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Theme: Infrastructure and Regional Integration

Presentation

**Infrastructure Development and Regional Integration: What
Challenges for Africa?**

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Introduction

The importance of infrastructure development for integration in Africa has been duly recognized. African Governments thus admitted, in the early 1970s, that an effective and accessible infrastructure is essential to the achievement of regional integration for sustainable economic development.

During the period 1980-2000, several initiatives were put in place, among which one can mention:

- The United Nations Transport and Communication Decade in Sub-Saharan Africa (SSATP) for development of key sectors;
- The Lagos Plan of Action (1980) and the Abuja Treaty (1991) which underscored infrastructure development as a priority area;
- NEPAD (2001) which reaffirmed infrastructure development also as a priority area;
- The Infrastructure Consortium for Africa (G8 Summit 2005), which aims to promote improved living conditions in Africa through increased private and public investment in infrastructure;
- The Program for Infrastructure Development in Africa (PIDA) established in 2009 and considered as an integrated continental vision, a strategic framework and infrastructure development program. PIDA is thus the matrix, a follow up to various initiatives, especially the African Union Infrastructure Master Plan; the 2002 NEPAD Short-Term Action Plan; the NEPAD Infrastructure Project Preparation Facility (IPPF) hosted by AfDB and the AU/NEPAD African Action Plan (AAP) - (AU/ADB, 2011);
- Program for Infrastructure Development in Africa (AU Summit 2010) covering the period 2010-2040, and embracing infrastructure related initiatives such as **NEPAD Short-Term Action Plan**, NEPAD Medium and Long-Term Strategic Framework and the Infrastructure Master Plan;

- The Presidential Infrastructure Champion Initiative (AU/NEPAD, 2011) as a landmark tool for analysis of policies and measures implementation in the infrastructure sector.

Despite the recognition of the importance of infrastructure as a key element in the success of regional integration and related initiatives, Africa's infrastructure deficit constitutes a grave obstacle to the deepening and strengthening of regional integration. This deficit underscores the challenges facing Africa in the realization of the initiatives.

This paper seeks to identify and analyse the said key challenges. Section 1 defines the concepts of regional integration in relation to infrastructure. Section 2 discusses the theoretical linkages between infrastructure development and regional integration. Section 3 presents an overview of, and the progress achieved in, the field of infrastructure. Section 4 identifies the infrastructure development challenges facing Africa. Lastly, it concludes with closing remarks.

1. Regional integration and infrastructure: an update on concepts

Regional integration is a multifaceted process. It is often understood from three perspectives.

The first refers *stricto sensu* to physical infrastructure (hard infrastructure) covering the development of regional transport, energy and telecommunication networks. Establishment of institutional mechanisms for management and maintenance of these facilities forms part of any definition *lato sensu*.

