Finland, Netherlands, Sweden, USA and UK). It works with existing regional bodies, such as the East African Community (EAC), and related national and regional public/private organisations. TMEA has offices in all EAC countries, plus Juba in South Sudan, with a management team in Kenya. It is currently governed through a Programme Investment Committee (mainly investors), which is now evolving to a fully professional Board and Council set-up.

By 2016, it aims to: reduce the time for freight to cross East Africa by 15%, and for trucks to cross selected borders by 30%; increase exports from EAC by 10%; and increase intraregional EAC trade by 25% more than total trade. Its support is centred around three pillars: (i) increased physical access to markets (45% of the portfolio); (ii) enhanced trade environment (38% of portfolio); and (iii) an improved business environment (17% of portfolio).

TMEA has not yet been operational long enough for a systematic evaluation, although several project evaluations are ongoing and it has recently reviewed its theory of change. In addition, TMEA has published a range of impact stories indicating, for example, how projects have reduced trade costs, developed trade capacities, or improved standards. Activities include investments in regional ports such as Mombasa (75% complete at Yard 5) and Dar es Salaam, one-stop border posts (five are due to become fully operational in 2015), support for Uganda and Rwanda tax authorities, Rwanda Bureau of Standards, South Sudan Customs Services and regional private sector associations. In addition, TMEA has been a catalyst in leveraging multilateral support (e.g. USD600 million in support to the Tanzania Ports Authority for



financing port infrastructure).

The most recent annual review (December 2014) suggests that TMEA has made very good progress in achieving its intended outputs. Whilst the metrics around impact measurement need to be more robust, existing analysis indicates that TMEA has made significant reductions in transport time so that the intended 15% reduction is expected to be achieved. The review also pointed to a lack of a clear and agreed results framework, and the need for improvements in integrating management systems.

Further discussions suggested that the positive experiences with TMEA result primarily from the recognition that regional ambitions can only be achieved by implementation at the national level, and that national level implementation requires simultaneous support of all stakeholders (government, private sector, civil society), which in turn requires action at a sufficient scale and in a co-ordinated and flexible manner.

Source: Trademark East Africa website, Impact Stories Compendium, TMEA Annual Report, 2013/14; Annual Review, 2014; discussion with DFID and other officials.

The policy focus adopted by IFIs has led to the development of a pipeline of regional infrastructure projects in sub-Saharan Africa. The African Union Commission, United Nations Economic Commission for Africa (UNECA), African Development Bank and New Partnership for African Development (NEPAD) have formulated the Programme for Infrastructure Development in Africa (PIDA, see Box 9), launched in 2010, to: "...develop a vision and strategic framework for the development of regional and continental infrastructure." 6.

Such projects are seeking to address the critical missing links and bottlenecks in the regional transport, power transmission, trans-border water and fibre-optic networks. In trade, transport corridors are being built and improved (DFID, 2013). In the power sector, a number of key cross-border transmission projects are in preparation, including the Great Millennium Renaissance Dam in Ethiopia and several transmission lines and interconnectors (World Bank, 2014a; African Development Bank Group, 2013c).

Regional infrastructure projects are also affected by the different policy approaches of the external funding sources; for example, where finances are aligned with the national policy of the source country or institution. China has become a major partner supporting infrastructure development in sub-Saharan Africa, particularly in some of the resource rich countries (World Bank, 2014a) and through participation in multinational funds (see Box 4). This means that regional infrastructure development in Africa is increasingly linked to China.

http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/programme-for-infrastructure-development-in-africa-pida/



Box 4. China's involvement in sub-Saharan Africa and Asian Infrastructure

In recent years, China has been active in infrastructure investment in sub-Saharan Africa. To date, many Chinese infrastructure investments have been bilateral with a focus on mutual benefits. They have invested mainly in power generation (especially hydropower) and transport (especially rail and roads). For example China invested USD2 billion in Angolan government-led projects with the condition of receiving 10,000 barrels of crude oil per day for a period of 17 years. This was the first major natural resource-backed financing agreement of its kind, but China has since signed many more.

China has sought greater autonomy and leadership in investments. The New Development Bank (NDB), colloquially known as the BRICS bank, is an example of new initiatives involving China in Africa. The five founding countries, Brazil, Russia, India, China and South Africa, will open up membership to all UN member countries, provided the Board of Governors of the NBD deems them all as viable countries for investment. The NDB is open to co-finance projects with the World Bank and other national and regional development banks. The agreement reached by the founding members in July 2014 officially declared that the headquarters will be in Shanghai.

The Chinese government has also formed the Asian Infrastructure Investment Bank (AIIB). The AIIB is a multilateral development bank that will begin lending to member countries in 2015. The initial subscribed capital for the bank is USD50 billion and its authorised capital is roughly USD100 billion. Some 50 countries have agreed to join, including the UK.

The Asian Infrastructure Investment Bank and the New Development Bank are examples of an emerging challenge to the established world banking system and established institutions, with policies, practices and interests that are not necessarily aligned with the approaches to date.

Sources: Asian Development Bank, 2014; Tyson et al., 2014.

2.2 South Asia

There is potential for a 'peace dividend' within the South Asia region through stronger regional economic integration. Creating economic dependencies and shared interests from a platform of regional infrastructure can assist in the stabilisation of intra-regional relations. The World Bank (2010a) has estimated that conflicts in the South Asia region have reduced the annual GDP by 2–3% in Nepal, Pakistan and Sri Lanka, primarily due to the impact on trade. They also argue that trade can have a positive influence on regional stability, which has been shown to reduce the risk of conflict.

Apart from political division, some of the barriers to regional integration in South Asia are geographical constraints, with many landlocked and remote areas. Conversely, the geography can also present significant opportunities for regional infrastructure, with potential for hydroelectric developments and energy trading. Power exports from Bhutan to India, for example, now represent approximately 20% of Bhutan's GDP (Asian Development Bank 2015) while other projects are mentioned in Box 5.



In South Asia, the main barrier to regional integration remains the political economy, with conflict identified as a major constraint to lasting cooperation (World Bank, 2014a). Political agreements remain affected by "long-standing political tensions" and these have affected the ability to reach and enforce regional cooperation and project governance (Asian Development Bank, 2006).

Also, South Asian nations have had great difficulty in financing infrastructure in the past through national governments and domestic banks, because of their limited and underdeveloped financial sectors. Private financing, in particular, has been scarce and concentrated largely in India (World Bank, 2014a). South Asia has had almost no PPP projects and, where they have been implemented, the private sector has mainly provided financial support and not been involved in their management (World Bank, 2014a).

Project-based agreements have been used as a solution to these problems and have achieved some successes. The Asian Development Bank (ADB)-sponsored South Asia Subregional Economic Cooperation (SASEC) Programme, for example, has been successful in slowly but steadily progressing regional infrastructure integration. This is further illustrated in Box 5.

Box 5. South Asia Subregional Economic Cooperation Programme (SASEC)

Discussion of the SASEC format: approach, success, challenges and lessons

South Asia Sub-regional Economic Cooperation (SASEC) strives to improve cross-border relations, promote trade and boost economic cooperation within the region. It includes Bangladesh, Bhutan, India, the Maldives, Nepal and Sri Lanka. Since the organisation was founded in 2001, SASEC members have created 34 regional projects, worth over USD6.5 billion, on making intra-regional trade and the energy market more efficient. The Asian Development Bank (ADB) has also supported the SASEC programme.

The ADB serves as the Secretariat to the SASEC Programme. SASEC is centred around two strategies, it's Long-term Strategic Framework 2008–2020 and it's Regional Cooperation and Integration Strategy. It focuses on the following sectors:

- Transport: The lack of modern infrastructure and border procedures lead to inefficiencies in cross-border trade routes. A range of projects help to address this: e.g. the Dhaka—Chittagong Expressway PPP Design Project, involving a loan for the creation of an expressway that will connect two major cities in Bangladesh; the North Eastern State Roads Investment-Project 2 in India to provide better access in the northeast region with improved roads and trade accessibility;
- Trade Facilitation: The SASEC Trade Facilitation Programme focused specifically on maximising trade efficiency and reducing non-tariff barriers between Bangladesh, Bhutan and Nepal. It is financed by the ADB;
- Energy: Effort here focuses on ensuring increased access to household electricity and more efficient and renewable energy sources in the region. It includes the Second Green Power Development Project in Bhutan, which seeks to construct a hydropower plant that will not only meet the domestic demand for electricity, but also provide an opportunity to export electricity to India, and the SASEC Power System Expansion Project which addresses Nepal's power shortages and domestic access to electricity.

Source: http://sasec.asia/index.php?page=what-is-sasec; Brunner and Prasad, 2014.



In addition to the economic benefits of developing infrastructure to support economic growth within the region, the goals of these programmes are to enhance regional cooperation in important areas such as in regional public goods and political stability (Asian Development Bank, 2006).

Other examples of regional infrastructure initiatives in the South Asia region include:

- The Central Asia Regional Economic Cooperation (CAREC) Program: CAREC was
 established in 2001, is an umbrella programme that supports transport and energy
 corridor development to support trade, linking 10 countries in Central Asia and South
 Asia. It is a consortium of partners led by the ADB⁷ and provides grants, loans and
 technical assistance;
- The TUTAP (Turkmenistan—Uzbekistan—Tajikistan—Afghanistan—Pakistan)
 Interconnection Concept: The 'TUTAP' concept is an umbrella for multiple, distinct projects aimed at opening up new energy markets by building transmission lines to supply power and provide for competition in the Central and South Asian regional electricity market;
- The Turkmenistan–Afghanistan–Pakistan–India Natural Gas Pipeline Project (TAPI) is one of a number of regional power trading projects. TAPI is building a pipeline from Turkmenistan to Afghanistan, Pakistan and India to export natural gas, with an export target of 33 billion m³ of natural gas per year. When completed, TAPI will be operated by a special-purpose consortium company, led by a private-sector firm.
- The Afghanistan National and Regional Resource Corridors Programme is a strategic plan to enhance economic growth and development in Afghanistan. The country has potentially large natural resources, estimated at a value of between USD1 trillion and USD3 trillion in copper, gold, coal, oil, gas, industrial minerals and rare earth minerals. Afghanistan's government, with help and guidance from the international community, aims to cultivate the use of 'resource corridors' to capitalise on investments made in the extractive minerals sector to drive private-sector investment, regional integration and strategic investment in human capital.

Since the formation of the ASEAN organisation, member countries have had significant success in developing regional infrastructure, especially in relation to transport, energy and water infrastructure. The benefits have been large, with significant growth in trade and attracting investment (Asian Development Bank, 2006).

This success has not been replicated in the South Asia region, represented by the South Asian Association for Regional Cooperation (SAARC). The region remains the least integrated area in Asia, with limited regional infrastructure and low intra-regional trade representing just 5.5% of total trade by the region in 2008 (Asian Development Bank, 2014), compared to 10% in sub-Saharan Africa (Gruenwald and Masahiro, 2008).

Improving regional infrastructure could yield huge economic benefits, in comparison to what has been seen in ASEAN region. The ADB has estimated that there could be a nine-fold increase in trade between India and Pakistan, if regional infrastructure was developed further and political differences were resolved (Asian Development Bank, 2009). These benefits could be pro-poor; there are half a billion poor people within the South Asia region (World Bank, 2014a). Development of regional integration is seen as key to poverty reduction, supporting small, poor countries in overcoming the barriers to regional and global supply chains (Asian Development Bank, 2006; World Bank, 2014a). Box 6 discusses in

The other partner organisations are the European Bank for Reconstruction and Development (EBRD), the International Monetary Fund (IMF), the Islamic Development Bank (IDB), the United Nations Development Programme (UNDP) and the World Bank.



detail the electricity transmission and trade project for Central Asia and South Asia (CASA 1000) led by the World Bank.

Box 6. CASA 1000 for electricity trading within Central and South Asia

Discussion of the CASA 1000 Initiative

The CASA 1000 Electricity Transmission and Trade Project for Central and South Asia (CASA 1000) facilitates trade in electricity from the abundant clean hydropower resources in Central Asia (Tajikistan and Kyrgyz Republic) to South Asia (Afghanistan and Pakistan). Central Asia produces surplus hydroelectricity on a seasonal basis that will be exported to south Asia to help it meet the energy shortages in Afghanistan and Pakistan.

The project includes construction of hard infrastructure for inter-country transmission as well as technical assistance and project implementation support. The project will finance the engineering design, construction and building of transmission lines and three new converter stations. This initiative not only expands markets and increases regional trade, but also provides a sustainable solution to the lack of efficient power in South Asia. It needs interregional cooperation as well as cooperation between public and private sectors. There is a community support programme for poor communities living along the project corridor

The framework for the project allows for additional energy supplying countries to connect with the regional transmission networks making CASA 1000 a critical building block of a long-term development plan for a regional electricity market. The total project costs of CASA 1000 are estimated at about USD1.2 billion spread over four countries and would allow trade of 1300 MW of clean electricity.

The four countries have created an Inter-Governmental Council to foster cooperation on the CASA 1000 Project. The IGC is responsible for discussing and deciding on strategic issues regarding the project – and ensuring that the necessary steps are taken to implement the project. The IGC's Secretariat is located in Kabul. The IGC has already made decisions on financing, private sector participation and system access, and has signed Memorandums of Understanding. The IGC meets regularly to advance the project.

