Report Number : ICRR0021023

1. Project Data

Project ID P094103	**Project Name** Telecommunications APL (FY07)	
Country Africa	**Practice Area(Lead)** Transport & Digital Development	**Additional Financing** P104429,P127380,P149019,P03705

L/C/TF Number(s) IDA-42840,IDA-42850,IDA-50920,IDA-54080,IDA-H2830	**Closing Date (Original)** 31-Jul-2012	**Total Project Cost (USD)** 201,900,000.00
Bank Approval Date 29-Mar-2007	**Closing Date (Actual)** 31-Dec-2016	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	164,500,000.00	0.00
Revised Commitment	226,587,108.68	0.00
Actual	222,396,166.92	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

This operation involving three countries - Burundi, Madagascar and Kenya - was the first phase of the Regional Communications Infrastructure Program (RCIP)- aimed at supporting the development of regional Information and Communication Technology (ICT) connectivity in the Eastern and Southern African countries.

The Project Development Objective (PDO) project as stated in the Financing Agreements of Burundi (Schedule 1, page 5) and Madagascar (Schedule 1, page 6) was:

"To contribute to lower prices for international capacity and extend the geographic reach of broadband networks."
The PDO for Kenya which was the same as the PDO for the regional program as stated in the Financing Agreement of Kenya (Schedule 1, page 6) and in the Program Appraisal Document (PAD, page 7) was: **(i) To contribute to lower prices for international capacity and extend the geographic reach of broadband networks: and, (ii) to contribute to improved Government efficiency and transparency through e-government applications."**

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

No

c. Will a split evaluation be undertaken?

No

d. Components

There were four components.
1. Enabling Environment. **Total appraisal estimate US$20.93 million** *(US$14.74 million for Kenya:US$3.25 million for Burundi: US$2.94 million for Madagascar).* **Actual cost at closure** US45.28 million (US$41.04 million for Kenya: US$3.01 million for Burundi: US$1.23 million for Madagascar). Actual cost for Kenya was higher than expected due to the change in the scope of activities following the approval of two Additional Financings (AFs) for Kenya (discussed below). This component aimed at providing technical assistance for regional market integration and Information and Communication Technology (ICT) sector. Activities included: (i) technical assistance for strengthening the legislative and regulatory reforms for promoting open access to national and international infrastructure, tariff regulation, security of networks and electronic transactions, privacy and data protection, access to information, intellectual property rights, cyber security and strengthening Public Private Partnership (PPP) frameworks: and, (ii) strengthening the monitoring and evaluation capacity of countries.
2. Connectivity. **Total appraisal estimate US$100.05 million** *(US$62.55 million for Kenya, US$13.50 million for Burundi:US$24.00 million for Madagascar)*. **Actual cost at closure US$38.88 million** (US$12.36 million for Kenya, US$14.51 million for Burundi: US$12.01 million for Madagascar). This component aimed at supporting the deployment of regional connectivity in the countries through investments in physical assets and technical assistance. Activities included: (i) support for financing a submarine cable landing station or virtual landing station for landlocked countries and support for establishing a creating national Internet Exchange Points (IXP) with regional connections to other IXPs (the ICR (page 3) notes that IXPs enable Internet Service Providers to keep locally-generated and received Internet traffic within its country/region of origin, as opposed to carrying this traffic on international routes): (ii) support for financing purchase of capacity on the submarine cable, backhaul and national backbone networks for assisting rural/underserved areas and targeted users (such as schools, hospitals and e Government use), with discounted capacity prices: (iii) support for deploying regional backhaul links

across borders with neighboring countries to reach the submarine cable's landing point: (iv) support for deploying national backbone infrastructure on the basis of PPPs, leveraging private sector investment: (v) establish a government virtual private network (GOVNet) for government communication needs: (vi) support for extending Information and Communication Technology (ICT) in rural areas and community-driven ICT development on the basis of PPP: and, (vi) support for country-specific demand-simulation programs (such as the Digital Village and the short messaging service (SMS) e-Services programs for Kenya.

3. eGovernment applications. **Total appraisal estimate** US$29.61 million (US$29.16 million for Kenya: US$0.45 million for Burundi) **Actual cost at closure US$134.59 million** (US$134.38 million for Kenya: US$0.21 million for Burundi). Actual cost of activities for Kenya was higher than expected at appraisal due to the increase in project scope (discussed below). This component aimed at providing technical assistance to the two countries to improve their internal systems and to make information more accessible to citizens. Activities included: (i) supporting selected major government services make the transition to e Government: (ii) support transaction-based eProcurement in selected departments: (iii) support the establishment of scalable transaction-enabled government Web-portals to anchor key e government interventions, access to service delivery applications and information and real-time monitoring and evaluation.

4. Project Management. Total appraisal estimate US$5.77 million (US$2.95 million for Kenya: US$1.46 million for Burundi:US$1.36 million for Madagascar. **Actual cost at closure US$16.48 million** (US$11.81 million for Kenya: US$2.91 million for Burundi: US$1.76 million for Madagascar. This component aimed at providing project management support in areas such as human resources support for procurement, financial management, M&E and conducting audits.

