Changing the game for Africa's infrastructure: what role does South-South cooperation play in addressing Africa's infrastructure gap and under what terms?

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Abstract

One of the key (re)emerging concerns among African governments is the need for improved infrastructure. However, there is capital deficit in infrastructure in Africa – latest World Bank estimates put this as equal to US$ 31 billion a year [World Bank, 2010]. Thus, the meeting of Africa's need for infrastructure and its financing is a significant challenge. One of the most important developments in meeting this challenge is the growing role of South-South co-operation, including aid. This paper explores the role and effectiveness of South-South cooperation and considers how its benefits might be maximised. Emerging financiers with African interests include China, India, the Arab States, South Africa and Brazil. As well as providing infrastructure investment and finance, a number of these actors offer the services of highly competitive state-owned and private construction and communications firms. Sometimes their role is essentially a condition of the financing, in other cases they are successfully bidding for open tenders. This paper will focus particularly on the transportation and telecommunications sectors in order to highlight some of the variations across sectors and the relative roles of different providers. It also explores the role of technical assistance and technology in infrastructure as a way of understanding some of the intangible impacts of aid on the everyday lives of poor people and their appropriateness and effectiveness.

1. Introduction

There has been, over recent years, an increased focus on the role of infrastructure in the development of sub-Saharan Africa. Infrastructure is increasingly seen by African governments and some of their development partners as crucial to the development of the region. It is regularly argued that the provision of infrastructure in Sub-Saharan Africa lags substantially behind that of other developing regions, that the region pays a high price for its infrastructure services and as a result there is detrimental impact on the economic performance of the region [World Bank, 2010a]. Consequently, there has been a renewed call for aid and investment to be focused on investment in infrastructure. However, there is still a substantial shortfall in the amount of investment required to meet the continent's needs and maximise its economic performance. It has been argued that there is capital deficit in infrastructure in Africa, which the World Bank estimates at US$ 31 billion a year [World Bank, 2010a]. In this regard, one potentially positive trend is the growing presence of alternative older and emerging development financiers, such as China, India, the Arab States, South Africa and Brazil.

As well as providing infrastructure investment and finance, a number of these actors provide highly competitive state-owned and private construction and communications firms. Sometimes their role is essentially a condition of the financing, in other cases they are successfully bidding for open tenders. This paper will focus on the transport and telecommunications sectors in order to highlight some of the variations across sectors and the relative roles of different providers. It will explore:

- the scale and nature of their involvement in the last decade across sub-Saharan Africa
- strategies to maximise the benefits of their involvement.
- the role of technical co-operation and technology transfer in infrastructure as a way of understanding some of the intangible impacts of co-operation around infrastructure and its appropriateness and effectiveness.
- challenges to be addressed in the further development of South-South co-operation in Infrastructure, with reference to the transport and telecommunications sectors and to infrastructure more generally.

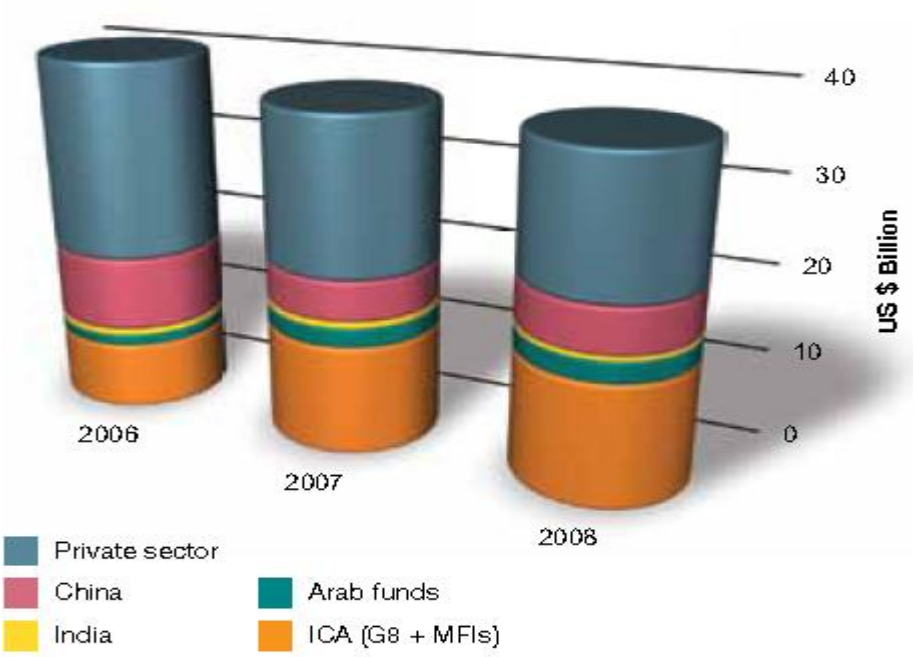
2. Volume of Official Flows in Infrastructure in Africa

As highlighted in the DCF Background Study on South-South Co-operation (UNDESA, 2008), adequate information on flows of investment in the Infrastructure Sector is frequently very difficult to obtain. However, efforts have recently been made to obtain a better approximation of the volume of such flows. Most notable has been work undertaken as part the Africa Infrastructure Country Diagnostic (AICD) Study, (World Bank, 2010a), that has sought to understand infrastructure investment in Africa (from both partners within the Organisation of Economic Development (OECD) group and other partners) and its future needs. The AICD Study has undertaken extensive work to understand more about the infrastructure investments made by non-OECD financiers, particularly official government and private sector South-South flows from China, India and the Arab countries.