The CASA 1000 project has the support of the World Bank, USAID, UK DFID, AusAid and others. . The ADB withdrew from the initiative in 2009, citing the challenging security situation in Afghanistan. Most implementation of the project still needs to occur, although most of the necessary power generation infrastructure is in place. The project was approved in 2014 and is scheduled to be completed by 2020. The project is reported to be progressing well with respect to commercial issues, procurement and financing.

Sources: World Bank; http://www.casa-1000.org/1.%20Project FAQs ENG.pdf; thediplomat (http://thediplomat.com/2013/12/the-new-silk-road-to-nowhere/); The Central Asia-Caucasus Analyst (http://www.cacianalyst.org/publications/analytical-articles/item/13152-casa-1000-%E2%80%93-high-voltage-in-central-asia.html~).



SECTION 3

Planning and governance for regional infrastructure

3.1 Introduction

A conducive political environment is a necessary pre-condition to any specific project being conceived. This includes the need for safety of interventions, their associated investments and a long-term view of the development. Achieving such an environment can be difficult. This is particularly the case in fragile states where there needs to be a genuine prospect of security and political stability throughout the life cycle of the project. This in itself may preclude consideration of regional infrastructure projects, where the scale and timeframes require long-term views that are not realistic in a conflict environment.

There are a number of regional political fora, which were established to help create and maintain stability and a conducive political environment. In this regard, the South Asia 'Heart of Asia – Istanbul Process' seeks to build regional cooperation by placing Afghanistan at the centre of the agenda for regional cooperation, with the premise that a peaceful and stable Afghanistan would lead to security and prosperity for the entire region (Heart of Asia – Istanbul Process⁸, Date accessed 05/03/2015).

In addition, the Regional Economic Cooperation Conference for Afghanistan (RECCA) coordinates and monitors progress on regional projects that are central to the economic development of Afghanistan.

Nevertheless, establishing a favourable political environment can be a long and often difficult process, requiring patience and a pragmatic approach. Creating this environment represents one of the key challenges to developing regional infrastructure. Regional cooperation and governance across countries is essential for planning and executing regional projects; for harmonising hard and soft infrastructure and for reaching agreements on the sharing of the costs and benefits.

This section discusses the process and challenges of establishing regional cooperation and governance once a conducive political environment is established. Policy options and case studies are presented demonstrating successful policy execution and providing lessons that can be carried forward for future regional project initiatives.

http://www.heartofasia-istanbulprocess.af/

EVIDENCE

ON DEMAND

3.2 Challenges in planning and governance for regional infrastructure

Planning and governance for regional infrastructure takes patience, time and effort. There are several steps from achieving cooperation between regional stakeholders to agreeing an approach for governance of a typical regional infrastructure project. Figure 2 presents a flowchart based on World Bank project processes and DFID notes. Although it is presented in a linear form, each step in the process can be carried out in parallel or may require an iterative approach, providing greater detail and clarity for decision makers.

Figure 2 The process for planning and governance for regional infrastructure

An initial study commissioned to analyse regional potential and identify project implementation and policy options (including project interdependency, scale, sequencing, regulatory harmonisation, etc.) and identify potential implementation Governments discuss project, implementation and policy options Governments provide political commitment to specific project, implementation and policy options Detailed design of project implementation and policy options including the establishment of regional institutions for the operation and maintenance Formal agreements, including goverance structures and sharing of costs and benefits, negotiated and signed between governments Project moves to financing stage

The process begins with preparing policy options for any project intervention. This can be a complex process in itself. Once support has been gained, an initial study would normally be conducted to analyse the potential project benefits, risks and implementation options. This would provide the platform for developing a consensus among the various governments and stakeholders, which would lead to an in-principle commitment to develop the project. A more detailed project design can then be developed to form the basis for formal agreements between the relevant governments.

The project can fail at any of these initial stages. There is a risk of delays and/or termination at each stage as multiple stakeholders, with potentially divergent agendas and mandates, may fail to reach agreements or align on project design. This risk can be exacerbated by weak governance, a history of poor regional cooperation and a lack of institutional capacity (as was the case with the Nile Basin Initiative for a long period discussed in Box 1). The complexity of the process for arriving at mutually agreed governance structures and regional cooperation can create considerable lead-in time between the initiation of a project and its implementation.

The Infrastructure Consortium for Africa (ICA) works within the African Development Bank to help remove some of the technical and policy challenges and barriers to building more infrastructure and to better coordinate the activities of donors by supporting and promoting increased investment in infrastructure in Africa, from both public and private sources. ICA (2014)⁹ discusses the complexities around project preparation involving work on the enabling environment, project definition, project feasibility, project structuring, transactions support and post-implementation support, all of which are complicated in a regional setting. The following are estimates of project preparation costs in a regional setting (see references in ICA, 2014):

- The development of projects represents 3–5% of project costs, and up to 10% in more difficult locations.
- Infrastructure PPPs require 3–4% of project costs for projects under USD100 million, and around 2% for projects of more than USD500 million.
- Low carbon technology infrastructure projects require up to 5% of total costs for project preparation.

World Bank (2010)¹⁰ estimates that project preparation costs for regional projects are around 5% of total financing and could be double that of national projects.

3.3 Policy options for planning and governance for regional infrastructure

Successful regional cooperation and governance on infrastructure projects relies on appropriate methods for interaction and collaboration between national governments. These need to be established through the drafting and introduction of policy appropriate for the context, environment, stakeholders and infrastructure project.

The most common policy approach is to create formal governance structures to manage and control the project. There are two main policy options for establishing an appropriate approach to regional governance:

formal governance treaties and broader regional institutional developments;

^{**}www.infrastructureafrica.org/system/files/Africa's%20Infrastructure%20A%20Time%20for%20Transformation%20FULL%20TEXT.pdf



⁹www.icafrica.org/fileadmin/documents/Publications/Effective_project_preparation_in_Africa_ICA_Report_31_Oct ober 2014.pdf

• stand-alone special purpose entities (SPEs), which are also termed special purpose vehicles (SPVs).

These approaches need to be formed through collaboration between the stakeholder national governments. A development agency could support this process. This is discussed in more detail in this section.

3.3.1 Formal governance treaties and broader regional institutions

A formal governance treaty is a ratified agreement between states setting out the governance structures between stakeholders. The member states who are involved in the regional infrastructure project are signatories to the treaty, thereby forming a binding agreement for a mutually agreed approach.

A common approach in practice is to establish a formal agreement with the relevant part of government or operating company. It is best practice to include explicit, legally binding rules and regulations with compliance and enforcement monitored by a standing body or secretariat. The treaty may also include agreements on cost and benefit sharing, harmonisation of hard and soft infrastructure, financing mechanisms and technical details, which are discussed in Section 4.

The formal agreement often involves the establishment of a specific entity, such as a Project Management Unit or Project Implementation Unit. This entity can act as an umbrella body to manage the multiple sub-projects. Given the complexity of some regional projects, such an organisation, with a mandate to lead on regional infrastructure projects, can present an effective mechanism for realising regional infrastructure projects. It's role can include managing the negotiation and development of regional initiatives, overseeing dispute resolution during project execution and addressing complex geo-political and social issues across numerous stakeholders.

Establishing such entities can be complex and time-consuming, but the approach has been shown to create strong institutional structures that are effective in developing and operating regional infrastructure projects. This approach has been most successful in East Asia, where treaties have been established for very large-scale multinational regional infrastructure projects in energy, water and transport. This is illustrated by the case studies in Box 7 and Box 8, which present examples of governance bodies for major regional infrastructure projects in energy and transport.

Box 7. Greater Mekong Subregion Cross-Border Transport Agreement

Illustrating effective harmonisation of trade infrastructure, including domestic legislation, but also issues of slow execution and weak stakeholder capacity

The Cross Border Transport Agreement (CBTA) is one of the most important initiatives negotiated and implemented in the Greater Mekong Subregion (GMS), helping to harmonise soft infrastructure for regional trade by addressing cross-border transport facilitation.

The ADB acted as a 'neutral negotiator' in establishing the agreement and provided technical assistance through its negotiation and execution.

The CBTA applies to selected and mutually agreed routes, as well as to points of entry and exit in the signatory countries. It provides the practical means of streamlining regulations and reducing soft infrastructure barriers that are consistent with similar ASEAN initiatives and



existing international conventions on cross-border land transport facilitation.

Implementation involved harmonising and integrating procedures and systems to facilitate border crossings, and promoting the development of trade logistics, incorporating the CBTA into domestic law and preparing detailed implementation guidelines, manuals and training. This has included initiatives agreeing arrangements for single-window and single-stop inspections, transit traffic regimes, cross-border movement of persons, exchange of commercial traffic rights and harmonised standards for road and bridge design, road signs and signals.

However, the CBTA suffered from a number of problems including limited and slow execution, poor capacity of stakeholders and operational weaknesses (for example, lack of manuals for border officials and weak infrastructure/facilities at key border crossings). It has also been criticised for failing to address adverse social and environmental impacts adequately.

Source: Mekong Institute, 2011.

Box 8. South Asia Association for Regional Cooperation (SAARC) Energy Centre

Illustrating institutional mechanisms for regional energy cooperation

The South Asia Association for Regional Cooperation (SAARC) is an economic and geopolitical organisation designed to promote welfare economics, collective self-reliance and socio-cultural development. SAARC was created in 1985 with its Secretariat in Kathmandu, Nepal. Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka are members. Energy security is a key component of the SAARC, which recognises that there is the potential for significant gains from energy cooperation in South Asia.

Within this broader institutional set-up, the SAARC Energy Centre was created through the Dhaka Declaration in 2005 to realise the vision of SAARC leaders of establishing an Energy Ring in South Asia. The SAARC Energy Centre was created in 2006 with headquarters in Islamabad. Energy cooperation is seen as a driver for durable peace in the region and the centre was designed as a catalyst for economic growth by initiating, coordinating and facilitating collective energy activities. Its primary objective is to provide a centre of excellence for energy to: (i) strengthen regional capacity, (ii) facilitate energy trade, (iii) promote regional energy efficiency, (iv) enhance co-operation, (v) serve as a focal point for energy data, (vi) enhance expertise in energy, (vii) promote private sector investment and participation and (viii) undertake programmes to deliver its mandate.

While often cumbersome and lengthy, it has resulted in regional agreements in relation to the supply, demand and provision of energy and has proved to be an effective mechanism for resolution of complex and difficult multilateral negotiations. It has achieved a change in mind-set, as the concept of an Energy Ring gained acceptance, with a much more regional outlook on solving issues.

Source: Asian Development Bank, 2009;

http://www.saarcenergy.org/AboutUs/Introduction.aspx and Raza, 2013



Similar formal arrangements exist in sub-Saharan Africa; the Regional Economic Communities (RECs) group countries together across a number of subregions to promote greater economic integration. RECs are considered to be the building blocks of the African Economic Community and act as neutral fora for negotiation and agreement between countries (African Development Bank, 2013d). The RECs have been criticised for a lack of both resources and mandate to implement programmes (World Economic Forum, 2014), which limits their effectiveness.

Regional transport has been seen as an opportunity in sub-Saharan Africa, because of the potential to facilitate regional growth and international trade. However, success has been limited given the challenges of setting up appropriate governance structures. According to the African Development Bank (2008), the approach to regional growth through regional transport is hampered by lengthy negotiations between stakeholders to prepare and update the legal and regulatory instruments needed to facilitate transport. This particularly relates to the harmonisation and integration of customs information systems, and the legal status of corridors and associated border checkpoints.

One response has been to provide an overarching framework for coordinating national infrastructure plans, a broader form of regional governance. A recent important initiative has been the Programme for Infrastructure Development in Africa (PIDA), which seeks to coordinate national plans and accelerate regional infrastructure projects as discussed in Box 9.

Box 9. Programme for Infrastructure Development in Africa (PIDA)

Establishing a framework to coordinate the setting up of strategic priorities for sub-Saharan Africa

The Programme for Infrastructure Development in Africa (PIDA) was established in 2010. It is a joint initiative of the African Union Commission, the New Partnership for Africa's Development Planning and Coordination Agency, and the African Development Bank. PIDA projects are funded through a range of donors such as DFID, EU and the African Development Fund.

PIDA provides new analyses and insights to bring together, under one coherent programme, existing or previous continental infrastructure initiatives, such as the NEPAD Short Term Action Plan, the NEPAD Medium to Long Term Strategic Framework and the African Union Infrastructure Master Plans. It fills in gaps and emphasises local ownership, the necessity of both hard and soft interventions, the need for diverse financing and the importance of sound implementation strategies. PIDA provides an agenda for priority projects aligned with Africa's long-term goals. The costs are estimated to be around USD360 billion between 2011 and 2040. The PIDA priority action plan (PAP) comprises 51 priority infrastructure backbone projects in the areas of energy, water, transport and ICT requiring investment of USD68 billion by 2020.

The creation of PIDA has allowed member states to collectively align national agendas with strategic regional and continental goals. It has enabled the development of strategic objectives to improve integrated infrastructure networks, which will contribute to the acceleration of growth, improved efficiencies, greater integration with the world economy, improved living standards and increased trade across Africa.