Two AFs were approved for Kenya. The first AF approved on 3/29/2012 was intended for scaling-up project activities including supporting ICT devolution by providing county offices with hardware, open data, shared platform for e government services, security and data, developing the Integrated County Management (ICM) Tool for the Nairobi City County and developing ICT Roadmaps and the Integrated County Management (ICT) Tool for revenue collection and management and two other applications for two counties. The second AF approved on 03/26/2014 expanded the scope of the project to include ICT road maps for 44 counties and dissemination of the Integrated Financial Management Information System (IFMIS) within the selected counties.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. Total project cost at appraisal (including baseline cost and price contingencies) for the three countries was US$164.68 million (US$114.40 million for Kenya: US$20.10 million for Burundi: US$30.28 million for Madagascar). Two AFs of US$55.10 million and US$30.00 million, respectively, were approved for Kenya. The revised estimate for Kenya was US$199.50 and the revised total project cost for the three countries was US249.78 million. Actual cost at closure (including actual cost and costs of contingencies) was US$235.23 million (US$199.59 million for Kenya, US$20.64 million for Burundi and US$15.00 million for Madagascar). Actual cost for Madagascar at closure was lower as US$15.00 million of the grant was cancelled in the wake of the political crisis in 2009 when the entire portfolio for Madagascar was put on hold.

Project Financing. The project was financed by an IDA grant (regional IDA funding was used to leverage country allocations). Total grant estimate at appraisal was US$164.50 million (US$114.40 million for Kenya: US$20.10 million for Burundi: US$30.00 million for Madagascar). AFs of US$85.10 million was approved during the project lifetime for Kenya. With this, the revised grant estimate for Kenya was US$199.50 million and the revised grant estimate for the three countries was US$249.60 million. Amount disbursed at closure US$235.23 million (US$199.59 for Kenya: US$20.60 million for Burundi: US$15.00 million for Madagascar). US$15.00 million of the grant for Madagascar was cancelled. There was a parallel financing for activities aimed at leveraging private sector participation in the ICT sector of the countries by other development partners including, the African Development Bank (AfDB), the French Development Agency (AFD in French), the Development Bank of Southern Africa (DBSA), the United Kingdom Department of International Development (DFID), the European Investment Bank (EIB), the European Union, the German Credit Agency for Reconstruction and Development (KfW in German), and the Swedish International Development Cooperation Agency (SIDA).

Borrower Contribution. Appraisal estimate US$37.40 million. The contribution of the three countries at closure was US$0.00 million.

Dates. The project was restructured through nine Level 2 restructurings for the three countries. The changes made during the lifetime of the project for the three countries in chronological order were as follows.

Kenya. In addition to the two AFs, there were two Level 2 restructurings. The main changes made through the first restructuring on 02/24/2010 were: (i) Capacity building activities (such as Business Process Outsourcing (BPO) capacity purchase) was dropped, as these activities were financed by the government. (ii) The scope of activities associated with the Kenya Education Network (KENET), e-government application shared services, and community computer programs was expanded. (iii) A new activity associated with funding a center of excellence for software developer certifications and business incubator was added. and, (iv) The results framework was revised in view of the changes to the project scope.

These were the main changes made through the second Level 2 restructuring on 04/18/2011: (i) The project closing date was extended by 18 months (from 07/31/2012 to 01/31/2014); and, (ii) There was a reallocation of Credit proceeds between components. In addition to the changes in project scope, the following changes were made following the approval of AF on 03/29/2012. The project closing date was extended by 36 months to December 31.2016 for completing the new activities. In addition to the changes in project scope following the approval of second AF for the project on 03/26/2014, the results framework was revised. The project for Kenya closed on December 31,2016.

Burundi. There were three Level 2 restructurings. The main changes made through the first Level 2 restructuring on 10/4/2010 were: (i) The closing date was extended by nine months (from July 31,2011 to April 30, 2013), in view of the implementation delays caused by a combination of factors including, difficulties associated with implementing the PPP model and procurement delays: and, (ii) There was a reallocation of grant between project components. The main changes made through the second Level 2 restructuring on 04/13/2013 included, extending the closing date by a year (from April 30, 2013 to April 30, 2014) for completing ongoing activities and reallocation of grant funds between components. The changes made through the third Level 2 restructuring on 03/26/2014 included extending the closing date by six months (from April 30,2014 to October 31,2014) for completing ongoing activities. The project for Burundi closed 27 months behind schedule on October 31,2014.

Madagascar. There were three Level 2 restructurings. The main changes made through the first Level 2 restructuring on 07/26/2011 were: The closing date was extended by nine months to April 2012 for factors such as, implementation delays in the wake of the political crisis in 2009, completion of the Bank's

Madagascar Interim Strategy Note and a complete restructuring of the country portfolio following lifting of the temporary freeze on disbursements. The main changes made through the second Level 2 restructuring on 04/26/2012 were: (i) extension of the closing date by 20 months to December 2013 in view of the political changes: (ii) About half of the grant was cancelled for factors such as, acknowledgement that the government was not likely to take key policy decisions in the near future regarding liberalization of the wholesale capacity market in the ICT sector and the need for IDA grant in other priority social sectors. The ICR (page 15) notes that the political crisis hampered the implementation of social programs and the Bank was called to provide urgent funding for social sectors (such as health and education): (iii) the results framework was revised. The third Level 2 restructuring extended the project closing date by 24 months to December 31, 2015 for completing ongoing activities. The project for Madagascar closed four and half years behind schedule on December 31, 2015.
Split rating. While one outcome indicator and several outcome targets were revised in line with AF and changes in the scope of the project for the three countries, IEG has chosen not to undertake a split rating as it would not make a material difference to the achievement of the PDO.

