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Report No: ICR00004013

IMPLEMENTATION COMPLETION AND RESULTS REPORT

(IDA-46010, IDA-46020, IDA-46140)

ON A

CREDIT
IN THE AMOUNT OF SDR 13.5 MILLION
(US$ 20 MILLION EQUIVALENT)
TO THE REPUBLIC OF MALAWI

CREDIT
IN THE AMOUNT OF SDR 20.9 MILLION
(US$ 31 MILLION EQUIVALENT)
TO THE REPUBLIC OF MOZAMBIQUE

CREDIT
IN THE AMOUNT OF SDR 67 MILLION
(US$ 100 MILLION EQUIVALENT)
TO THE UNITED REPUBLIC OF TANZANIA

IN A TOTAL OF SDR 101.4 MILLION FOR APL3
(US$151 MILLION EQUIVALENT)
OF A US$424 MILLION EQUIVALENT
REGIONAL ADAPTABLE PROGRAM LOAN
FOR THE
AFCC2/RI-RCIP3 - REGIONAL COMMUNICATIONS INFRASTRUCTURE PROGRAM - PHASE 3 (P111432)

JUNE 28, 2018

Transport & Digital Development Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of June 30, 2016 for Malawi)

Currency Unit	=	Malawi Kwacha (MKw)
MKw 695.38	=	US$1
US$0.6600	=	SDR 1

(Exchange Rate Effective as of June 30, 2016 for Mozambique)

Currency Unit	=	Mozambique New Metical (MZN)
MZN 63.64	=	US$1
US$0.6600	=	SDR 1

(Exchange Rate Effective as of December 31, 2017 for Tanzania)

Currency Unit	=	Tanzanian Shilling (TSH)
TSH 2248.65	=	US$1
US$0.5825	=	SDR 1

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ABBREVIATIONS AND ACRONYMS

2G	Second-generation cellular technology
APL	Adaptable Program Loan
BESTAP	Business Environment Strengthening Technical Assistance Project (World Bank Malawi Project)
BRELA	Tanzania Business Registration and Licensing Agency
BRS	Tanzania Birth and Death Registration System
CAS	Country Assistance Strategy
CMC	Community Multimedia Centers
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CSO	Civil Society Organization
EAP	Environmental Action Plan
EASSy	Eastern Africa Submarine System
e-BAU	Electronic *Balcão de Atentimento Único* (Mozambique electronic one-stop shop platform for public services)
e-RCEV	Electronic *Registo Civil e Estatísticas Vitais* (Mozambique electronic Civil Registry and Vital Statistics)
ERP	Enterprise Resource Planning
e-SISTAFE	Electronic *Sistema de Administração Financeira do Estado* (Mozambique Electronic System for State Financial Administration)
ESMF	Environmental and Social Management Framework
Gbps	Gigabits per second
GDP	Gross Domestic Product
GNI	Gross National Income
GoURT	Government of the United Republic of Tanzania
GovNet	Mozambique Government Electronic Network
GSMA	GSM Association (international trade body representing interests of mobile network operators)
ICR	Implementation Completion and Results Report
ICT	Information and Communications Technology
ICTA	ICT Association
ILMIS	Tanzania Integrated Lands Management Information System
IMF	International Monetary Fund
IRR	Internal Rate of Return
ISP	Internet Service Provider
IXP	Internet Exchange Points
JAST	Joint Assistance Strategy for Tanzania

Km	Kilometer
LGAs	Local Government Authorities
LKR	Sri Lankan Rupee (currency)
MACRA	Malawi Communications Regulatory Authority
Mbps	Megabits per second
MCT	Mozambique Ministry of Science and Technology
MDAs	Ministries, Departments, and Agencies
MEGCIP	Mozambique eGovernment and Communications Infrastructure Project
M&E	Monitoring and Evaluation
MGDS	Malawi Growth and Development Strategy
MICE	Malawi Ministry of Information and Civic Education
MNH	Muhimbili National Hospital (Mozambique)
MOF	Ministry of Finance
MoH	Ministry of Health
MoRENeT	Mozambique Research and Education Network
MST	Mozambique Ministry of Science and Technology
MTC	Mozambique Ministry of Transport and Communications
MTR	Mid-Term Review
MWTC	Tanzania Ministry of Works, Transport and Communications
NGO	Non-Governmental Organization
NPV	Net Present Value
NUIT	Número Único de Identificação Tributária (Mozambique Taxpayer Single Identification Number)
PAD	Project Appraisal Document
PAP	Project Affected People
PARPA	Mozambique Action Plan for the Reduction of Absolute Poverty
PC	Malawi Privatization Commission
PDO	Project Development Objective
PIU	Project Implementation Unit
PO-PSM	President's Office - Public Service Management (Tanzania)
PPA	Project Preparation Advance
PPP	Public Private Partnership
PPPC	Malawi Public Private Partnership Commission
PRAP	Performance Results and Accountability Project (World Bank Tanzania Project)
QAG	Quality Assurance Group
RAMD	Tanzania Records and Archives Management Department
RAP	Resettlement Action Plan
RCIP	Regional Communications Infrastructure Program
RCIPMW	Malawi Regional Communications Infrastructure Program Project
RCIPTZ	Tanzania Regional Communications Infrastructure Program Project