PIDA anticipates results in a variety of infrastructure sectors; a predicted reduction in the cost of electricity production by roughly USD30 billion per year will increase access to nearly 70% of the population by 2040. Intra-African trade will reduce overseas trade as transport efficiency gains will be at least USD172 billion in the African Regional Transport Integration Network. PIDA plans to increase broadband connectivity by 10% by 2018, which is predicted to increase African GDP by 1%.

Source: PIDA, 2012

3.3.2 Special purpose vehicles

Special purpose vehicles (SPV), also called special purpose entities (SPE) or special purpose companies (SPC), can provide an alternative to treaty-based regional cooperation and governance. SPVs tend to be used in PPP projects and differ from formal treaties with associated organisations mandated to implement the project.

SPVs are stand-alone legal entities created as governance structures specifically to manage a project. They typically have a corporate legal identity with a governing executive board of key stakeholders to manage high-level decision making. Ongoing responsibilities are then executed through professional management and staff employed by the SPV. The stakeholders involved include the host governments and various financing and execution agencies, such as contactors, suppliers, bondholders and equity investors. Further information on the design and development of SPVs can be found in the UN ESCAP (2011) Guide to Public–Private Partnership in Infrastructure.

There are a number of advantages to creating SPVs for regional infrastructure projects. The governance and financing arrangements of the SPV allow the pooling and coordination of multiple financiers and can be used to ring-fence finances by committing stakeholders to financing obligations, collateral arrangements, legal liabilities and asset and revenue ownership among multiple stakeholders.

The same governance structures can be used to limit the legal and regulatory obligations of stakeholders, allowing benefits such as tax relief or limited legal obligations, which can be attractive to investors and ensure risk is allocated to those most able to manage it. SPVs need to be carefully structured to ensure risks and rewards are shared fairly. In addition, care should be taken to ensure that legal and regulatory implications, and transparency in relation to them, are appropriate. Box 15 discusses the SPV created to manage the Maputo Development Corridor, illustrating how it helped to raise debt financing for a large infrastructure project without affecting the overall debt burden.

3.3.3 Role of development agencies in regional governance

Development agencies can play a key role in creating an enabling environment for regional cooperation and governance. As an external agent, they can facilitate dialogue and bring added value to the efforts of regional stakeholders. For a regional infrastructure project, a development agency can support governance of projects, acting as a neutral coordinator or being the 'trusted adviser' in negotiations and/or provide technical assistance (African Development Bank, 2008; World Economic Forum, 2014).

The ability of a development agency to act in any of these roles is often facilitated by their established position as a funder, technical adviser and/or adviser to one or more of the

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stakeholders. This established relationship and network enables them to gain access that may otherwise be more challenging. It can also enable the development agency to bring stakeholders together and push for fair agreements. Care needs to be taken to ensure that the roles do not overlap with other organisations or with any existing structures. There have been initiatives that align the agendas of different development agencies through frameworks to support national governments and regional organisations. PIDA is an example of such a framework and is described in greater detail in Box 9.

Development agencies considering becoming involved in regional projects have to resolve the strategic question of whether to act bilaterally or as a partner in a multilateral initiative. Given the scale and complexity of many regional infrastructure projects, multilateral participation is often seen as a better strategic option. In contrast, the incentives for multilaterals to engage in regional projects are weak (DFID, 2014). DFID concludes that its support for capacity building for regional infrastructure, outside the scope of its programmes that already provide such support, is best done through contributions to multi-donor agencies, such as IPPF and ITF. These capacity-building interventions are required for sub-regional organisations and must be directly linked to preparation and implementation of specific investment projects (DFID, 2014, p.8).

Technical assistance can be an important value-added approach for development agencies seeking to contribute to regional infrastructure development. Technical assistance can contribute to projects directly or can assist in knowledge transfer and in building capacity of the stakeholders to deliver the project. This is particularly the case in sub-Saharan Africa and South Asia where technical capacity in public and private institutions may be weak. It can include technical assistance in developing regional governance structures as well as financing programme implementation.



SECTION 4

Securing finance for regional infrastructure

4.1 Introduction

The estimated capital requirements for infrastructure, and especially regional infrastructure integration, for sub-Saharan Africa and South Asia are large. For sub-Saharan Africa, PIDA estimates the needs at USD360 billion between 2011 and 2040, with significant investments required by 2020 (PIDA, undated). The annual estimate for 16 PIDA Priority Action Projects (PAP) by New Partnership for African Development (NEPAD) is USD7.5 billion over the period 2012–2020. The Africa Infrastructure Country Diagnostic (AICD) estimates current requirements of USD48 billion annually between 2006 and 2015 (see ICA, 2014). Furthermore, meeting this shortfall should be continued over extended periods of time, often over decades, with large sums committed to individual projects. For example, construction of the Inga 3 Dam in DR Congo has recently incurred a delay of another three years to cover technicalities, which is expected to cost a further USD50 billion.

	Africa, 2012 (ICA data)		SSA, 2001–2006 (AICD data from Foster and Briceño-Garmendia (2010))				Developing world, 2008 (Bhattacharya et al., (2012))	
			Capital only		Capital + O&M		Capital only	
	USD bn	%	USD bn	%	USD bn	%	USD bn	%
National government	42.2	47	9.4	38	29.8	66	500-600	60-70
Developed countries	18.3	20	3.6	14	3.6	8	40-60	5-8
Emerging economies	21.4	24	2.5	10	2.5	6	20	3.0
Private sector	7.9	9	9.4	38	9.4	21	150-250	20-30
Total	89.3		24.9		45.3		800-900	

Source: UNTT, 2013, based on data from ICA, 2012; Foster and Briceño-Garmendia, 2010; Bhattacharya et al., 2012.

Table 1 Annual investment in infrastructure in developing countries, by source

Estimates of the importance of financial flows to infrastructure vary by source. National government expenditures have been the principal source of finance for investment in infrastructure, ranging from 47% of annual investments in Africa in 2012, to 66% in sub-Saharan Africa over the 2001–2006 period. As illustrated in Table 1, finance for



infrastructure development from emerging economies and developed countries to sub-Saharan Africa, and to developing countries more generally, has been considerably lower than national government investment. Differences are more pronounced in the case of private-sector participation, which has financed 20–30% of total infrastructure investment in developing countries, but only a small share in Africa (9%).

In order to attain the investment levels required, the mobilisation of private capital for regional infrastructure is essential. There are a number of barriers to private investment in infrastructure that have previously made investors wary of committing to regional infrastructure projects. Specific barriers include:

- difficulties with finding bankable opportunities independently;
- short investment horizons of private investors relative to the required investment periods for regional infrastructure projects;
- unwillingness to be involved in projects with long preparation times;
- internal control restrictions, regulatory restrictions or fiscal duties that set limits on risk and credit exposures of private enterprises;
- political risk, normally involving changes in government or other political factors which would threaten a project (National Audit Office, 2014).

The challenges to securing finance are further exacerbated by the regional and cross-border complexities that exist in the sub-Saharan African and South Asian contexts (and the complexities of structuring finance for regional projects). Weak financial markets, including very weak domestic capital markets and banks with low risk appetites and weak or no credit ratings, mean that opportunities for raising funding from private sources are limited (Te Velde, 2014; Tyson, 2014a, b). These financial weaknesses come in addition to weaknesses in the enabling environment. Nevertheless, there is a wide range of potential sources: recent interest from sovereign wealth funds, insurance and pension funds, and commercial investment funds demonstrate that there is some interest. The latter have included private equity, hedge funds and 'frontier' funds. A recent example has included the sovereign wealth fund of Norway, which has re-oriented its strategy to increase investments in low income countries (LIC), including through equities and bonds (a re-orientation of just 1% could lead to an additional USD10 billion for Africa, for example). 'Frontier' funds have become a popular asset class for pension funds and retail investors since 2012 with annual returns of up to 40%¹². Private resources from domestic pension funds and insurance companies in developing countries grew 10-fold from 2002–2012 to USD5.5 trillion in 2012 (World Bank, 2013). They are expected to increase further to USD50 trillion by 2050.

Most international commercial banks do not lend for infrastructure projects in poor countries, but there has been a significant increase in sovereign bond issues for middle income countries (MIC) and LICs since 2011, especially for sub-Saharan Africa; much of this has been aimed at infrastructure development. This strong investor appetite means that there is ample potential for private capital investment (Tyson, 2104a, b). However, IFIs continue to be a major source of finance for regional infrastructure projects in sub-Saharan Africa and South Asia. Major IFI financiers include the World Bank, the African Development Bank (AfDB), the Asian Development Bank, the European Commission (EC) and European Investment Bank (EIB). These are likely to be joined by other development organisations, which are also becoming important; the New Development Bank (NDB), representing the BRIC countries and China's Asian Infrastructure Investment Bank are new entrants to financing infrastructure projects, as discussed in Box 4 (Tyson et al., 2014).

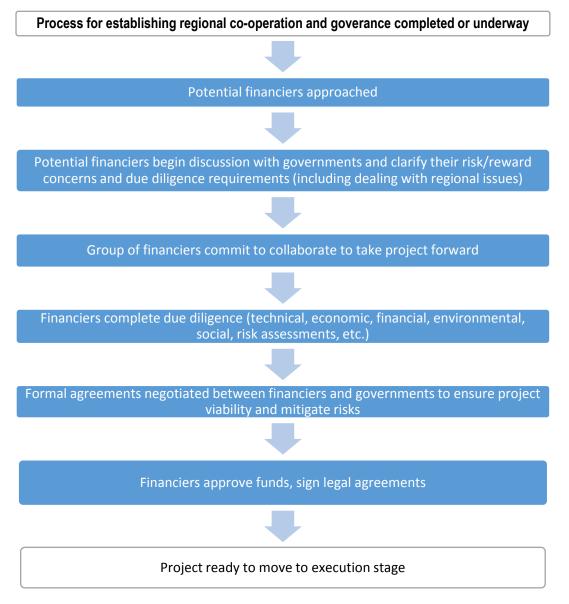
http://www.forwardinvesting.com/docs/frontier-markets-weighing-the-risks.pdf



4.2 Challenges of securing finance for regional infrastructure

Details of guidance on securing finance, particularly from DFID and from IFIs, such as the World Bank are included in the annotated bibliography. Figure 3 presents a simplified linear process, but the reality is much more complex and delicate than could be described by this (or any other) linear process.

Figure 3 The process of securing financing for a regional infrastructure project



Note: (i) Financing preparations can take place in parallel to the process for establishing regional cooperation and governance. (ii) The diagram presents a linear process. However processes may take place in parallel or in an iterative manner.



4.3 Policy options for financing

The traditional approach of development agencies to financing regional infrastructure is to provide direct lending for projects. This is typically through concessional terms, such as subsidised interest rates, sometimes blended with grants, or through credit direction to national governments (OECD, 2012). Historically, it has taken two basic forms:

- Project preparation. Development agencies have provided a facilitation role in order
 to use their expertise to overcome barriers to private-sector investment. This can
 include project preparation to create a pipeline of bankable projects or the provision
 of technical assistance to create an enabling environment for private investment.
- Risk mitigation, sharing, transference, etc. Development agencies mitigate or share the risk with the private sector. This has included providing guarantees, co-investment vehicles and partnerships including public–private partnerships (PPP). This policy approach requires consideration of three issues:
 - Capital needs to be raised in addition to that which would have been made available by the private sector in the absence of policy interventions.
 However, assessment methods remain underdeveloped in relation to the issue of additionality (Jouanjean et al., 2015).
 - Development agencies assume the risks transferred from the private sector.
 For example, in offering guarantees, the development agencies are assuming the credit risks in relation to the project. In more complex fund structures, development agencies have assumed high-risk elements such as first-loss tranches. An example of this includes DFID's Impact Fund, which provides 'first-loss' financing. Further information can be obtained at the CDC website¹³.
 - Risk perception is higher than actual risk, so part of the solution is to reduce the perception through demonstrating good projects.

These policy options are often combined within the same project. The large scale of the capital needed for regional infrastructure, however, exceeds the capacity of national financing. As a country shifts from being an LIC to an MIC, development agencies often reorient financing policies to reduce grants and concessional lending. This limits available financing sources and shifts attention to the private sector as a potential investor. However, as noted earlier, there are a number of barriers to private-sector investment in regional infrastructure. Therefore, new innovative solutions for engaging the private sector are needed if private capital is to be mobilised as a source of finance for investment in infrastructure.

Care needs to be taken to balance the benefit of securing private-sector capital finance with the project risks. It is important that development agencies fully understand the risks they are assuming and are not unduly exposed when engaging private-sector commitment through attractive finance structuring arrangements (such as guarantees). Similarly, there needs to be an appropriate balance of the risk and reward for private-sector participants to ensure that private investors are integrated into the success of the project. DFIs such as the Netherlands Development Finance Company (FMO) balance development and financial objectives by requiring a minimum financial rate of return and maximising development gains.

South Asia has seen little innovation in policy approaches, generally because there have been fewer challenges to accessing traditional financing sources for regional infrastructure. The ADB, for example, continues to see their core role as a financier with 80% of lending in

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infrastructure development¹⁴. In contrast, sub-Saharan Africa has seen a number of recent financing initiatives designed to promote regional infrastructure. The Infrastructure Consortium for Africa (ICA) is a consortium of G8 governments and multilateral development banks hosted by AfDB, with a goal of strengthening coordination between infrastructure financiers and monitoring infrastructure investments in Africa. ICA is discussed in greater detail in Box 10.