3. Relevance of Objectives & Design

a. Relevance of Objectives

At appraisal, ICT costs were high in East and Southern Africa (E&SA) countries. Twenty regional countries lacked direct access to global ICT networks and were forced to rely on expensive satellite connectivity to link up with each other and with the world. E&SA countries were the only part of Africa that were not connected to the global optical fiber broadband infrastructure and without access to low price and quality communication services, it was expensive for the countries to trade regionally and globally. There were variations in the levels of development of the ICT sector across the three countries. Telecommunication services were limited and expensive in Burundi and Madagascar, with mobile telephone penetration at 2.7% and 5.3% of the population and many areas in the countries remained uncovered. In the absence of adequate communications infrastructure, Internet access was through expensive satellite channels, leading to high retail prices for Internet services. Bringing connectivity from infrastructure developing in the sub-region, with the arrival of the first open access submarine cable (Eastern Africa Submarine System - EASSy - submarine cable) was highly relevant for Madagascar and Burundi. Kenya had a nascent, although growing ICT sector before appraisal and was in the cusp of preparing new telecommunications legislation aimed at deepening ICT sector reforms and extending e-government for service delivery, developing rural ICT centers and enhancing ICT research and development through private sector participation.
The PDO was consistent with the government strategy of the countries and with the regional goals. Kenya's Open Government National Action Plan published in 2016 affirmed the importance of an e-citizen portal for delivery of public services. Burundi's National ICT Development Policy ratified in 2007 underscored the need for developing an efficient and quality communication network for improving governance. The Systematic Country Diagnostic of Madagascar in 2015 identified investments in telecommunications to mitigate the deficiencies of physical connectivity. The PDOs were relevant to the targets of the Millennium Development Goals (MDGs) of the countries: (i) Targets one and two of eradicating extreme poverty and hunger: (ii) Target 3 of promoting universal primary education: (iii)Targets five and six of improving health: and, (iv) Targets 12 to 18 of global partnerships for development through

promoting good governance and cooperation with the private sector, especially in the ICT sector. Regarding the regional goal, the PDO of improving connectivity was part of a broader regional program and was important for the initiative called by the New Economic Partnership for Africa's Development's (NEPAD's) Heads of State in November 2004.
The PDO was consistent with the Bank's strategy for the countries and for the region. The Country Assistance Strategy (CAS) for Kenya for the 2004-2008 period underscored the role of telecommunications as a driving force for accelerating economic growth, improving transparency, strengthening local government and improving service delivery through e-government applications. The PDO was consistent with all pillars of the Country Partnership Strategy (CPS) of Kenya for the 2014-2018 period. The PDO was in line with the Interim Strategy Note for Burundi for the 2006-2007 period. This note highlighted the need for improving governance through developing efficient and quality ICT community networks. The CAS for Burundi for the 2013-2016 period highlighted the need for developing the ICT sector for improving competitiveness. The PDO contributed to two pillars of the CAS for Madagascar for the 2007-2011 period: (i) improving service delivery: and, (ii) helping remove bottlenecks to investment and growth. The PDO continues to be relevant to the Country Partnership Framework of Madagascar for the 2017-2021 period. The Bank's Africa Regional Development Strategy issued in 2003, identified advances in ICT as one of the emerging positive trends in the 21st century offering "enormous opportunities to leapfrog stages of development" (PAD, page 14). The Bank's regional ICT sector articulated in "*Connecting Sub-Saharan Africa, 2005*", identified incomplete sector liberation and lack of ICT infrastructure as key impediments to leveraging ICT for economic and social development.

Rating	**Revised Rating**
High	Not Rated/Not Applicable

b. Relevance of Design

A horizontal Adaptable Program (APL) was used as the lending instrument for the regional program which had a customized menu of options to allow the eligible countries to choose activities depending on the country context. This instrument was appropriate given the differences in the level of development of the ICT sector in the regional countries. The statement of PDO was clear and the links between project activities, their outputs and intended outcomes were clear. Component One technical assistance activities were aimed at strengthening the legislative and regulatory frameworks for promoting open access to national and international ICT infrastructure. Component two activities such as, physical investments aimed at creating national Internet Exchange Points (IXP) with connections to regional IXPs, deploying backbone and national backbone networks and establishing government virtual private networks, were aimed at supporting the deployment of national and regional connectivity in the countries. The outputs of these activities could be expected to contribute to extending the geographical reach of broadband networks and thereby to the development outcome of increasing the volume of international traffic of the participating countries. Component three activities were aimed at supporting selected major government services to make the transition to e-government and transactions- based web portal. The outputs of these activities could be expected to contribute to the outcome of improving the quality of e-government services.
There were shortcomings at design. It is unclear whether there was enough focus on activities associated with ICT sector reforms. This contributed to the non-realization of activities associated with 'enabling

legislation" (ICR, page 41). The project underestimated the difficulties associated with implementing Public-Private Partnerships (PPPs) in fragile countries like Burundi and Madagascar. Given that the PPP approach required close collaboration between public and private stakeholders over a relatively long period of time, it is not clear if adequate technical assistance activities were planned at design for furthering PPP approach in the ICT sector. This contributed to implementation delays associated with implementing the PPP for Burundi Backbone Service (BBS).
In addition, some defined outcomes could not be exclusively attributed to the project and were significantly influenced by external factors outside the control of the project. For example, expansion of mobile penetration and internet usage could well have been influenced by such factors as, increase in purchasing power of the population, the expanded accessibility of services, the increase in competition, the lowering of operating costs and overall scale effects on price reductions (ICR, page 27).
The original design was ambitious in terms of scope and in terms of project timelines, for a project involving three countries with different capacities. This necessitated many restructurings and extensions of project closing date for all the three project countries.