RITA	Tanzania Registration, Insolvency and Trusteeship Agency
RPF	Resettlement Policy Framework
SDR	Special Drawing Rights (of the International Monetary Fund)
SIGIT	Sistema de Gestão de Informações de Terras (Mozambique Land Management Information System)
SISSMO	Sistema de Informação da Segurança Social (Mozambique Social Security Information System)
SMS	Short Message Service
STM	Synchronous Mode Transfer
TCRA	Tanzania Communications Regulatory Authority
TTCL	Tanzania Telecommunications Company Limited
TTL	Task Team Leader
VLP	Virtual Landing Point

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P111432	AFCC2/RI-RCIP3 - Regional Communications Infrastructure Program - Phase 3
Country	**Financing Instrument**
Africa	Investment Project Financing
Original EA Category	**Revised EA Category**
Partial Assessment (B)	Partial Assessment (B)

Organizations

Borrower	Implementing Agency
Tanzania Ministry of Finance, Mozambique Ministry of Finance, Malawi Ministry of Finance	Tanzania Ministry of Works, Transport and Communications, Tanzania President's Office - Public Service Management, Mozambique Ministry of Science and Technology (MCT), Malawi Public Private Partnership Commission (PPPC)

Project Development Objective (PDO)

Original PDO

Project development objectives for RCIP 3 include the following: Malawi: Support the Recipient#s efforts to improve the quality, availability and affordability of broadband within its territory for both public and private users Mozambique: Support the Recipient'sefforts to contribute to lower prices for international capacity and extend the geographic reach of broadband networks and to contribute to improved efficiency and transparency through eGovernment applications. Tanzania: Support the Recipient's efforts to: (i) lower prices for international capacity and extend the geographic reach of broadband networks; and (ii) improve the Government's efficiency and transparency through eGovernment applications.

FINANCING

	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing			
IDA-46140	100,000,000	100,000,000	94,015,809
IDA-46020	20,000,000	20,000,000	19,873,776
IDA-46010	31,000,000	31,000,000	30,943,874
Total	**151,000,000**	**151,000,000**	**144,833,459**
Non-World Bank Financing			
Borrower	0	0	0
Total	**0**	**0**	**0**
Total Project Cost	**151,000,000**	**151,000,000**	**144,833,459**

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
25-Jun-2009	14-Oct-2009	22-Jun-2012	28-Feb-2015	31-Dec-2017

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
02-Aug-2010	11.79	Change in Disbursements Arrangements
20-Nov-2013	39.09	Change in Components and Cost Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Implementation Schedule
05-Jan-2015	57.34	Change in Components and Cost Change in Loan Closing Date(s) Change in Implementation Schedule
08-Feb-2015	57.34	Change in Results Framework Change in Components and Cost Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Implementation Schedule
14-Nov-2016	103.62	Change in Results Framework Change in Loan Closing Date(s) Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Moderately Satisfactory	Modest

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	23-Dec-2009	Moderately Satisfactory	Moderately Satisfactory	2.08
02	23-Jun-2010	Moderately Satisfactory	Moderately Satisfactory	2.54
03	29-Jun-2010	Moderately Satisfactory	Moderately Satisfactory	11.79
04	20-Apr-2011	Moderately Satisfactory	Moderately Unsatisfactory	14.20
05	13-Mar-2012	Moderately Satisfactory	Moderately Satisfactory	16.11
06	12-Dec-2012	Moderately Satisfactory	Moderately Satisfactory	28.44
07	28-Oct-2013	Moderately Satisfactory	Moderately Satisfactory	38.95