It is clear from the AICD study that emerging, non-OECD financiers, particularly those from the global South, play a growing and increasingly significant role in infrastructure investment. China, for example, made commitments of US$5billion of official assistance to the infrastructure sector in sub-Saharan Africa in 2006. This is an important contribution in the context of an infrastructure funding deficit for Africa that has been estimated at US$31billion a year. A recent World Bank report (2008) estimates that emerging financiers' investment to Africa jumped from US$1bn in 2000 to US$8bn in 2006 and was estimated to be US$5bn in 2007, which is comparable to the Official Development Assistance (ODA) of the OECD countries (estimated in 2006 to be US$5.3bn) (World Bank, 2008).

Figure 1: Financial Commitments for Infrastructure in Africa for 2008

Figure 1: The big picture – minimum external financial support to African infrastructure 2006 to 2008[1]



[1] 1) The source of the private sector commitments in 2006 and 2007 is the PPI database, PPIAF. The PPI data for 2008 is not available except the water sector, thus the 2008 figure was estimated by assuming 85% of the 2007 level. The 15% reduction came from "PPI data update 22" released in June 2009 by PPIAF saying that "between July 2008 and March 2009, the rate of project closure fell 15% by investment compared to a similar period in the previous year."

Table 0.4 Infrastructure Spending on Addressing Sub-Saharan Africa's Infrastructure Needs
$ billions annually

	Operation and maintenance	Capital expenditure					
Infrastructure sector	Public sector	Public sector	ODA	Non-OECD financiers	Private sector	Total	Total spending
ICT	2.0	1.3	0.0	0.0	5.7	7.0	9.0
Power	7.0	2.4	0.7	1.1	0.5	4.6	11.6
Transport	7.8	4.5	1.8	1.1	1.1	8.4	16.2
WSS	3.1	1.1	1.2	0.2	2.1	4.6	7.6
Irrigation	0.6	0.3	—	—	—	0.3	0.9
Total	20.4	9.4	3.6	2.5	9.4	24.9	45.3

Source: Briceño-Garmendia, Smits, and Foster 2008.
Note: Based on annualized averages for 2001–06. Averages weighted by country GDP. Figures are extrapolations based on the 24-country sample covered in AICD Phase 1. Totals may not add exactly because of rounding errors. ICT = information and communication technology; ODA = official development assistance; OECD = Organisation for Economic Co-operation and Development; WSS = water supply and sanitation. — Not available.

Table 1: Infrastructure Spending in Africa. *Source: World Bank (2010a)*

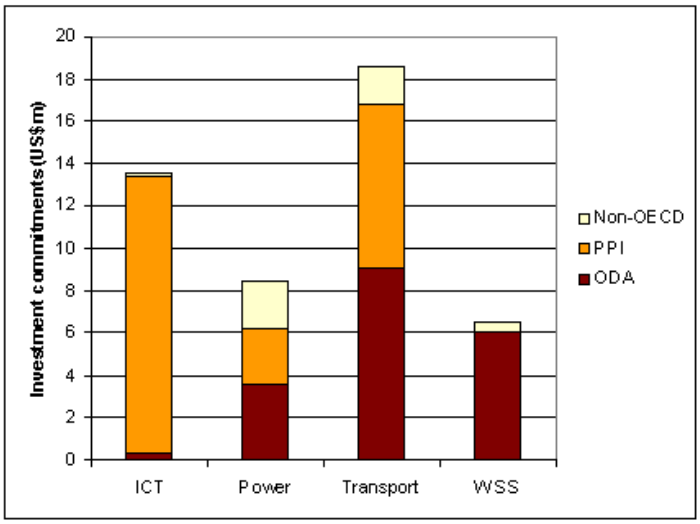
Such South-South flows are not uniform across all infrastructure sectors. Nor are they uniform across all countries. For example, investment from the Southern Africa Development

Bank is mostly focused on a few Southern African countries. Official infrastructure investment from China concentrates 70% of its infrastructure finance across 4 countries (Nigeria, Angola, Sudan and Ethiopia), (World Bank, 2008). Arab donors also continue to play a significant role in financing infrastructure in Africa with US$2.4 billion committed in 2008. In a similar pattern to Chinese investment, 65 percent of investment was committed to just 5 countries: Sudan, Morocco, Egypt, Mauritania and Niger. Arab donor finance has been also concentrated in specific infrastructure sectors and areas, with 38% going to dam construction, 30% to road construction and 15% to the power sector (World Bank, 2010).

