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Session 6:

Can the Private Sector add value to public sector  
infrastructure development?

*“The Role and Pitfalls of Private Sector Involvement in Infrastructure”*

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# Can the Private Sector add value to public sector infrastructure development?

## 1. Introduction:

This short paper addresses the extremely relevant topic of the private sectors' role in infrastructure provision, with an eye to examining both the *role* and the *pitfalls* of their involvement, and draws on some of the valuable information that has come out of the recently published study "Africa's Infrastructure: A Time for Transformation". The original title of this referenced study was the *Africa Infrastructure Country Diagnostic* (AICD).

## 2. Infrastructure is critical for Africa's growth

A key message emanating from the AICD study is that infrastructure spending is critical to achieve Africa's growth, but that the continent is hampered by low service levels and the high costs of infrastructure services provision. While Africa's growth performance improved markedly between the 1990s and 2000s, a recent study by Calderon (World Bank) aimed to isolate the factors responsible for this increased growth found that infrastructure improvements contributed almost 1% to the per capita growth rate. This was comparable in magnitude to the growth effect of improved macroeconomic policies.

The infrastructure improvements that generated this growth effect were those associated with the ICT revolution taking place during this period. The percentage of Africa's population living within range of a GSM signal soared from less than 5% in 1999 to more than 50% in 2006. Over the same period, 100 million new cellular telephone subscribers were added. Other dimensions of infrastructure, however, have been holding Africa back. Deficient power shaved 0.1 percentage points off the per capita growth rate in the period 1999 to 2006 (and this was before the current power crisis had really taken hold).

Illustrative simulations suggest that if all African countries could improve their infrastructure to the level enjoyed by the best performer in the region (Mauritius), the impact on future growth rates could be substantial. Africa lags behind the rest of the developing world (let alone the OECD countries) in infrastructure provision. What is particularly striking is that both low and middle income countries in Africa lag behind their respective low and middle income country peer groups in the rest of the world.

The gap between Africa and the rest of the developing world is most striking with respect to power. The installed generation capacity per million population found in Africa's LICs is about one tenth of that found in other LICs around the world, and electricity coverage is less than half.

Normalised units	SSA LICs	Other LICs	SSA MICs	Other MICs
Paved road density	31	134	94	141
Total road density	137	211	215	343
Mainline density	10	78	106	131
Mobile density	55	76	201	298
Internet density	2	3	5	8
Generation capacity	37	326	256	434
Electricity coverage	16	41	35	80
Improved water	60	72	75	86
Improved sanitation	34	51	48	74

Not only does Africa have very limited infrastructure, but the associated services are very expensive by global standards. In many cases, the cost of using infrastructure in Africa is more than twice as high as that in other developing regions, and for some countries and sectors the differential can be much larger. For example, road freight tariffs in Central Africa at \$0.14 per ton-kilometre are about ten times as high as best practice levels in Asia. While power tariffs in small diesel based systems in West Africa can easily top \$0.20 per kilowatt-hour, which is four times as high as those found in some other parts of the world.

High end costs for SSA & other regions	SSA	Other developing regions
Power tariffs (\$/kWh)	0.46	0.10
Water tariffs (\$/m3)	6.56	0.60
Road freight (\$/ton-km)	0.14	0.04
Mobile telephony (\$/mo.)	21.0	9.9
International telephony (\$/min.)	12.5	2.0
Internet dial-up service (\$/mo.)	148.0	11.0

The reason for these high tariffs is wide-ranging. In some cases, the cost of production is genuinely higher in Africa, particularly due to the very small scale of production, and reliance on inefficient technologies. For example, many countries rely on oil-based generation technologies, or use satellites for international connectivity. In other cases, the problem is a lack of competition leading to very high profit margins. This explains, in particular, Africa's high road freight tariffs. It also explains why the charges for international connectivity remain high in many countries even after they break free from dependence on satellites: due to monopolistic control of international gateways.