Box 10. The Infrastructure Consortium for Africa (ICA)

Illustrating how the Infrastructure Consortium for Africa (ICA) is supporting the coordination between infrastructure financiers and infrastructure projects in Africa

Launched at the G8 Gleneagles Summit in 2005, the role of the Infrastructure Consortium for Africa (ICA) is to help improve the lives and economic well-being of Africa's people through encouraging, supporting and promoting increased investment in infrastructure (water, energy, transport and ICT) in Africa, from both public and private sources. Using its convening power, ICA acts as a catalyst in the development of Africa's infrastructure.

ICA also works to help remove some of the technical and policy challenges and barriers to building more infrastructure and to better co-ordinate the activities of its members and other significant sources of infrastructure finance, such as China, India and Arab partners. ICA is not a financing agency itself, but acts as a platform to catalyse donor and private sector financing of infrastructure projects and programmes in Africa. ICA is supported by a Secretariat that is hosted by the African Development Bank. The Secretariat is funded by voluntary contributions from ICA members and staffed by a combination of permanent staff from the African Development Bank, consultants and experts on secondment from ICA-member countries. ICA members include the G8 countries, the World Bank Group, the African Development Bank Group, the European Commission, the European Investment Bank and the Development Bank of Southern Africa.

The expected outcomes of ICA include (i) enhanced coordination in Africa's infrastructure development (ii) facilitation of regional infrastructure programmes through the convening power of ICA and identification and removal of key technical and policy blockages; and (iii) increased knowledge and information.

Sources: ICA annual report 2013, ICA, 2014, http://www.icafrica.org/en/knowledgepublications/introduction/

PIDA, as discussed in Box 9, is another regional initiative to develop vision, policies and strategies to prioritise regional infrastructure. Its other recent initiatives have included project preparation and blending facilities such as:

- The <u>NEPAD Infrastructure Project Preparation Facility</u> (IPPF)¹⁵ established in 2004 specifically for project preparation for regional infrastructure;
- The EU-Africa Infrastructure Partnership launched in 2007, which focuses specifically on regional infrastructure through the EU-Africa Infrastructure Trust Fund

http://www.nepad-ippf.org/



¹⁴ See Key readings for further details of the ADB strategy



<u>(ITF)</u>¹⁶, to blend grants from EU donors with long-term project finance from development finance institutions (DFIs).

4.3.1 Project preparation and management

A key barrier to private-sector investment is often the lack of a pipeline of bankable projects, with the complexity and lengthy project preparation times deterring private investors from becoming involved. Private investors may also lack the necessary information, expertise and relationships to understand opportunities and manage risks. These problems can be particularly acute for international investors who, while having arguably the largest pool of potentially investable funds, may have limited understanding of the socio-economic and political context and risks of certain regions such as South Asia and sub-Saharan Africa.

Preparation of regional projects typically takes 5% of project costs, which could be twice what the national projects usually require. For regional hydropower projects, the costs are likely to be in the 7–10% range. Physical implementation of regional projects also tends to be slower than national projects, so that it typically takes 6–10 years to move from project identification to the commissioning of new infrastructure (DFID, 2014).

Development agencies can assist in addressing these challenges by providing their own relationships, understanding and expertise to support project preparation, gained through prolonged engagement in these regions. This can involve facilitating regional cooperation and effective project management, through their relationships with national and regional bodies.

There have been a number of examples of such initiatives in recent years, including the Infrastructure Project Preparation Facility (IPPF), which undertakes project preparation studies and provides technical advisory services for projects financed by organisations. The IPPF is discussed in Box 11. The EU–Africa Infrastructure Trust Fund (ITF) is complementary to IPPF, providing grants that are used to help fund the implementation of regional projects. The ITF is supported by a consortium of financiers, managed by the European Investment Bank (EIB), including the African Development Bank (AfDB), the Private Infrastructure Development Group (PIDG), Kreditanstalt für Wiederaufbau (KfW) and Agence Française de Développement (AFD). A similar facility focused on improving regional trade is the South Asia Regional Trade and Integration Programme (SARTIP)¹⁷. This facility is funded by DFID to provide grant finance for the preparation of investments and associated institutional capacity for IFI investments in infrastructure. Such project preparation facilities are relatively new, but there is significant optimism that they will help to overcome the barriers to private-sector investment in regional infrastructure.

A *Review of Project Preparation Facilities (PPFs)* commissioned by the ICA in 2012 concludes that the project preparation needs for regional infrastructure and for public–private partnerships are particularly problematic. It furthermore identified that the IPPF, ITF and Public–Private Infrastructure Advisory Facility (PPIAF) have a particularly important role to play in these areas.



http://www.eu-africa-infrastructure-tf.net/

iati.dfid.gov.uk/iati_documents/3717413.docx

Box 11. The Infrastructure Project Preparation Facility (IPPF)¹⁸

Illustrating how development agencies can assist in building a pipeline of bankable projects suitable for public and private sector investment

IPPF commissions early stage preparation of regional projects, to provide confidence in the viability of projects for other organisations to then finance and implement those projects.

"The IPPF's objective is to improve the efficiency and replicability of infrastructure projects for the benefit of its clients."

Priority is given to preparatory activities with a high probability of generating viable regional infrastructure projects that can secure downstream financing from public and private sources. This includes project preparation studies and technical advisory services at various stages in project development. Sectors covered are energy, transport, water and ICT.

The main donors over 2004–2012 include Canada (USD23.5 million), AfDB (USD10.3 million), UK (USD9.5 million), followed by others.

Since 2004, IPPF has supported 51 regional project preparation studies of which 31 have been completed and 20 are currently underway. Of the completed projects, 25 have sought financing for implementation; 15 of these have been successful and are now in the construction phase. The IPPF has been most successful in the transport (USD16.5 million so far) and energy (USD11 million) sectors where it has supported a number of large and successful projects including electricity generation and trading and in physical transport infrastructure (e.g. roads and bridges) and in hard infrastructure trade corridor development. However, it has been less successful in executing projects in ICT and water with no executed projects since 2009.

IPPF grants have led to successful financial closure of projects such as: (i) Benin–Togo–Ghana Electricity Interconnection Project, (ii) Kenya–Uganda Oil Pipeline Project, (iii) Zambia–Tanzania–Kenya Power Interconnection Project, (iv) East African Submarine Cable (EASSy) Project, (v) OMVG Electricity Project, (vi) Ithezi-Thezi and Kariba North Bank (SAPP)–AfDB.

However, to date, the majority of the finance for the projects prepared and executed remains almost exclusively from the public sector, including IFIs and national governments, with very limited private sector financing being mobilised to date. Further development is required to ensure that such project preparation facilities are leveraged into private, as well as public, financing.

Source: NEPAD - Infrastructure Project Preparation Facility (IPPF)



4.3.2 Technical assistance

Technical assistance can be an effective way to assist the mobilisation of finance, both private and public. By providing expertise to support project preparation, development agencies can help create the enabling environment for public and private financiers to have the confidence to engage. Technical assistance can be directed in a number of ways to support specific issues or stages of a project and/or, providing broad institutional or environmental capacity building. Box 12 highlights an innovative example of technical assistance in a regional context. It is a project to develop private markets, in this instance, through the development of a financial architecture for bond markets.

Box 12. ADB's Asian Bond Markets Initiative

Illustrating technical assistance that seeks to assist in developing the building of capacity in private financial market architecture for primary and secondary private bond markets

Asian bond markets have been developing since the early 2000s. Nevertheless, domestic local currency bond markets remain limited. The lack of such markets was an important factor in the Asian Crisis of 1997, as it created currency mismatches that were important in deepening the crisis originating from asset bubbles. Although capital markets were and are deeper than those in South Asia or sub-Saharan Africa, governments intervened and launched the Asian Bond Markets Initiative (ABMI), a regional initiative established under the Finance Ministers and Central Bank Governors framework of the ASEAN+3 in 2006 which aimed to take measures to develop local currency bond markets.

The ABMI has received technical assistance from the ADB since 2006. It provides an interesting example of the role DFIs can play in assisting private market development through technical assistance. Technical assistance has included creating harmonised frameworks and practices to facilitate the Asian bond market development, such as establishing regionally standardised bond issuance frameworks, harmonisation of processing and settlement for primary and secondary markets and coupon payments, market practices and cross-border collateral management and self-regulatory organisations (SROs).

The technical assistance aims to contribute to the long-term objective of the ABMI, which is greater and more efficient mobilisation of regional resources through deeper, broader, and more integrated bond markets.

Source: Asian Development Bank, 2014.



4.3.3 Guarantees

Providing a guarantee, whereby the guarantor will assume the liabilities of the investor under defined contingent circumstances, is one of the commonest and simplest ways for development agencies to mitigate risk for the private sector.

They can be used to mitigate most forms of risks, including financial, non-financial and political risk. Guarantees can be issued in combination with other financing structures, such as public—private partnerships (PPP), and provide a useful method for overcoming a number of the barriers to private investment in infrastructure.

One particular barrier to highlight, where guarantees can assist, is political risk; in 2013, the World Bank Group Multilateral Investment Guarantee Agency (MIGA) launched the Conflict-affected and Fragile Economies Facility, which provides first-loss guarantees. It is supported by a number of national development agencies, including DFID, and has provided facilities to a number of fragile and conflict-affected states, in South Asia and sub-Saharan Africa¹⁹.

In the area of infrastructure, guarantees of Guarantco (part of PIDG) mobilised USD144.2 million of finance over 2009–2011. The cumulative value of financial commitments at the end of 2012 was USD 203 million for 19 projects. Half of the guarantees were aimed at fragile contexts. Examples include providing municipal bonds in Kenya and supporting a PPP hospital in Egypt, a river hydropower project in Nepal and an agro-energy project in Tanzania.

Further information on the use of guarantees can be found in the <u>OECD (2014a)</u> publication on guarantees for development or on the website of the <u>African Development Bank (2015)</u>.

4.3.4 Co-invested and co-managed funds

Co-investment or co-managed funds seek to leverage the skillsets of development agencies to create a pipeline of bankable projects, while increasing the amount of capital raised by attracting private-sector investment with risk-reduction techniques. Development agencies have adopted this approach for some projects to engage the private sector, with some success. The approach can also act as a vehicle for bundling financing from multiple investors into funds that reach the scale needed for regional infrastructure projects and for the diversification of investment risks.

Such funds have taken a number of forms; some are co-managed and others are managed exclusively by development agencies or by private-sector participants. The latter includes professional fund managers or other financial institutions. To date, the most common private-sector co-investors in such funds have been sovereign wealth funds and private equity funds. It is expected that other investors, such as pension funds, may be substantial future co-investors. Examples of co-invested and co-managed funds include

- The Africa-50 Fund²⁰, proposed by the African Development Bank and described in more detail in Box 13, and;
- The <u>IFC Global Equity Infrastructure Fund²¹</u>, which is described in more detail in Box 14.

http://www.ifcamc.org/funds/ifc-global-infrastructure-fund/



In 2014, this included outstanding facilities in Afghanistan, Burundi, the Central African Republic, Côte d'Ivoire, Guinea Bissau, Mozambique, Rwanda and Sierra Leone.

http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/africa50/about-us/?referer=http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/africa50-infrastructure-fund/

Funds vary in relation to the assumption of risk by development agencies. For example, donors take leveraged risk in the form of equity or higher risk tiered financing structures. The private-sector co-investors provide debt finance only. Such risk assumptions require careful management by development agencies.

Fund investments have included funds with 'returnable capital' where development agencies provide investment capital that is returned over the course of a project. Also termed 'patient capital', such financial assistance has the advantage of being provided over longer periods and, in some instances, at concessional investment costs and with technical assistance. This marks a shift away from grants to loans. An example of a project funding through patient capital is DFID's Impact Fund and DFID's returnable capital fund in India, see DFID (2014a).

Box 13. Africa 50 Fund

Illustrating how African countries can take equity in infrastructure projects

Conceived in 2012 by PIDA in partnership with the African Development Bank, the Africa-50 Fund is aimed at mobilising private financing in an effort to accelerate infrastructure delivery in Africa. It was officially launched by the Made in America Foundation and the African Development Bank in September 2013.

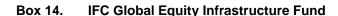
The idea is to shorten the time taken for infrastructure projects to reach financial close while not necessarily getting involved with direct funding of projects. Africa-50 backs the early tasks and feasibility studies of new ventures, rather than directly investing in established projects.

The fund is profit-driven and is designed to bring modest returns to investors while bringing infrastructure projects in Africa to bankability. Africa-50 has a corporate legal identity as an SPV, and is designed as a development-oriented commercial entity. It is, therefore, not run by fund managers. It is seen as a 'one-stop-shop' vehicle for the delivery of infrastructure and is split into a Project Development business line and a Project Finance business line. The Project Development branch attempts to facilitate the creation of bankable projects, by reducing the duration of planning processes from typically 7 years to 3 years.

Once a project is brought to bankability, the Project Finance business line assists with identifying appropriate methods of funding. The finance line provides services not offered by development finance institutions, such as bridge finance, senior secured loans and credit enhancement. It is designed to attract local and global capital investment in a public—private partnership. The goal is to leverage a USD10 billion investment by Africa-50 to USD90 billion investment from private sector finance. The initial primary investors in Africa-50 were the African Development Bank and the African nations. As the programme improves its credit rating, it will then begin targeting central banks and institutional investors from the capital markets. Africa-50 is new and, in theory, should act as a pipeline for private sector investment into infrastructure. There should be benefit to all parties involved but it remains to be seen that the Africa-50 Fund will have positive impact on regional infrastructure development in Africa.