Non-OECD financiers from the global South also make material contributions in infrastructure sectors that, traditionally, are not considered a priority by ODA funders. The important power sub-sector in sub-Saharan Africa faces significant funding challenges and non-OECD financiers make a much more important contribution in this area than the traditional ODA financiers. The private sector, both from across the OECD and non-OECD countries, also has an important role to play in infrastructure financing. Figure 2 shows the relative importance of ODA, Public-Private Partnership Initiative funding (PPI) and non-OECD finance for different infrastructure sectors. Here again, involvement varies across the sector. Most noticeably, evidence indicates (Figure 2) that the telecommunications sector is dominated by private sector flows in contrast to transport and power where private sector investment is very limited. However, the line between state-owned/private firms is often blurred, for example through consortia between state and private firms and through financing conditionality.

The degree to which South-South flows are involved in private sector investments is frequently difficult to ascertain but data from UNCTAD (2007) suggest that flows from Asia, for example, are significant and varied in their country of origin. This complex private sector picture is also reflected in data from Greenfield investments where private sector infrastructure investments are frequently focused (UNCTAD, 2007). 2005 Greenfield Foreign Direct Investment (FDI) originating from the top Asian investor countries is targeted at only 16 African countries.

Figure 2: External infrastructure finance by sector in Sub-Saharan Africa, 2001-06 *(source: World Bank, 2008)*



Source: World Bank–PPIAF Chinese Projects Database; World Bank–PPIAF PPI database (ppi.worldbank.org); OECD database (http://stats.oecd.org/), as of 2008.

3. South-south Co-operation in Transport

Financing arrangements

The transport sector takes the largest amount of public sector infrastructure investment in Africa with US$5.9 Billion in 2008 (World Bank, 2010). The evidence indicates the importance of government/public sector finance; transport is important to non-OECD financiers but there is limited private sector involvement. There are particular sub-sector and geographical distributions within financing and Nigeria, Ethiopia, Gabon and Mauritania attract major China investment in transport sector. In addition there are financing arrangements that make it difficult to trace the patterns of investment in the transport sector, particularly the 'Angola Mode' agreements of infrastructure for resources. Frequently multiple flows disguise infrastructure investment and complicate untying aid processes.

Chinese investment in the rail sector (large long-distance rail projects in Nigeria, Gabon and Mauritania) is of particular note. The extent to which these initiatives are linked into, or provide opportunities to the wider African economies or are co-ordinated with pan-African strategies such as NEPAD, requires further exploration as some commentators argue that some of these transport sector initiatives are designed to reduce supply side risk for extractive industries and to support the trade activities of TNCs, particularly in the mineral extractive industries.

The case study, below, of rail investment towards a Trans-Africa corridor, shows the complexity of investment patterns. This complexity, involving state and private finance, interdependencies of spatial distributions in transport, trade and wider economic benefits, and African states' willingness to provide investment concessions, seems? typical of recent South-South investment in the transport sector for large scale infrastructure projects. It may also be typical of South-South co-operation that the infrastructure sector is integrated towards a wider perspective of South-South economic co-operation. This integrated perspective on infrastructure also impacts on financing and implementation.

China's first SEZ in Africa, announced in February 2007 was established in Chambishi, Zambia's copper belt region.[1] The Chinese Government has committed US$800 million in investment credit for Chinese firms to tap into. The zone's anchor investment will be a US$200 million copper smelter for local beneficiation.[2] It is claimed that up to 60,000 jobs will be created in the SEZ that will enjoy duty and tax incentives for Chinese firms.[3] China's strategic supply line of copper will be secured through the investment.

Chinese companies are constructing and refurbishing two strategic railroads from Zambia to Africa's West and East coast; respectively the Benguela and Tazara Railway lines.

The Benguela Railway line, following restoration, will run 1,300 km from Benguela to Luau, on the border with the Democratic Republic of Congo. The railway also has a link to Lobito, 700 km south of Luanda. The project, while also restoring an important transport backbone to Angola, will also thus facilitate the access to Angola's ports for Zambia's extracted copper.[4]

The Tanzam or Tazara Railway, linking Kapri Mposhi in Zambia to Tanzania's Dar es Salaam was built by the Chinese Railway Engineering Corporation between 1970 and 1976, when it was handed over to the Zambian Government. Chinese investors have since shown interest in the rehabilitation of the historic railway. Together the Tanzam and Benguela lines bisect sub-Saharan Africa. The intent is to reduce supply-side risk for resource extraction.

Of further interest, however, is the US$ 5 billion loan China Exim bank announced with the Democratic Republic of Congo (DRC) in September 2007.[5] Anecdotal evidence suggests US$ 3 billion of the aid package will be directed towards a 3,200 km railway link between 3,200km between Sakania, in resource-rich Katanga Province, near the Zambian border, to Matadi. Part of the financing will also fund road link of 3,500km linking Kisangani, north-east of Lubumbashi, the capital of Katanga province, Kasumbalesa. Significantly, Lubumbashi will also be connected to Lobito port in Angola, once the rehabilitation of the Benguela railway is complete.