### 3. Diagnosis of the Infrastructure Spending Need

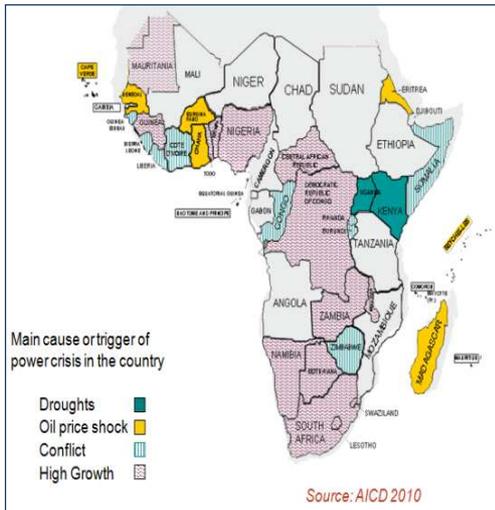
US\$ bn/an over 10yrs	Capital Expenditure	Operating Expenditure	Total
ICT	7.0	2.0	9.0
Irrigation	2.9	0.6	3.5
Power	26.7	14.1	40.8
Transport	8.8	9.4	18.2
WSS	14.9	7.0	21.9
<b>Total</b>	<b>60.4</b>	<b>33.0</b>	<b>93.3</b>

The AICD has estimated that Africa will need **\$ 93 billion** annually for the next 10 years to meet the following extremely modest targets: (i) to rehabilitate existing infrastructure; (ii) to build new assets needed to keep pace with economic growth over the next decade; (iii) to meet minimum social targets such as the **MDGs** for water and others described in the table below; and (iv) to operate and maintain all new and existing assets.

Sector	Economic Target	Social Target
ICT	Complete networks of submarine cables & fibre optic backbone linking capitals	Extend GSM voice signal and public access broadband to 100% of the rural population
Irrigation	Develop all financially viable opportunities for large & small scale irrigation	---
Power	Attain demand-supply balance in power production within a regional framework	Raise household electrification rate by 1% annually
Transport	Attain good quality road networks supporting regional & national connectivity goals	Provide 100% rural road access on high value agricultural land; place entire urban population within 500 metres of a road supporting motorised access
WSS	--	Meet the MDGs for water & sanitation

These goals are not ambitious, but they would allow Africa to catch-up with other developing regions. It is important to emphasize that while the bulk of the \$ 93 billion relates to investment, there is also an important share relating to operations and maintenance – an area of spending too often overlooked by policy-makers.

Power stands out as having by far the largest spending needs at \$ 40 billion/ annum; water and transport are a distant second with around \$20 billion each per annum. The reason that power spending needs weigh so heavily is that the continent is in the midst of a power crisis affecting more than 30 countries. The causes of that crisis differ across countries, but the effects are similar – regular blackouts leading to significant production losses and a drag on economic growth.