Rating	Revised Rating
Modest	Not Rated/Not Applicable

4. Achievement of Objectives (Efficacy)

Objective 1

Objective

To contribute to lower prices for international capacity.

Rationale

Outputs (ICR, pages 44-48 and Data Sheet).
The following were the outputs for Kenya.

- Technical assistance was provided for establishing the National (PKI) certification body and PKI root certification body. The PKI was established at the Kenya Revenue Authority at project closure.
- Open data website covering both National and Country government was development for citizens at project closure.
- 10 operators had access to the landing station as targeted. Nine individuals and 36 companies were provided grants to develop applications at project closure.
- A software certification program was developed to certify software developers. The program was operational at project closure and was being used to test and certify software developers. A curriculum was developed for the business processing outsourcing sector.
- A national cyber security master plan and a shared services master was developed for guiding the strategy for all government Information Technology projects with respect to standards, architecture and implementation.

- Communication material for project activities such as flyers, brochures, reports and documentaries were provided as targeted.
- Connectivity was provided to county governments, to the Kenya News Agency and to the Civil Registration offices.

Outputs for Burundi.

- Technical assistance was provided for: (i) designing a legal and regulatory framework. The ICT draft law was proved by the Council of Ministers: (ii) designing a legal and regulatory framework for the digital switchover. The decree pertaining to the digital switchover was enacted: and (iii) a legal and regulatory framework for the ICT sector. This law was yet to be enacted by the Council of Ministers at project closure.
- The report on an economic evaluation and formulation of the disbursement mechanisms for a Universal Service Fund was approved and submitted to the regulatory authority of telecommunications (ARCT in French).
- The Public-Private Partnership (PPP) arrangement to support the government in preparing the negotiations with the telecom operators and other stakeholders was developed and the PPP contract was signed in May 2010.
- A communication strategy for the Executive Strategy for ICT (SETIC) was completed. The SETIC Website was implemented and operational at project closure. The design of the National Policy for the Development of the ITC sector (PNDTIC) was completed.
- Eight operators had access to the landing station at closure. This exceeded the revised target of six.
- The equipment for the virtual landing station was provided and an internet exchange point was completed. At the end of the project, the landing station was fully operational with eight operators having access and using it. The Burundi Backbone System (BB) was created as a consortium.
- 14 University Personal Computers were connected to broadband.
- The model for calculating operating costs and interconnection tariffs in the telecommunications sector was completed and submitted to the ARCT but was yet to be validated by the ARCT at project closure.
- 1,245 kilometers (km) Fiber Optic Network were built as per the revised target.

Outputs for Madagascar.

- Technical assistance was provided for the following: draft decree on the regulation of telecommunications networks and services, on interconnection, on setting tariffs for telecommunications services, on dominance, dispute settlement, interoperability of networks, infrastructure sharing, on landing stations and regulating telecommunication networks and services.
- Technical assistance was provided for developing PPP arrangements in the context of the national backbone.

Outcomes.
Kenya.

- Volume of international traffic increased to 877,775.43 Mbit/s. This exceeded both the original and revised targets of 7,500 Mbit/s and 190,000 Mbit/s respectively.

- Price of a whole international E1 capacity link (a standard measure of capacity in digital communication links) reduced to US$200 a month as per the revised target. This exceeded the original target of US$1,200 a month.
- The price of National Backbone Loop for one Mb link from Nairobi to Thika reduced by 25% from US$650 to US$200 at project closure as targeted.

Burundi.

- Volume of international traffic increased to 763 Mbit/s. This exceeded the original and revised target of 500 Mbit/s and 763 Mbit/s respectively.
- Price of a whole international E1 capacity link reduced to US$300 a month. This exceeded both the original and revised targets of 2,000 and 1,600 respectively.
- Mobile phone charges dropped from 320 fbu/mn at the baseline to 60 at closure as per the revised target. This exceeded the original target of 250 flbu/mn.
- Resale price for Internet Access (monthly price for 256 kb connection) fell from US$2,500 at the baseline to US$300 as targeted.

Madagascar.

- Volume of international traffic increased to 31,930 Mbit/s. This exceeded the original and revised targets of 1,000 Mbit/s and 21,480 Mbit/s respectively.
- Price of a whole international E1 capacity link reduced to US$442 a month. This exceeded both the original and revised targets of US$1,500 and US 1,000 a month respectively**.** This result was however mainly due to exogenous factors caused by increased competition between international access providers, that is, between the The Eastern Africa submarine System (EASSy) and the arrival of the second submarine cable (LION 2 which was extended to reach Kenya landed in Madagascar).
- Price of Internet Access (monthly US$ price for 256 kb connection) declined from US$100 at the baseline to US$14.5 at project closure. This exceeded the original and revised targets of US$80 and US$14.5 respectively.