Source: Anvaripour, 2014, De Charles, 2014.





Illustrating a typical structure for a co-managed fund and the role of IFIs and the investors

In 2013, the IFC completed fund raising of USD1.2 billion for an infrastructure equity fund, which the IFC will manage as owners of the management company. The fund's mandate is to make equity and equity-related investments, alongside IFC, in a broad range of infrastructure sectors in developing countries, such as power, transport, utilities and telecommunications.

The fund received capital commitments from 11 investors, including 9 sovereign and pension fund investors from Asia, the Middle East, Europe and North America. Such investors have appetite for long-term and large-scale investments with attractive risk-reward profiles but face barriers to entry in accessing pipeline investments and in creating a diversified portfolio.

The value to investors of co-investing through such a fund includes their ability to benefit from the IFC's investment expertise and networks, especially in developing countries, and participation in an IFC managed transaction pipeline. The fund also allows for diversification benefits for investors across multiple projects, thus reducing the barriers to entry and transaction costs for investors for their large scale, long term and high-risk equity investments in infrastructure in developing countries.

The main risks and challenges relate to the ability to simultaneously leverage private sector investment, invest in projects with sustained financial returns and deliver development impacts. Some DFIs (e.g. CDC or FMO) have long invested in funds where the DFI take a small or a larger share in the fund. It can be difficult to know exactly the role of the DFI in catalysing the other flows. Moreover, the fund needs to operate under commercial principles and regulated in appropriate ways in order to attract private investment. Finally, it can be hard for such funds to prove that they invest in developmentally oriented projects.

Source: IFC, 2013; Te Velde and Warner, 2007.

4.3.5 Public-private partnerships (PPP)

Public–private partnerships are a partnership between development agencies or national governments and private sector participants. Typically, the public sector participates by providing a concession on the project, wherein the private-sector participants own, finance and manage the project for a defined period. Risk and rewards can be shared in various ways; for example, through financing capital costs and operating costs and through return allocations as well as operational risk.

PPPs are well-established vehicles for realising regional infrastructure projects with a number of potential benefits for the public sector including: alleviating the financial burden; transferring risks from the public to the private sector; and increasing 'value for money' through private-sector efficiency, lower costs and more reliable services. They are particularly attractive in infrastructure where they can potentially avoid the need for the public sector to assume large debt burdens in order to finance projects. The Maputo Development Corridor (N4 Toll Road), described in Box 15 highlights a successful PPP.





Illustrating a successful PPP in regional infrastructure

The Maputo Development Corridor (MDC) is one of the first Spatial Development Initiatives (SDI) conceptualised and implemented in Southern Africa. The MDC aims to revitalise the area between the economic centre of South Africa (Gauteng province) and the city and port of Maputo in Mozambique. The project has four objectives: (i) rehabilitation of infrastructure (ii) facilitating global capital; (iii) social development; and (iv) ensuring sustainability. The MDC started in 1995 under the Ministers of Transport of Mozambique and South Africa. It is now coordinated by the Department of Trade and Industry (DTI) in South Africa.

It has been successful and, by 2000, 11 other SDIs in South Africa were based on the success of the MDC. Generally, the further from the corridor the weaker its impact, but this can be strengthened by targeted interventions to link specific areas to the corridor, for example via rail branch lines or feeder roads.

Part of the MDC is an infrastructure PPP between the governments of Mozambique and South Africa, and the private company, Trans African Concessions (TRAC). The main focus of the PPP is the MDC part of the N4 toll road from Witbank in South Africa to Maputo, the capital city of Mozambique. The cost of the initial contract was USD660 million over 30 years, of which 330 million was allocated in the first 3.5 years. The concession was awarded to the Trans African Concessions (TRAC) consortium. TRAC is responsible for the financing, design, construction, rehabilitation, operation and maintenance of the toll road. Financing for the project was split between 20% equity and 80% debt. The governments of South Africa and Mozambique guaranteed the debt of TRAC and to a certain extent the equity. The concession contract was signed with South African National Roads Agency (SANRAL) and the Mozambique Roads Agency (ANE) and ends in 2027, after which the road reverts back to the governments (having been maintained to specific performance criteria).

This project was financed using an SPV to combine equity finance from the private partner, plus loan finance from a range of the major financial houses in the sub-continent – primarily from South Africa. The Development Bank of South Africa (DBSA) and a mine workers' pension fund also provided a percentage of the finance. Both governments agreed to underwrite or guarantee the debt in case of TRAC's inability to service the loan. The construction was handled by the private partner (TRAC), which was a consortium that included three construction companies. Labour and sub-contractors were sourced from both South Africa and Mozambique.

To the beneficiary governments the SPV meant raising debt financing for a huge infrastructure project without affecting their overall debt burden and consequent ability to borrow for other projects. This allowed the beneficiary governments the opportunity to participate as investors in the project, but isolated them from the risks that the debt could pose. Regional bodies face major challenges taking on debt, so PPPs through SPVs offer an alternative route.

ICA (2014) draws the following lessons from the MDC: the necessity of political support and project champions, a simplified process focusing on core projects, the necessary legal and regulatory reform and the involvement of the private sector in project preparation.

Source: <u>Maputo Development Corridor</u>; draft EPS PEAKS topic guide on development corridors, available at <u>http://www.mcli.co.za/mcli-web/mdc.html</u>

and http://www.icafrica.org/fileadmin/documents/Publications/Effective project preparation in Africa ICA Report 31 October 2014.pdf



Constraints remain in relation to further successful PPPs in Africa and South Asia regions. PPP projects have been affected by gaps between public- and private-sector expectations, inadequate legal and regulatory frameworks, poor management and poor transparency. These issues are particularly apparent in sub-Saharan Africa and South Asia, where institutional capacity in the public and private sectors is limited and the legal and regulatory frameworks are weak (OECD, 2013). PPPs can also be challenged to demonstrate economic viability with investors typically seeking returns of over 20% or where there are technical concerns or limited political appetite (IFC, 2013).

Other issues can include contingent liabilities or risk sharing where the public sector did not fully anticipate the risks they have assumed (OECD, 2013). In PPPs, private partners often seek collateral arrangements, which give considerable rights in the event of default. For example, private-sector partners may be given the rights of legal ownership and appropriation of assets and revenue flows, including those from the national infrastructure that they are financing. This could be detrimental to national interests in the long term.

Overall, PPPs offer the potential to solve the financing constraints in regional infrastructure. However, the issues noted above remain significant constraints. Further research is recommended to assist in understanding the challenges and benefits from PPPs and the World Bank resource for PPPs in infrastructure²² is suggested as further reading.

SECTION 5

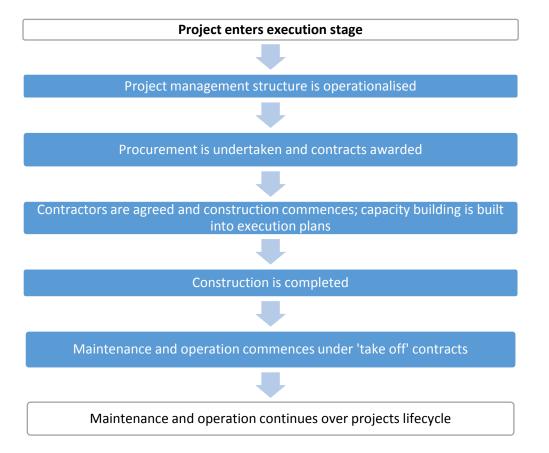
Project implementation of regional infrastructure

The scale and long timeframes required for establishing governance and financing of regional infrastructure projects make the process of reaching the project implementation stage challenging, lengthy and complex. Once reached, implementing the project can present its own challenges, which can also extend beyond implementation into operations. These challenges are discussed in this section.

5.1 Challenges of implementing regional infrastructure projects

Guidance is available for project implementation; for example, notes from DFID and from other IFIs, such as the World Bank. Details of these documents are included in the annotated bibliography, DFID (2014) and associated documents. Figure 4 presents a linear process for project implementation, but it should be recognised that the process can be complex and Figure 4 is not necessarily representative of the whole reality, which is often highly complex.

Figure 4 The process for implementation of a regional infrastructure project



One of the key challenges is maintaining a conducive political environment, especially in fragile and conflicted-affected environments, where the political environment can be uncertain over timeframes required for regional infrastructure projects. Financial and political risk can be mitigated by guarantees for private-sector investors (as discussed above on page 26) but it is difficult to create a secure environment to ensure a successful project implementation.

Infrastructure projects are often seen as particularly susceptible to corruption at all stages of their implementation. This is because projects can be executed in many parts and with different parties. Projects can also be made more vulnerable to corruption where there are weaknesses in governance, in policy, in legal and regulatory systems and/or in institutional capacity. These all affect the cost control and quality of infrastructure development as a result of the investment.

Development agencies have led initiatives to tackle corruption and fraud. An example is the Construction Sector Transparency (CoST) Initiative, now an independent entity but initiated by DFID. CoST seeks to support greater transparency in infrastructure projects. The programme provides standards of transparency and accountability for stakeholders and sets operational procedures for achieving them²³.

The recently published Topic Guide on Reducing Corruption in infrastructure (Hawkins 2013) includes a specific section on the issues of corruption in infrastructure, which is included in the further readings.

Box 16 discusses TradeMark Southern Africa (TMSA), which was established to promote regional trade harmonisation and infrastructure programme policy. TMSA was less successful that TMEA due to issues with management and presents an important case study when considering the approach to project design for effective implementation and operation.





To illustrate the challenges in implementation of a trade corridor project

TradeMark Southern Africa (TMSA) was a DFID programme that aimed to promote regional integration and trade in Southern Africa by working with African Regional Economic Communities.

The central project was to develop a road project pipeline for a North–South corridor through the southern African region. TMSA facilitated the negotiation of the Tripartite Free Trade Agreement that was formed in 2006, created to assist with the process of harmonising trade and infrastructure programme policies within and between the three Regional Economic Communities of Common Market for East and Southern Africa (COMESA), the EAC and the SADC. It was also designed to advance the establishment of the African Economic Community at the continental level.

By 2013, the project had severe difficulties and an independent audit was conducted by the Independent Commission for Aid Impact (ICAI). The investigation found that, although TMSA had achieved some results, the programme had an inordinate amount of uncommitted funds and was also making payments that were in contravention of UK government policy. The fund was accused of harming the poor in the short and medium term by the commissioner of the ICAI investigation.

These findings highlight how weaknesses in programme execution can undermine a project's effectiveness. The ICAI evaluation found that "serious deficiencies in governance" was the root cause of failure, with multiple weaknesses in:

"...financial management; procurement; value for money; transparency of spending; delivery and impact." (ICAI, 2013).

The ICAI also found misreporting of the programme impact, financial performance and mispayments, which led to the closure of the programme by the UK government. The programme was found to lack transparency and did not accomplish enough real goals for DFID to continue its funding. Following their report, in December of 2013, the UK's Secretary of State for International Development, Justine Greening, announced the closure of the TMSA programme. According to her statement, the ICAI evaluation had uncovered gross mismanagement and a lack of significant results. Specific lessons learnt from this project include the need for:

- strong oversight
- high levels of in-house technical expertise
- strong procurement rules that includes competitive bidding for contracts (ICAI, 2013).

TradeMark Southern Africa officially closed on 17 March 2014.

Source: TradeMark Southern Africa, 2014; ICAI, 2013; (http://icai.independent.gov.uk/reports/dfids-trade-development-work-southern-africa/)



5.2 Policy options for implementation of regional infrastructure

5.2.1 Project management

Project execution requires careful sequencing and coordination of sub-components and strong management. Sequencing and coordination is particularly important in infrastructure projects, especially large regional projects, where there are multiple and interdependent components. There are frequent cost overruns with infrastructure as it can be difficult to assess costs and forecast revenues. In a regional context, the uncertainties and incentives are even greater with involvement of a more complex geography, a larger number of sub-contractors, and diverse local material and labour markets (World Economic Forum, 2014). It is therefore important to have the political backing and ensure that there are project champions (e.g. in the Maputo Development Corridor, see Box 15).

The established approach to managing the complexities of a large regional infrastructure project is the formation of a dedicated management entity, as discussed in Section 3.3. During the implementation phase of projects, these dedicated entities are typically responsible for ensuring professional project management. It is important to ensure that there is sufficient oversight of specifically formed management companies, with processes in place to enable assessment of impact, and independent audit and reporting functions. Box 17 presents the management structure for the Itaipu Binacional Dam in South America.

Box 17. Project Management of the Itaipu Binacional Dam

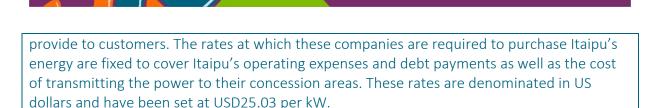
Discussion of a successful project management system for a large regional infrastructure project

Itaipu Binacional is the operating company of world's largest generator of renewable energy, the Itaipu Binacional hydroelectric power plant. The facility is located on the Paraná River along the border between Brazil and Paraguay. In 2007, Brazil and Paraguay celebrated the 33rd anniversary of the signing of the Itaipu Treaty and the last of the 20 generating turbines going into operation. Under favourable conditions the facility is capable of producing 100 million megawatts-hour.