Box 1: Case study illustrating the integration of infrastructure and economic investments from Caulkin et al (2008).

Management and labour

There is some evidence that different sectors generate different structures or patterns of employment. Within transport it is often perceived that unskilled labour is required for the construction and subsequent management and operation of infrastructure projects. In Africa, 'labour based methods' have been promoted as a means to reduce patterns of employment inequality and inequity. The extent to which South-South cooperation affects labour and employment practices and social organisation is little understood. For example, there is anecdotal evidence that construction companies may support migrant labour and associated organisational arrangements (food and accommodation) that reduce integration with the wider local economies. A further unknown is the extent to which social organisation of labour differs between infrastructure sectors. For example, it is sometimes argued that initiatives in the telecommunications sector use very little local labour, although in some contexts this may reflect skills shortages [?]. Greenfield FDI investments (that build new production) are thought to provide greater opportunity for local labour employment and higher wages: further research needs to make the distinction between different forms of FDI.

Environmental and social safeguards

The perceived lack of priority given to environmental and social safeguarding is a common criticism of South-South co-operation in infrastructure development. However, this may be more to do with the differing degrees to which environmental and social development

practice is embedded within the infrastructure development practice of the donor country. It is also not a uniform picture, with Arab donors (particularly in areas where they contribute to co-financing of infrastructure), following other donors' good practice, whereas Chinese investments may have a less developed safeguarding approach. The latter pattern may change as practices around environmental and social safeguards in infrastructure improve in the Southern donor country (and especially if regulation by recipient country governments also improves).

Quality/value/usage and appropriateness of investments

The quality and appropriateness of infrastructure investments under South-South co-operation is a complex issue. The breadth of possible infrastructure investments from ports and airports to rural roads provides a challenge to assessing the value of South-south co-operation. Much of the quality of infrastructure is guided by national standards and specifications and, as noted above, the quality of such investments is heavily influenced by the supervisory environment in which investments are made. There is an ongoing debate about the impact of standards on the quality of transport infrastructure. This debate is particularly important in the area of rural road infrastructure where there is a recognised (large) gap in investment needs for Africa and where possibly experience in other similar social and economic contexts could significantly improve the quality and appropriateness of investments. However, the length of relationship between the non-OECD financier and the African host nation may also inform the degree of compliance and quality. For example, Chinese contractors have reportedly achieved high quality work in Zambia, where there is a relatively long history of Chinese investment, but this is rarer in countries like Sierra Leone and Angola where investment is more recent and government capacity for labour standards and construction quality enforcement is not always adequately in place. There is also a question of the value and appropriateness of South-South co-operation in transport infrastructure services. Indian and Chinese private sector investments in transport equipment such as bikes and minibuses could make an impact on the affordability of personal mobility and public transport services.

4. South-south Co-operation in the Telecommunications Sector

Financing arrangements

Considerable interest in African telecommunications from Asia has been apparent in the last few years. Evidence points to the central importance of the private sector in this dynamism, with several companies from India, China and elsewhere seeking shares in African telecommunication markets, the fastest growing the world. Since 2008 South Africa and Kenya, in particular, have been the target of large bids by Indian conglomerates, which have been persistent in the face of resistance from South African competitors, for example. South African companies continue to bolster the diversity of markets within the Southern African region, but also West Africa, while firms from the UAE and elsewhere in the Middle East occupy positions in the sector in West Africa, Sudan and Tanzania. The majority of customers of Kuwait's Zain Group are actually located in Africa, although flagging profits led to the sale of its African operations to India's Bharti Airtel for $10.7 billion in March 2010 in a landmark deal.

This private sector activity should not disguise the complexity of state/private financing, with state 'backing' intrinsic in a number of national telecommunications companies.. A company with a growing presence in Africa, Alcatel-Lucent Shanghai Bell Ltd Co (ASB) is, for example, directly managed by China's State-owned Assets Supervision and Administration Commission of the State Council. The company has been active in Angola, Ghana and Nigeria for nearly a decade. In 2004, it received a Chinese government? loan package of US$60 million to help boost sales overseas. In March 2008, the China Development Bank said it would provide ZTE with a large credit line for overseas project financing.

There are also examples of 'South-South' telecommunication cooperation outside the private sector, focused on tele-medicine, tele-education and networking among African heads of state for instance. The 'Pan-Africa e-network', inaugurated by the Indian government in 2007, is a pioneer in this regard – linking educational and medical institutions throughout Africa to premier institutions in India. This, and other such endeavours, appeals to both bilateral and multilateral mechanisms (notably the AU) within Africa.