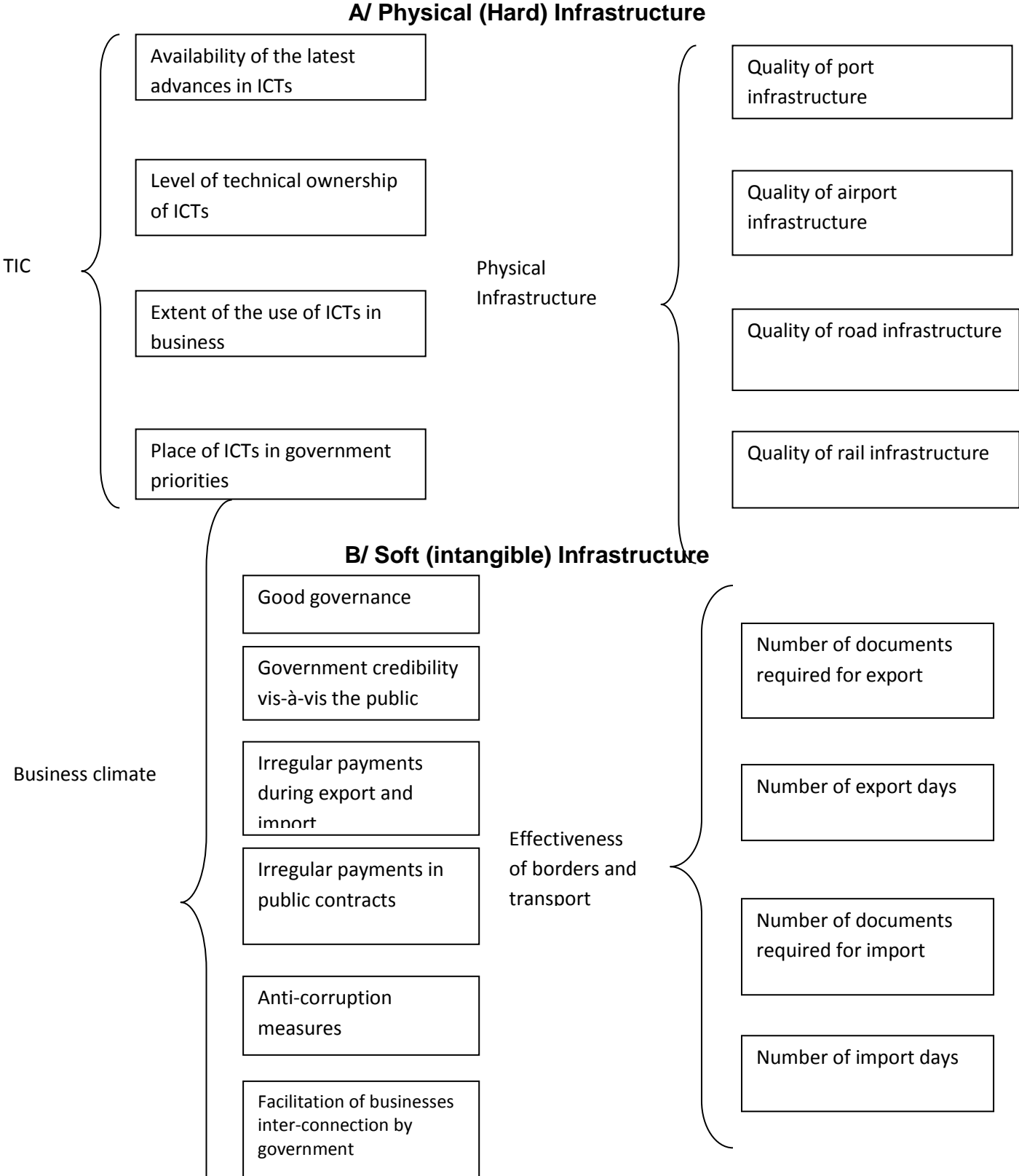
The second perspective concerns intangible infrastructure (soft infrastructure), and refers to the removal of intangible barriers to the free movement of goods, capital, services and labour, and the establishment of institutional frameworks to enhance integration of national markets. These include:

- Elimination of obstacles and barriers to intra-market trade;
- Harmonization of policies for promotion of intra-regional trade and investment;
- Creation of institutions for management of cross-border markets; and

- Improving the business climate region-wide.

Finally, the third perspective relates to joint action to tackle cross-border challenges of regional or continental nature such as water management, adaptation to climate change, cross-border health issues, etc.

Portugal-Perez, A. & Wilson, JS (2012) proposes the following schemes for different types of infrastructure (physical and intangible):



2. Theoretical relations between infrastructure and regional integration

According to economic literature, to harness the economic integration potential in Africa, it is needful to eliminate the constraints imposed by the lack of physical infrastructure. Poor infrastructure constrains access to markets, generates higher business costs, reduces productivity and in the end, hampers intra-African trade. It is estimated that defective infrastructure slashes business productivity by 40% and *per capita* output growth by 2%.

Infrastructure development also contributes to strengthening and deepening regional integration. Better infrastructure, in effect, up-scales and facilitates relations between countries. It stimulates integration of the productive sectors because it brings close together economic spaces, reduces and/or eliminates the physical barriers to trade and transport costs and expands the market size. Studies indeed show that inadequate physical infrastructure exacerbates the constraints of regional integration in Africa by isolating economies, one from the other. Landlocked countries are particularly disadvantaged because of their situation of isolation: they are faced not only with the challenges associated with inadequacy of their own infrastructure, but are also subject to the constraints imposed by the infrastructure, policies and regulations for facilitation of transit trade. Consequently, trade costs are higher in landlocked countries than in coastal countries. Development of intra-African infrastructure could generate substantial benefits for trade and economic growth. According to some estimates, an investment of US\$ 32 billion in roads in Africa could step up intra-African trade by US\$ 250 billion over a period of 15 years (UNDP, 2011).