Itaipu Binacional has adopted the Sarbanes—Oxley Act (SOX), because of its bi-national legal position. The SOX is a fiscal responsibility law that regulates corporate governance standards in open capital companies, promoting reforms, transparency, consistency, and business ethics. The principles have served the company well and have led to a string of awards and innovations, the latest of which won first place in the category, 'Best water management practices', competing with 40 initiatives worldwide. It was praised by The Secretary-General of the United Nations (UN), Ban Ki-Moon, who said, "Cultivating Good Water (CAB), developed in the Paraná Basin 3, west of the state of Paraná, has the potential to transform the lives of millions of people."

Each nation has 10 dedicated generators, operating at different production frequencies of 60 Hz for Brazil and 50 Hz for Paraguay. Production exceeds the load in Paraguay, and much of the production is exported to Sao Paulo and Rio de Janeiro, where it is converted to 60 Hz. Distribution companies operating under concessions in the midwest, south and southeast regions of Brazil are required by law to purchase Brazil's portion of the energy generated by the Itaipu facility in a proportion that correlates with the volume of electricity that they





Source: www.itaipu.gov.br

Impact assessments are needed to ensure project-specific goals can be monitored. Performance criteria and project result indicators help the development agency to monitor value for money and efficiency, and to hold management companies to account should performance be lacking. Performance criteria can include speed of execution, quality of the project, costs, savings, etc. Similarly, project results indicators may include increased trade, economic activity or increased employment. It should also be recognised that assessments may have to be carried out through independent studies or research to ensure impartiality and balanced conclusions are reached.

Audits can be particularly effective in managing and controlling costs during execution and operation and in the prevention of fraud and corruption (Hawkins, 2013; Annex 1). Also, the threat of an audit (in a controlled experiment) was found to reduce wastage by 8% in Indonesia (cited in Hawkings, 2013). See the DFID *Blue Book*²⁴ section on accountability and audit.

5.2.2 Procurement and construction

Procurement is an important part of implementation. Procurement is typically subject to strict rules set by sponsoring development agencies to ensure transparency and adequate standards. The DFID procurement regulations are an example of this (see the DFID website on procurement²⁵).

The regional context makes this more complex, as different countries may have different tendering and procurement procedures and legislation. Best practice involves the establishment of a procurement committee that includes neutral experts. The role of the committee would be to supervise the screening and selection of contractors for the execution of the project. Economic Community Of West African States (ECOWAS) provides a relevant model where a committee helped to balance national interests in the procurement of a one-stop border post (World Economic Forum, 2014), thereby increasing the transparency in the project execution.

International bidders are often the preferred partners for regional infrastructure projects because of their greater perceived capacity to manage the complex processes of project implementation and to understand and control the associated risks. There could be advantages of using small- and medium-sized local firms; smaller firms can add value through increased business and employment creation in host countries and communities. This can also build local capacity in host countries.

The UK Parliamentary Committee for International Development (2011) and the UK government response summarise the experiences of AfDB and ADB.²⁶ The AfDB has sought to maximise regional use of local and regional suppliers, contractors and consultants. This has included direct appointment by, or joint ventures with, international partners. Between

http://www.publications.parliament.uk/pa/cm201012/cmselect/cmintdev/1721/172104.htm



https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229375/Chapter-C-revised-060813.pdf

²⁵ https://www.gov.uk/government/organisations/department-for-international-development/about/procurement

2006 and 2011, 45% of the value of AfDB-financed contracts was awarded to African contractors.

The ADB has promoted local procurement by ensuring regular training on policies and procedures for procurement of goods, works and consulting services. This has included capacity building of national institutions, consultants, contractors and suppliers in member countries. The approach has sought to strengthen local governance and the design of a new lending instrument that seeks to use local procurement systems and procedures to build capacity of the governments involved. Finally, contractors are encouraged to use local expertise and materials, while ensuring rigorous standards in procurement.

Private-sector companies can provide valuable input on the best construction options. They typically have specialist staff and extensive experience enabling them to advise on approach and design for projects. Engaging them in the early stages of implementation can be invaluable in developing an infrastructure project, though care should be taken to avoid conflict of interest and corruption in procurement (World Economic Forum, 2014).

Wells and Hawkins (2008) suggest a number of options to increase local content in infrastructure projects, ranging from consulting with users and local communities, developing an operations and maintenance strategy for each new project, evaluating alternative solutions and designs for opportunities to build local capacity, and evaluating planning and design consultants on the basis of their track record and plans for promoting local content and transfer of skills. They cite the examples of the targeted procurement procedures in South Africa, role of public clients in Singapore and standardised designs in Malawi that have helped raise local content. Box 18 describes some examples of targeted procurement options that can be used to achieve certain contractual arrangements, such as raising local content in services and supply.



Box 18. Examples of targeted procurement procedures

Thirty years ago the local construction industry in Singapore was seriously underdeveloped, but now local firms are represented in all classes and are fully competitive in their own home market, as well as winning a substantial number of projects overseas. A recent investigation of the factors that have been responsible for the development of Singaporean contractors found that public sector clients played a key role. For many years, the Housing and Development Board has offered bidding preferences to firms with good performance records, as well as offering a pre-financing loans scheme. Contractors were asked to rank 10 factors in order of importance in furthering their development. Top in the overall ranking was 'government's attempt to improve the industry's operating environment' and this was followed by 'public sector client's help' and 'Government's financial incentives'.

Source: George Ofori and Chan Swee Lean, Factors influencing development of construction enterprises in Singapore, Construction Management and Economics, 2001.

Targeted Procurement Procedures: Targeted procurement procedures were developed in South Africa to address social development objectives including black economic empowerment, local economic development and poverty alleviation. The system facilitates the participation of targeted enterprises and targeted labour. There are a number of techniques and mechanisms associated with targeted procurement procedures, all of which are designed to promote or attain the participation of targeted enterprises and targeted labour in contracts. These procedures relate to the measurement and quantification of the participation of target groups; the definition and identification of target groups; the unbundling of contracts; provision of incentives for the attainment of key performance indicators (KPIs) in the performance of contract; the creation of contractual obligations to engage target groups in the performance of the contract; the provision of third party management support and the evaluation of procurement outcomes. These procedures are all documented in South African national standards.

Sources: Construction Industry Development Board Inform Practice Note 10 Attaining social and economic deliverables, www.cidb.org.za (August 2006) and South African standards for construction procurement. The Structural Engineer. 15 February 2005, pages 15-18.

NEC3 Contract: NEC3 contracts provide an option for contractors to be paid an amount stated in an incentive schedule if the target stated for a KPI is achieved. The Incentive Schedule should provide details of the performance that the KPI is intended to measure, how it is to be measured, the target that is to be achieved and the amount to be paid to the contractor if it is achieved.

Source: Cousins P, Nicholson T, Read C (2005); NEC3 Engineering and Construction Contract Guidance Notes, Thomas Telford Ltd.

Note: All examples adapted from Wells and Hawkins: Increasing Local Content in the Procurement of Infrastructure Projects in Low Income Countries; Engineers Against Poverty, ICE 2008



5.2.3 Operation and maintenance

Maintenance of infrastructure is often down-graded or forgotten. Engineering, surveying and other professional construction skills for maintaining infrastructure projects can be in particularly short supply. Failure to adequately maintain projects results in a cycle of *'invest, neglect and expensively reconstruct'* (Parliamentary Committee for International Development, 2011), which means increased costs and reduced effectiveness of infrastructure projects over their lifecycle. Further information on this issue is discussed in a DFID Topic Guide on the Maintenance of Infrastructure, published in July 2015 (Cox, 2015).

It is important that maintenance be considered as an integral part of infrastructure planning. For example, the project design team should ensure that there is sufficient local or regional capacity to maintain the asset in order to meet the projected design life. A project with lower technical specification but strong prospects of being well-maintained, may be a more appropriate choice than high-tech solutions that cannot be maintained locally. One example has been the proposal that dirt roads are a better choice for some parts of sub-Saharan African as they are cheaper to construct and easier to maintain than tarmac roads (Parliamentary Committee for International Development, 2011).

The regional setting makes this even more problematic due to the increased likelihood of possible failure in institutional coordination around maintenance or the possibility that producers and consumers of project outputs (e.g. energy) are located in different countries. Maintenance arrangements can be included in a 'take-off' agreement between two or more countries that details arrangements for day-to-day operations. It can specify management protocols for maintenance including performance indicators and long-term responsiveness to changes in demand, such as changes in energy or water demand in partner countries (World Economic Forum, 2014).

Many of the issues that will affect the operation and maintenance of regional infrastructure are the same issues that will affect the operation of national infrastructure, though the cross-border nature of regional infrastructure will exacerbate many of these issues. As with most infrastructure projects, the greatest potential to address the challenges to the efficient and smooth operation of regional infrastructure is during the concept and planning stage prior to implementation and operation. This involves addressing many of the issues identified previously in this guide and ensuring clarity, understanding and compromise for all stakeholders involved in the project. These issues are discussed in more detail below.

Political incentives: Without the necessary political motivation to achieve a successful result, it will be more challenging to develop mutually acceptable compromises, engagement in resolutions or promotion of solutions. Retaining that political will despite changes in political leadership is also essential.

Legislation: National stakeholders need to consider the impact of existing legislation on the operation and maintenance of regional infrastructure. A lack of harmonisation of regulation across borders can lead to discrepancies in maintenance of infrastructure and higher incidences of failure. Legislative action typically begins with the abolition of rules and other legal barriers that prevents private-sector participation. This restricts maintenance to national providers that struggle - or are not incentivized - to introduce the efficiencies necessary to deliver performance to a viable cost (Cox, 2015).

Financing: The financing arrangements for regional infrastructure need to be designed such that funds are ring fenced for operation and maintenance. A whole-life cost approach is an important tool in establishing the optimum balance between capital costs and recurrent budgets. It is essential to identify and establish the income generation methods for recurrent costs. This can be through agreed selling rates and commitment to purchase, as seen with



the Itaipu Dam in Brazil (see Box 16) or through tolls, as seen with the Maputo Corridor (see Box 15). Without such arrangements agreed, financing long-term operation and maintenance may fall to national budgets putting additional burden on often stretched resources.

Contractual arrangements: As discussed in Section 3.3, the contractual arrangements need to be designed to ensure that organisations operating cross-border infrastructure can fulfil their responsibilities. SPVs are a typical method for establishing a separate management company that is responsible for the operation and maintenance of a facility, with national governments or utility companies becoming primary stakeholders. Contractual arrangements need to ensure operation as required by the project, or they need to establish clear boundaries as to where the remit of the management organisation ends and others take over. Performance based contracts (PBC) can offer suitable methods for ensuring services are provided to an acceptable quality. Outsourcing responsibility for operation and maintenance increases the importance of stakeholders in the role of the client, requiring the capacity to manage, monitor and hold to account management organisations. These are issues that have been explored as part of the PPP contracting method and will apply to regional infrastructure, though with greater importance on the harmonisation of legislation and performance criteria.

Fair division of risk and reward: It is important that there is a fair and equitable division of reward and risk both to for project partners, in order to maintain political economy and to ensure that those most able to mitigate risks, do so. This can become more complicated with transboundary water resources; without a fair division there is likely to be a more rapid breakdown of cooperation as national governments, or other stakeholders, may feel that there is more to be gained by going outside of regional agreements. The Nile Basin Initiative, discussed in Box 1, is a good example of this issue; here historical precedence and Egypt's high dependence on the Nile waters is at odds with many of the other riparian nations.

Harmonisation of hard and soft infrastructure: the harmonisation of infrastructure across national boundaries was discussed in Section 1 and is essential to ensure operation uniformity in service delivery. This extends to performance standards and specifications for infrastructure operations and maintenance that crosses borders. The high-voltage transmission lines in the CASA 1000 project (see Box 6) are due to cross numerous borders and potentially unstable or insecure areas; its operational success depends on the ability to maintain infrastructure in critical areas. Long-term maintenance of infrastructure in remote, potentially risky locations will introduce added challenges to successful operations and maintenance. The need to maintain this infrastructure to the same performance specifications in both or all countries will further complicate operation and could introduce risks that are beyond the capacity of a single SPV to manage. However, allocating the risk for management to national bodies could introduce other issues, especially where those national bodies lack the necessary capacity to maintain the infrastructure in question.

Successful operation and maintenance is dependent on the willingness of stakeholders, not least national governments, to engage and establish robust planning, financing and operating mechanisms. This includes ensuring there is the due diligence on behalf of the client(s) to continue to be involved through monitoring performance beyond the implementation stage. Though there is added complexity introduced due to the transboundary nature of regional infrastructure, management of an SPV by a client has similar challenges as to the management of a purely national PPP contract. Though crossborder, the Maputo Corridor N4 Toll between Mozambique and South Africa is a useful example, where operation is the responsibility of a private venture TRAC on a concession basis, with a performance based contract signed with SANRAL and ANE (see Box 15). Operation and maintenance is outsourced via a PPP arrangement on which smooth operation of the facility depends on the Operators ability. The relevant national bodies in



South Africa and Mozambique are responsible for monitoring and holding TRAC to account, which requires the contract to allow these entities to have oversight of operation, but requires them to have sufficient capacity to do so. This could point to the need for technical

assistance to develop the capacity of relevant national stakeholders such that they are able

to fulfil their contractual obligations and hold a private-sector operator to account.



