

AFRICAN DEVELOPMENT BANK GROUP



Review of the Bank's ICT Operations Strategy & Action Plan for the Medium Term 2012-2014

**OPERATIONAL POLICIES DEPARTMENT
(ORPC)
TRANSPORT AND ICT DEPARTMENT
(OITC)**

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Review of the Bank's ICT Operations Strategy
&
Action Plan for the Medium Term
2012-2014

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List of Abbreviations

ACE	Africa Coast to Europe
ADF	African Development Fund
ADB	African Development Bank
AU	African Union
CAB	Central African Backbone
CAETIC	Centre Africain d'Excellence en TIC
CDMA	Code Division Multiple Access
CEMAC	Communauté Économique et Monétaire de l'Afrique Centrale
CNS/ATM	Communication, Navigation, Surveillance / Air Traffic Management
DFS	Detailed Feasibility Study
DSL	Digital Subscriber Lines
EAC	East African Community
EAC-BIN	East African Community – Backbone Infrastructure Network
ECA	Economic Commission for Africa
ESIAS	Environment and Social Impact Assessment Study
EASSy	East Africa Submarine Cable System
ECOWAN	ECOWAS Wide Area Network
ECOWAS	Economic Community for West African States
EV-DO	Evolution, Data Optimized
GDP	Gross Domestic Product
HEST	Higher Education Science and Technology
ICT	Information and Communications Technologies
IDRC	International Development Research Centre
IPPF	Infrastructure Project Preparation Facility
ITES	Information Technology Enabled Services
ITU	International Telecommunications Union
LIC	Low Income Countries
LION	Lower Indian Ocean Network
MDB	Multilateral Development Banks
MIC	Middle Income Countries
NEPAD	New Partnership for African Development
NREN	National Research and Education Network
OECD	Organization for Economic Cooperation and Development
OINF	Infrastructure Department
OITC	Transport and ICT Department
OIVP	Infrastructure, Private Sector and Regional Integration Vice Presidency
ORPC	Operational Policies Department
PIDA	Programme for Infrastructure Development in Africa
RCIP	Regional Communications Infrastructure Programme
RECs	Regional Economic Communities
RMC	Regional Member Countries
RREN	Regional Research and Education Network
SADC	Southern African Development Community
SMCC	Senior Management Coordination Committee
TEAMs	The East African Marine System
WACS	West Africa Cable System

Executive Summary

Africa's ICT sector has seen unprecedented growth in recent years. The private sector has invested close to USD 50 billion in the last decade, with a focus on mobile and related applications, and more recently in international submarine cables. Mobile density in the continent jumped from 20% (in terms of the number of SIM cards sold per 100 inhabitants) in 2005 to around 65% in 2011. Recent completion of undersea cables has tripled available bandwidth. However, the rollout of ICT infrastructure, in particular access to the Internet is uneven (Internet penetration is about 11.5% in 2011) and many underserved countries and areas remain. In addition the lack of regional and national backbone infrastructure is a stumbling block towards the development of broadband Internet. The promotion of ICT in Africa still requires investing billions of USD.

The short term objectives of the ICT Strategy which was approved in October 2008 were to support the development of regional and national broadband infrastructure and to create an enabling policy and regulatory environment that would attract private investment and encourage public-private partnerships. During the review period (2008-2011), the Bank Group has approved about USD 212 million in loans and grants for the development of regional infrastructure projects, of which USD 170 million through the private sector lending window¹ and USD 42 million through the public sector financing window. It has promoted policy dialogue on ICT issues and supported training efforts and the sharing of experiences in mobile technologies, digital broadcasting and e-security. The Bank's interventions in capacity building have focused on establishing ICT centers of excellence in support of Connect Africa Summit commitments. The publication of the African Economic Outlook of 2008 focusing on ICT raised the Bank's profile on the issue.

However, work remains to be done in expanding ICT activities. Inadequate staffing for ICT activities is one of the main challenges to expanding the Bank's ICT portfolio. The Bank Group needs to leverage the public-private partnership space that is opening up for delivery of ICT infrastructure and services. To this end, it will work to strengthen the existing interaction between its ICT interventions in the public and the private sectors. The absence of a Manager for ICT activities and general lack of in-house expertise in ICT regulations and PPPs are key impediments. Moreover, the lack of flexible funding arrangements dedicated to ICT prevents the timely launching of catalytic projects, advisory services and other opportunities for the promotion of the Bank's enhanced lending in the sector.

Looking ahead, the Bank needs to focus on: (i) extending ICT infrastructure to underserved areas and expanding regional/national ICT broadband infrastructure; (ii) creating enabling policy/regulatory environment to leverage private investment and forging PPPs for improved and affordable connectivity; and (iii) providing support for RMCs to scale up their ICT applications in all sectors to transform public service delivery and regional integration.

The Bank should firm up its ICT organizational structure by appointing a Manager, recruiting adequate staff, and creating more synergies between private lending and public non-financing and financing operations in the sector. With regard to financing, Management opts for a financing mechanism that relies on the existing Bank's Trust Funds and external resources with the aim to financing opportunistic and scalable innovative projects, capacity building and advisory services that catalyze further investment.

¹ It should be noted that the Bank had approved one year before the review period, in 2007, two major operations funded through its private sector window and amounted to USD 65 million. These operations are the East Africa Submarine Cable System (EASSy) and the Africa Satellite Project (RASCOM). This review will cover partly the implementation of these operations.

1. Introduction

1.1. In October 2008, the Boards of Directors of the Bank Group approved the ICT Operations Strategy with the aim of promoting access to and use of ICT in support of poverty reduction and economic growth of Regional Member Countries. The strategy's goals are to support the development of regional and national broadband infrastructure and create the enabling policy and regulatory environment to attract private investment and encourage public-private partnerships. Key cross-cutting concerns include capacity building, coordination with others, and knowledge management and sharing. In 2008, the Board requested a review of the Strategy after the first two years of implementation. This review assesses the implementation of the Strategy during 2008-2011 and draws lessons for the way forward.

1.2. The report draws on an extensive review of background information and project documents from the Bank, its development partners, and the private sector engaged in the ICT sector development in Africa. The report has benefited from broad consultation with Bank staff and other stakeholders. Interviews were conducted with key stakeholders including the Organization for Economic Cooperation and Development (OECD), Regional Economic Communities (RECs), the World Bank and the African Union Commission (AUC).

The rest of the report proceeds as follows: Chapter 2 provides a progress report of the Bank's short term activities (2008-2011). Chapter 3 discusses trends in the ICT sector and outlines opportunities for the Bank's investment. Chapter 4 charts an action plan for the medium term (2012-2014). The last chapter concludes the review and lays out a number of recommendations.

2. Review of the Implementation of the ICT Operations Strategy

2.1. Overview

2.1.1. The ICT Operations Strategy laid down a clear and selective work programme under two pillars for the short term: (i) development of regional and national backbone infrastructure; and (ii) creation of enabling policy and regulatory environment to attract private investment and promote public-private partnerships. Capacity building, knowledge management and coordination were also considered important cross-cutting activities to facilitate the implementation of the two pillars. This Strategy was elaborated considering the Bank's commitment to the "Connect Africa" Summit² in the area of broadband infrastructure development.

2.2. Implementation of Pillar 1: Regional and National ICT Infrastructure

2.2.1. The Bank has played a catalytic role in the ICT sector by providing non sovereign financing for several landmark infrastructure projects. By improving bankability and/or reducing the perceived political risk, the Bank's participation has facilitated the mobilization of external commercial lending and allowed projects to be implemented. The ICT projects recently financed by the Bank's Private sector window fall in three main categories (Table 1):

² The "Connect Africa" Summit was held in Kigali in 2007 as a follow-up of the 1st World Summit on Information Society (WSIS) held in Tunis in 2005. The first of the five goals of the "Connect Africa" Summit is to interconnect all African capitals and major cities with ICT broadband infrastructure and strengthen connectivity to the rest of the world by 2012.

- Submarine cables: these include Main One on the west coast and EASSy on the east coast. Both Main one and EASSy are now operational. (See Box 1).
- Satellite projects: these consist of RASCOM, New Dawn and “Other 3 billion” (O3b). Despite the arrival of submarine cables, the lack of terrestrial infrastructure remains a critical bottleneck for the development of mobile and Internet services in landlocked countries and rural areas. The ubiquitous coverage of satellite technology makes it the **major** alternative in many parts of the continent.
- Telecom operators: these include Helios Towers Nigeria, a tower sharing company. The investment allows operators to increase their network capacities, enhance the availability of their service through increased coverage

Box 1: Initial Impact Assessment of the Arrival of Submarine Cables in East Africa

EASSy landed in East Africa’s Coast over the summer of 2010, shortly after the arrival of other cables (Seacom and Teams). An assessment of the impact of these cables is highlighted below:

1. The impact on wholesale prices is high. For example, wholesale bandwidth prices were slashed by at least 60% in Tanzania.
2. The retail price impact has been slower, but consumer Internet prices continue to fall.

Table 1 - Bank Group’s non sovereign lending operations in ICT Infrastructure over the past four years

	Projects	Bank investment (million \$)	Total mobilized funds (million USD)	Key development outcomes
Submarine cables	EASSy	15	235	Affordable Internet
	Main One	60	268	Affordable Internet
Satellites	RASCOM	50	380	Rural telephony, regional integration
	New Dawn	30	240	Mobile backhaul, Internet to landlocked countries
	Other 3 billion	50	1200	Affordable broadband Internet for landlocked countries and 3G mobile coverage for semi-urban and rural areas
Telecom towers	Helios Towers Nigeria	30	345	Enhanced quality and reduced communication prices

2.2.2. The Bank has also financed through NEPAD-IPPF and MIC Trust Fund a series of studies on regional backbone infrastructure, including the Eastern African Backbone Infrastructure Network (EAC-BIN), the ECOWAS Wide Area Network (ECOWAN), the SATA backhaul link for southern Africa, with a cost of USD 1.4 million, and the Central Africa Backbone (CAB) feasibility study, costing over USD 1 million, and being implemented jointly with the World Bank. A study on the North

African Backbone is nearly completed. The total investment cost of the five regional backhaul infrastructure is estimated at USD 481 million. The Bank has also financed a study on the security of the high speed optical fiber **networks in** the countries of the Arab Maghreb Union.