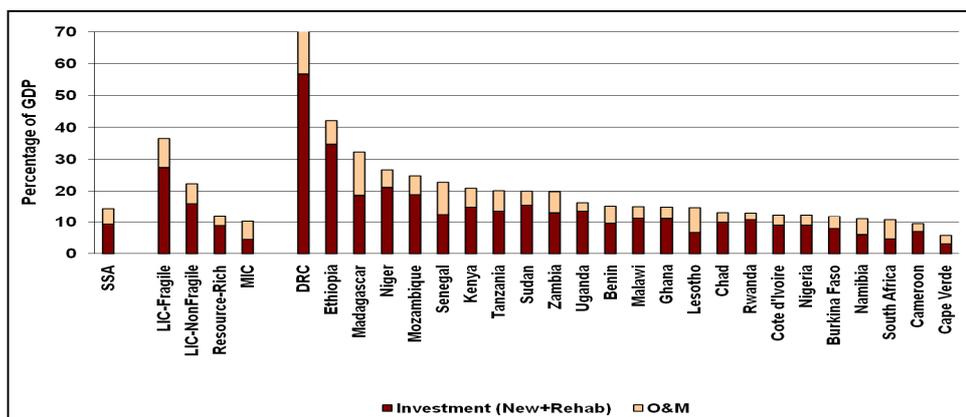


To restore power sector equilibrium, Africa will need to build some 7,000 MW of new capacity each year over the next decade, compared with the meagre 1,000 MW each year of new capacity that have gone in over the last decade. Outside of South Africa, African power consumption is little more than 100 kilowatt-hours per person per year and falling. Even if all this power were allocated to residential use, this is barely enough to power one light bulb per person for three hours a day. The entire installed capacity of Sub-Saharan Africa with its 48 countries and population of 1 billion is no more than that of Spain with a

population of around 40 million.

Expressing annual infrastructure spending needs as a percentage of GDP, SSA would need to spend 15% of GDP on infrastructure, 10% on investment and 5% on operations and maintenance. If these numbers look high, note that China has been investing 14 percent of GDP on infrastructure during the mid-2000s. However, the burden of funding infrastructure assets varies hugely across country groups. Whereas middle income (MIC) and resource rich countries need only spend around 10 % of GDP, low income (LIC) non-fragile states need to spend more than 20 % and low income fragile states more than 35 % of GDP. Some countries face a particularly difficult situation; with the DRC needing to spend 70 % of GDP to meet the above targets (see table below). This is, of course, manifestly impossible but illustrates how hard it will be for some African countries to catch-up.

Infrastructure needs as a percentage of GDP:



These numbers are based on detailed analysis of public expenditure at the country level, including central government budgets, as well as parastatals and special funds. The result shows that already \$ 45 billion a year is being spent to cover the kinds of infrastructure

needs mentioned. What is most striking is that the bulk of this – some \$30 billion – is financed domestically by the African taxpayer and African service users. The balance comes from a variety of external funding sources. Of these, by far the largest is the private sector with more than \$9 billion per annum. With ODA from OECD countries and non-OECD finance (such as China Ex-Im Bank, India Ex-Im Bank, Arab Funds) each contributing around \$3 billion per annum.

MICs account for a third of total spending, while the LIC fragile states account for less than 5% of the total. For MICs and resource rich countries, the **private sector is the key source of external finance**, whereas for the LIC non-fragile states, ODA is the main source of finance. Non-OECD finance is almost on a par with ODA in the LIC fragile states.

Annualised Overall spending flows traced to Needs							
US\$ bn/an	Public Sector O&M	Capital Expenditures					Grand Total
		Public Sector	ODA	Non-OECD financiers	Private Sector	Total	
MICs	10.3	3.1	0.2	0.0	2.3	5.7	16.0
Resource rich	2.5	3.9	0.6	1.7	3.8	10.0	12.5
LIC-typical	4.4	1.7	2.6	0.6	2.1	7.0	11.4
LIC - fragile	0.7	0.3	0.4	0.3	0.5	1.4	2.2
Total SSA	20.4	9.4	3.6	2.5	9.4	24.9	45.3

The existing spending envelope of \$ 45 billion captures expenditure that is effectively allocated to meet the infrastructure needs identified. However, due to widespread inefficiencies, the financial cost of spending this \$ 45 billion is much higher, and represents an efficiency gap estimated at \$ 17 billion per annum. Inefficiencies arise in a variety of ways:

- (a) When budgetary resources allocated to public investment in infrastructure go unspent due to delays in project appraisal, procurement and other administrative bottlenecks.
- (b) When infrastructure service providers fail to recover the revenues associated with the services billed to their customers, due to non-payment and deficiencies in revenue collection practices.
- (c) When utilities lose significant volumes of power and water on their distribution network either due to technical (leaking pipes) or non-technical losses (clandestine connections).
- (d) When utilities employ a larger workforce than needed to provide their services, due either to patronage or political pressures to create jobs.