SECTION 6

Conclusions

The Topic Guide has reviewed the principal blockages to regional infrastructure development – regional cooperation and governance, the securing of finance, the challenges of programme implementation – and effective policy interventions in relation to each of them.

Because of these issues, and as discussed in the introduction, regional infrastructure development is one of the most challenging areas for execution. However, it also has the potential for significant acceleration of economic development in South Asia and sub-Saharan Africa and sometimes can have a peace-building role. This is of particular value for fragile countries or countries which are on the cusp of becoming fragile.

These potential benefits and challenges need to be reflected in DFID business cases. Business cases that make the case for further engagement in regional infrastructure will need to consider the following four issues to ensure successful implementation of regional integration projects:

- creating and maintaining a political space;
- regional governance arrangements to ensure that projects are sustainable and provide the right context;
- financing, which is likely to involve public and private finance from different sources for a long-term period;
- implementation, maintenance and operational issues, which will involve setting up accountable management structures for project implementation and arrangements to cover maintenance and operation over the longer run.

Even if engagement is planned in only one of these areas, success in one area will depend on success in the other areas. Financing, implementing, maintaining and operation of a regional infrastructure project will be easier when regional governance arrangements are more effective. However, just setting up the regional governance arrangements are no guarantee that all regional infrastructure projects will achieve funding and will reach successful implementation.

Managing these complex interdependencies in the context of the DFID business case is the challenge that needs to be addressed.



SECTION 7

Key readings

This section provides a reading list for further reference of major development agencies approaches and research. It is divided into three areas: Global, with relevance to all regions, and separate references for sub-Saharan Africa and South Asia.

Global

The World Bank 'Transformation through Infrastructure'; Infrastructure Strategy Update FY2012-2015. This strategy lays out a framework for how to transform the Bank Group's engagement in infrastructure across sectors in order to respond to demands for more integrated solutions which combines lending, mobilisation of other public and private capital as well as technical knowledge and advice. Infrastructure development is seen by the World Bank as critical to delivering growth, reducing poverty and addressing broader development goals. In 2011 it represented 43% of the Group's assistance. The World Bank believes that the public sector will remain central to the delivery of infrastructure services as a provider or enabler. Nevertheless, in addition to their traditional role as adviser and financier, the World Bank also acts as coordinator in infrastructure development including helping to align large-scale funding and delivering major projects. Also central strategy is to leverage the Banks' capital with private sectors financing. Active within the bank are the IFC, whose focus is third party resource mobilisation, and MIGA, who focus on guarantee support. It is piloting Public—Private Partnerships (PPPs) including through innovative financing structures. Available online at

http://siteresources.worldbank.org/INTINFRA/Resources/Transformationthroughinfrastructure.pdf

The G20 High-Level Panel on Infrastructure, 2011: In 2011, the G20 welcomed the report by its High-Level Panel (HLP) on Infrastructure, which focused on how to mobilise more private finance for infrastructure in low income countries, especially in Africa. The HLP report made recommendations on a range of issues covering: scaling up the project pipeline; greater focus on catalytic and regional projects; ensuring a strong and sustainable supply of bankable projects; contributing to building an enabling environment; making funding available under appropriate terms; and, increasing infrastructure spending efficiency. Available online at

http://www.bond.org.uk/data/files/G20_Outcomes_on_Infrastructure_Summary_and_Analysis_24th_Nov.pdf

DFID Strategy Paper 'Connecting people, creating wealth: Infrastructure for economic development and poverty reduction' September 2013 DFID set out its strategy in 2013 which emphasises support for major regional connectivity programmes designed to promote trade and economic development in Africa and Asia. DFID targets its funding through innovative programme design to achieve best value for money, for example by mobilising private-sector finance in ways that benefit the poor and through high-impact technical assistance. DFID's work with the private sector involves a range of partnerships, including with the Private Infrastructure Development Group (PIDG) and the International Finance Corporation (IFC) as well as many smaller funds and initiatives. Multilateral organisations,



through which DFID channels around 50% of infrastructure spend, are key partners as they provide large-scale loans to governments for capital- intensive infrastructure programmes, a financing modality in which most bilateral donors are not well-suited to engage. DFID also directly finances infrastructure that reaches the poorest, including water and sanitation and rural roads, working through a broad range of partners. In the 26 country programmes which have infrastructure components, all work is carried out in close liaison with developing country governments. Available online at

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/243802/130918 Infrastructure Postition Paper FNL.pdf

The ICA Review of Project Preparation Facilities (PPFs), 2012: Concludes that the project preparation needs for regional infrastructure and for public–private partnerships are particularly onerous and that the IPPF, ITF and Public–Private Infrastructure Advisory Facility (PPIAF) have an especially important role to play in these areas. Available online at

http://www.icafrica.org/en/knowledge-publications/article/ica-assessment-of-project-preparation-facilities-for-africa-197/

Sub-Saharan Africa

The Infrastructure Consortium for Africa (ICA) exists to improve coordination between (and investment by) G8 donors, multilateral lenders, the private sector and African regional institutions. The ICA has recently extended its membership to include G20 countries and has launched a comprehensive review of Project Preparation Facilities, a task welcomed by the G20 High-Level Panel on Infrastructure in 2011.

The EU-Africa Infrastructure Partnership launched in 2007 focuses specifically on regional infrastructure, using a new mechanism, the EU-Africa Infrastructure Trust Fund (ITF), to blend grants from EU donors with long-term project finance from development finance institutions. However, the Partnership's engagement with non-EU financing institutions and donors has been fairly limited. The ITF has a strong pipeline of projects but needs donor replenishments because nearly all its funds are already committed. A comprehensive and positive external Mid-term Evaluation of the ITF was completed in early 2012. ITF is currently preparing its response to the evaluation, which is likely to include actions to increase its focus on African agreed priorities and working with the private sector.

The Program for Infrastructure Development in Africa (PIDA) has 51 regional infrastructure programmes and a large pipeline of potential projects. At the January 2012 AU Summit, when African leaders endorsed the PAP they also resolved to reflect PIDA priorities in their national resource allocation and reform processes. An Institutional Architecture for Infrastructure Development in Africa (IAIDA) is being developed which will support the implementation of PIDA.

The **NEPAD Infrastructure Project Preparation Facility (IPPF)** was established in 2004 specifically for project preparation for regional infrastructure. It had limited success to show in its early years partly because of the length of time taken in preparing projects and in ensuring that the projects prepared are then financed and implemented, but 13 IPPF-supported projects are now reaching implementation stage. IPPF has recently launched a new Strategic Business Plan to address identified weaknesses, but it also needs a financial replenishment.





South Asia

Asian Development Bank 'Regional Cooperation and Integration Strategy' July 2006. Since 1994, ADB has assisted various subregional cooperation programmes, including the Greater Mekong Subregion (GMS) economic programme (Highlighted in Case Study 2), the South Asia Subregional Economic Cooperation (SASEC) programme, the CAREC programme, the Subregional Economic Cooperation in South and Central Asia programme, and the Pacific Plan. Projects goals included improved physical connections across member countries including transport and power grids. In South Asia, progress in cross-border physical connections has been slower but improved in land and rail transportation. The ADB have also been active in promoting regional monetary and financial cooperation and regional cooperation to prevent and control disease. Its strategy set in 2006 focuses on 'four pillars' of physical interconnectivity (Including transport, power and ICT), trade, monetary and financial cooperation and regional public goods (Including environment, disease and climate change management). It considers its role in these areas as "ADB will play four distinct roles in supporting and promoting RCI in Asia and the Pacific: (i) providing financial resources for RCI projects, programmes, and related TA and/or helping DMCs mobilise funding and TA (i.e., acting as a money bank); (ii) creating, consolidating, and disseminating knowledge and information on RCI to DMCs (i.e., acting as a knowledge bank); (iii) helping DMCs and regional and/or subregional bodies build their institutional capacity to manage RCI (i.e., building capacity); and (iv) acting as catalyst and coordinator of RCI for the DMCs (i.e., serving as an honest broker)". However, the role for the ADB is a region where economic growth, including graduation to MIC status, and poverty alleviation has been outstanding. remains to be fully defined especially for those regions – such as South Asia – who have not fully participated in these gains.

APEC Multi-Year Plan on Infrastructure Development and Investment: is a regional forum for coordinating infrastructure development including technical assistance and advisory services, raising private and public financing for infrastructure-related projects including public—private partnerships and developing legal and regulatory structures to facilitate investment and improve the investment climate in the APEC region.



References

- African Development Bank. (2008). "Transport Facilitation Programme for the Bamenda Enugu Corridor". www.afdb.org
- African Development Bank. (2012). "Annual Development Effectiveness Review 2012". http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ADER%202012%20(En).pdf
- African Development Bank Group. (2013c). "AfDB Strategy for 2013–2022 At the Center of Africa's Transformation".

 http://www.afdb.org/fileadmin/uploads/afdb/Documents/PolicyDocuments/AfDB_Strategy_for_2013%E2%80%932022_
 At the Center of Africa%E2%80%99s_Transformation.pdf
- African Development Bank. (2013d). "Supporting Africa Integration: Developing the AfDB Regional Integration Strategy. 2014-2023). AFDB presentation, Thinktank consultation AEC, October 2013.
- African Development Bank (2015). "Guarantees". 30 April 2015 Web: http://www.afdb.org/en/projects-and-operations/financial-products/african-development-fund/quarantees/
- Anvaripour, T. (2014a.) "Incorporation of Africa50." African Development Bank. African Development Bank Group, 3 Sept. 2014. Web. http://www.afdb.org/en/news-and-events/article/incorporation-of-africa50-13471/
- Asian Development Bank. (2006). "Regional Cooperation and Integration Strategy". www.adb.org
- Asian Development Bank. (2009). "Financing Regional Infrastructure". www.adb.org
 Asian Development Bank. (2014). "Project Number: 47262-001 Regional—Policy and Advisory Technical Assistance (R-PATA) Support for ASEAN+3 Bond Market Forum: Regional Standardization of Bond Issuance Framework and Transaction Flows". www.adb.org
- Asian Development Bank (2015) http://www.adb.org/
- Behar, A. and Venables, A.J. (2010). 'Transport Costs and International Trade' in Palma, A; Lindsey, R; Quinet, E. and Vickerman, R. (ed.) (2010) Handbook of Transport Economics. Cheltenham: Edward Elgar, pp 97-115
- Bhattacharya, A., Romani, M., Stern, N. (2012) Infrastructure for Development: Meeting the Challenge. Policy background paper for Brookings-G24 High-Level Seminar, 11 April, Washington, DC.
- Bouët, A., Mishra, S. and Roy, D. (2008) 'Does Africa Trade Less Than It Should, and If So, Why? The Role of Market Access and Domestic Factors'. Discussion Paper 00770. Washington, DC: IFPRI.
- Bromley, D., Cook, A., Singh, S. & van Dusen, N. (2011) Regional agricultural transport and trade policy study. West Africa trade hub technical report 41. Washington, D.C.: USAID.
- Brunner, Hans-Peter and Prasad, Kislaya, Regional Cooperation and Integration (RCI) and Trade-Driven Competitiveness Is There a Relation to Inclusive Growth? Overview of Economic Literature (September 24, 2014). Robert H. Smith School Research Paper No. RHS 2500702. Available at SSRN:http://ssrn.com/abstract=2500702
- Cadot, O., Dutoit, L. and Olarreaga, M. (2010) 'Barriers to Exit from Subsistence Agriculture'. Working Paper 1014. Paris: CEPREMAP.
- Canning, D., Fay, M., Perotti, R. (1994). "Infrastructure and growth". In: B. Saldassarri, M., Paganetto, M., Phelps, E.S. (Eds.), International Differences in Growth Rates. St. Martins Press, New York, pp. 285–310.
- Cantens, T., Raballand, G., Bilangna, S. and Djeuwo, M. (2011) 'Reforming Customs by Measuring Performance: A Cameroon Case Study'. In O. Cadot, A. Fernandes, J.



- 5/2
 - Gourdon and A. Mattoo (eds) Where to Spend the Next Million: Applying Impact Evaluation to Trade. London and Washington, DC: CEPR and World Bank.
- Cox, J. (2015) Topic Guide: Planning and Financing of Effective Maintenance of Infrastructure, http://dx.doi.org/10.12774/eod_tg.june2015.coxj
- De Charles. "Africa's Infrastructure: The Case for the Africa50 Fund". Made in Africa, Jan. 2014. Web. http://decharles.com/wp-content/uploads/brochures/DeCharles-MIAF AfricanInfra.pdf
- DFID (2013). Connecting people, creating wealth, Infrastructure for economic development and poverty reduction
 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/24380
 2/130918 Infrastructure Postition Paper FNL.pdf
- DFID (2014). Business Case Intervention: Regional Infrastructure Programme for Africa, <a href="https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCYQFjAB&url=http%3A%2F%2Fiati.dfid.gov.uk%2Fiati_documents%2F3702413.doc&ei=Cc1IVcaZEs6xacO-gfgL&usg=AFQjCNHFgzkcIJZwuRwxBZRjtxF2H6UfAw&sig2=Rrd29ABBwBQmXKggthSS-Q&bvm=bv.92291466,d.d24
- DFID (2014a): Operational Plan 2011-2016, DFID India.