08	25-Jun-2014	Moderately Satisfactory	Moderately Unsatisfactory	47.40
09	16-Dec-2014	Moderately Satisfactory	Moderately Satisfactory	55.68
10	08-Jan-2015	Moderately Satisfactory	Moderately Satisfactory	57.34
11	10-Aug-2015	Moderately Satisfactory	Moderately Satisfactory	65.67
12	12-Apr-2016	Moderately Satisfactory	Moderately Satisfactory	88.07
13	12-Oct-2016	Moderately Satisfactory	Moderately Satisfactory	101.84
14	28-Jun-2017	Moderately Satisfactory	Moderately Satisfactory	114.83
15	23-Feb-2018	Satisfactory	Satisfactory	134.66
16	23-Apr-2018	Satisfactory	Satisfactory	137.32

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Public Administration	**1**
Central Government (Central Agencies)	1
Information and Communications Technologies	**97**
Public Administration - Information and Communications Technologies	22
ICT Infrastructure	60
ICT Services	10
Other Information and Communications Technologies	5
Health	**2**
Health	2

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)

Private Sector Development	**23**
Business Enabling Environment	1
Regulation and Competition Policy	1
Jobs	12
Job Creation	12
Public Private Partnerships	10
Public Sector Management	**37**
Public Administration	37
Administrative and Civil Service Reform	37
Human Development and Gender	**2**
Health Systems and Policies	2
Health System Strengthening	2
Urban and Rural Development	**47**
Urban Development	12
Urban Infrastructure and Service Delivery	12
Rural Development	35
Rural Infrastructure and service delivery	35

ADM STAFF

Role	At Approval	At ICR
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

1. Context

1. *RCIP–APL3:* At appraisal (2009), limited Information and Communications Technology (ICT) infrastructure and prohibitive ICT costs were holding back economic development in Eastern and Southern Africa (E&SA). E&SA accounted for only 0.013 percent of the world's international bandwidth capacity. In this sub-region, 250 million people did not have access to high-speed broadband Internet services, and the monthly cost of Internet was more than 100 percent of their per capita monthly income (gross national income (GNI)).

2. The Regional Communications Infrastructure Program (RCIP) was prepared as a series of regional Adaptable Program Loans (APL) to accelerate ICT infrastructure roll-out, encourage traffic demand, and support eGovernment applications[1]. The program aimed to ensure that capacity of the submarine fiber-optic cables under construction at that time along the E&SA coast[2] could be reached by inland areas of coastal countries, and in landlocked countries. It also aimed to drive ICT usage, which in turn justified private investment in ICT infrastructure.

3. RCIP was designed as a modular program, where countries would join the program as and when they became interested and ready. Kenya, Burundi, and Madagascar (RCIP-APL1) were the first countries to join. Subsequent phases included Rwanda (RCIP-APL2); Malawi, Mozambique, and Tanzania (RCIP-APL3, the subject of this ICR); Comoros (RCIP-APL4) and Uganda (RCIP-APL5).

4. The rationale for World Bank Group engagement included its extensive experience of supporting ICT investment in low- to middle-income countries, and its comparative advantage in coordinating among multiple stakeholders. The Bank's organizational structure was also appropriate to support a regional approach to ICT investment in order to take advantage of cross-country spillovers[3]. Finally, the Bank's engagement was supported by an important body of analytical work and policy dialogue, developed both in the region and globally[4].

5. *Malawi:* At appraisal, Malawi's low-income economy was benefitting from a period of stable macroeconomic management and fiscal discipline.

6. As of 2008, Malawi's mobile communications networks (2G / voice services only) covered more than 85 percent of the country. At the same time, total teledensity was only around 10 percent of the population, lower

[1] As the potential for delivering online public services was expected to increase with broadband network development and a decrease in prices.
[2] At appraisal, these were the East African Submarine Cable System (EASSy), New Partnership for Africa's Development Submarine Special Purpose Vehicle (NEPAD Submarine SPV), SEACOM, and The East African Marine System (TEAMS).
[3] ICT prices and service quality experienced in one country depend very much on the quality of networks, overall sector competitiveness and enabling environment in neighboring countries. This is particularly true for, but not limited to, landlock countries.
[4] See PAD, p. 5, for further details.

than the regional average, primarily because of high ICT costs. International connectivity was dependent on satellite connections, and it was expensive, and low-capacity. It was foreseen that this situation would improve once the submarine fiber-optic cables under construction at that time were commissioned. However, as a landlocked country, Malawi would still face the challenge of bringing capacity from the coastal landing stations into the country, through its neighbors.