- (e) When governments fail to carry out adequate preventive road maintenance, allowing assets to deteriorate and necessitating more costly reconstruction at a later date: every \$1 that goes unspent on road maintenance creates a \$4 liability for rehabilitation (in present value terms).
- (f) When user charges for services fail to fully recover costs - be they power or water tariffs or fuel levies - although the typical excuse is one of affordability, in practice only relatively well-off Africans have access to these services in the first place.
- (g) When public funds are not allocated to their highest value uses, there is some evidence to suggest that there is over-spending in some areas of infrastructure relative to what appears to be necessary. Salient examples are ICT, where many governments devote public resources to services that could easily be provided by the private sector.
- (h) Although much less quantifiable, inefficiency also takes place when governments pay inflated unit costs for infrastructure construction and maintenance due to corruption.

Almost half of this \$17 billion (i.e., \$8 billion) comes from operational inefficiencies such as distribution losses, collection losses, over-manning and under-maintenance. A further \$4 billion comes from improving cost recovery, \$3 billion from improving allocation of resources across sectors, and \$2 billion from enhancing capital budget execution. The largest potential efficiency gains are in the power sector (\$6 billion), followed by transport (\$4 billion) and water supply (\$3 billion).

Putting aside the fact that since the global financial crisis hit in 2008 private capital flows to infrastructure investments have slowed down tremendously, closing the financing gap of \$48 billion (\$17bn through efficiency gains + \$31 bn for new finance) presents a number of challenges for African governments. These include, (i) addressing the huge backlog in infrastructure services *via* financing for new assets; (ii) rehabilitation of existing infrastructure assets; (iii) operations and maintenance of all existing assets; and (iv) redressing existing inefficiencies of public services providers. The burden of meeting the proposed set of infrastructure targets is considered insurmountable especially for low income fragile states, and thus the possibility of raising external finance on the required scale appears to be remote. Finding a way to close the circle between infrastructure targets and finances is therefore a critical objective. In this regard, it is recognised that in addition to the usual measures required, African countries need to attract more private sector investments into infrastructure.

But in following this route, governments need to understand first that while their orientation is in providing efficient and affordable services to their citizens, the private sector's motivations are totally different and driven primarily by maximisation of profit. Second, governments need to be clear about both the role and the pitfalls of involving the private sector in infrastructure provision. The challenge is to harness this profit motivation for efficient and affordable services delivery. This requires certain measures to be taken by the public sector.

#### **4. Increasing private sector involvement in infrastructure**

Taking first the inefficiencies identified, because this is where governments can begin to make a difference before seeking new financing. While building or strengthening capacities in utilities and SOEs (i.e., in financial management and operational effectiveness) is a key strategy, it will take time and additional public resources – neither of which may be available in the short-term to governments - to fix the problem.

A further option is to engage the private sector in improving operational efficiency and service quality via management or *affermage* contracts, as found in West Africa, particularly in the water and sanitation sector. These types of Public Private Partnerships (PPPs) have grown in use in many developing countries and do not involve any privatisation or divestiture by the governments. No investment is expected of the private sector; rather the latter is covered by government or donor funding, or by annual cash flows (as in projects in Côte d'Ivoire and Mali).<sup>1</sup>

The private sector is remunerated via fees paid by governments (adjusted for performance) rather than from tariff revenues collected from customers. These low-risk contracts have been on the increase since 1990, although according to the PPI database<sup>2</sup>, they have never accounted for more than 10% of all PPI contracts. They occur mostly in WSS and transport sectors, with less than 20% in the electricity sector. During the 1990s these contracts were viewed as first steps towards deeper forms of PPI, such as long-term concessions. The frequency with which this happened has however been low, and has occurred only in Mali and Gabon. Since the end of the '90s, these contracts are now seen as ends in themselves – i.e., ways of making short-term improvements in operating efficiency and transferring skills to local staff. Of the 17 management contracts concluded for electricity services in 15 countries in SS-Africa, only three remain in operation. Four were terminated prematurely, and others were simply not renewed. Problems included unrealistic expectations and limited ability to address broader sector challenges. Many were undertaken with donor support where the latter saw them as initial steps towards more extensive reform, while many governments saw them as costly reform measures needed to secure donor funds, and

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<sup>1</sup> AICD, 2010: p. 310.