Given that Burundi Backbone (BBs) was created with private sector participation and BBs negotiated capacity prices for operators, it is reasonable to conclude that the project activities contributed to reducing wholesale prices of international capacity (The ICR notes that since the BBs started operating only in the final project months, it was premature to know the extent to which wholesale cost reductions would translate into retail prices). Both in Kenya and in Madagascar, however, attribution is difficult, given the exogenous factors affecting the ICT market. For instance, in Madagascar, the reduction in wholesale prices was mainly was due to the increase in competition between the two international access providers. In Kenya, attribution is difficult, given that Kenya at appraisal already had a growing and competitive ICT sector. This review concludes that the project activities made a significant contribution to reducing ICT prices in Burundi and a modest contribution to reducing ICT prices in Kenya and Madagascar. The overall efficacy rating for this objective is modest.

Rating
Modest

Objective 2
Objective

To extend the geographic reach of broadband networks.

Rationale
Outputs.

- The outputs described above for the three countries were also relevant for this objective.

Other outputs for Kenya.

- The Integrated Financial Management Information System (IFMIS) to be used in various levels of National and County government was integrated to various Ministries, Departments and counties. All 47 counties at project closure had ICT road maps for assisting them in planning for ICT adoption within their counties. All counties were provided with computing equipment to execute the work with respect to IFMIS systems at the sub-county level.
- 63 entrepreneurs were supported to start digital villages (pasha centers in rural areas) with access to ICT resources to provide affordable online services to people in the community. Of these, 25 pasha centers were operational at closure.

Other Outputs for Burundi.

- The BBs with five major operators was operational at project closure and this contributed to the construction of 1,254 kilometers (Km) of fiber optic cable. The BBs also enabled the creation of Burundi government communication system (COMGOV) and Burundi Education and Research Network (BERNet), which linked 58 governmental institutions and 14 universities in October 2014.
- 34 localities (communes) had access to broadband at project closure. This exceeded the revised target of 20.

Other Outputs for Madagascar.

- 65 towers/pylons were delivered as targeted.
- 663 localities had broadband access at project closure. This exceeded the original target of 40, but was short of the revised target of 1065.

Outcomes.
Kenya.

- Volume of national traffic (Internet User Penetration) increased to 37,716,579. This exceeded the original and revised targets of 3,000,000 and 20,000,000 respectively.
- Teledensity - Access to telephone services (fixed mainlines plus cellular phones per 100 people) increased to 92.7% as compared to the original and revised targets of 36% and 84% respectively.
- 3,068,827 people (of which 52% were female beneficiaries) benefited from the project due to access to internet and telephone services, as compared to the original and revised targets of 283,500 and 620,000 respectively.

Burundi.

- The number of internet subscribers increased to 6.9% at project closure. This exceeded the target of 5%.
- Access to telephone services (fixed mainlines plus cellular phones per 100 people) increased to 35.5% as compared to the original and revised targets of 10% and 35% respectively.
- 3,061,706 people representing 50% of the population benefited from the project due to access to internet and telephone services. This exceeded the revised target of 3,003,000**.**

Madagascar.

- Access to Internet Services (number of subscribers per 100 people), which was negligible at the time of project approval, increased to 13.40% at project closure. This exceeded both the original and revised targets of 1% and 4% respectively.
- Access to telephone services (fixed mainlines plus cellular phones per 100 people) increased to 45%. This exceeded the original target of 10% but was short of the revised target of 58% respectively. This growth in access to Internet and telephone services was in remote populations in about 660 communities.
- The number of project beneficiaries at closure was (of which 51% were females) due to Internet and telephone services was 2,300,000. This exceeded the revised target of 1,995,769.

It is clear that the project activities, which included in addition providing financial resources to the individual operators contributing to the operational and institutional abilities, made a significant contribution to realizing the PDO outcome in Burundi. A beneficiary survey was carried by the ICT Board in Kenya in 2013 and in Madagascar in the summer of 2015. The ICR provides no details of the methodology carried out in the survey in Kenya but reports that Kenya had a higher internet penetration in relation to South Africa due to mobile Internet connections. According to the beneficiary survey carried out in Madagascar, out of the 1,015 individuals spread across the targeted localities, 83% of individuals believed that the project had significantly improved their communication environment with better coverage and quality of service. Given these outcomes, this review concludes that the project activities made a significant contribution to realizing the PDO of extending the geographic reach of broadband networks in the three countries.

Rating
Substantial

Objective 3
Objective

To contribute to improved government efficiency and transparency through e-government applications.

Rationale
Outputs.
Kenya.

- 65 departments adopted e-government applications at project closure. This exceeded the revised target of 20.
- 60 million records (216,00 files) had been digitized at project closure. This represented 166% of the original 130,120 files to be digitized.
- 16 applications were developed in shared services. This exceeded the target of five applications.
- 65 government agencies (including 18 ministries and 47 counties) were using Integrated Financial Management Information Systems (IFMISs) at project closure. This exceeded the original target of 10 government agencies but was short of the revised target of 71 government agencies.
- Time required to clear unreconciled items in bank reconciliation reports dropped from 180 at the baseline to 30 at project closure. This was short of the target of 15.
- The number of embeds from the open data portal increased to 66,662 as compared to the revised target of 8,000.
- 81 government agencies had online datasets. This was as per the original target but short of the revised target of 100.

Burundi.

- The e-government strategy was finalized. Government portal was launched as targeted. The Information Technology (IT) Architecture Standards and Interoperability Framework for the e-government network was completed.

Outcomes.
Kenya.

- Time required to disseminate budget reports to government gazette and the Ministry of Finance websites reduced from 90 days at the baseline to 15 days as per the revised target. This exceeded the original target of 60 days.