7. The Government had placed a high priority on developing the ICT sector as recognized in the Malawi Growth and Development Strategy, 2006-2011 (MGDS), and was in the process of developing a National ICT Policy meant to guide its ICT sector development. The Malawi Regional Communications Infrastructure Program (RCIPMW) was designed as the main investment instrument to *increase access* to *high quality*, *affordable connectivity*. The operation supported the World Bank Malawi Country Assistance Strategy (CAS) FY07-10 in putting in place a foundation for long-term economic growth through improved infrastructure and investment climate (Outcome 2). This, in turn, also supported the country's higher-level objective of improving productive capacity and reducing the cost of doing business.

8. *Mozambique:* A low-income country, as of 2008 Mozambique was experiencing high economic growth (annual average of 6.5 percent) and high population growth.

9. Consistent with the growing economy, the ICT sector in Mozambique was also in strong expansion. Mobile service penetration (2G/voice services) had increased dramatically from 0.1 percent in 1998 to 20 percent in 2008. Coverage, however, was limited to the urban business areas (such as provincial capitals and cities) and corridors of development, while rural areas lagged behind. Internet access remained limited, with user penetration at only 0.9 percent, and was expensive[5]. Among other drawbacks, high backbone prices had a significant impact on the costs of running eGovernment applications and services. In 2007 e-SISTAFE (the Electronic System for State Financial Administration) and GovNet (Government Electronic Network) combined were spending as much as US$2-4 million per year on Internet connectivity alone. At appraisal, it was foreseen that two submarine cables (EASSy and SEACOM) would arrive at the coast of Mozambique within years (one in 2009, and the second in 2010) and it was expected that this would lead to a significant increase in Internet speed and considerable lowering of international connectivity prices.

10. Mozambique's Action Plan for the Reduction of Absolute Poverty (PARPA II) identified telecommunications infrastructure as critical to support the country's growth and the decentralization process[6]. The 2007 World Bank Country Partnership Strategy (Pillar I – Improving the Investment Climate) supported the PARPA II goals by fostering competition in the ICT sector, strengthening connectivity infrastructure, and supporting the expansion *of e-government applications* through the Mozambique eGovernment and Communications Infrastructure Project (MEGCIP).

[5] At Appraisal, a 2Mbps dedicated line for 500km cost US$7,000 per month, which was 40 to 60 times higher than the price for the United States, Europe, and Asian countries.
[6] Which included rapid scaling up in the number of provincial, district, and municipal government institutions to be linked by an electronic government network.

11. *Tanzania:* At Appraisal, this low-income country was experiencing continuous economic growth averaging about 6 percent since 2000, compared to 4 percent in the mid to late 1990s. In particular, the ICT sector's contribution to GDP had significantly increased since 2002, when a large part of the sector was fully liberalized[7].

12. In the early 2000s, Tanzania implemented a series of fundamental reforms in the ICT sector, putting in place the key ingredients of market competition, private sector participation, and independent sector regulation[8]. Voice service prices had continuously decreased since the partial privatization of the incumbent operator (TTCL). Telephony penetration increased from below 1 percent in 2000 to 32 percent at the end of 2008. At the same time, Internet penetration remained very low, and Internet access was expensive. Furthermore, access to ICT was highly concentrated in urban areas due to the limited reach of the existing ICT backbone infrastructure. Finally, connectivity was not being leveraged to deliver online public services.

13. To address these challenges, in late 2008 the Government of the United Republic of Tanzania (GoURT) launched the National ICT Infrastructure Development Program to *increase access* to *affordable connectivity* and *online public services*. Coordination among GoURT, development partners, and sector teams[9] made it possible to meet the Program's goals through different instruments: the National ICT Broadband Backbone (NICTBB) initiative[10], the Performance Results and Accountability Project (PRAP)[11] (to develop an eGovernment strategy and create an eGoverment Executive Agency), and RCIP Tanzania (RCIPTZ) (focusing on institutional strengthening for ICT policy, last-mile connectivity, and eGovernment applications for public service delivery).