<sup>2</sup> The database is managed by PPIAF and the World Bank.

had no intention of taking the process further. Second, while financial and efficiency gains can be achieved through these contracts; they cannot overcome broader policy and institutional weaknesses. Finally, the efficiency gains did not always produce tangible results for customers.<sup>3</sup>

The Kenyan Power and Lighting Company (KPLC) – a two year contract signed with Manitoba Hydro in 2006 to manage distribution services on behalf of the Kenyan Government, is one of those that were not renewed. It ended in April 2008 with the Government complaining about high costs and poor performance. While both the government and the contractor agreed that at least three quarters of the long list of performance targets had been met, they disputed the exact percentages and the size of the performance bonus. Compensation paid to the contractor was much higher than that ever received by Kenyan managers, and the company also had to weather labour disputes. The first two years had been paid by the World Bank, and any extension would have had to be met by the Kenyan Government. In the wake of the post-election civil unrest in 2008, the government had to consider other spending priorities.

In Uganda and South Africa, a series of short-term expatriate contracts in the water sector, demonstrated to governments that training, more independence and better compensation can lead to more efficient, commercial operations directed by local managers.

Management contracts of this nature encounter certain issues not commonly found in other more usual PPP types of projects. Project companies will be bound by general obligations to improve service delivery and labour productivity (whether in terms of addressing levels of leakage of water or increasing the roll-out of services distribution). More needs to be done to improve the performance targets and incentives incorporated into such contracts. Customer service issues must be better addressed, and cost-effective generation planning and procurement must be recognised as foundations for the successful implementation of such contracts in the electricity sector.

The public sector will usually transfer the use of existing assets to the company for the purpose of performance of its obligations. The condition of these assets and the need for refurbishment or replacement may not be clear until well into the management arrangement, and represents a serious risk for the project company. The public sector may need to allow the company sufficient flexibility to manage these conditions. Additionally, the personnel of the existing utility will be transferred to the project company so as to provide training and continuity, and satisfy the requirements of public sector labour unions.

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<sup>3</sup> AICD: p. 189-190.

The latter would generally be hostile to any form of privatisation which might threaten their members' employment benefits. This will need to be carefully managed by the project company. To some extent these risks can be managed more efficiently by the public sector prior to bringing in the project company rather than during the contract period. Some residual risks will however remain with the private sector.<sup>4</sup>

In these contracts for example, tariff levels for water services can be a very political issue, and have historically been used to subsidise certain elements of society, specific industries or public sector entities. Often, tariffs are not charged, or charged at very low levels or not collected at all. Private sector involvement may require formal arrangements with the project company for government subsidies or financing, especially where the government is not willing to raise tariffs to profitable levels or where substantial investment in capital works is needed. Though challenging, this can provide a healthy transition for the utility, formalising the subsidy and rendering transparent the burden on the public purse as demonstrated by the artificially low tariffs.<sup>5</sup>

The range of PPP options has expanded over the past 30 years, with agreements between public and private entities taking many shapes and sizes for both new and existing services. At one end of the spectrum are management contracts. At the other end is full privatization or divestiture, where a government sells assets to a private company. Outsourcing is another popular option, where a private company will handle an aspect of service, such as billing, metering, transport, or even cleaning. There are hybrid models in-between, which have grown exponentially in recent years, especially with the development of a more diversified pool of emerging market investors and operators with local expertise. These models rely on simpler contractual arrangements and blend public and private money to diversify risks.<sup>6</sup>

Among the usual PPPs, and for purposes of raising new money, the “build-operate-transfer” or BOT project that mobilizes limited recourse (or project) financing, stands out. BOTs are large and complex undertakings, usually involving major infrastructure such as roadways and power generation plants. They place the responsibility for financing, constructing and operating the project on the private sector. The host government grants a 15-30 years concession to the project company to build and operate the facility. The private company uses the revenues from the operation of the facility to service the debt, and provides the investors with a return.