2.2.3. At the national level, the Bank has provided financial support, through NEPAD-IPPF, and MIC Trust Fund, for the feasibility study of a navigation satellite aimed at improving Communications, Navigation and Surveillance and Air Traffic Management (CNS/ATM) services for the government of Egypt with a total cost of USD 900,000 and a **submarine cable** landing station feasibility study for the Government of Seychelles at a cost of USD 450,000 to facilitate broadband communications for economic growth of the island. The estimated investment cost of the two projects is USD 650 million. Table 2 lists the Bank’s financing (all grants) for regional/national pre-investment studies on infrastructure.

Table 2 - The Bank’s financing for regional and national ICT pre-investment studies on infrastructure during 2008-2011

	Grants for pre-investment studies in USD million	Expected investment in USD million
I – Regional Backbone Studies		
East African Community Broadband Infrastructure Network	0.45	30.00
SADC Backhaul Link	1.40	81.00
ECOWAS Wide Area Network	0.50	252.00
Central African Backbone	1.09	60.00
North African Backbone	0.45	50.00
Maritime Communication for safety on Lake Victoria	0.50	8.00
Securing the high debit network in optical fiber of the countries of Arab Maghreb Union	0.42	
Total	4.86	at least 481.00
II - National Infrastructure Studies		
Seychelles submarine cable system	0.45	50.00
Egypt Navigation Satellite	0.90	600.00
Total	1.35	650.00

Source: African Development Bank, Report of Short Term Activities 2008-2010 and various project documents

Outcomes and Lessons Learned under Pillar 1

2.2.4. The support of several catalytic transactions by the Bank has crowded in funding into ICT infrastructure projects well in excess of the Bank’s direct investment. Indeed, for each dollar invested by the Bank, 10 dollars were mobilized on average from external sources.

2.2.5. The Bank has supported several landmark projects, which have started yielding development results. Both Main One and EASSy are triggering a bandwidth revolution in the markets they serve, including by slashing Internet prices (see Box 1). Helios Towers Nigeria has been the first tower sharing company in the continent. The model is being replicated in many other countries such as Ghana, DRC and Tanzania, where operators are bidding out their towers to third parties as they seek to improve their operational efficiency.

2.2.6. Satellite projects have faced delays caused by technical failures at launch. RASCOM satellite was re-launched successfully two years after a first total launch failure. New Dawn had a partial loss at launch and is likely to operate with reduced capacity. In both cases, adequate insurance arrangements have been critical to protect the Bank's investments.

2.2.7. A review of progress of the activities planned indicates that the opportunity for the Bank to invest more is in the development of national backbone networks. About thirty countries in the region still need to build their national backbones for onward connection to neighboring countries, in the case of land-locked states and to link to international submarine cables. The demand for support to national backbones is high as evidenced by the interest recently expressed by the governments of Burkina Faso, Guinea, Liberia and Sierra Leone. RMCs could benefit from comprehensive packages combining business models, regulatory reforms and **infrastructure** financing through public-private partnerships and programmes aimed at stimulating the demand for ICT infrastructure **through e-government and other e-applications.**

2.2.8. The translation of regional backbone feasibility studies into investment projects and initiating policy and regulatory dialogue between **private and public** players **remains an important task,** for the Bank to capitalize on its investment in submarine cables and satellite services. The Bank could also play a key role in providing comfort and acting as a catalyst in encouraging private investors into the broadband market and giving loans to governments that can be channeled through the private sector to build the missing regional and national backbone networks.

Perspectives

2.2.9. In sum, this pillar remains relevant for the Bank in the medium term. In fact, in addition to the existing demand for regional and national ICT broadband infrastructure, in order to fill the missing gaps, the Bank needs to consolidate its short term achievements in this area. More specifically, the Bank will leverage the completion of regional feasibility studies to stimulate its lending, with particular focus on non-sovereign lending operations to extend ICT infrastructure in underserved areas.

2.3. Implementation of Pillar 2 : Policy and Regulatory Frameworks

2.3.1. The Strategy envisioned the inclusion of policy and regulatory concerns such as pricing, cross-border licensing and spectrum coordination in all feasibility studies and that the studies should be followed by workshops on policy and regulatory dialogue. The Bank's feasibility studies have covered the associated regulatory and sector reform initiatives that were addressed at the workshops that followed the completion of the studies. The follow up on regulatory reforms requires considerable policy and regulatory expertise to address the complex issues arising from these feasibility studies. The Bank has also financed a specific policy and regulatory study for the Arab Maghreb Union (AMU). This study costing about USD 0.5 million deals with the harmonization of the regulatory and legal framework of ICT sector in AMU's countries.

2.3.2. The Results-Based Logical Framework of the ICT Operations Strategy forecasted that about 15 countries would have developed competitive regulatory frameworks that stimulate investment of regional backbone by 2010; and about USD 1 billion would have been mobilized to implement regional and national backbones. While considerable progress was made in mobilizing financing for national backbone, investment for regional backbone was inadequate, and the policy and regulatory frameworks remain a constraint to cross-border connectivity between RMCs.

2.3.3. In the absence of a robust public and private partnership model, most countries that have established their own national backbones opted either for “vendor financing” schemes in collaboration with the equipment makers or let the private sector build different network segments. A sizeable window is opening up for public-private partnerships to complete the missing national backbones, to extend broadband access to rural areas, and build cross-border connectivity between countries.

Lessons learned under Pillar 2

2.3.4. Although most RMCs made progress in regulatory reform and introducing competition in the ICT sector, the broadband markets are not fully liberalized to stimulate private investment and affordable Internet access. Some countries still put restriction on the number of entrants into the broadband markets. It has been proved that electricity transmission, pipeline and railway companies have considerable fiber capacity, often laid out as part of their internal communications that can be leveraged to expand backbone networks in Africa. Licensing of these alternative broadband providers has proved difficult in most countries.

2.3.5. Beyond the enabling environment for the “hard” infrastructure investment side of ICT, much more is needed to unleash the contribution of ICT investment to the business climate enabling environment. In most countries, the mobile-banking³ revolution needed to overcome the high cost of brick and mortar based banking service is not possible under existing banking sector legislation and regulation. This is definitely an area of work where OITC jointly with OSGE and the MFW4A could play a leading role in supporting reforms aimed at building an enabling policy and regulatory environment for enhanced private sector involvement in ICT.

2.3.6. The Bank’s effort on the policy and regulatory front needs to improve significantly to leverage the public-private partnership space opening up for broadband investment. Policy advice and regulatory support require considerable understanding of the economics of the broadband **and the Internet** markets and knowledge of technical and economic regulation.

Perspectives

2.3.7. Overall, there are still rooms for involvement by the Bank under this Pillar in the medium term. Policy and regulatory interventions that abolish exclusivity on market entry, reduce license fees and simplify licensing procedures as well as those promoting open, transparent and non-discriminatory access to the networks are still needed in RMCs. **Governments also need regulatory frameworks that stimulate affordable access to broadband Internet to schools, homes, businesses and underserved areas.** Definitely, the Bank should boost its interventions under this Pillar in the medium term in order to foster the enabling environment necessary to attract private investment and PPPs for regional and national broadband ICT infrastructure. The main constraint for the Bank under this pillar is the one of human resources.

³ Mobile-banking (also known as M-banking, m-banking, sms-banking) is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as mobile phone or Personal Digital Assistant (PDA)

2.4. Implementation of Cross-cutting Issues

2.4.1. The cross-cutting activities covered the following aspects: capacity building, coordination, knowledge management and sharing.

2.4.2. The Bank's support to the development of regional ICT centers of excellence in response to its commitment to the "Connect Africa" Summit has been commendable. The Bank approved an ADF loan of UA 8.6 million (USD 13.00 million) in December 2010 to support the establishment of the Kigali Regional ICT Center of Excellence. The Bank also provided, through the French Trust Fund, a grant of about USD 700,000 to carry out feasibility studies of the two Centers of Excellence in Mali and Tunisia. The estimated investment cost of the three centers is over USD 100 million. The feasibility study of the ICT Center of Excellence in Mali has been completed and has resulted in the Bamako Digital Complex Support Project which was approved in September 2011 to the tune of UA 14 million (USD 21 million) under ADF. The Center in Tunisia is positioned to provide capacity building for senior policy makers and to act as a research hub on e-government services for Africa.

2.4.3. Apart from financing ICT equipment in most of its education, health and agriculture projects in RMCs, the Bank's support to projects with strong ICT focus has been growing. A grant of UA 297,000 (USD 440,000) was approved in July 2010 to finance a feasibility study for the establishment of the Technology Center in Praia (Cape Verde). The Bank has also provided USD 750,000 to the government of Algeria for a feasibility study for the modernization of its information system. The government of Morocco has received from the Bank two grants amounting to USD 1.35 million to support the strengthening of the supervision and control system of the financial markets (USD 730,000) and the enhancement of the national guarantee system (USD 700,000). Table 3 below provides a breakdown of the Bank's financial support to governments for capacity building purpose.