- Kenya's company registry (proxy for volume of electronic record events processed with the e government applications) started using automated workflow for processing new company registration and digitized an average of 5,000 records daily. There were over 3,000 queries using Short Messaging Service (SMS) and mobile payment for business names search and reservations every day, which had resulted in 4,134,277 e-registrations and transactions for business names, as of November 2016.

Burundi.

- 58 government institutions were connected to the government virtual network. This exceeded both the original and revised targets of 10 and 30 respectively.

Given that the proxies used for measuring government efficiency (the time required to disseminate budget reports to the Government gazette and Ministry of Finance websites) and transparency (the volume of electronic record events processed with e-government applications) were realistic and achieved, it is reasonable to assume that the project activities made a substantial contribution to realizing the PDO of improving government efficiency and transparency.

Rating
Substantial

5. Efficiency

Economic Analysis. An economic analysis was carried out for selected activities in the three countries.
Kenya. A detailed with and without the project economic analysis was performed for one of the e-government applications - the Kenya High Court Registrar application. The estimated investment cost for the Kenya High Court Registrar application was US$3 million. The potential economic benefits were assumed to come from the direct effects (revenues from user fees and charges) and indirect effects (cost savings due to time efficiency, back office time savings and court efficiency). Based on an econometric model, the potential net economic benefits were estimated to be about US$5.2 million.
The economic analysis was conducted for the benefits of the internet user penetration (% of population using internet) in Kenya. A World Bank study published in 2009 (*Economic Impacts of Broadband)* used a cross sectional analysis to examine the impact of ICT usage including on Gross Domestic Product (GDP) growth for 120 countries. This study suggested a robust and noticeable growth dividend from internet usage in developing countries and that all else remaining the same, a 10 percentage increase in internet usage penetration would increase GDP per capita growth by 1.21% in developing countries. This study was refined in 2013 by a paper (*Internet, Economic Growth and Recession*) that concluded that a 10 percentage increase in internet penetration rate raises GDP growth by 0.63 percentage points (ICR, page 50). Based on internet penetration in Kenya at project closure and the conclusions of the study which indicated that a 10 percentage point in internet penetration raises GDP per capita by at least 0.63 percentage points, the increase in internet penetration

yielded an average of US$147 million each year over the 2011-2016 period (ICR, page 51).
Burundi and Madagascar. An economic (with and without the project) analysis was conducted for Burundi and Madagascar at appraisal and at closure using a similar methodology. The components accounted for 12% of the cost at appraisal and 8% of the cost at closure for Burundi. These components accounted for 18% and 6% respectively of the project cost at appraisal and at closure for Madagascar. The benefits from increased penetration of fixed and mobile telephone subscribers with the project were assumed to come from: (i) savings to the individual new users from substituting 10% of their expenditure on transportation by telephone calls: and, (ii) increase in productivity in the agricultural perishable products sub-sector (ICR, page 26). The ex post Financial Internal Rate of Return was 21% as compared to the ex ante FIRR of 19%. The ex post FIRR for Madagascar Was 21% as compared to the ex ante FIRR of 20%.
Administrative and Operational Inefficiencies. There were time overruns - with the implementation period for the project being 10 years and nine months in total and different closing dates for the three participating countries, due to delays. While internal project-related factors such as procurement issues contributed to delays, the delays were exacerbated by external factors over which the project can be expected to have no control (such as the political instability following the 2008 post-election violence which led to the freezing of disbursements for all Kenya operations in the initial years and the political crisis in Madagascar in 2009 which put the entire portfolio on hold). Despite these external factors, all activities for the three countries were completed with the extended closing date (albeit a reduced scope of project activities for Madagascar given that parts of the grant were cancelled due to the political uncertainities).

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	21.00	15.00 ☐Not Applicable
ICR Estimate	✓	19.00	7.00 ☐Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The PDO objective is highly relevant for the participating countries, for the region, the Bank's strategies for the participating countries and the Bank's regional strategy. Relevance of Design is rated as Modest in view of the moderate shortcomings in design that included its scope and project timelines, as well as attribution issues. Efficacy of the first objective - to contribute to lower prices for international capacity - is rated as Substantial for Burundi and Modest for Madagascar and Kenya in view of attributional issues. Efficacy of the second PDO - to extend the geographic reach of broadband networks is rated as Substantial for the three countries. Efficacy of the third objective - to contribute to improved government efficiency and transparency through e-government applications- is rated as Substantial, in view of the appropriate proxies for measuring outcomes. Efficiency is rated as Substantial. The economic analysis for the three countries was satisfactory. Although there were extended time overruns, there were to a large extent due to external factors outside the project's control and the project activities were completed within the extended project closing date. Taking these factors into account, the overall outcome is rated as Moderately Satisfactory.

a. Outcome Rating

Moderately Satisfactory

7. Rationale for Risk to Development Outcome Rating

Government Commitment/ownership:
Kenya. Kenya now has a developed ICT sector and a liberalized telecom market with the current price of mobile broadband one of the lowest in the continent, according to the International Telecommunication Unit. Given that the government has been actively pursuing the goal of liberalizing the ICT sector, the risk to development outcome is rated as Low.
Burundi: The Burundi Backbone System (BBS) was operational when the project closed and the management of the BBS company was providing services to its members. However, due to conflict of interests in the governance of BBS, uncertainties remained as regards the ability of management to strictly enforce the open access and non-discriminatory rules to the infrastructure. The authorities had revoked the PPP status of BBS and nationalized it in January 2017, without consultation or compensation, officially on grounds that the shareholders were not respecting their contractual terms in infrastructure. Given this, the sustainability risk to development outcome is rated as Significant.
Madagascar. The activities financed under the auspices of the project was restricted to "passive" elements (that is, towers and energy solutions than active equipment such as antennas and switches) that all operators would be allowed to use and share to set up active elements (such as antennas) deployment to increase transmission capacity. Given that the passive infrastructure was built by a reputable international company in the field and managed by a well-established firm, the technical risk is low. Governance risk related to the passive infrastructure is rated as Low, given that the general terms and conditions regarding how mobile operators can lease the towers to install their own active equipment was formalized through a ten year agreement between the Communications Infrastructure Project for Madagascar (PICOM) and the consortium.