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<sup>4</sup> Delmon, J. *Private Sector Investment in Infrastructure: Project Finance, PPP projects and Risk*. pp. 540-542. (2<sup>nd</sup> ed.) Kluwer (2009).

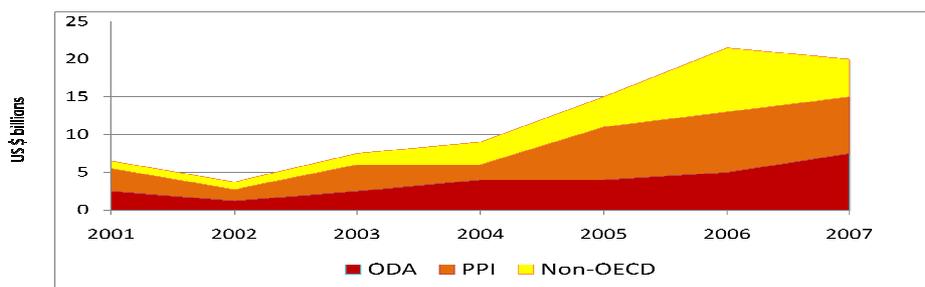
<sup>5</sup> Ibid. p. 543.

<sup>6</sup> PPIAF website – see [www.ppiaf.org](http://www.ppiaf.org).

Where the host government is also the off-taker or purchaser of the service, the project is treated as a payment for a service rather than financing of infrastructure. This can keep the project off the host government's books, and therefore will not burden the country's debt ratios or public sector borrowing requirements. With PPPs, therefore, African governments have a range of options to consider when contemplating how to engage the private sector in infrastructure provision, and particularly in the financing of such infrastructure.

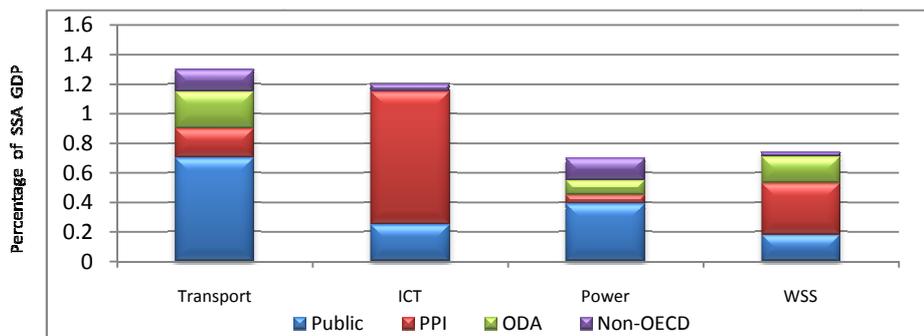
To meet the private sector part of the above-stated challenge, AICD suggests that Africa needs to double private sector investments (PSI) into infrastructure – scaling-up investments from the current \$9 billion recorded, to \$18 billion over the next 10 years. Up until the financial crisis, there was a large increase in external finance for infrastructure across all major sources. Political commitments at Gleneagles drove the ODA scale-up, while the surge in private finance was buoyed by favourable economic conditions during this period. The increase in non-OECD investments reflected increased Asian interest (especially from China) in Africa, as a natural resource trading partner.