2.4.4. The links with other Bank operations could be made more explicit to position investments in the sector as an enabler of private sector development. For instance in the Financial sector, much of the enhancement to the supervision function of Central Banks, the reduction in transaction cost in interbank transfers, and the functioning of credit bureaus rely on real-time information flows and automation. ICT has likewise become a critical enabler of regional banking sector integration.

Table 3 – Bank grants to governments for capacity building purpose

	Grants in USD million
Algeria: Feasibility study for the modernization of the information system	0.750
Cape Verde: Feasibility study for the Technology Center in Praia	0.440
Mali: Feasibility study for the Bamako Digital Complex	0.225
Morocco: Strengthening the supervision and control of the financial markets	0.730
Morocco: Strengthening the national system of guarantee	0.700
Rwanda: Feasibility study for Center of Excellence	0.100
Tunisia – Feasibility study for Regional Center of Excellence	0.475
Total	3,420

2.4.5. Other capacity building efforts have focused on raising the awareness of Bank’s staff on ICT and building the ICT awareness of senior government officials in RMCs. Sixty officials from RM and seven Bank staff have received training on mobile communications, digital broadcasting and information security in Korea. Six experts from RMCs are currently pursuing post graduate ICT studies in the Republic of Korea under a cooperation framework between the Bank and the Korean government. Training on ICT and development was also provided to Bank staff, including task managers and country economists in collaboration with the Human Resources Management Department (CHRM).

2.4.6. The coordination with partners in the ICT sector has shown good progress. The Bank’s coordination effort has intensified with the launching of the Programme for Infrastructure Development in Africa (PIDA), which is implemented jointly with the African Union Commission and the New Partnership for African Development. PIDA **is completing** feasibility studies in the areas of transport, energy, ICT, and water and sanitation in order to institute a coherent strategic framework for implementing and monitoring infrastructure development. In collaboration with the African Union Commission, the International Telecommunications Union, and the United Nations Economic Commission for Africa, the Bank was actively involved in the preparatory meetings which deliberated on the ICT sub-theme and key policy issues discussed at the AU Heads of States Summit, held in January 2010, on the theme “Information Technologies in Africa: Challenges and Prospects for Development”.

2.4.7. Efforts are also underway to improve partnership with the private sector. The Bank and Microsoft signed a memorandum of cooperation in 2008 to partner in the areas of innovation, capacity building and knowledge sharing. However, the implementation of the outlined activities has been difficult due generally to lack of follow up and limited resources accompanying the agreement.

2.4.8. With regard to knowledge management, the Bank **made progress in 2011 with the launch of e-transform Africa⁴**, a joint project with the World Bank and the African Union Commission to research on ICTs in different sectors of the African economy. The study that covered the roles of ICTs in agriculture, health, education, public services, climate change and adaptation, trade and regional integration and financial services and ICT sector competitiveness has generated considerable information that is being shared through the www.etransformafrica.org web site. However, the Bank **has not sustained its internal** organization, analysis and generation and dissemination of information in the ICT sector. Several factors have contributed to this, including the lack of dedicated staff and the absence of a knowledge management plan in the ICT sector in line with the broader Knowledge Management Strategy of the Bank. The ICT sector is one of the most knowledge intensive areas, requiring considerable interaction with major players, including research institutions and active gathering, analysis and dissemination of data.

Perspectives

2.4.9. In sum, the review notes that Bank’s capacity building support to ICT sector development is on the right track and should be continued in the medium term. Efforts should also be made to strengthen the Bank’s cooperation with the private sector and its knowledge management capability.

⁴ www.etransformafrica.org

2.5. Assessment of Financing and Resource Mobilization

2.5.1. The ICT operations Strategy approved in 2008 envisioned that the Bank should use existing financing instruments. The NEPAD Infrastructure Project Preparation Facility Fund (IPPF) and the Enhanced Private Sector Assistance Facility (EPSA) and the Infrastructure Consortium for Africa (ICA) were recommended for carrying out studies, advisory services and capacity building. The Bank would use private sector lending and the public windows to promote the development of broadband infrastructure. Policy-based lending was also proposed to facilitate the creation of an enabling regulatory environment. Furthermore, the Board recommended the use of equity investment and joint financing with international institutions.

2.5.2. Use of Trust Funds - The review indicates that the NEPAD IPPF has been instrumental for the completion of feasibility studies on regional backbone networks. The Central African Backbone study has benefited from FAPA. The Middle Income Countries Technical Assistance Trust Fund was also used to carry out infrastructure feasibility studies in Egypt and Seychelles. Altogether the Bank approved USD 6.21 million to carry out a series of national and regional infrastructure feasibility studies (see Table 2). The review reveals also that one feasibility study financed by a public grant, namely the feasibility study of a submarine cable linking Seychelles and other East African systems resulted in a private sector loan.

2.5.3. Private Sector Financing - The Bank's private sector window was also instrumental in mobilizing external funding for infrastructure development in Africa. Between 2008 and 2011, the Bank approved USD 170 million for financing the Main One undersea fiber cable, the New Dawn satellite and Helios Towers Nigeria and O3b. The Bank's direct investments have helped raise USD 2.4 billion for those particular projects.

2.5.4. ADF Financing – So far, the approvals in the ICT sector under ADF have been relatively low (USD 13 million under ADF-11 and USD 21 million under ADF-12), although ICT has been included among the ADF-12 priority areas under infrastructure. Management is taking steps to address this issue. In this respect, two regional ICT infrastructure projects (Central Africa backbone and EAC backbone) amounting to UA 54 million are currently under the ADF-12 pipeline. Pre-investment studies are also ongoing on especially for regional and national ICT infrastructure projects to further increase ADF resources allocated to ICT operations. Furthermore, efforts will be made to mainstream ICT in priority areas identified in the Country Strategy Papers and to increase ADF financed regional operations targeting ICT sector development in order to improve countries' ADF allocations for the ICT sector.

Perspectives

2.5.5. The growing private-public partnership space for ICT investment implies that the Bank needs to focus on leveraging public-private partnerships and the channeling of public resources through the private sector in order to build backbone networks at national and regional levels and scale up ICT applications and competitiveness in RMCs.

2.5.6. Efforts should also be made to mainstream ICT in priority areas identified in the Country Strategy and Regional Integration Strategy Papers to increase the ICT operations in the pipelines and hence channel more ADF resources for ICT sector development.

2.5.7. Still, the absence of a resource pool for the ICT sector constitutes a major constraint to stimulate demand for Bank public financing in this dynamic sector. A responsive financing mechanism that combines the use of the existing Bank's trust funds and the mobilization of external resources is required to support ongoing advisory services on backbone infrastructure, e-government and e-applications, drive ICT projects that stimulate regional trade and integration, showcase innovative projects, conduct pre-investment studies and promote knowledge sharing on development opportunities offered by ICTs.

2.6. Review of Institutional Arrangements and Staffing

Institutional Arrangements

2.6.1. In recognition of the overarching role of ICT, the Strategy recommended the establishment of "a light ICT focal Point" with a coordinating role and acting as a facilitator and knowledge builder vis-à-vis other complexes (OIVP, ORVP and OSVP) and the Chief Economist's Complex. The strategy envisioned that the "light ICT focal Point" would support the operations complexes' work on ICT, assist country teams in integrating ICT in CSPs, provide policy and regulatory advice, undertake analytical and knowledge management functions and promote capacity building and coordination within and outside of the Bank. This institutional arrangement has been barely implemented since the Bank's restructuring which created the ICT Division within OITC intervened a few months after the approval of the Bank's ICT Operations Strategy.

2.6.2. The ICT Public Sector activities are currently located in the Transport and ICT Department (OITC). Although the location with transport signifies the link between infrastructure development and ICT, it is yet to take into account the overarching role of ICT in promoting effectiveness in government, delivery of services in social sectors and in promoting private sector led innovation.

2.6.3. The ICT Private Sector activity is currently located in the Infrastructure Division of OPSM. The Division is responsible for private sector investments in energy, transport, ICT and water and sanitation.

Staffing

2.6.4. The Bank's ICT function has also suffered from lack of staff and skills mix. The ICT team in OITC consists of 3 specialists for e-applications, telecommunications engineering, and communications policy, respectively. The OPSM team has two investment officers with ICT background (working part time on ICT) and two Young Professionals (YPs) (also working part time on ICT).

2.6.5. The other sector and regional operations departments have specialists, who generally depend heavily on the ICT team in OITC and with support from consultants in the preparation and implementation of ICT for development operations in their respective areas. The Bank still lacks an integrated approach for providing support to ICT applications in areas where the use of ICT has greatest impact, including governance, health, education, agriculture, trade and regional integration.

2.6.6. Progress in staff capacity building has been positive, although more work remains to be done in this area. The ICT team collaborated with the CHRM and the African Development Institute (EADI) to build the skills of fifteen (15) staff from Operations Complexes in ICT in development and in support of selected complexes in providing advice on project preparation. The Bank needs to continue to build the capacities of its operational staff both at headquarters and in the field. This will encourage staff to support ICT solutions that are rooted in country strategies.

Perspectives

2.6.7. The outcome of the assessment has revealed the need to firm up the ICT division within OITC and strengthen the existing interactions between the Public and Private sector ICT teams. In particular, the skills mix should be reinforced by adding expertise in the areas of PPPs and ICT sector regulation.