Management and labour

The demand for highly skilled labour at certain levels of the telecommunications sector has dictated the importation of overseas labour in upper management and many technical positions within Africa. Local employment has, however, been created most notably in retail outlets, both formal and informal, in urban centres across Africa, as well as in local telecommunications offices. It has been reported that the Chinese company, Huawei Technologies, for example, operates 32 offices and service centres throughout Africa with 1,500-2,000 'local' and 1,000 Chinese employees. Huawei Technologies also has training centres in Nigeria, Kenya, Egypt and Tunisia where local managers have found opportunities. ("**Huawei Technologies: A Chinese Trail Blazer in Africa**", Wharton School, University of Pennsylvania, April 2009) The relatively small numbers of workers required in establishing telecommunication endeavours, unlike transportation infrastructure, however, casts doubts on the potential for the private sector dimensions of the South-South telecommunications relationship to create significant local employment, certainly in higher-earning management roles, as opposed to lower-skilled retail roles.

Quality/value/usage and appropriateness of investments

There are claims that 'Southern' investments are particularly appropriate in African settings. India claims 'affordable, available, adaptable' products, based on a parity of market experiences in Africa and India. Certainly, Indian conglomerate Essar in Kenya has conspicuously introduced products and strategy aimed to capture a mass market, providing cost effectiveness above all – what a CEO of the company described as 'the telecoms equivalent of a no-frills airline'. This is tied to 'Base of Pyramid' models of profitability. Kaplinsky and Messner (2008), thus argue that growing consumer ability, and therefore competitive Indian production, is driving a wave of innovations.

Certain actors have been particularly concerned with capturing the 'base' of the market, with Chinese companies offering cheap handsets, as well as cheaper network facilities. China's Huawei, for example, markets itself at 5-15% lower than its major international competitors, Ericsson and Nokia, with a rhetoric that this enfranchises poorer Africans into this crucial sector. However, in pricing products at such low rates, certain 'Southern' companies such as

ZTE of China are perceived as being of inferior quality within local markets, where established brands have initial advantages. As the following case study shows, newer investors from Asia are energetically penetrating telecommunications markets in Africa, although not without challenges.

Box 2: Case study of India's 'safaris' into African telecommunications

Amongst the most prized African markets for Asian conglomerates have been African telecommunications. In 2008 Indian corporate giant Essar (through Essar Communications) announced its intention to invest heavily in Kenya, having bought 49% of South Africa-based Econet Wireless International that in turn had purchased 70% percent of Econet Wireless Kenya in December 2007. Essar declared its intention to invest $500 million over two years – the biggest such foreign private investment in the sector in years and Essar's first major investment in sub-Saharan Africa. Thanks to this outlay, Econet Wireless was able to open a new network – "Yu" – in November 2008, after five years of legal and financial setbacks, recruiting 330 local employees. The move, with the entry of Orange, added competitive pressure in an industry that has been dominated by two players for nearly 10 years. Econet soon introduced the country's cheapest tariff, intending the investment to be a 'springboard' to the wider East African region, especially after acquisition of Dhabi Group's Warid Telecom Uganda and Warid Congo in 2009.

But Essar, like Zain and Orange, are struggling to break the dominance of Safaricom, who enjoy around 70% market share in Kenya, success built on decent branding and skilful marketing to the crucial lower end of the market thorough the introduction of small credit options and per second billing. Two of India's biggest companies, Bharti Airtel and Reliance had attempted, but failed, to merge with South Africa's MTN, the biggest telecommunications company in Africa. Bharti has now been able to acquire the African assets of Kuwait's Zain in 2010. Yet, this deal if considered to be far from assuring success given the competitive pressure from dynamic companies such as MTN itself in this most competitive and innovative African market.

Technology Transfer

The Telecommunications sector is of great importance for national development strategies in Africa. This makes analysis of South-South co-operation in the telecommunications sector and its likely future trajectories particularly important. Deliberate government policies of privatisation have been introduced in order to secure increased levels of private inflows. Thus, Ghana Telecom was privatised, firstly leading to joint ownership with Malaysian investors, and subsequently with Vodafone. There is a need for better information regarding private investment in the telecommunications sector through UNCTAD and FDI flows than is currently available.

There have been innovations led by non-private sector actors, notably through India's 'Pan-Africa e-network', which is introducing tele-medicine, tele-education and governmental networking within Africa, and linking the African Union to other areas of the 'global South'. Technology transfer centres in Ghana were also built through an Indian governmental partnership. Perhaps the most important South-South cooperation in telecommunications has been investment supporting the proliferation of fibre optic cables linking different African

countries to each other and other regions of the 'global South' – notably the East African Submarine Cable System (EASSY) and Atlantic 3/West Africa Submarine Fibre Optic Cable (SAT-3/WASC). This will greatly increase the speed of internet connectivity, although it is only likely to benefit populations in major towns and privileged social groups. Finally, the innovation demanded in the competitive telecoms markets of Africa has led to the transfer of mobile phone technologies across the 'South. Interestingly, this has even seen technologies developed in African markets (notably the M-Pesa mobile money transfer system in Kenya) being exported to India, Afghanistan and elsewhere.

5. South-South Technical Co-operation, Knowledge Transfer and Capacity Development in Infrastructure

Much of the discussion on South-South co-operation in infrastructure has, quite understandably, focused on physical infrastructure investment. However, it is clear that Africa needs investment in other elements of infrastructure. Analysis of the African infrastructure sector highlights the need for development of both infrastructure services and technical and managerial capacity within the sector. These are two areas where the role and potential of South-South Development Co-operation also needs to be better understood.