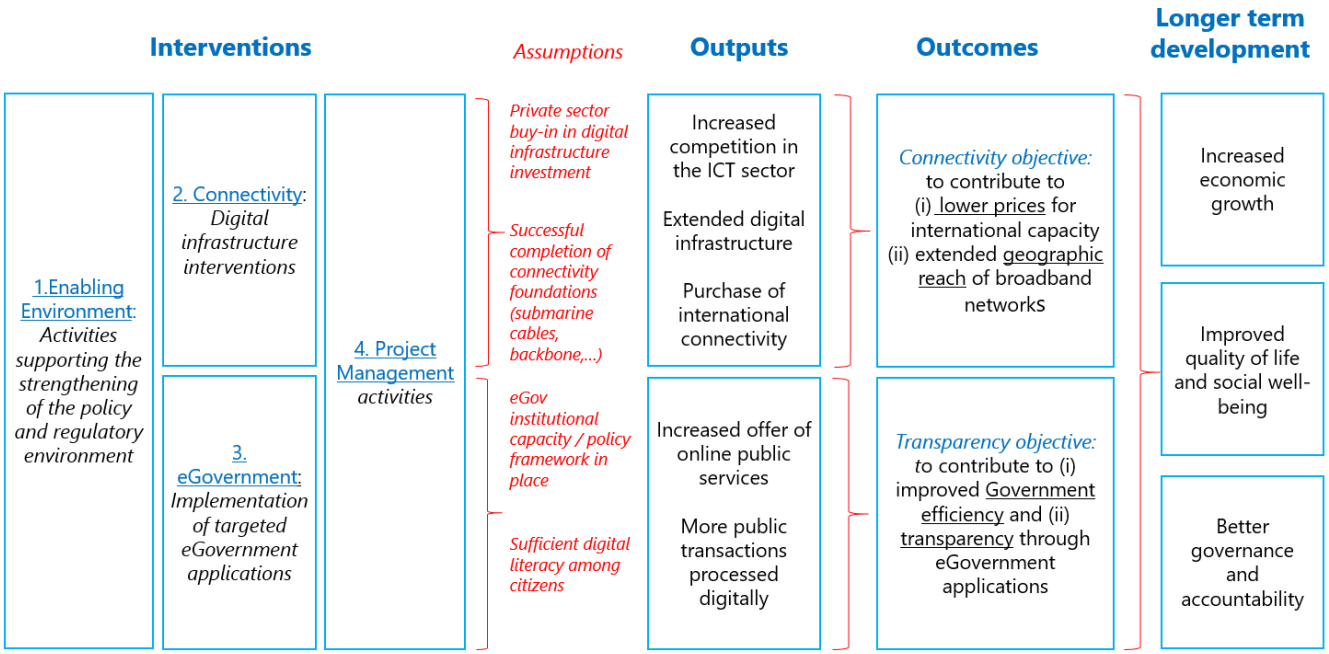
14. RCIPTZ was fully aligned with the Joint Assistance Strategy for Tanzania (JAST)[12] FY07-10 in supporting (i) growth (through improved communications infrastructure and lowered communications costs); (ii) improvement of quality of life and social wellbeing (through access to connectivity and online public service delivery); (iii) governance and accountability (through improved government efficiency and transparency).

[7] The Transport and Communications sub-sector's contribution to GDP reached approximately 7.2 percent in 2007.
[8] Key reforms included the definition of a National ICT Policy (2003), the establishment of an independent regulatory body (Tanzania Communications Regulatory Authority, TCRA), the liberalization of the telecommunications market, and the implementation of a technology-neutral converged licensing framework.
[9] See Section III for more details on coordination among development partners.
[10] Financed by a loan from the Government of China.
[11] Financed by a credit from the World Bank (P092892).
[12] The JAST is a national medium-term framework for managing development cooperation between the Government of the United Republic of Tanzania (Government) and development partners in a coordinated manner.

2. Theory of Change (Results Chain)

15. Figure 1 illustrates graphically a general results chain appropriate for the standard RCIP APL 3-type project. More detailed results chains for each part of the PDOs of each country project are presented in Annex 1.B.

Figure 1. Results chain for RCIP APL3-type projects



3. Project Development Objectives (PDOs)

16. Consistent with the overall RCIP program, the RCIP APL3 development objective is: to contribute to lower prices for international capacity, and to extend the geographic reach of broadband networks ("Connectivity objective"); and to contribute to improved Government efficiency and transparency through eGovernment applications ("Transparency objective")[13].

17. *Malawi:* To support the Recipient's efforts to improve the quality, availability and affordability of broadband within its territory for both public and private users.

[13] The PAD seems to suggest the PDO is composed of two development objectives (the Connectivity and the Transparency development objectives). In this ICR, the project's efficacy is discussed for each of these two objectives. The authors evaluate prices and coverage to be endogenous to each other, and hence recommend evaluating them together. Similarly, efficiency and transparency are very much dependent on each other, and are therefore assessed together. As a robustness check, the PDO is further subdivided into four parts (lower prices, geographic reach, efficiency, transparency), and results chains are presented for each of these four sub-objectives, in Annex 1.B.

18. *Mozambique:* To support the Recipient's efforts to contribute to lower prices for international capacity and extend the geographic reach of broadband networks and to contribute to improved efficiency and transparency through eGovernment applications.