3. Trends and Investment Opportunities in ICT in the Medium Term

3.1. Trends in the Mobile Industry

3.1.1. The dramatic growth of mobile telephony in Africa over the past decade has been well documented and remains a success story for the continent. The mobile industry in Africa contributes US\$56 billion to the regional economy, equivalent to 3.5% of total GDP⁵. Key trends of the mobile industry are highlighted below:

- Competition in the mobile market is high. The number of operators per market has increased, most markets having now at least three operators. Fierce competition has driven down prices and increased penetration.
- The continent's mobile penetration in terms of SIM cards sold reached 649 million (65%) at the end of 2011. This reflects significant growth as it compares with a penetration rate of 20% in 2005. User penetration, which discounts the strong trend of using multiple SIM cards, lags behind at around 35%, however. This shows that Africa still remains behind other continents in providing mobile access to rural population.
- The number of mobile subscribers is expected to continue to grow, though with a slowdown. This results from increased competition and tightening addressable market⁶. In particular, profitability is declining as a result of two factors, including (i) expanding coverage to underserved rural areas comes at an increased cost, and (ii) marginal revenue per user is declining as operators look to acquire new subscribers at low income levels. The extreme pricing pressure and regulatory risks will affect the investment environment in the future. Poor road infrastructure that makes it expensive to transport equipment to set up mobile towers, and a dependence on diesel generators to power towers in areas where there is insufficient electricity are factors driving up investment costs in Africa.
- Mobile value-added services have been launched throughout the continent to enable and support agriculture, banking, education, healthcare and gender equality. There has been a significant growth of mobile banking in the region opening the way for increased use of mobile networks for electronic transaction. The number of mobile broadband users has increased significantly with direct impact on productivity, social networking and more recently on governance.

⁵ GSM Association, Africa Mobile Observatory, <http://www.gsma.com/documents/download-exec-summary-pdf-726-kb/21100>

⁶ The addressable market refers to “the market efficiency gap” i.e. the difference between the level of penetration that can be reached under current plans and conditions, and the level that the market could achieve by means of an ideal regulatory and legal environment. The addressable market can be reached with adequate changes in current regulations and should not require public transfers.

3.2. Trends in Internet Broadband

3.2.1. The spectacular growth in the mobile sector has not been replicated in the Internet sector, as access to broadband has been very limited in Africa over the last decade. Internet penetration was about 11.5% in 2011⁷. However, as submarine cables find their way along Africa's coastlines⁸, the continent is slowly but steadily emerging from an era characterized by excessively high prices, near-zero broadband penetration rates and self-defeating regulatory models. The African bandwidth revolution is nearly here as outlined in Annex I.2, with all its implications for economic growth, social transformation business models and investment opportunities. Key trends of the market are as follows:

- Most African countries now have commercial DSL services, but their growth is limited by the poor geographical reach of the traditional fixed-line networks. Access to rural areas was made possible through national backbones and the rapid spread of mobile data and third-generation (3G) broadband services. Many fixed-line incumbents have also reacted by rolling out fixed-wireless access networks to expand their geographical reach. The technology of choice has been CDMA-2000 which supports broadband data rates with an upgrade to EV-DO standard.
- The mobile broadband penetration was 3.79%, while the fixed broadband Internet penetration was merely 0.2% in 2011⁹.
- National backbones remain a major supply bottleneck, and probably the weak link in the emerging African broadband infrastructure value chain.

3.2.2. There has been progress with regard to national backbones in Africa. Angola, Botswana, Ethiopia, Ghana, Rwanda, Burundi, Kenya, Malawi, Madagascar, Uganda, Tanzania, Sudan, and South Africa are among the countries that have launched plans for the development of their national backbone networks over the last two years. Yet, a substantial gap remains in the majority of the countries, particularly those in Central and Western Africa. In contrast, the regional backbone has seen limited private sector interest due to the diversity of regulatory frameworks and unattractiveness of some of the routes due to high sunk costs. Fiber backbones have been growing in Southern Africa, however, with South Africa acting as a hub for surrounding countries, and in western Africa, with Nigeria, Ghana and Senegal acting as connectivity hubs in the region. This is not incidental, as broadband network investments tend to follow regional trade and economic activities, with the goal of connecting profitable urban centers rather than rural and underserved areas. The major regional broadband gap is in West, Central and Eastern Africa.

⁷ Internet Usage Statistics for Africa, <http://www.Internetworldstats.com/stats1.htm>

⁸ A diagram of the current fiber projects is provided in Annex I.1.

⁹ <http://www.itu.int/ITU-D/ict/statistics/index.html>

Box 2. Challenges to the African ICT Sector

1. Building the missing gaps in regional and national backbone infrastructure
2. Removing policy and regulatory restrictions including restrictions on licensing and market entry and promoting universal access to **affordable broadband Internet**
3. Leveraging existing broadband infrastructure by aggregating demand and scaling up applications in the public sector **through e-government, e-business, e-health, e-education and e-agriculture services**
4. Building skills and competitiveness in RMCs for the knowledge economy
5. Promoting ICT use to support trade and regional integration

3.3. Trends in ICT Sector Investment

3.3.1. The private sector continues to be the main driver for investment in the ICT sector in Africa. Studies by the International Telecommunications Union (ITU)¹⁰ and the OECD¹¹ concluded that, despite the international financial crisis, ICT in Africa remains an attractive business area and that several investment deals were concluded in late 2008 and 2009. In 2007, the private sector committed to increase investment in telecommunications from USD 35 billion to USD 50 billion by 2012. It is important to note that private investment was largely focused on the mobile networks and related applications that are easy to scale up and potentially more lucrative compared to fixed and broadband networks.

3.3.2. Public sector investment in the ICT has improved considerably over the last decade, but challenges remain in scaling up current ICT usage in government. Efforts in systematically integrating ICT in government and key sectors such as health, education and agriculture have been ad hoc and primarily focused more on automation than transformation of services. Moreover although many RMCs have developed e-strategies, they are still unable to turn them into useful application due to inadequate appreciation of the complex interaction between policy and regulation, access, skills and technological innovations. Countries like Egypt, Mauritius and Tunisia that have shifted from simply drawing up a “laundry list” of ICT applications to catalytic interventions in infrastructure, policy and regulation, capacity and skills and scaled up applications in the public sector have benefited from ICT enormously.

3.3.3. A significant potential exists for the participation of low and middle income African countries in the IT Enabled Services (ITES) sector that will exploit available broadband infrastructure. The ICT-based services represent a USD 500 billion addressable market, of which only about 20 percent has been realized¹². A huge potential exists for African countries that take concerted efforts in building the

¹⁰ . International Telecommunications Union, 2009, *Confronting the Crisis, Its impact on the ICT Industry*, http://www.itu.int/osg/csd/emerging_trends/crisis/report-high-res.pdf

¹¹ OECD, 2009, *The Impact of the Crisis on ICT and their Role in the Recovery*, <http://www.oecd.org/dataoecd/33/20/43404360.pdf>

¹² Sudan, Randeep, and al, 2010, *The Global Opportunity of IT Based Services: Assessing and Enhancing Country Competitiveness*, World Bank, Working Paper http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/Global_Opportunity_IT_Based_Services.pdf

requisite infrastructure and advanced skills in software engineering, project management, networking and creating an enabling legal and regulatory environment including laws for online transactions. Egypt, Mauritius, Morocco, South Africa and Tunisia have already tapped into the ITES market, the potential exists for increased employment and improved innovation in other countries.

3.4. Development Assistance in the ICT Sector

3.4.1. Substantial development assistance has been channeled to the ICT sector in Africa. Development partners are bent on improving the capacities of regulators and policy makers to appreciate the complex linkages between access to broadband, policy and regulatory frameworks and increased usage of the available network. The World Bank, for example, is spending a total of USD 424 million to finance the Regional Communications Infrastructure Program (RCIP) that aims to bring affordable high speed connectivity in Eastern and Southern Africa from which Burundi, Kenya, Madagascar, Malawi, Mozambique, Rwanda and Tanzania have benefited. A similar project for USD 215 million was approved in 2009 to promote connectivity in Central Africa with focus on connectivity, policy and regulatory capacity and e-government applications.

3.4.2. The European Union is another player in the sector, in particular with the financing of the creation of Regional Research and Education Networks. One such initiative is the newly funded AfricaConnect project with a total budget of €14.75 million with the aim to establish a high-capacity Internet network for research and education in Southern and Eastern Africa to provide the region with a gateway to global research collaboration. The initiative will undoubtedly have a significant impact on Africa's competitiveness and innovation.

3.4.3. In sum, the ICT sector has made considerable progress in the mobile sector and international undersea cables, but gaps remain in the regional and national backbone segment. There has been a significant progress with regard to sector reforms and the participation of middle income countries in the IT Enabled Services market. Adequate use of the installed network and promoting affordable access to underserved users remain a challenge for African countries.

3.5. Opportunities for the Bank

3.5.1. The challenges in the ICT sector present significant opportunities for the Bank (Box 2). Apart from the World Bank, the African Development Bank is the only player in regional infrastructure development in Africa. The Bank could play a key role in stimulating ICT usage in government through financing e-government services and promotion of regional integration by financing innovative applications of ICTs in RECs priority areas such as trade.

3.5.2. The Bank has a role to play to support the following developments in the mobile industry:

- Support the expansion of mobile operators as they transform their business model to address the needs of the bottom of the pyramid (subscribers with ARPU¹³ under USD 5) and extend their network coverage to rural areas with emphasis on mobile applications that have impact on the poor.
- Support the competitive environment and the development of infrastructure by new/late entrants and value added mobile service providers.

¹³ The Average Revenue Per User (ARPU) is a monthly or annual average of revenue the operators make per user. It is calculated by dividing total revenue to users' number.

- Support the development of infrastructure in countries suffering from a deficit of infrastructure and private sector investment due to perceived political risk. This is particularly needed in low income countries where penetration rates are still low.