Infrastructure services refer to the delivery of services to users, businesses and communities that use the infrastructure network. Recent discussion around infrastructure services includes the provision of electricity to consumers from energy utility companies, public transport services along road infrastructure, provision of clean water and waste water services to communities and mobile phone services and innovation such as money transfer services across the wireless telecommunications infrastructure (World Bank 2010a). The equipment to provide such services (e.g. pumps to facilitate irrigation, bicycles, handcarts, motorbikes and minibuses for informal transport services, and mobile phone handsets) is a key element of South-South co-operation that enables effective infrastructure services. The trade conditions and the financing of such trade flows maybe a significant element of successful infrastructure services. For example, facilitating flows of affordable Indian and Chinese bicycles and motorbikes through preferential government-supported credit and financing arrangements has significant impact on ease of mobility for citizens of many African countries and makes the impact of infrastructure investment more beneficial.
However, there is a significant challenge in understanding and gathering reliable data on the importance of South-South Development Co-operation in infrastructure services as much of it may appear embedded in normal trade flow data where it may be difficult to differentiate between equipment for infrastructure services and that for other commercial or personal use.

We argue that there is also a significant element of South-South Development Co-operation around technical co-operation, capacity building and technology transfer. Technical Co-operation and capacity building are often loosely defined concepts. In fact, Kuhl (2009) argues that capacity development 'is an umbrella concept … under which various approaches to development assistance are subsumed'. There are substantial challenges in building the management and technical capacity necessary to develop, manage and maintain African infrastructure. The exchange of expertise and experience from similar contexts across the global South can be a noticeable feature of such co-operation. A key element of the discourse around South-South co-operation focuses on such knowledge

exchanges. The Brazilian Development Co-operation agency, for example, sees this as its main mission in Africa. Arab donors also report on the number of scholarships provided (see below) and level of technical co-operation funded. The Indian Technical and Economic Cooperation (ITEC) programme is a long-established element of Indian South-South collaboration. It offers training programmes in a wide variety of areas – from accountancy to IT to gender empowerment. India currently provides around 1000 ITEC places a year (out of around 4000 places available to partners across the South) to its African partners. However, at present ITEC appears to be relatively poorly leveraged to India's other development cooperation activities, although this varies from country to country.

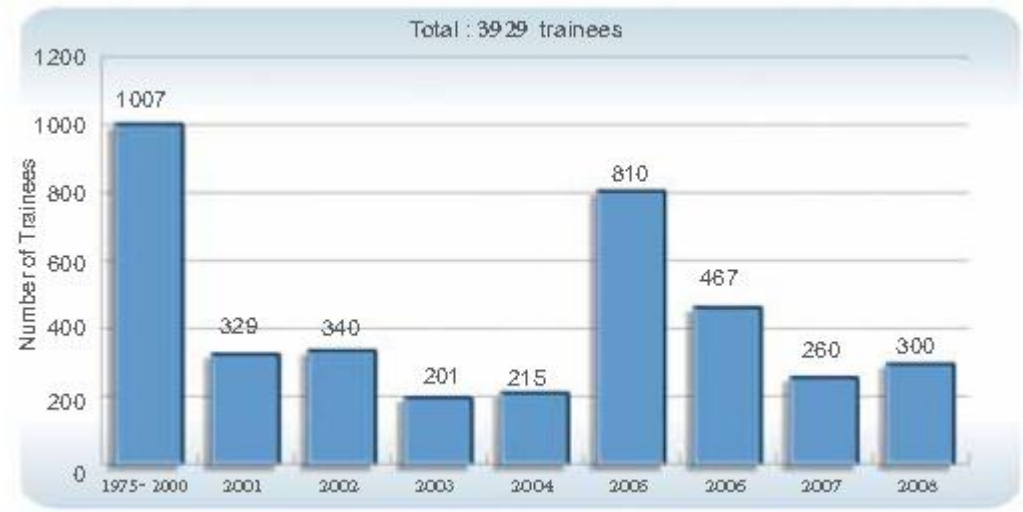


Fig 3. African Trainees financed by Arab Bank for Economic Development in Africa (BADEA) 1975-2008 *(Source: BADEA Annual Report 2008 http://www.badea.org/pdf/annual2008eng.pdf)*