19. *Tanzania:* To support the Recipient's efforts to lower prices for international capacity and extend the geographic reach of broadband networks; and improve the Government's efficiency and transparency through eGovernment applications.

4. Key Expected Outcomes and Outcome Indicators

20. See Annex 1.A and 1.B for a detailed description and graphical representation of Key Expected Outcomes and Indicators for each country-specific project.

5. Components

21. The RCIP program was designed as a customizable menu of options which Governments could choose from in order to adapt the scope of activities to their unique circumstances. It included the following optional components: (i) Component 1: Enabling Environment; (ii) Component 2: Connectivity; (iii) Component 3: Transparency and eGovernment applications; (iv) Component 4: Project Implementation. The content of these components, as well as details on how they were translated in the country-specific operations, are described below. Importantly, Component 3 was included only in those countries positively assessed at Appraisal in terms of eGovernment institutional readiness[14].

22. *Malawi:* Component 1 – Enabling Environment (US$2 million[15]): This component provided support to strengthen the overall enabling environment including capacity building through technical consultancies for the promotion of key ICT policy and legislation; training to government officials; analysis of environmental, social and resettlement implications of RCIPMW; and project promotion communications. Component 2 – Connectivity (US$14.5 million): This component financed digital infrastructure interventions (PPP for regional connectivity including government pre-purchase of international bandwidth, enabling the establishment of a Virtual Landing Point (VLP), and supply of broadband connectivity to institutions/rural access). Component 3 – Project Management (US$2 million): This component supported RCIPMW project management (including project coordination, procurement, financial management, Monitoring & Evaluation (M&E), and other activities). A price contingency (US$1.5 million) was included in the budget: This contingency was designed to cover unexpected increases in the price of the services obtained during the course of the project.

23. *Mozambique:* Component 1 - Enabling Environment (US$3.23 million): This component provided support for capacity building (through training and other activities); and technical assistance for launching a third mobile

[14] The eGovernment component was included in the Mozambique and Tanzania projects (as these countries were assessed to have an eGovernment institutional and policy framework already in place), but not in Malawi (PAD, p. 7).
[15] All the financial figures presented in this section refer to the original allocations in the PAD. See Annex 3 in this document for more information on actual disbursement by component.

operator, for implementing open access and infrastructure sharing regulation, and for developing cost models for backbone infrastructure. Component 2 - Connectivity (US$14.6 million): This component financed digital infrastructure interventions (government pre-purchase of international bandwidth, deployment of the GovNet); strengthening of the Internet Exchange Point (IXP); financing for equipment and bandwidth for the setup of the Mozambique Research and Education Network (MoRENet); financing for the establishment and capacity building of the National Community Multimedia Centre Program (CMC) throughout Mozambique. Component 3 - eGovernment Applications (US$10.4 million): This component supported the Government's cross-cutting and underlying activities for interoperability and commonality of hardware, software, and communications; and targeted eGovernment applications (Civil Identity Registration and Land Management, among others). Component 4 - Project Management Support (US$2.34 million): This component supported RCIP project management (including project coordination, procurement, financial management, M&E, and other activities).

24. *Tanzania:* Component 1 - Enabling Environment (US$14 million): This component provided support for field supervision of the NICTBB deployment; other technical and policy consultancies (including on the environmental and social impact of Project's activities); capacity building (through training and knowledge events); and ICT policy awareness communications campaigns. Component 2 - Connectivity (US$60 million): This component financed digital infrastructure interventions (government pre-purchase of international bandwidth with its termination equipment for priority targeted user groups; deployment of the Government Communications Network – GovNet; PPP arrangements for rural connectivity). Component 3 - eGovernment Applications (US$22 million): This component financed the design and implementation of targeted eGovernment applications (National Business Portal, National Vital Registration System, TeleMedicine system, and eProcurement, among others). Component 4 - Project Management Support (US$4 million): This component supported RCIP project management (including project coordination, procurement, financial management, M&E, and other activities).

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

1. Revised PDOs and Outcome Targets

25. The PDO was not modified during project implementation. Targets for MEGCIP PDO indicators were updated in the 2010 and 2015 restructurings to better reflect the progress achieved. Targets for RCIPTZ PDO indicators were scaled up in the 2016 restructuring to reflect progress to date and extended implementation. See Annex 1.A for more details on original and revised PDO targets.

2. Revised PDO Indicators

26. The PDO indicators were not modified during project implementation. One PDO indicator for MEGCIP, namely "User Perception of Quality of Public Services", was dropped in the 2015 restructuring as a timely survey was difficult to complete before project closing given the early delays encountered in implementation.