Development of such infrastructure services as energy, information and communication technologies (ICTs) and transport, is all the more important because it conditions the competitiveness of economies and hence their growth. A better mainstreaming of the regional space should therefore support the development of infrastructure of international dimension; and this will, in the end, produce economies of scale and/or club economies (in other words the use of network increases with the number of subscribers).

Moreover, when services produced by the services infrastructure are commensurate with private assets such as ICTs, regional integration

would stimulate competition by expanding the number of providers. Service quality would improve and the price of services would decline.

Physical infrastructure development, especially road and rail corridors, is also a tool for reducing costs and enhancing economic efficiency, given the accepted fact that the lack of regional interconnections is mainly due to the inadequacy of the very regional interconnections infrastructure; and besides, these interconnections are subject to the constraints imposed by the infrastructure, policies and regulations for facilitation of transit trade.

3. State of infrastructure in Africa and progress achieved

The effort that most African countries should deploy to improve the state of their infrastructure would indeed condition the competitiveness of their economies and, by extension, their growth. Better integration of economies should thus place a premium on construction of region-wide infrastructure (motorways, railways, ICTs, energy, etc). In addition, regional integration should allow for the development of certain infrastructure that are subject to competition in a wide regional market, thus enhancing the quality of services while reducing prices: this is the case of ICTs, for example.

It is therefore of vital importance to undertake an appraisal of infrastructure in Africa. Such a study will focus on the countries of the Franc Zone and involve a comparative examination of the countries of the West African Economic and Monetary Union (UEMOA) and those of the Central African Economic and Monetary Community (CEMAC) (see Table 1). The table presents some indicators on infrastructure services development in the aforesaid two monetary unions.

Table 1: State of infrastructure in the regional unions of the Franc Zone

	UEMOA					CEMAC					Afrique (hors ZF)				
	1992-1996	1997-2001	2002-2006	2007-2011		1992-1996	1997-2001	2002-2006	2007-2011		1992-1996	1997-2001	2002-2006	2007-2011	
Power consumption (kWh per capita)	98,474	112,995	127,085	143,635	↗	338,116	387,218	408,864	463,914	↗	655,041	725,553	850,481	1002,877	↗
Electricity production (million kWh)	976.5	1570.55	2004.15	2220.18	↗	1420.8	1657.13	2000.2	2654.33	↗	16791,44	20119,0	25415,6	29863,91	↗
Internet users (per 100 people)	0.002	0.197	1,228	3,369	↑	0.002	0.155	1,184	3,481	↑	0,034	0,704	3,753	10,427	↑
Telephone lines (per 100 persons)	0.471	0.786	1,009	1,327	↗	0.831	0.996	0.975	1,101	→	2,319	3,678	4,648	4,999	↗
Mobile subscribers (per 100 persons)	0.005	0.614	6,571	42,077	↑	0.05	1,375	13,113	47,559	↑	0,064	2,033	13,689	49,460	↑
Railway lines density (km/km ²)	0.197	0.197	0.196		→	0.085	0.092	0.101		↗	0,456	0,482	0,475		→
Road density (km/km ²)	0.147	0.148	0.160		↗	0.074	0.077	0.089		↗	0,340	0,372	0,391		↗
Paved roads density (km/km ²)	0.037	0.041	0.045		↗	0.008	0.009	0.010		↗	0,211	0,238	0,261		↗

Source: Adapted from P. Plane (2013) Regional Integration and Infrastructure Development in Regional Integration for Development of the Franc Zone.

Key: Significant progress ↑ ; slight progress ↗ ; no progress →

This Table shows a power consumption trend on the average slower in CEMAC countries than in UEMOA countries or in Africa outside the Franc Zone. Despite a marked increase in *per capita* services, the average consumption level in UEMOA was extremely low compared to CEMAC, itself below the average outside the Franc Zone. As regards average electricity production in the two unions, the trend was most pronounced in the late 1990s in UEMOA, whereas CEMAC experienced its strongest growth in the late 2000s. Average electricity production levels in the two unions in the late 2000s were however lower than the average for Africa outside the Franc Zone.