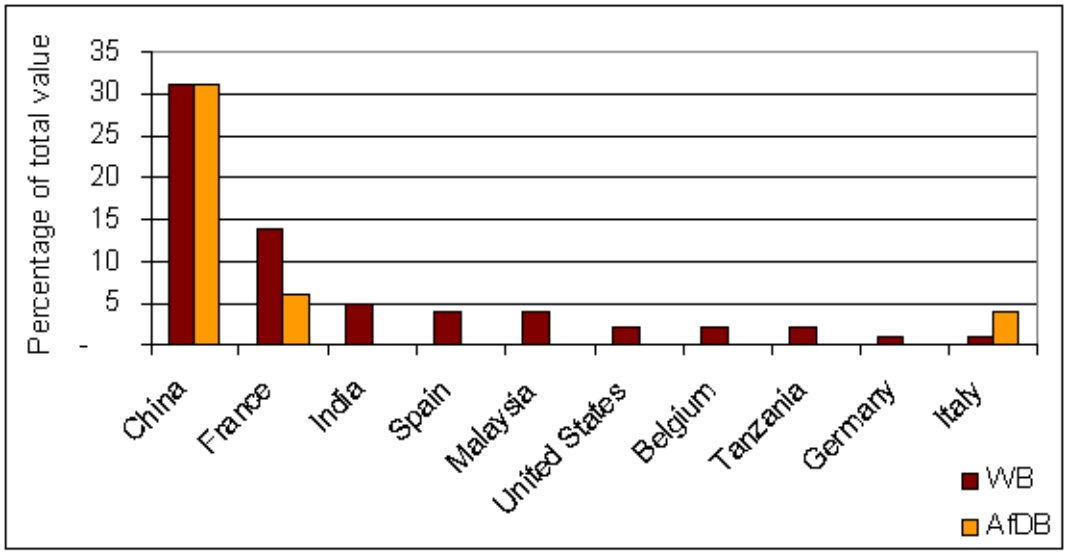
Chinese press reports detailed the knowledge exchange elements of Africa-China co-operation agreed in 2009:

"China will train 15,000 African professionals, send 100 senior agricultural experts to Africa, and set up 10 special agricultural technology demonstration centers in Africa over the next three years," Hu said at the summit. He also said that China will dispatch 300 youth volunteers to Africa, build 100 rural schools there, and increase the number of Chinese government scholarships to African students from the current 2,000 per year to 4,000 per year by 2009. " http://www.china.org.cn/english/infernational/198836.htm

However, there is very little data on the actual flows of knowledge transfer with which to assess the overall level of such transfer and the degree to which it contributes to the needs of Africa's infrastructure sector. This is an area where further data collection and analysis are required.

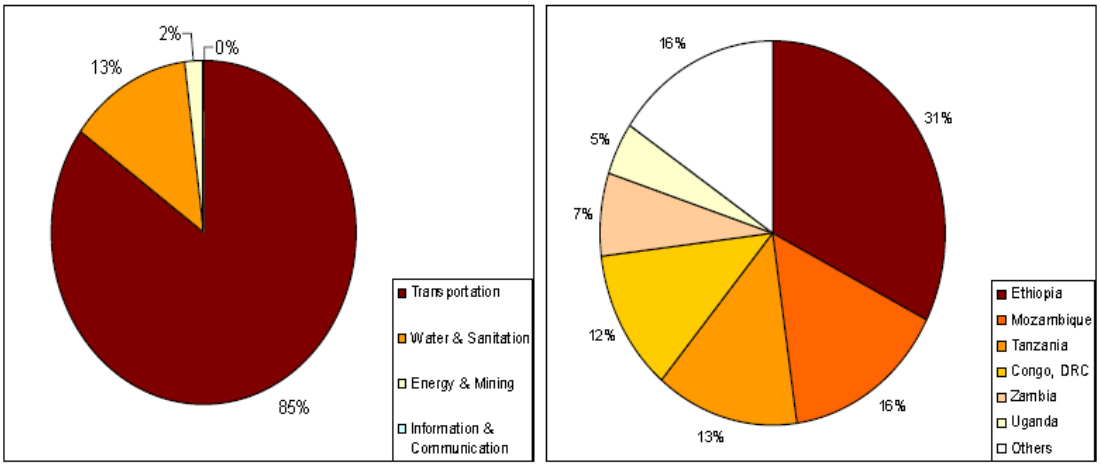
Quality and Impact of infrastructure development co-operation influenced by technology capacity

One area of frequent discussion regarding technical capacity concerns the use of foreign contractors in the delivery of infrastructure and its impact on the local contracting industry and local construction labour markets. Southern contractors are playing an increasing role in Africa's infrastructure development and, as Fig 4 below shows, contractors from countries such as China, India and Malaysia are important in delivering infrastructure financed by the multilateral development partners. However, as Fig 5 demonstrates, the picture is not uniform across sectors and countries.



Source: African Development Bank and World Bank procurement data, 2004–06.

Fig 4 Percentage value of multilateral civil works contracts in Sub-Saharan Africa captured by foreign contractors' according to their country of origin, 2004–06 *(Source: World Bank, 2008)*



Source: African Development Bank and World Bank Procurement Data 2005–06.

(a) Sectoral distribution **(b) Geographic distribution**

Fig 5 Sectoral and geographic distribution of multilateral civil works contracts in Sub-Saharan Africa awarded to Chinese contractors, 2005–06 ***(Source: World Bank,2008)***

Caulkin et al. (2008) report, regarding the role of project finance, that one of the biggest advantages of Chinese contractors is their access to capital, often through PRC Government concessional loans. They argue that Chinese companies, predominantly SOEs, can secure the necessary funds for advance payment and performance bonds from their head offices in China and make full use of their access to competitively priced capital from Chinese banks.