3. Revised Components

27. The project's components were not modified during project implementation.

4. Other Changes

28. RCIP3 processed five Level II restructurings as described below:

29. *Malawi:* At the Mid-Term Review in June 2012, the budget contingency amount of US$1.5 million was allocated to Component 3 (Project Management) because of higher than expected project management costs. The project subsequently underwent a Level II restructuring in 2013 to extend the closing date by 16 months from February 28, 2015 to June 30, 2016, and to reallocate funds among project components. The primary reason for the closing date extension was to allow enough time for implementation of the contract for a fiber optic link to provide international Internet bandwidth capacity from a private operator for Malawi (Subcomponent 2.1). The reallocation reduced the original allocation to Component 1 (Enabling Environment) from SDR 1.33 million (US$2 million equivalent) to SDR 1.26 million (US$1.895 equivalent). It increased the original allocation to Component 2 (Connectivity) from SDR 9.64 million (US$14.5 million equivalent) to SDR 9.66 million (US$14.53 million). Finally, it further increased the allocation to Component 3 (Project Management) to cover the project extension period.

30. *Mozambique:* MEGCIP underwent two Level II restructurings. In 2010 the restructuring authorized the waiver of a condition of withdrawal of proceeds for the processing of two contracts corresponding to 10 percent of the funding within the disbursement of Category 3. The waiver made possible: (i) the purchase of leased lines to interconnect MoRENet institutions in Maputo; and (ii) an Internet access contract for up to 38 sites across Mozambique, divided among three areas of the country. In 2015, a second restructuring authorized a 16-month extension of the closing date to June 30, 2016; a reallocation of proceeds between components and disbursement categories; and an amended results framework (to add additional indicators, drop obsolete indicators, and revise upward many of the existing indicator targets. See Annex 1.A for further details).

31. *Tanzania:* RCIPTZ underwent a first Level II Restructuring in 2015 to authorize an extension of the closing date (from February 2015 to December 2017). The implementation schedule was adjusted accordingly. Funds originally intended to finance the Integrated Lands Management Information System (ILMIS)[16] were reallocated to expand the scope of the eProcurement pilot. The project underwent a second Level II Restructuring to authorize an additional closing date extension (from December 2016 to December 2017). The implementation schedule was adjusted accordingly. Targets for selected PDO indicators and intermediate indicators were scaled up to reflect progress to date and the extended implementation schedule (see Annex 1.A for further details).

[16] The Government requested that the implementation of ILMIS be transferred to the Private Sector Competitiveness Project (P147951).

5. Rationale for Changes and Their Implication on the Original Theory of Change

32. The changes had no substantial implication on the projects' theory of change. See Section III.B for more details on the rationale for changes.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

33. *RCIP – APL 3:* **High.** The operation remains relevant to the World Bank regional strategy and country-specific strategies. The project is consistent with Priority Area 4 in the Africa Strategy[17], focusing on regional integration to improve connectivity, leverage economies of scale, and enhance productivity. The project fully supports the Regional Integration and Cooperation Assistance Strategy FY18-FY23, which envisages sustained investment in regional ICT connectivity, including through leveraging private financing.

34. *Malawi:* **High.** The most recent World Bank Country Assistance Strategy for Malawi (FY13-FY16, extended to FY17) identifies ICT as a priority sector to "*Promote Sustainable, Diversified, and Inclusive Growth*" (Theme 1 in the CAS), specifically through the diffusion of reliable broadband connections throughout the country.[18]

35. *Mozambique:* **High.** MEGCIP remained highly relevant to the development objectives of the Country Partnership Strategy FY12-15, which was extended to FY16[19]. Pillar I "*Competitiveness and Employment"* considers improved access to affordable telecommunications services, particularly Internet services both fixed and mobile, essential to improve access to information, doing business, and effective decentralization of services to the provinces.

36. *Tanzania:* **High.** The operation is highly relevant to the development objectives identified in the FY18-22 Tanzania Country Partnership Framework (CPF). The connectivity component is instrumental to achieve Objective 1.6 "*Enhance transport, energy and digital connectivity for improved services to rural areas*", under Focus Area 1 ("Enhance productivity and accelerate equitable and sustainable growth"). The eGovernment component is key to achieve Objective 3.3 "*Better leverage ICT to modernize the public sector*", under Focus Area 3 ("Modernize and Improve the Efficiency of Public Institutions")[20].