a. Risk to Development Outcome Rating

Modest

8. Assessment of Bank Performance

a. Quality-at-Entry

Given that this project was the first ICT project in the region, the project was prepared based on lessons from other regional Adaptable Program Loans (APLs) in Africa (Southern Africa Power Market Program) and from outside the region (Social and Institutional Development and Economic Management Technical Assistance Program for European Union (EU) Eight countries) as well as from other prior-Bank financed projects in other sectors in East and Southern Africa countries. Lessons incorporated at design included emphasis on capacity building, entrusting the responsibility for project preparation and implementation to the respective Ministries of ICT and making adequate provisions for communication strategy, given the number of stakeholders and implementing partners. The lending instrument used for the regional program - a horizontal APL - was appropriate, as this would enable participation of countries as and when they expressed demand and demonstrated readiness through meeting the effectiveness conditions.The project was prepared in consultation with stakeholders including academia, the private sector, civil society and other government ministries and agencies. Country-specific risks were identified at appraisal, including modest associated with the low capacity of the borrower for all participating countries and substantial risks associated with governance issues for Kenya. Appropriate arrangements were made at appraisal for M&E (discussed in section 10) and safeguards and fiduciary compliance (discussed in section 11).

As indicated in Section 3b, there were shortcomings in design: The original design was ambitious in terms of project timelines for a project involving three countries with different capacities. The project underestimated the implementation difficulties that could arise in countries with different levels of development of the ICT sector. The supervision of the project was made more complex for administrative purposes by a single project code for budget allocation (ICR, page 41). These factors contributed to the extension of the closing date in the three countries.

It is unclear if there was adequate preparation in terms of engagement with public and private stakeholders for launching and implementing PPPs in fragile countries. The risk mitigation measures for addressing risks associated with PPP arrangements were not adequate and this in turn undermined the key principles of PPP in Burundi.

There were shortcomings in M&E design (discussed in Section 10a).

Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

Supervision missions were on a bi-annual basis. The supervision missions included meetings with the relevant stakeholders, the Project Implementation Units (PIUs), relevant ministries, telecom regulators and public and private operators. The supervision team proactively responded to the needs of the respective countries through restructurings (for all countries), additional financings (for Kenya) and cancellation of components (for Madagascar in the wake of the political crisis). Although there were some disbursement delays and initial disruption to activities in Kenya following the change in Task Team Leader, these were rectified with help from the supervision team and this aided in completion of the project activities.

It is not clear if there was adequate focus on institutional reforms and laying the groundwork for future sustainability by the supervision team.

Quality of Supervision Rating
Moderately Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. Assessment of Borrower Performance

a. Government Performance
The three countries met the effectiveness conditions for the regional program and the three countries at appraisal had subscribed to an open access platform (broadly defined as equal opportunity for operators to have unfettered access to given ICT infrastructure and services under similar terms and conditions).
Kenya. The government's commitment remained strong through the project implementation phase. During implementation, the government used the project funds to equip the county governments. The government's commitment during implementation was demonstrated by its adoption of new policies (such as the disclosure policy) and by its introduction of several e-government applications throughout the different agencies and levels of government.
Burundi. The government was committed to the construction and rollout of the terrestrial backbones. Frequent shifts of key decision makers during implementation contributed to poor coordination among the planned activities.
Madagascar. Despite the political crisis, which hampered implementation of project activities, the government was committed to the construction and rollout of the 'passive' backbone infrastructure. Unlike in Kenya, the commitment to sector reforms and liberalization of the national and international communications networks remained weak during implementation in both Burundi and Madagascar.

Government Performance Rating
Moderately Satisfactory

b. Implementing Agency Performance
The Ministries in Charge of Telecommunications of the three countries were in charge of project implementation.
Kenya: The Project Implementation Unit (PIU) in Kenya was located in the ICT Board. Although there were delays in tenders due to the backlog of reviews by the Tender Committee, these were rectified during project implementation and at project closure, the revised activities were completed. Through the project period, there were no procurement, financial management and M&E issues. The performance of the implementing agency for Kenya is rated as Satisfactory.
Burundi. The implementing agency was the Executive Secretary for ICR (SETIC). SETIC facilitated the roll out of the Burundi Backbone Service (BBS). However as discussed in Section 7, there were issues associated with interactions between the regulatory and the Ministry. Although the implementing agency was in fiduciary and M&E compliance, there were delays in data collection due to the difficulty associated with getting data from the regulator.
Madagascar. The performance of the PIU in implementing the project following the resumption of the Bank's operational engagement was demonstrated by their active involvement in ensuring that the project

remained on track. There was compliance with fiduciary issues.