The ease of access to capital can impact on overheads and alter the competitive position of contractors in the competitive tendering process. Caulkin et al. (2008) argue that while local and foreign construction companies operate on profit margins of 15-25 percent, Chinese companies usually operate on margins of under 10 percent, thereby making them extremely competitive on price.

Moreover, there has been much discussion about the quality of infrastructure delivery and the role that technical capacity plays in infrastructure implementation, particularly in the case of Chinese construction contractors. Work by a number of commentators (for example, Caulkin et al, 2008) highlights widespread perceptions that the quality of work by Chinese construction companies is inferior. However, Caulkin et al. (2008) argue that, in some cases, very little distinguishes the quality and standards of Chinese construction companies from the other firms, whether local or foreign. There is a need to emphasise the important role of project management and contract supervision. Development of African capacity in these fields will ensure that non-compliance or irregularities in the procurement of materials and problems in workmanship can only be the result of poor supervision and/or collusion between the contractor and the consultant and are dealt with accordingly. The length of time particular Southern contractors have been in a particular market does, it is reported, make a positive impact on the quality of work delivered. In some contexts if a contractor has been in a country longer then they are more likely to produce a higher standard of work.

Emerging financiers also play significant role in developing technical capacity

As noted above, the role of emerging financiers in developing technical capacity is not well documented or measured. However, such financiers and their contractors may come from a similar socio-economic context to the recipient nation and may have valuable and appropriate skills and technical solutions to transfer. A number of commentators, however, question the impact of South-South co-operation on local skills development and labour markets. Chinese contractors are reported as importing a large percentage of the necessary labour and skills such that there is a disconnect between contractors and the local labour markets. However, Caulkin et al. (2008) report, that Chinese construction companies claim that they provide employees with on-the-job training, focusing particularly on machine operation. They found some local construction engineers reporting that they had learned new techniques when visiting Chinese sites with consultants and suppliers (who are also exposed to new work practices and developments in the industry introduced by the Chinese). The transfer of work practices and discipline is another feature of transfer that has been identified.

6. Common Approaches, Best Practices, Lessons Learned and Challenges to be Addressed

This paper has argued that there is a need to maximise the benefits of South-South co-operation, recognising it as an important contribution to African development. This is particularly the case in infrastructure development, which is recognised as being of substantial importance for Africa and where there is an identified investment gap of around US$31 billion a year. The geographical distribution of South-South investment flows is also not uniform across sectors or spatially. To some degree, it could be argued that non-OECD financiers respond to different priorities that may be more in keeping with Africa's infrastructure needs. This is the case in the neglected energy sector where non-OECD financiers appear much more substantially involved than traditional development financiers. There is, however, need for more data and analysis in this area as information is very difficult to obtain and a true picture of the role of South-South co-operation not easy to construct.

Externalities of South-South investments include labour standards, environmental practices and a lack of co-ordination between external financiers and contractors and in-country governments. A firmer assessment of the costs and benefits of co-operation is needed. There is currently a perceived tension in labour standards between non-OECD financiers and Western approaches, though this may change if/as standards improve in non-OECD countries. Moreover, Western standards are not necessarily always of the highest order, particularly where sub-contracting to local firms occurs.

Local contractors will need stronger support if they are to compete in this global infrastructure market – however much South-South Investment is tied for the foreseeable future. However, as a number of commentators observe, the use of escrow accounts by China in such tied investment activities, means that the chances for corruption are much reduced. The financing stays in China, supporting Chinese firms engaged in construction activities in Africa. The intensification of market competition in infrastructure development should deliver more cost-effective bridging of the infrastructure gap in Africa.

Spin-offs from South-South co-operation can be wide-ranging. For instance, Chinese traders are now well-ensconced in many African markets and vice-versa etc and this has facilitated greater access to products at more affordable level for many communities in Africa. The rise of mobile communications facilitated by South African, Indian or Chinese foreign investment in infrastructure and infrastructure services has had very significant impacts on everyday life across many parts of Africa. It has also generated noticeable levels of employment and commercial opportunities through kiosks selling mobile phone airtime, even if the employment impacts in higher-skilled labour markets within Africa have not been noticeable.

We argue that there is also a significant element of South-South Development Co-operation around technical co-operation, capacity building and technology transfer. The prevailing pattern of global business organisation makes impacts on national economies in far more complex ways than traditional models did. Within these patterns there is a need for a more sophisticated and targeted model of knowledge transfer and capacity development through infrastructure investment as the development flows made may not deliver technical and managerial skills. International labour markets cannot guarantee the composition of national populations in infrastructure project implementation. Temporally there is also an issue of

length of time of integration affecting quality and transfer. However, there is very little data on the actual flows of knowledge transfer with which to assess the overall level of such transfer and the degree to which it contributes to the needs of Africa's infrastructure sector. This is an area where further data collection and analysis are required.

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