External Finance Commitments for Infrastructure in Africa:



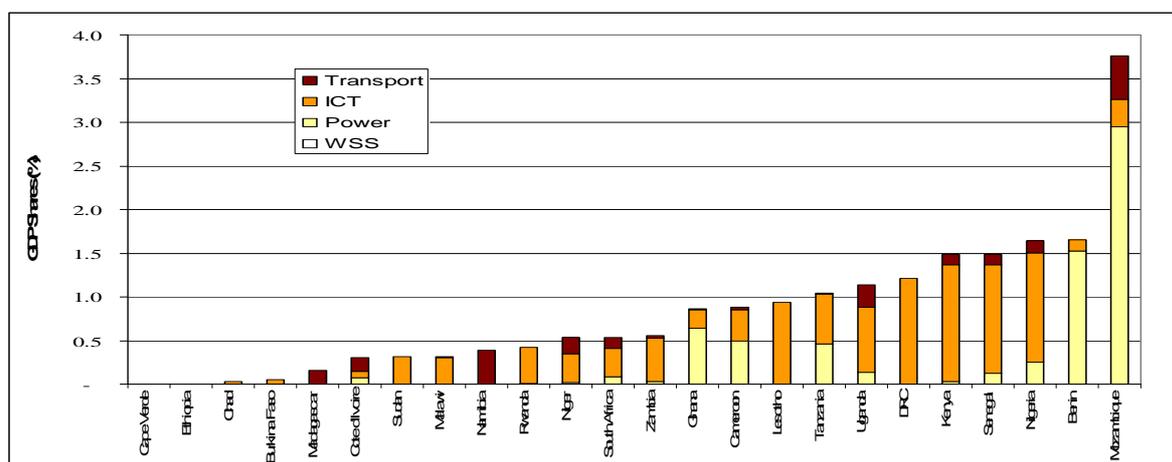
Additionally, there has clearly been strong specialization across different sources of external finance: both sectoral and geographical. From a sectoral perspective, private capital has been particularly important for the ICT sector, non-OECD finance for energy and mining supportive transport networks, and ODA for water and sanitation and transport.

Sectoral coverage of PPI:



From a geographical perspective, private capital has also been a key source of investments in middle income (ICT and transport) and resource rich countries (ICT, transport and electricity), ODA for low income non-fragile countries, and non-OECD finance for resource rich and low income fragile countries. The table below shows the key sectors in which PPI has developed in the African countries listed.

What PPI is spent on by country?



Between the 1990s and 2006, Africa only attracted private investments into ICT-related projects and power with almost no investments into socially challenging sectors such as water and sanitation (WSS), or into longer-term and higher risk projects. Since 2004, greenfield and small projects accounted for 70% of private provision of infrastructure (PPI) in Africa, with concessions and divestiture only accounting for about 10% of the total.

There has been increasing interest in transport concessions (Uganda’s Rift Valley Railway and Sudan’s Juba Port), and larger greenfield power projects are now beginning to emerge.

The table below sums up the PPP projects done in Africa, the experience by sector and what the future prospects are.<sup>7</sup>

	Extent of PPI	Experience	Prospects
<b>ICT</b>			
Mobile telephony	Over 90% of countries have licensed multiple operators	Exponential increase in coverage	Various countries could grant additional licenses
Fixed telephony	60% of countries have divested SOE incumbent	Controversial but with efficiency improvements	Various countries could still undertake divestiture
<b>Power</b>			
Generation	34 IPPs invest US\$2.5bn to install 3,000MW of capacity	Frequent renegotiations, costly to utilities	Likely to continue given huge capacity needs

<sup>7</sup> Source: PPIAF, Infrastructure in Africa; The Private Sector Role, presentation to MEFMI, November 2009.