A strong progression in telecommunication infrastructure development in the Franc Zone is observed. The proportion of internet users increased significantly especially in the late 1990s, period of Internet development. Thus, the number of mobile service subscribers rose sharply, an increase that was more pronounced in UEMOA than in CEMAC. Besides, there was a downturn in the number of fixed lines per 100 persons in UEMOA as against CEMAC which saw a stagnation in this regard during the past twenty years.

Railways density expanded only marginally in CEMAC, but stagnated in UEMOA and in Africa outside the Franc Zone. As regards road density, this generally evolved very slightly (in the three samples). However, UEMOA and Africa outside the Franc Zone saw a more rapid increase in paved road density than in road density.

The aforesaid road and rail infrastructure conditions trade and domestic production in landlocked countries in the Franc Zone (Burkina Faso, Mali, Niger, Central African Republic and Chad). These countries do use foreign transit routes for trade with other parts of the world via major African ports.

The corridors' effectiveness is thus a tool of regional economic integration, especially as it reduces costs and enhances economic efficiency. However, in most regional unions, the most significant logistics obstacle to goods transit is associated with the cumbersome customs, police and port authorities' control procedures (hence the poor quality of soft infrastructure: borders and transport inefficiency), all compounded by highway robbers.

The Franc Zone therefore presents significant delays in the development of infrastructure compared to other developing regions of Africa. This is partly due not only to lack of regional interconnections between national networks but also to the exorbitant costs of access to services. These

high cost levels are the result of the absence of economies of scale, lack of competition infrastructure and huge transport costs.

This appraisal of infrastructure in the Franc Zone (UEMOA, CEMAC) places the competitiveness of the economies of the zone at a great disadvantage. For example, the persistent defects in the electricity sector marked especially by epileptic load shedding generate revenue shortfalls estimated as being in the range of 1% to 2% of GDP.

Table 2 hereunder depicts the progress made in the infrastructure sectors in Africa in relation to the goals of integration. Africa's progress was generally higher compared to those of its peers in low and middle income countries. Noteworthy, however, was the decline in the length of the tracks. This shortfall may be explained in part by the lack of rail network maintenance as well as management difficulties, resulting in the privatization of the infrastructure sector in most regional unions (the case of the Abidjan-Niger rail line, for example).

Table 2: Africa's progress in the area of regional integration

INDICATORS	AFRICAN COUNTRIES		ADF COUNTRIES	
	Reference 2005	Last value 2012	Reference 2005	Last value 2012
REGIONAL INTEGRATION POLICY AND TRADE				
EPIP Group on regional integration and trade (average EPIP)	3.58	3.6	3.59	3.61
Logistics performance index: general average (1=low to 5=high)	2.34	2.48	2.32	2.37
Africa's share of global trade (%)	2.5	3.1	1.0	1.5
Total intra-African trade (in billion dollars)	48.5	108.4	31.3	68.7
ROAD AND RAILWAY				
Proportion of paved roads by PMR (%)	35	47	14	17
<i>Total length of railways (km)</i>	58,000	50,000	25,000	14,000
IPL: quality of trade and transport related infrastructure (1=low to 5=high)	2.12	2.31	2.06	2.19
PORTS				
Traffic in ports with container terminals (20 feet container TEUs)	13.9	19.3	0.4	0.5
Share of global container trade (%)	2.8	3.6	0.7	1.0
Average port waiting time (average number of import and export days)	30.6	25.6	41.6	30.5
IPL: efficiency of procedures and customs clearance (1=low to 5=high)	2.19	2.29	2.17	2.18
AIR TRANSPORT				
Africa's share of all passenger transport (%)	2.7	3.9
Number of aircraft departures (aircraft take-off, in thousands)	553	761	175	192
ENERGY				
Total energy consumption (kWh per capita)	666	690	159	170
Energy use per unit of GDP	697	738	351	449
INFORMATION AND COMMUNICATION TECHNOLOGIES				
Countries connected to sub-marine cables (number)	13	21	8	15
Number of submarine cables connecting Africa (number)	3	19	2	18
Combined capacity cables (bandwidth in terabytes)	2.9	102	1.6	101
Subscribers to fixed line and mobile telephony (per 1,000 persons)	183	559	86	415