Implementing Agency Performance Rating
Moderately Satisfactory

Overall Borrower Performance Rating
Moderately Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design
The key outcome indicators were the same as the outcome indicators for the regional program and were industry standard indicators that covered geographic reach, usage and price of ICT. The three indicators, the volume of international traffic, the volume of national traffic and the average price of international communications which were common to the three countries were in principle, measurable and appropriate for measuring the connectivity development objective. However, it is difficult to the extent to which the outcomes could be attributed to the project activities, given that external factors could also have influenced the outcomes.
The intermediate indicators were at the country level and based on the menu of activities undertaken by each country.
There were no key indicators to track progress in sector reforms and activities aimed at liberalization of the ICT sector in the respective countries.

b. M&E Implementation
Several outcome targets were revised during implementation. The outcome indicators for monitoring Kenya-specific activities that were added during implementation - the number of users who were satisfied with the government services received through electronic delivery and improved efficiency of government agencies which adopted e Government applications - were reasonable proxies for monitoring performance with respect to government efficiency and transparency.
The data for monitoring the key outcome indicators that were industry standards came from the third party operators. The Project Implementation Unit (PIU) of each country had a dedicated M&E specialist to coordinate data collection efforts and guarantee the independence of the analysis.

c. M&E Utilization
In addition to monitoring performance, the outcome indicators statistical market data. It is not clear if the data collected was used for aiding in policy decision making.

M&E Quality Rating
Modest

11. Other Issues

a. Safeguards
The project was classified as a "Category B" project for environmental assessment purposes. Other than environmental assessment (OP/BP 4.01), one safeguard policy was triggered: Involuntary Resettlement (OP/BP 4.12).
The PAD (page 29) notes that environmental impacts were expected to be confined to temporary disruptions (such as due to the construction of ducts for laying out fiber optic networks). Land acquisition was anticipated for activities associated with the construction of the telecommunications and ancillary infrastructure. An Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) was prepared and publicly-disclosed for the program both in English and French before appraisal. Country specific ESMP and Resettlement Action Plans (RAPs) were prepared by the participating countries at appraisal and this included updates for activities that were added following the approval of AF for Kenya (ICR, page 17).
The ICR (page 17) reports that there were no environmental issues during implementation for the participating countries. No resettlement was needed for Kenya. In the case of Burundi, compensations were paid in full for 8,265 people for a total amount of Burundian Franc (BIF) 105,311,800 (equivalent of approximately US$67,000 in April 2015). 115 people were yet to be paid compensation at project closure. In the case of Madagascar, compensations were paid in full for a total amount of US56,941 under the RAP and US$9,241 for the ESMP.

b. Fiduciary Compliance
Financial Management. An assessment was made of the financial management arrangements of each participating country at appraisal (ICR, page 18). Audits and Interim Financial reports were in compliance with Bank rules and submitted in a timely fashion; there was no violation of the governance principles through the life of the project (ICR, page 18).
Procurement. The ICR (page 18) notes that compliance with procurement was deemed to be satisfactory. Although an investigation from the World Bank Integrity Vice Presidency was conducted in Kenya regarding allegations of fraud in connection with a contract for consultant service, the investigation concluded that the allegations were unsubstantiated and the matter was closed in July 2016. Given the significant delay in the conclusion of the main procurement contract, a special waiver from procurement guidelines was provided for Burundi.

c. Unintended impacts (Positive or Negative)
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d. Other

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12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	Relevance of objective is High. Relevance of design is rated Modest. Efficacy of the two sub-objectives - to extend the geographic reach of broadband networks and to contribute to improved government efficiency and transparency - is rated Substantial for the three countries. Efficacy of the third objective - to contribute to lower prices for international capacity- is rated modest representing different outcomes for the three countries and attribution issues. Efficiency is rated Substantial.
Risk to Development Outcome	Modest	Modest	---
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Substantial	---

Note
When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR Review selected the following main lessons from the ICR, with some modification of the language.
(1) Given the significant risks to incorporating PPP arrangements to large communication

infrastructure projects in fragile countries (like Burundi and Madagascar), adequate technical assistance activities need to be planned at appraisal. The experience of this project showed that project preparation did not properly anticipate the complexity of the operation, particularly in terms of engagement of the various stakeholders. In the case of Burundi, mitigation measures for addressing risks associated with PPP arrangements were not adequate and this in turn undermined the key principles of PPP, like open access.
(2) Proactivity of the supervision team can aid in implementing complex projects. In the case of this project, a willingness to adapt (such as through restructurings in case of the three countries and redesigning activities in Madagascar following the political crisis in Madagascar) helped in realizing the PDOs.
(3) In situations where the Bank needs to provide significant support during implementation, Government ownership towards sector reform is particularly important. In the case of this project, it is not clear if the supervision team focused adequately on sector reform. This contributed to the non-enforcement of activities pertaining to the enabling environment for development of the ICT sector.

14. Assessment Recommended?

No

15. Comments on Quality of ICR

The ICR is concise for the regional project that involved three countries with a different set of activities, outcomes, and performance of the project entities. The ICR was based on the ICR reports prepared separately for three countries. The ICR is analytical and candid in its analysis of efficacy and the project's M&E. The report performs an assessment of project attribution to the defined outcomes and discusses the exogenous factors that influenced the project outcomes. The ICR also derives pertinent lessons from the experience of implementing this project. There are some omissions of relevant outputs in Annex Two-Outputs, and the figures provided in Annex One (ICR, page 43) are not consistent.

a. Quality of ICR Rating

Substantial