Distribution	16 concessions and 17 management or lease contracts	One quarter of contracts prematurely cancelled	Movement towards hybrid models with local firms
<b>Transport</b>			
Airports	4 concessions investing less than US\$0.1bn	No cancellations, some lessons learned	Limited number of additional cases viable
Ports	26 container terminal concessions invest US\$2.5bn	Few cancellations, results positive	Quite good prospects, likely to continue
Railroads	14 railroad concessions invest US\$0.4bn	Frequent renegotiations, limited investment	Likely to continue, but model must adapt
Roads	10 toll road concessions (RSA) invest US\$1.6bn	No cancellations reported	Only 8% of network meets traffic threshold
<b>Water</b>			
WSS	26 contracts mainly management or lease	40% of contracts prematurely cancelled	Movement towards hybrid models with local firms

Arguments in favour of doing PPPs, and specifically of financing infrastructure through BOT arrangements and the like include the following: (i) they offer alternatives to attract new financing sources and management of infrastructure assets and services, while maintaining a public presence in ownership and strategic policy-setting. (ii) Improved efficiency, closely managed costs and faster completion through private sector involvement; (iii) they facilitate contracting with well qualified private enterprises to manage and deliver infrastructure services. (iv) They lower the cost of offtake, due to improved technology and efficient operation from the private sector; (v) Infrastructure at no direct cost, owing to private financing, therefore no need for any other source of financing and limited impact on the government's credit capacity and rating; (vi) involvement of experienced industry professionals and private financing organisations, ensures exhaustive review of project feasibility; (vii) maintenance of public sector strategic control over the project (as compared to privatisation) and transfer back to government at the end of the concession period (where relevant) of the asset; (viii) that if the PPP project helps mobilise competition to drive down project costs and improve innovation, they provide value for money; (ix) involvement of international lenders, including IFIs; (x) attraction of further foreign investment; (xi) the interests of the project company in long-term facility operations generally resulting in high quality construction; (xii) transfer of the most up-to-date technology and know-how, including training of local personnel; (xiii) indirect development of related industries; (xiv) development and deepening of local capital markets; and (xv) involvement of local lenders, subcontractors, suppliers and shareholders.

However, BOTs may also have disadvantages for the host government, including<sup>8</sup>: (i) distortion of development priorities, as a government may favour projects which are financially viable over those that are necessarily appropriate for the economic and

<sup>8</sup> Delmon, op cit. pp.95-97.

infrastructure needs of the country; (ii) PPPs involve equity and debt to provide funds for SPVs, which may be more expensive than public borrowings, assuming that the government is able to obtain more favourable financing terms than would the private company; (iii) considering the complexity of the project, the need for supervision and high development cost including the cost of the due diligence exercise and the cost of risk management; (iv) possible public or political resistance, in particular from labour unions and those unwilling to sacrifice any government control over infrastructure; (v) the need to mitigate foreign exchange risk for BOT projects whose debt is denominated to some extent in foreign currency; (vi) some loss of control of an otherwise public sector operation; (vii) possible loss of an income stream from the sector in question; and (viii) that the supposed increased efficiency is in practice negated by lack of competition resulting in increased costs that wipe out the 'value for money' justifications that are used initially to go the PPP route.<sup>9</sup>

Despite these criticisms, the use of PPPs for closing the infrastructure gap is widely recognised, and they are being used in an increasing number of infrastructure projects worldwide, as governments try to balance need against means.<sup>10</sup>

In order for African governments to achieve their stated goals in respect of increasing private sector investments into infrastructure, there should be clear objectives, good public leadership, and strong government institutional capacities for effective oversight and implementation. Experience has shown that the best way to attract private capital into infrastructure is to provide sustainable and credible policy and regulatory environments, where risk allocation, balanced with rewards, is clearly delineated between the public and private sectors.<sup>11</sup>

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<sup>9</sup> Bankwatch Network; "Never Mind the Balance Sheet: The dangers posed by PPPs in Central and Eastern Europe", pp. 18-23 (November 2008).

<sup>10</sup> Leigland, J. "PPI in poor countries: How to increase private participation in infrastructure management and investment", p. 4. Gridlines. Note No. 51, Feb 2010, PPIAF.

<sup>11</sup> Delmon, op cit. pp.3-5.