INDICATORS	AFRICAN COUNTRIES		ADF COUNTRIES	
	Reference 2005	Last value 2012	Reference 2005	Last value 2012
Secure internet service (per 1 million persons)	16.1	34.2	0.4	2.2
Africa's share of the secure internet service (%)	2.74	2.49	0.05	0.12
CROSS-BORDER CHALLENGES (CLIMATE CHANGE, AGRICULTURE AND HIGHER EDUCATION)				
CO₂ emission by African countries (in thousand metric tons of CO₂)	1075	1131	228	226
Urban pollution (PM 0 average fine particle in cities)	56.1	45.6	59.0	46.5
Forest area in Africa (in thousand km²)	6,877	6,700	40,490	40,204
Percentage of forest area (%)	17	16.7	15.6	15.2
Index of staple crops yields (value 2002 = 100)	110	115	109	113
Value added in agriculture per worker (constant 2,000 dollars)	877	1308	393	455
Enrolment in higher education (% of gross rate)	6.6	8.0	3.4	5.1

Source: Adapted from AfDB (2012) "Review of Development Effectiveness. Promote regional integration.

Key: **Bold** means that the progress made in 2011 was higher in relation to the benchmark situation (2005).

Italics means that the situation in 2011 was lower in relation to the benchmark situation (2005).

For the rest, progress realized in 2011 was at the same level as the benchmark situation (2005).

ADF countries: 39 AfDB low income member countries which qualify for concessional financing.

4. The challenges of infrastructure development in Africa

The three main challenges being faced in Africa today are: the magnitude of the funding to be mobilized towards infrastructure development; good governance for management of such funds; and the difficulties in adopting a regional approach.

According to the Africa infrastructure country diagnostics (AICD) study, annual financing needs in respect of infrastructure in sub-Saharan Africa are estimated at US\$ 93 billion for capital investment and maintenance. However, US\$ 45 billion are mobilized each year, leaving an annual gap of US\$ 50 billion. A significant portion of the investments, representing about two-thirds, is financed by national resources (Foster and Briceno-Garmendia). Despite the increased public funding for infrastructure development in recent years, OECD (2004) notes, however, that this type of funding has little chance of further progress given the fact that the countries that provide the aid have been tightening their budget. Since the G8 Summit held in Gleneagles in 2005, external public financing jumped from US\$ 37 billion in 2007 to US\$ 56 billion in 2010. These resources have nonetheless remained well below the requirements as indicated in Table 3.

Table 3: Infrastructure financing needs in sub-Saharan Africa (in billion US\$ per annum)

Infrastructure sector	Capital investment	Operation and maintenance	Total investment
ICT	7.0	2.0	9.0
Irrigation	2.9	0.6	3.4
Electricity	26,7	14.1	40.8
Transport	8.8	9.4	18.2
Water and sanitation	14.9	7.0	21.9
Total	60.4	33.0	93.3

Source: Adapted from ADF & World Bank (2010): African Infrastructure. Compelling Need for Transformation

Only recourse to private investment through public-private-partnership (PPP) initiative can provide a meaningful way to bridge the funding gap bedeviling African infrastructure. The challenge therefore is to develop effective mechanisms for implementation of such partnership. The said mechanisms should primarily involve bankable projects, enabling laws and regulations, loan guarantees and political stability.

Good governance requires that the Regional Economic Communities (RECs) should have the capacity to regulate infrastructure, especially the services, in a transparent and effective manner. Plane (2012) stresses that this, first and foremost, requires that these communities have the capacity to put in place an effective regional regulation: good regional governance could thus reduce the strong interdependencies subsisting between countries and their lack of mutual trust.

Finally, adoption of a regional approach requires consensus among the countries concerned. According to some studies, such consensus should focus on institutional issues, harmonization of regulatory frameworks, pricing, specific knowledge and equitable sharing of the costs and benefits of cross-border projects, financial instruments that are both innovative and robust, and creation of institutions.

5. Closing Remarks

Despite African leaders' political positions clearly recognizing the importance of infrastructure development as a key factor in achieving regional integration, the African Continent has still not really managed to adapt its infrastructure to meet the requirements that go with these goals. Admittedly, the last two decades saw some progress in infrastructure

development in support of regional integration in certain regional economic communities. However, these achievements are still inadequate in relation to the huge needs. These shortcomings may be explained by challenges such as mobilizing financial resources, good governance at national and regional levels and establishment of an appropriate regional approach. It is thus needful, in the course of this conference, that ways be identified to address these challenges.

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