3.5.3. In the current context of broadband Internet, the Bank has a role to play to support the following developments:

- Regional and national backbones are not scalable and reversible, thus the bulk of the routes remain unattractive to private investors. In addition, the regional geographic scope of these projects often introduces a risk, which the Bank in collaboration with the AUC, RECs and other specialized regional institutions are well positioned to address. This provides an opportunity for the Bank to play a key facilitating role by pushing for creative public-private partnerships in RMCs in order to improve broadband connectivity.
- Substantial private sector investments are expected in the access networks to continue to reduce the supply bottlenecks of broadband Internet. This also constitutes an opportunity for the Bank to support catalytic transactions in this area.
- The Bank's investment in scaling up e-government applications will facilitate the aggregation of the traffic that will increase the viability of backbone and future undersea cable projects.

3.5.4. The Bank's response to development challenges will be adapted to the targeted RMCs, including by putting emphasis on the following key areas:

- Most Middle Income Countries have built the basic broadband and voice communications infrastructure. They seek Bank's support in the scaling up of ICT applications to improve the delivery of public services such as health, education and municipal services. These countries face a significant shortage of human resources to compete in the global ICT enabled services market.
- Most Low Income Countries seek to build national backbone infrastructure, continue ICT sector reforms and maximize the impact of connectivity. A significant demand involves creating public-private partnerships for broadband connectivity, **policy and regulatory dialogue** and scaling up ICT applications in key sectors.
- Post-conflict and fragile states often lack basic infrastructure. They seek to build basic broadband infrastructure, improve the policy and regulatory environment and build the requisite human resources in all areas. They also need sustained assistance in integration of ICTs in Bank's projects and the rollout of fiber optic networks as integral to other infrastructure projects such as roads.

3.5.5. Finally, the Bank can play a key role in stimulating long term ICT **sector development** and economic growth by investing in ICTs in higher education connectivity and innovation that bring the private sector and academia together and promoting ICT services that create jobs and stimulate growth. Academic and research connectivity is a growing niche area, given the role of higher education in stimulating connectivity in other sectors and facilitating innovation and improved teaching, learning and research. The Bank's involvement in this area brings long-term impact of connectivity in other sectors, and improves the conditions for scientific and technical innovation. The Bank's support to ICT job creation would in turn stimulate long-term growth in RMCs.

4. Bank Group Action Plan for the Medium Term

4.1. Overview

4.1.1. The medium term objective for the Bank's ICT operations is to stimulate sustainable economic and social development through innovative technologies, with a special emphasis on the needs of the poor, e-government and regional integration. Bank's intervention will follow a holistic approach with focus on influencing the entire "ICT ecosystem" - namely policies, strategies, processes, information, technologies, applications and stakeholders that together make up a technology environment for a country and the region.

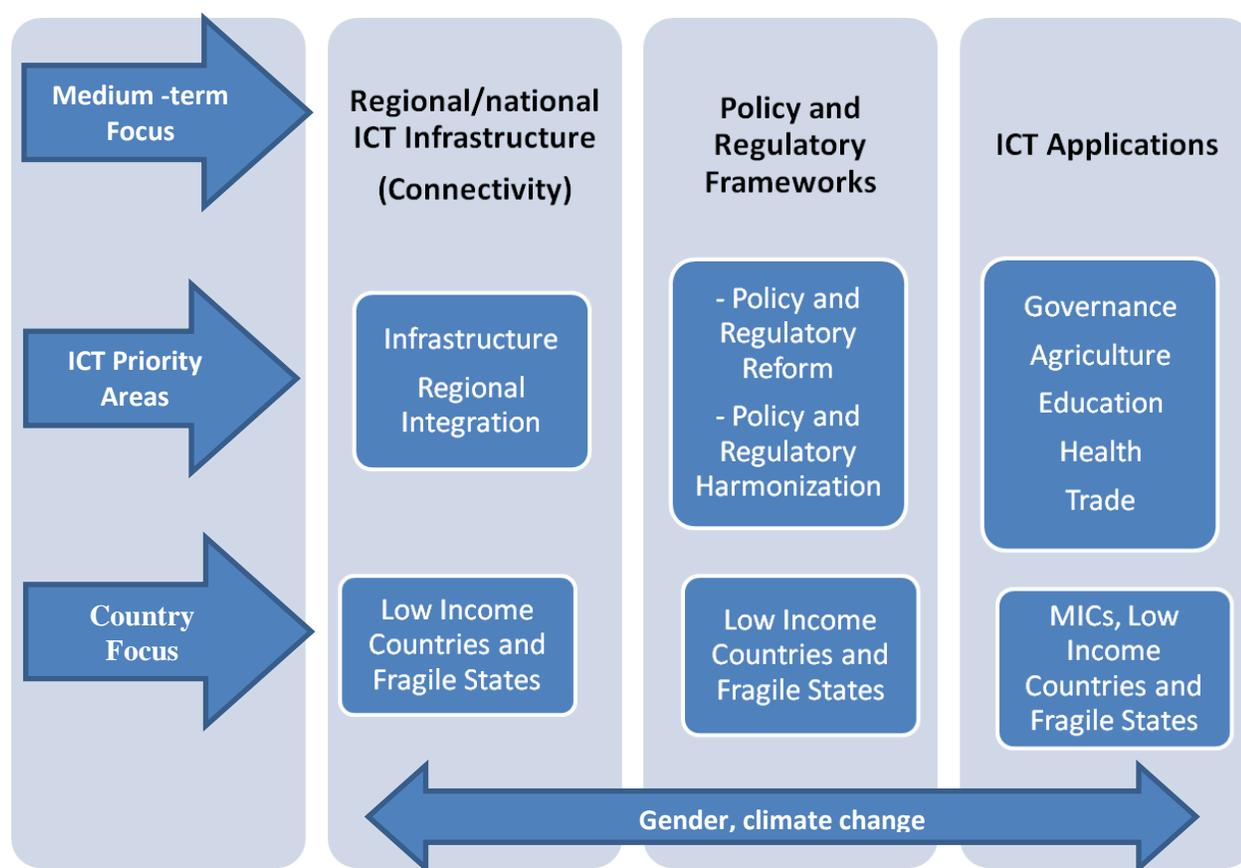
4.1.2. More specifically, Bank's ICT interventions will seek to, promote private investment in infrastructure to expand affordable access to broadband networks, increase effectiveness and competitiveness in RMCs, and enhance the efficiency of Bank operations. To this end, and building on the Bank's achievements and lessons learnt during the last 3 years as well as on the Bank's comparative advantages, three pillars will be proposed for the Bank's involvement in the ICT sector in the medium term (2012–2014), namely :

- **Regional/national ICT Infrastructure:** aimed at improving the connectivity, this pillar will focus on (i) extending ICT broadband infrastructure to deliver mobile and Internet services to underserved areas, and (ii) expanding regional/national ICT broadband infrastructure.
- **Policy and Regulatory frameworks:** focusing on creating enabling policy/regulatory environment to leverage private investment and forging PPPs for improved connectivity and affordable access to broadband services.
- **ICT Applications:** concentrating on completing the integration of ICT in the delivery of services by scaling up ICT applications in government services, key socio-economic sectors and regional integration, with particular emphasis on access, policy, standards and services.

4.1.3. The first two pillars were the main focus of the ICT Strategy approved in 2008, while the third one is a new area of involvement for the Bank aimed at harnessing the broadband infrastructure for more competitive and efficient public and private services. **The three pillars are in line with the Bank's Medium Term Strategy.** They are bound to yield development results as highlighted in Annex III (Results-Based Logical Framework).

4.1.4. The Bank will pay attention to particular needs of RMCs, especially the low income and post-conflict fragile states that have considerable basic infrastructure and human capacity needs. It will continue to assess the demand of RMCs for new technologies within the framework of its Medium to Long Term Strategy.

Figure 1 – Bank Focus Areas in ICT Operations over the Medium Term



4.2. Focus Area 1 – Regional/national ICT infrastructure

4.2.1. The Bank needs to continue to support the roll-out of ICT infrastructure with particular focus on regional and national backbones. It should also support the extension of broadband networks to rural areas, the mobile operators as they look to serve and provide value added services to rural and underserved subscribers, the increase of competition that reduces the costs of access and the development of the ICT services (such as e-government). The major roles of the Bank in this regard include:

- Supporting the rollout of integrated regional and national backbone programmes covering financing of fiber network, policy and regulatory reforms and capacity building, public-private partnerships, demand aggregation¹⁴ and capacity purchase¹⁵ on regional and international routes;
- Leveraging the Bank’s infrastructure programmes to facilitate the rolling out of fiber networks, in particular during the construction of new roads and power transmission lines

¹⁴ Demand aggregation includes the increasing of the use of broadband networks by forming a consortium of similar institutions such as national research and education network, network of small and medium enterprises that use high bandwidth, or creation of cyber zones where innovative companies use the broadband network

¹⁵ Capacity purchase involves the purchase of bandwidth by a consortium of private providers or network of institutions. It stimulates the demand for networks.

- Supporting the development of mobile infrastructure focusing on increasing penetration rates in low income countries, extending coverage to address the needs of the rural and underserved subscribers and fostering the reduction of communication costs through increased competition;
- Mobilizing private sector funding and promoting PPP for the development of broadband services;
- Leveraging non sovereign lending operations to extend ICT infrastructure in underserved areas.

4.3. Focus Area 2 - Policy and Regulatory Frameworks

4.3.1. In line with the second pillar of the 2008 Strategy, the Bank's interventions in this area of focus will continue to stimulate private investment in infrastructure, forge PPPs, and support its non-sovereign financing in the ICT sector, through the creation of conducive policy and regulatory environments.