 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/38904

 4/India.pdf
- DFID (2015), Sustainable infrastructure for shared prosperity and poverty reduction, A policy framework,
 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/39854
 3/Infrastructure-policy-framework-summary.pdf
- ESCAP (2011) A Guidebook on Public-Private Partnership in Infrastructure,
 https://www.planejamento.gov.br/secretarias/upload/Arquivos/ppp/referencia/guias_manuais/unescap_A_Guidebook_on_PPP_in_Infrastructure.pdf
- Esfahani, H.S. and Ramirez M.T. (2003). "Institutions, infrastructure, and economic growth". Journal of Development Economics 70 (2003) 443–477
- Foster, V., Briceño-Garmendia, C. (2010). Africa's Infrastructure: A Time for Transformation. World Bank.
- Gruenwald, P. and Masahiro, H. (2008) "Intra-regional Trade Key to Asia's Export Boom". Available at https://www.imf.org/external/pubs/ft/survey/so/2008/CAR02608A.htm
- Hawkins, J. (2013) "Reducing Corruption in infrastructure sectors". Topic Guide, Evidence on Demand. http://www.evidenceondemand.info/how-to-note-reducing-corruption-in-infrastructure-sectors
- Hallaert, J. and Munro, L. (2009) 'Binding Constraints to Trade Expansion: Aid for Trade Objectives and Diagnostics Tools'. Trade Policy Working Paper 94. Paris: OECD
- Heart of Asia Istanbul Process (2015) http://www.heartofasia-istanbulprocess.af/
- Hettige, H. (2006) 'When do rural roads benefit the poor and how? An in-depth analysis based on case studies'. Asia Development Bank
- ICA (2012). "Assessment of Project Preparation Facilities for Africa". Tunisia, Africa Development Bank. Available at:

 http://www.icafrica.org/fileadmin/documents/Knowledge/ICA publications/ICA-PPF-Study%20Report-ENGLISH-VOL%20A.pdf
- ICA (2014). "Infrastructure financing trends in Africa-2013". ICA Report 2013. Tunisia, Africa Development Bank. Available at:

 http://www.icafrica.org/fileadmin/documents/Annual_Reports/ICA-2013-INFRA-FIN-TRENDS-AFRICA-2013-FINAL-WEB-FRENCH.pdf
- ICAI, (2013) "DFID's Trade Development Work in Southern Africa", http://icai.independent.gov.uk/2013/12/06/dfids-trade-development-work-southern-africa/
- IFC. (2013) " A Winning Framework for Public-Private Partnerships: Lessons from 60-Plus IFC Projects". http://smartlessons.ifc.org/



- Jouanjean, M.A. (2013). "Targeting infrastructure development to foster agricultural trade and market integration in developing countries: an analytical review. Overseas Development Institute.
- Jouanjean, M.A. et al. (2015). "Regional Trade Facilitation". Overseas Development Institute. Forthcoming 2014.
- Limão, N. and Venables, A.J. (2001) 'Infrastructure, Geographical Disadvantage, Transport Costs, and Trade'. World Bank Economic Review 15(3): 451-479.
- National Audit Office (2014). "Development Policy" Conference proceedings and the Centre for the Study of African Economies, Oxford, 16th March, 2014.
- Nunzio, J (2013). "Conflict on the Nile: The future of transboundary water disputes over the world's longest river", Strategic Analysis Paper, Future Directions International
- OECD. (2012), "Mapping support for infrastructure investment in Africa". http://www.oecd.org/daf/inv/investment-policy/MappingReportWeb.pdf
- OECD. (2013). "Better Regulation of Public-Private Partnerships for Transport Infrastructure", OECD Publishing/ITF.
- OECD. (2014). "Addressing policy impediments to private investment in African infrastructure Remarks by Angel Gurría, OECD Secretary-General, OECD-AfDB Seminar" 15 July 2014 OECD, Paris
- OECD (2014a), Guarantees for Development, http://www.oecdilibrary.org/development/guarantees-for-development_5k407lx5b8f8-en
- Parliamentary Committee for International Development. (2011). "DFID's Role in Building Infrastructure in Developing Countries International Development Committee". http://www.publications.parliament.uk/pa/cm201012/cmselect/cmintdev/848/84806.ht m
- PIDA (Undated). "Closing the Infrastructure Gap Vital for Africa's Transformation". http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/PIDA%20brief%20closing%20gap.pdf
- PIDA. (2012). "Programme for Infrastructure Development in Africa: Interconnecting, integrating and transforming a continent".

 http://www.icafrica.org/fileadmin/documents/PIDA/PIDA%20Executive%20Summary%20-%20English_re.pdf
- Porto, G., Depetris Chauvin, N. and Olarreaga, M. (2011) 'Supply Chains in Export Agriculture, Competition and Poverty in sub-Saharan Africa'. Washington, DC: World Bank/CEPR.
- Raballand, G. and Macchi, P. (2008) 'Transport Prices and Costs: The Need to Revisit Donors' Policies in Transport in Africa'. BREAD Working Paper 190. Brighton: IDS.
- Raballand, G., Macchi, P. and Petracco, C. (2010) 'Rural Road Investment Efficiency: Lessons from Burkina Faso, Cameroon, and Uganda'. Washington, DC: World Bank.
- Raza, H. (2013) SAARC Initiatives in Energy Cooperation, ESCAP Policy Dialogue on Energy for Sustainable Development in Asia and the Pacific, Session 5(2) South Asian Association for Regional Cooperation
- Sanchez-Robles, B. (1998). Infrastructure investment and growth: some empirical evidence. Contemporary Economic Policy 16, 98–108.
- Schiff, M., and L.A. Winters (2002). Regional Cooperation, and the Role of International Organizations and Regional Integration. Policy Research Working Papers.
- Southern African Power Pool (SAPP) Annual Report (2014). http://www.sapp.co.zw/docs/Annual%20report-2014.pdf
- Tawfik, R. (2015) "The Declaration of Principles on Ethiopia's Renaissance Dam: A breakthrough or another unfair deal? The Current Column, German Development Institute
- Teravaninthorn, S. and Raballand, G. (2009) 'Transport Prices and Costs in Africa: A Review of the International Corridors'. Directions in Development Infrastructure Paper 46181. Washington, DC: World Bank.
- Te Velde, D.W and Warner, M. (2007) 'The Use of Subsidies by Development Finance Institutions in the Infrastructure Sector.' Working Paper 283. London: ODI.



- Te Velde, D. W. 2014. "Sovereign bonds in sub-Saharan Africa: Good for growth or ahead of time?" Overseas Development Institute.
- The Guardian, (2015). 'Egypt Sets Concerns Aside To Sign Nile Dam Deal With Ethiopia And Sudan'. 2015. Available online at: http://www.theguardian.com/global-development/2015/mar/23/egypt-signs-grand-renaissance-dam-nile-deal-ethiopia-sudan
- TradeMark Southern Africa. (2014).www.trademarksa.org
- TradeMark East Africa (2015) www.trademarkea.org
- Tyson, J., Kennan, J and Hou, Z. 2014. "Developing countries and the slowdown in China" www.odi.org
- Tyson, J., 2014a. "Sub-Saharan Africa International Sovereign Bonds: Investor and Issuer Perspectives". Forthcoming. www.odi.org
- Tyson, J., 2014b. "Sub-Saharan Africa International Sovereign Bonds: Risks for Issuers". Forthcoming. www.odi.org
- UNECA (2012), "Cost-Benefit Analysis for Regional Infrastructure in Water and Power Sectors in Southern Africa". http://www.uneca.org/publications/cost-benefit-analysis-regional-infrastructure-water-and-power-sectors-southern-africa
- UNESCAP (2011) A Guidebook on Public Private Partnerships in Infrastructure, Bangkok, http://www.unescap.org/sites/default/files/ppp_guidebook.pdf
- UNTT (2013) Mapping of financial flows at the sector level: A UNTT WG contribution in response to a request from the Co-facilitators for cluster 1, November 2013. New York: UN Intergovernmental Committee of Experts on Social Development Financing.
- USAID (US Agency for International Development) (2011) 'Regional Agricultural Transport and Trade Policy Study'. West Africa Trade Hub Technical Report 41. Washington, DC: USAID.
- Wells, J. and J. Hawkins (2008), "Increasing local content in the procurement of infrastructure projects in low income countries", ICE briefing note.
- World Economic Forum. (2014). "African Strategic Infrastructure Initiative Managing
 Transnational Infrastructure Programmes in Africa Challenges and Best Practices"
 http://www3.weforum.org/docs/WEF_AfricanStrategicInfrastructure_Report_2014.pdf
- World Bank (2010). "Africa's Infrastructure A Time for Transformation, Extract from the Africa Infrastructure Country Diagnostic Report".

 http://siteresources.worldbank.org/INTAFRICA/Resources/aicd_overview_english_no-embargo.pdf
- World Bank (2010a). "World Bank South Asia Economic Update 2010: Moving Up, Looking East". http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1269620455636/6907265-1275784425763/SAREconomicUpdate7June2010.pdf
- World Bank (2013) Financing for Development Post-2015. Washington, DC: World Bank. World Bank (2014a). "Transformation through Infrastructure". http://go.worldbank.org/FZF5M29P10
- World Bank (2014b). " How to engage with the private sector in public-private partnerships in emerging markets". http://documents.worldbank.org/curated/en/2011/01/13743599/engage-private-sector-public-private-partnerships-emerging-markets
- World Bank Group (2014c). "Optimizing World Bank Group Resources and Supporting Infrastructure Financing".

 https://www.g20.org/sites/default/files/g20_resources/library/Optimizing%20World%20Bank%20Group%20Resources%20and%20Supporting%20Infrastructure%20Financing.pdf
- World Trade Organization (2013) International Trade Statistics https://www.wto.org/english/res_e/statis_e/its2013_e/its2013_e.pdf



Glossary

ASEAN +3 is the Association of Southeast Asian Nations (ASEAN), the People's Republic of China, Japan and the Republic of Korea (collectively ASEAN+3).

Basel III is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulation, supervision and risk management of the banking sector. These measures aim to (i) improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source; (ii) improve risk management and governance; and (iii) strengthen banks' transparency and disclosures. For emerging market credit, Basel III introduced additional capital requirements for regulated banking institutions.

Bilateral development finance institutions are finance institutions that are majority-owned by national governments and have historically served to implement government foreign development and cooperation policies.

Development finance institutions (DFIs) are providers of loans, equity and guarantees as well as other risk mitigation instruments to public and/or private entities. These institutions have a developmental mandate and their objectives often include support for and catalyse private investment in developing countries where access to capital markets is limited.

Externalities are costs or benefits that affect a party who did not choose to incur that cost or benefit. The concept is widely used in economics.

Hard infrastructure is defined as tangible infrastructure including physical infrastructure such as transport (roads, railways, ports and air transport facilities), energy, communications and water systems.

Hedge and private equity funds are unregulated investment funds. Because of their lack of regulation they are able to invest in a wide range of securities and investments, including liquid investments. They are usually restricted to more sophisticated investors and use leverage to enhance returns.

The Independent Commission for Aid Impact (ICAI) is the independent body responsible for scrutinising UK aid, examining the effectiveness of the UK aid budget for intended beneficiaries and for delivering value for money to UK taxpayers. It conducts independent reviews of aid programmes and of issues affecting the delivery of UK aid, publically reporting their findings and recommendations.

International Finance Corporation (IFC) a member of the World Bank Group and is the largest global development finance institution focused exclusively on the private sector with over USD185 billion in commitments in over 5,000 enterprises in 2013.

Logistics management is the management of supply chains. It includes management of the transport and storage of goods, and encompasses freight management.

Multilateral Investment Guarantee Agency (MIGA) is a member of the World Bank Group. Its mission is to promote foreign direct investment (FDI) in developing countries through insurance provision. This includes providing political risk insurance guarantees to private-sector investors and lenders.



Public–private partnerships (PPP) are partnerships of government and one or more private-sector companies.

Regional infrastructure is the cross-border or national components of regional, multi-country infrastructure. It includes both 'soft' and 'hard' infrastructure.

Soft infrastructure is defined as intangible legal and regulatory systems and processes relating to customs management, the business environment and institutions. In regional infrastructure, it includes 'human' issues such as knowledge, skills and attitudes such as trust and working together and incentives.

South Asia is defined as Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka.

Sovereign wealth funds (SWFs) are state-owned investment funds. Most SWFs are funded by revenues from commodity exports or from foreign-exchange reserves held by the central bank. The largest country funds include Norway, Abu Dhabi, Saudi Arabia, China, Kuwait and Singapore (GIC), but they also include smaller funds such as the Pula Fund from Botswana.

Sub-Saharan Africa is defined as Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Brazzaville), Congo (Democratic Republic), Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Réunion, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Western Sahara, Zambia and Zimbabwe.

Tranching, including 'first-loss' tranches, are structuring elements commonly used in securitisation to create securities with different levels of risk within a single underlying asset pool. First-loss securities are high risk because any losses, such as those that may occur as a result of a credit default are borne by the first-loss securities until their value is nil. Such tranching provides credit enhancement for senior security holders.