4.3.2. In this regard, the Bank will continue to focus its interventions on:

- Promoting national policy and regulatory reforms: This comprises the provision of RMCs with technical assistance on the development of policies, regulation and institutional frameworks that stimulate access to ICTs, resolve market efficiency gaps and create business models that bring the public and private sectors together in extending broadband services to the population. This also includes supporting RMCs in developing policies that will ensure wholesale price decrease brought about by the advent of broadband networks are passed on by operators to end users.
- Supporting regional policy and regulatory harmonization: This involves undertaking studies in major regional policy challenges and promoting dialogue between countries to facilitate fair pricing of cross-border networks, non-discriminatory interconnection regimes and infrastructure sharing.
- Promoting harmonized Intellectual Property (IP) regimes that attract private sector investments in local technology ventures.
- Analyzing the investment, market and regulatory constraints of the various regional routes to better inform the players of the ICT sector;

4.4. Focus Area 3 - ICT Applications

4.4.1. In line with the recommendations of the ICT Operations Strategy, the Bank needs to embark on stimulating the usage of the existing networks by scaling up applications and promoting connectivity to countries. The Bank's interventions in this area will primarily focus on e-government services, applications that stimulate regional integration, ICT innovations and competitiveness.

- First, the Bank needs to scale up the **incorporation of ICTs in its sectoral projects** to improve the effectiveness of the delivery of these projects and enhance delivery of RMCs (public services and private corporations).
- Second, the Bank needs to **support the modernization of the government services in order to promote more efficient services to citizens. This will be implemented by supporting catalytic projects that facilitate ICT applications in governments.** These include specific projects such as the African Regional E-government Institute that supports capacity building of e-government players, national e-government projects, and sectoral e-projects such as e-health, e-education, e-trade, and e-agriculture.

- Third, the Bank **needs to play a key role in promoting trade by supporting projects that facilitate trade and regional integration.** This covers ICTs for customs and ports modernization, applications that support trans-border logistics especially along corridors and those for improving the coordination between agencies, supporting of regional payment systems and ICT capacity building for public and private actors in trade and regional integration.
- Fourth, the Bank needs to **finance large-scale ICT projects that can contribute to transforming the structure of the economy** and to **foster a greater sense of ownership of local ICT innovations within communities in RMCs.** The ICT interventions should cover the entire “ecosystem” spanning access, policy, standards, architecture and interoperability.

4.4.2. These sectoral ICT interventions must pay particular attention to projects that bring the greatest impact in terms of transparency and accountability (e.g., immigration, pensions, driver’s license/vehicle registration, company registration, land records, etc.), e-procurement and those that support the entire value chain such as shared infrastructure between ministries, regions and districts, back office systems such as Integrated Financial Management Systems, Loan Management Systems, interoperability frameworks and the capacity to deliver those programmes. Support could also include e-services delivery channels such as information kiosks, community service centers, mobile platforms, and mobile-banking.

4.5. Knowledge Management and Sharing

4.5.1. The Bank needs to intensify its knowledge management and analytical work in the ICT sector in the medium term. Building analytical capability in the three focus areas, namely Regional/national ICT infrastructure, policy/regulatory frameworks, and ICT applications, will enhance the Bank’s advisory capacity. In collaboration with ECON, the ICT Teams in OITC and OPSM should generate and share knowledge in the ICT sector to advance ICT applications and regulatory reforms in the sector. **Furthermore, the Bank will need to intensify its collaboration with other development partners in the area.**

4.6. Financing Instruments

4.6.1. The development of broadband ICT infrastructure, conducive policy/regulatory environments and ICT applications for transforming the public sector and the development of African talent for the knowledge economy require significant resources to carry out studies, support scalable innovative projects, capacity building, advisory services for PPP packaging and interventions in policy, standards and regulations. The Bank will therefore leverage all its existing financing instruments to scale up its ICT interventions, tapping both the ADB and ADF windows. The Bank will also use all its grants facilities (NEPAD IPPF, MIC Trust Fund, EPSA, FAPA, **ICA**, etc.) to stimulate Bank lending for building backbone infrastructure and promoting integrated applications in the ICT sector.

4.6.2. The Bank will continue leveraging private investment and PPPs in its ICT interventions. It will also continue to use senior and subordinated loans, equity participations and guarantees to promote ICT infrastructure and services

4.6.3. The Bank will further harness ADF resources to support its interventions in the ICT sector, in line with ADF-12 operational priorities, both in form of policy-based and project loans/grants. In fact, based on the ADF-12 Deputies’ Report, the Fund has prioritized (i) investing in broadband and telecommunication infrastructure networks supported by international submarine systems, national backbones and rural networks, and (ii) building capacity for policy and regulatory frameworks at the

country and regional levels. However, in regard of the limited ADF-12 resources, other sources of funding need to be explored to meet the huge needs of RMCs for bridging the digital gap.

4.6.4. The above-noted constraint justifies further the Management’s option for a financing mechanism that will enable the implementation of the Action Plan for the Medium Term 2012-2014, notably by tapping the bilateral trust funds available within the Bank and mobilizing external resources from key actors interested in the ICT sector development, so as to meet requests from RMCs aimed at supporting innovative projects in e-government applications and stimulating regional integration. The amounts required for such pilot projects would be generally low, ranging between USD 1-4 million.

4.7. Staffing and Institutional Arrangements

4.7.1. Major constraints of integrating ICT into the Bank Group’s operations include inadequate staffing and limited expertise. The Bank should also build on existing collaboration between its private and public operations departments to develop further synergies in its ICT operations.

4.7.2. The ICT Division needs to be strengthened by increasing the breadth of expertise especially in the areas where the Bank has shown weakness including PPPs and regulation. The Bank needs to recruit a Manager, PPP expert and a Regulatory specialist in order to fill the deficit in these areas.

4.7.3. The ICT Division will need about three additional staff and an administrative assistant between 2012 and 2013 to meet the demand from RMCs in the area of physical infrastructure and applications. Annex IV summarizes staff roles. Management, in the context of a zero growth budget in 2012, is taking steps to address staffing requirements for the expansion of the Bank’s role in ICT sector based on the indicative pipeline of projects outlined in Annex II. The Division’s additional human resource requirement for year 2012 will be met through the use of trust funds and use of consultants and its staff needs for year 2013 will be taken into account in the 2013 budget. Management will take into consideration the results of the Bank-wide vacant positions reallocation exercise currently undertaken by the Staff Planning Focal Group (SPFG).

Table 4. Projected Human Resources Requirement for the ICT Operations

Position	Required staff	Existing Staff	Projected Staffing needs 2012-2013
Manager	Head of ICT Division		1
Chief	E-government Specialist	1	
Chief	Infrastructure Specialist	1	
Principal	ICT Regulation Specialist		1
Principal	ICT Policy Specialist	1	
Principal	PPP Expert		1
Senior (GS)	Administrative/Research Assistant		1
Total		3	4

4.8. Partnerships and Coordination

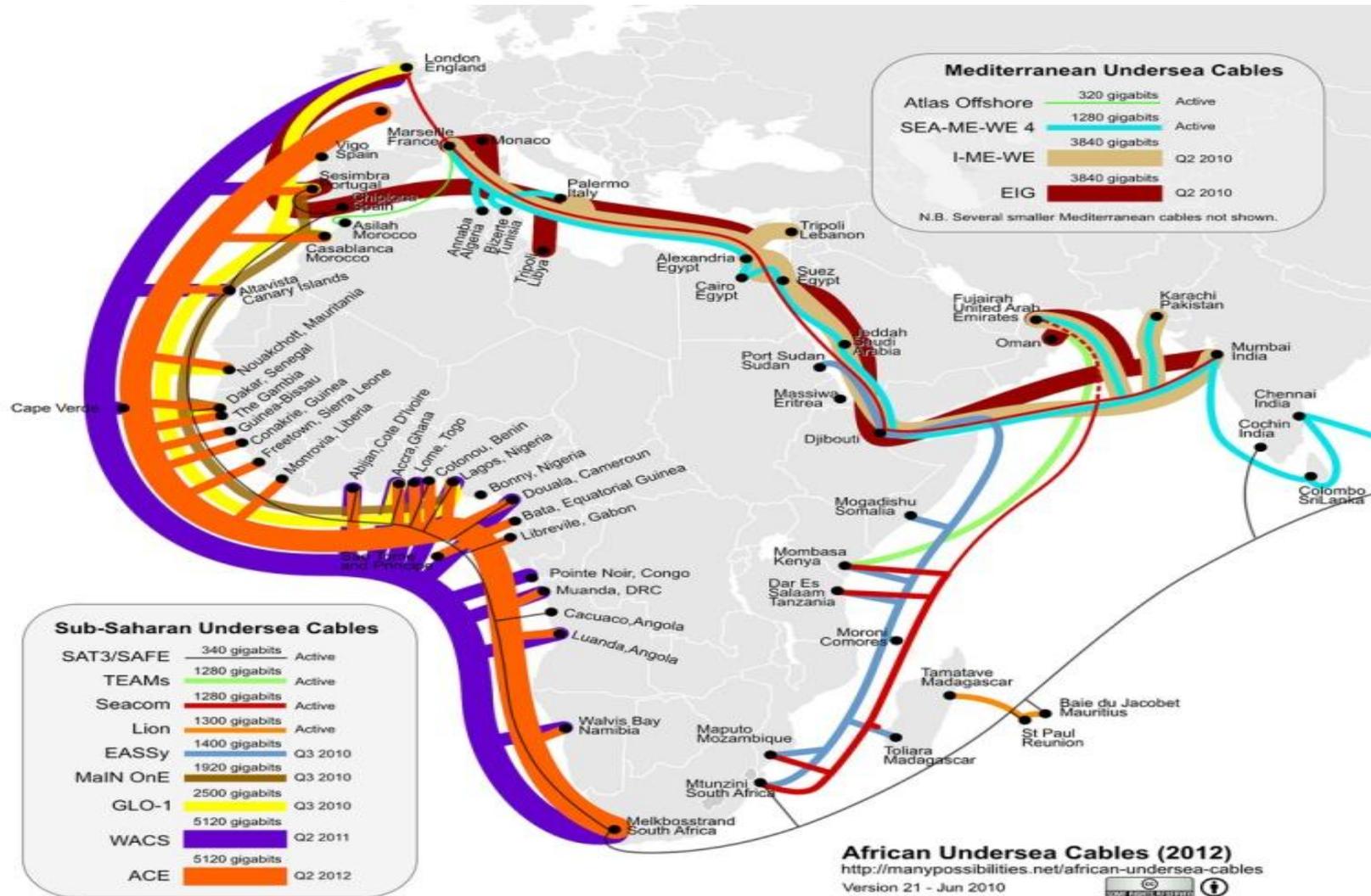
4.8.1. Partnership and coordination with all players is important in this dynamic sector. The Bank needs to continue to coordinate with traditional partners (AU, ECA, World Bank, ITU) and new partners including the private sector, research institutions and bilateral and multilateral donor agencies for the implementation of the mid-term activities outlined above. The goals of partnerships should be to minimize duplication of efforts, encourage the sharing of information, experience and resources, to stimulate the development of efficient national and regional markets for ICT products and services. Partnerships with private actors and international institutions should be based on clear and specific agreements to deliver well-articulated results in Bank's priority focus areas of connectivity and complete integration of ICT in the economy.

5. Conclusions and Recommendation

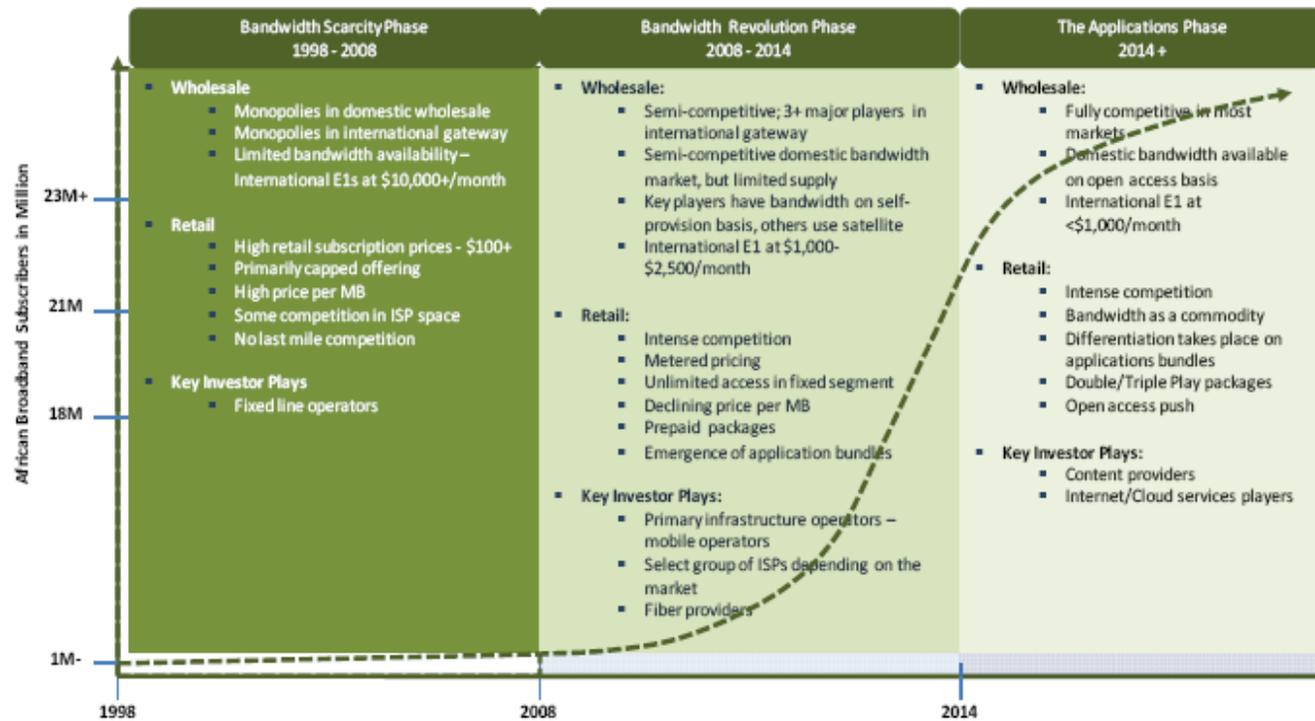
5.1. Building on the Bank's short term results and lessons learned, and in view of the pressing RMCs needs in ICT sector, the Review of the Bank's ICT Operations Strategy suggests to expand the role of the Bank in this dynamic and vibrant development area. This will allow RMCs to address major ICT challenges, including completing the missing national backbone networks, extending broadband access to rural and remote areas, removing policy and regulatory bottlenecks including on licensing and market entry and promoting universal access to broadband, building cross-border connectivity between countries, and improving the use of the existing infrastructure.

5.2. Management requests **the Boards of Directors** to approve the outcome of the review of the Bank's ICT Operations Strategy and its medium term action plan. The key recommendation **is related to** the proposed three (3) focus areas in the medium term, **namely** (i) regional/national ICT infrastructure, (ii) policy and regulatory frameworks, and (iii) ICT applications. These proposals build on the Bank's achievements and lessons learnt in the past 3 years as well as on its comparative advantages.

Annex I.1 – Africa Fiber Map



Annex I.2 - Key Phases in Africa's Bandwidth History¹⁶



Source: Africa Next research

¹⁶ The market of the broadband has been changing in Africa in terms of wholesale and retail, also in the number of players that participate in the market. Until 2008, the wholesale is largely monopoly and retail prices were very high. The major players were incumbent operators. This is shifting at the moment with some competition in the whole sale market and mobile operators entering in the broadband market. The retail prices for broadband are declining with further competition. It is expected that the broadband market will become fully competitive after 2014 with further decline in price and more entry into the market by additional operators in particular the content providers.

Annex II - Indicative Pipeline Projects

Focus Area	Domain	Project Title	Total Investment Cost (US\$)
Consolidation of regional and national Broadband Infrastructure	Regional Infrastructure	ECOWAS Wide Area Network	150,000,000
		East African Backbone Infrastructure Network	40,000,000
		Central African Backbone Network	60,000,000
		North Africa Backbone Network	50,000,000
	National backbone infrastructure	Seychelles Submarine Cable Landing Station	50,000,000
		National backbone – Burkina Faso	50,000,000
		National backbone- Guinea	45,000,000
		National backbone – Sierra Leone	50,000,000
	National backbone - DRC	120,000,000	
Integration: Scaling Up ICT Applications to transform public services	E-government	E-government in Algeria	2,400,000
		E-government Cote d'Ivoire	5,000,000
Capacity Enhancement	Capacity building	ICT Center of Excellence – Tunisia	15,000,000
	Higher education connectivity	West and Central African Research and Education Network	1,200,000
Partnerships cooperation and coordination	Joint programmes	ADB/World Bank toolkit on e-applications	500,000

Annex III - Results-Based Logical Framework for 2012-2014

OBJECTIVES	EXPECTED IMPACT & RESULTS	REACH	PERF. INDICATORS (MEANS OF VERIFICATION-)	BANK'S INDICATIVE TARGETS & TIMEFRAME	ASSUMPTIONS, RISKS & BANK MITIGATION MEASURES
<p><u>STRATEGIC GOAL</u></p> <p>Expand access to affordable and competitive information and communications infrastructure</p>	<p><u>Impact</u></p> <p>1. Digital divide bridged between RMCs and developed countries; 2. Sustainable economic growth promoted in RMCs; 3. Universal access to information and communication infrastructure promoted in RMCs</p>	<p><u>Beneficiaries</u></p> <p>-RMCs; - rural and urban population</p>	<p><u>Indicators</u></p> <p>1. ICT Development Index 2. Annual GDP Growth Rate used in Global Competitiveness Index</p> <p><u>Sources of data:</u> International Telecommunications Union; Country Ministries of Economy and Finances; Country Ministries of telecommunications and communications, WEF</p>	<p><u>Indicative Targets of all Development Partners 2017</u></p> <p>1. The average IDI value of several RMCs rises up to 0,75 by the end 2017 (In 2006, the highest IDI in the Continent was 0,5) 2. Improved Global Competitiveness Index Ranking in RMCs;</p>	<p><u>Assumptions:</u></p> <p>1. Supportive infrastructure such as electricity will be available</p> <p>2. The Bank will establish an institutional framework and mobilize resources to stimulate investments in infrastructure and applications and respond to RMCs requirement in comprehensive manner</p> <p>3. RMC's will continue to invest in the ICT sector and maintain the synergies between key building blocks such as policy and regulatory reform, sector application, human capacity development and access to broadband infrastructure</p> <p><u>Risks:</u></p> <p>1. Possibility for over building of fiber networks; 2. Difficulties in mobilizing resources</p>
<p><u>PURPOSE:</u> Stimulate investments in the ICT sector at national and regional levels and scaled up ICT applications</p>	<p><u>Outcome</u></p> <p>Improved ICT connectivity in several RMCs Improved ICT applications across the economy of RMCs</p>	<p><u>Beneficiaries</u></p> <p>RMCs</p>	<p><u>Indicators</u></p> <p>1- Number of broadband subscribers 2- Bandwidth per capita 3- umber of Internet users 4 -E-government Web Index 5 -Percentage of household with Internet access</p>	<p><u>Indicative Targets by 2016</u></p> <p>- Broadband penetration 6% - Internet users 20% - Double e-government web Index - Increase of household Internet penetration by 30%</p>	
<p><u>SPECIFIC OBJECTIVES</u></p> <p>Strategic Area of Focus N0 1: 1. Regional and national ICT infrastructure</p> <p>Strategic Area of focus N0 2: 1. Set up an enabling environment for the promotion of ICT.</p>	<p><u>Intermediate Outcome</u></p> <p>Strategic Area of Focus N0 1: 1. Approved Investment projects 2. Forged partnerships 3. Sound ICT policy and regulatory environment 4. Enhanced private investment and PPP in the delivery of regional infrastructure 5. Enhanced private investment and PPP in the delivery of national infrastructure</p> <p>Strategic Area of focus N0 2: 1. Sound ICT Policy and Regulatory Frameworks fully operational in RMCs; 2. Enhanced private investment and PPP in</p>	<p><u>Beneficiaries</u></p> <p><u>RMCs</u> Regional Economic Communities</p> <p>RMCs</p>	<p><u>Indicators of Medium-Term Outcomes & Data Sources:</u></p> <p>Strategic Area of Focus N0 1: 1. Number of investment project prepared 2.Number of investment projects approved 3. Number of PPPs forged 4. Number of sound ICT policies and regulatory frameworks 5. Private infrastructure flows</p> <p>Strategic Area of Focus N0 2 1. Number of sound ICT policy and regulatory frameworks operational in RMCs;</p>	<p><u>Bank's Indicative Targets by 2014</u></p> <p>Strategic Area of Focus N0 1: - 5 investment projects prepared - 5 investment projects approved - 3 PPPs forged - Enabling policy and regulatory framework created to stimulated national and regional backbone in 15 countries</p> <p>Strategic Area of focus N0 2: - About fifteen sound ICT policy and regulatory frameworks fully operational in RMCs;</p>	

OBJECTIVES	EXPECTED IMPACT & RESULTS	REACH	PERF. INDICATORS (MEANS OF VERIFICATION-)	BANK'S INDICATIVE TARGETS & TIMEFRAME	ASSUMPTIONS, RISKS & BANK MITIGATION MEASURES
<p>Strategic Focus Area No 3: Scaling UP ICT Applications</p>	<p>delivery of regional infrastructure;</p> <p>3. Improved PPP in delivery of national infrastructure.</p> <p>Strategic Area of Focus N0 3: 1. ICT projects integrated in sectoral projects 2. E-applications scaled up in RMCs 3. Enhanced use of ICT for trade and trade facilitation 4. ICT used across the economy in RMCs</p>	<p>RMCs</p>	<p>2. Private financing flows.</p> <p>- Number of projects that integrate ICTs in key sector - Number of e-applications projects financed by the Bank -Number of e-trade facilitation project financed by the Bank -Number of comprehensive ICT projects (e-country projects) financed by the Bank</p> <p>Source of data: Country sector ministries, ADB, United Nations, World Bank, UNESCO, ITU</p>	<p>- About ½ billion US\$ of private funding mobilized for regional broadband;</p> <p>- About ½ billion US\$ mobilized through PPP to implement national backbones.</p> <p>- At least 10% of Bank's programme contain ICT applications -E-applications in 2 country per year - Two e-trade facilitation projects by 2014 - Three comprehensive e-country programmes by 2014</p>	<p>3. Inefficient coordination of ICT activities within the Bank</p> <p>Mitigation Measures:</p> <p>1. Develop and implement a sound strategy of advocacy and resources mobilization framework 2. Allocate adequate resources for Bank' investment catalytic projects 3. Make good use of existing trust funds such as NEPAD IPPF, EPSA, etc.. 4. Strengthen internal capacity of the Bank, by hiring a Manager for ICT Division, regulatory specialist and PPP expert.</p>
<p>INPUTS AND ACTIVITIES</p> <p>Strategic Area of Focus N0 1:</p> <p>1. Investment planning for different routes in regional backbone</p> <p>2. Mobilization of private investment and PPP for regional backbone</p> <p>3. Stimulating policy and regulatory dialogue to promote fair interconnection between countries</p> <p>4. Investment, policy and business plan assessment for national backbone</p> <p>5. Mobilization of resources for national backbones through PPP</p>	<p>Main Outputs</p> <p>Strategic Area of Focus N0 1:</p> <p>1- Investment planning study for regional routes. completed</p> <p>2. Public and private partnership forged for selected regional routes</p> <p>3. Policy and regulatory reform dialogue takes place as an integral component of the public and private partnership for financing selected route</p> <p>4. Business plan for national backbones completed</p> <p>5. Resource mobilized and policy and regulatory reform dialogue takes place as an integral component of the public and private partnership for national backbone</p>	<p>Beneficiaries</p> <p>1. RMCs 2. Economic Regional Communities</p>	<p>Indicators of main outputs</p> <p>Strategic Area of Focus N0 1:</p> <p>-One study on investment planning</p> <p>-Number of Bank projects implemented through public and private partnerships</p> <p>-Number of policy dialogues for realization of regional infrastructure</p> <p>-Number of business plans for national backbone</p> <p>-Number of Bank's investment in national backbones</p>	<p>Bank's Indicative Targets by 2014</p> <p>Strategic Area of Focus N0 1</p> <p>- A study on investment planning completed</p> <p>- Three Bank regional routes project financed through PPP (one per year)</p> <p>-Three policy and regulatory dialogues (one per year)</p> <p>-Three business plans for national backbones (one per year)</p> <p>- Three national backbones financed by the Bank (one in 2012, one in 2013 and one in 2014)</p> <p>-Three project integrate fiber as part of the road construction and power</p>	

OBJECTIVES	EXPECTED IMPACT & RESULTS	REACH	PERF. INDICATORS (MEANS OF VERIFICATION-)	BANK'S INDICATIVE TARGETS & TIMEFRAME	ASSUMPTIONS, RISKS & BANK MITIGATION MEASURES
<p>6. Fiber rollout integrated into major utility project such as road</p> <p>7.Undertake a feasibility study on ICT Trust Fund and revise the existing draft concept note</p> <p>Strategic Area of Focus N0 2:</p> <p>1. Promotion of regional policy and regulatory harmonization dialogue;</p> <p>2. Policy harmonization with regard to open access, interconnection, fair trading and the stimulation of private investment;</p> <p>3. Policy and regulatory reform at national levels;</p> <p>4. Technical assistance in policies on e-applications and Internet security.</p>	<p>6.Fiber integrated in upcoming infrastructure projects</p> <p>7_ Feasibility study on ICT Trust Fund and revised Concept note on ICT Trust Fund</p> <p>Strategic Area of Focus N0 2:</p> <p>1. Studies carried out; forums organized; discussions and consensus promoted;</p> <p>2. Policies and regulations harmonized in all regions;</p> <p>3. Technical assistance provided in sector reform to advance national backbone network and universal access launched;</p> <p>4. RMCs empowered in policy formulation to formulate e-commerce and e-application policies.</p>	<p>RMCs Regional institutions</p>	<p>-Number of projects that integrate passive fiber as part of the construction</p> <p>- Feasibility study and Concept note</p> <p>Strategic Area of Focus N0 2:</p> <p>1. Number of studies carried out; number of forums organized; areas where consensus is reached;</p> <p>2. Number and areas where policies are harmonized;</p> <p>3. Number of countries that received technical assistance in policy and regulatory reform;</p> <p>4. Number of institutions and RMCs that received technical assistance; number of countries that developed policies on specific areas such as e-government, e-commerce, e-transaction, e-health, e-education, etc</p>	<p>transmission network (one per year) - Feasibility study completed by end 2012</p> <p>Strategic Area of Focus N0 2:</p> <p>1. Two studies per year; At least two forum per year;</p> <p>2. Two policy areas per year;</p> <p>3. Two countries per year;</p> <p>4. Two countries per year;</p>	
<p>Strategic Focus Area No.3.</p> <p>1.Systematic integration of ICTs in sectoral projects</p> <p>2.Financing catalytic e-government/e-application project</p> <p>3.Financing e-trade projects to speed up regional integration</p> <p>4.Financing comprehensive ICT sector project in RMC</p>	<p>1. ICT systematically integrated in Bank's sector programmes</p> <p>2.Bank's investment in e-applications and e-government improved</p> <p>3.Regional trade facilitation enhanced through increased use of ICTs</p> <p>4.ICT use across the economy of RMCs enhanced</p>	<p>RMCs Regional institutions</p>	<p>1. Number of sectoral project that integrate ICTs</p> <p>2. Number of e-applications projects financed by the Bank</p> <p>3.Number of trade facilitation projects financed by the Bank</p> <p>4. Number of integrated e-country projects financed by the Bank</p>	<p>1. 10% of Bank's sectoral project include ICTs</p> <p>2. Six e-applications projects (two per year)</p> <p>3. Two regional trade facilitation projects</p> <p>4. Three comprehensive e-country programmes (one per year)</p>	

Annex IV. Profile for the New Staff in the ICT Division

HR requirement	Major Tasks
ICT Division Manager	<ul style="list-style-type: none"> Lead the ICT team Liaise with other operation complexes Manage ICT activities Represent the Bank in international fora/meetings Lead the analytical and knowledge management functions
ICT Regulatory Specialist	<ul style="list-style-type: none"> Provide regulatory support to RMCs Lead the analytical work in regulation
PPP Expert	<ul style="list-style-type: none"> Participate in discussions with partners on PPP Advise on PPP initiatives Coordinate the design of PPP projects Lead the analytical work on PPP