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[17] *http://www.worldbank.org/en/region/afr/overview#2*.
[18] Malawi Country Assistance Strategy, FY13-FY16, p. 28, para. 77: http://globalpractices.worldbank.org/finance/Knowledge%20Base/AFR/CAS/Malawi%20-%20Country%20Assistance%20Strategy%20for%20the%20period%20FY13%20-%20FY16.pdf
[19] This ICR considers the CPS in place at time of MEGCIP closing. At the time of writing this ICR, however, a more recent CPF has been approved for the period FY17-21. MEGCIP's Connectivity objective remains relevant to the CPF's objective of "*Promoting Diversified Growth and Enhanced Productivity*", and its Transparency objective remains relevant to the CPF's objective of "*Increasing Accountability and Transparency of Government Institutions*".
[20] WBG, 2018. *Country Partnership Framework for The United Republic of Tanzania for the period FY18-FY22.*

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

37. *Malawi:* **High.** RCIPMW dramatically lowered the costs and increased the availability of wholesale international bandwidth (including in geographic areas that previously had no fiber optic network coverage) and thus substantially changed the ICT sector in Malawi. All targets for the 4 PDO indicators, and targets for 4 out of 5 of the intermediate indicators were surpassed.

38. RCIPMW directly *supported the Recipient's efforts to improve the quality, availability, and affordability of broadband within its territory for both public and private users.* The project was the main financial and technical assistance instrument used by the Government to jumpstart sector development in the period under consideration. *Quality* of broadband (i.e., access to higher capacity and higher speed Internet) improved substantially as measured by the increase in international Internet bandwidth from 180 Mbps at baseline (2008) to 11,680 Mbps at project closing (2016). Broadband *availability* also improved considerably: Internet user penetration increased from 0.7 percent (2008) to 15.7 percent (2016). The *price* of a wholesale international capacity E1 link dropped from US$21,230 (2008) to US$962 (2016). According to the Government of Malawi, the price of wholesale international connectivity fell from about US$3000 per Mbit/s per month in 2013[21] to a notional cost of just US$135 for public users and US$85 for private users at project closing.

39. RCIPMW played a decisive role in bringing these results. The project provided technical and financial assistance to the deployment of a Virtual Landing Point (VLP) and the regional connectivity system to bring high-speed Internet from Tanzania and Zambia to Lilongwe and to decentralized government agencies in the country. Specifically, RCIPMW financed pre-feasibility studies; the recruitment of a Transaction Advisor to assist the Government in awarding the license for their operationalization; the creation of a PPP for regional connectivity and the pre-purchase of international bandwidth, among other activities.

40. The license for regional fiber links and the VLP was awarded to the Tanzanian firm SimbaNET in December 2013. SimbaNET completed the western regional fiber link through Zambia in August 2015 and the northern/eastern fiber link through Tanzania and permanent VLP in December 2015. The process was also helped by awareness-raising activities carried out under the project, including awareness meetings on the plans for regional connectivity and open access held with ISPs, NGOs, and CSOs, and cross-border meetings held with Malawi and Tanzania, Kenya, Burundi, and Mozambique on regulatory and other cross-border issues related to construction of the network and its regional fiber links.

41. The installation of a permanent VLP and the completion of the regional connectivity network brought low-cost, high-end bandwidth international connectivity to Malawi for the first time. The open-access principle, a key

[21] The contract between the Government and SimbaNET, the Tanzanian firm chosen to build the regional fiber links and the VLP, was signed in December 2013.

provision of the entire RCIP program, was integrated into the Government's contract with SimbaNET as well as into SimbaNET's operating telecom license. This required the firm to offer wholesale bandwidth to private operators via the VLP at the same discounted price that had been agreed for Government users, reducing a major portion of operators' costs. This enabled many more ISPs, even smaller ones, to compete in the market, thus having a downward effect on retail market prices.

42. More market players began to access capacity on submarine cables, increasing from 0 at baseline (2008) to 8 at project closing. In addition, the number of operational ISPs increased from 12 at baseline (2008) to 21 by project closing. These increases in retail market activity and maturity in turn drove more competition, shown by a reduction in the mobile market of the Herfindahl-Hirschman Index (HHI), a standard measure of market concentration, from 5777 at project launch (Q2 2009) to 5029 at project closing (Q2 2016).[22] The increased competition, along with the lower wholesale bandwidth costs, resulted in some price reduction. For example, the average price of a mobile call dropped from US$0.20 at baseline (2008) to an average of US$0.11 by project closing. Reduced international connectivity costs had a marked impact in the Internet retail market as well. The retail price of Internet access dropped from US$120 at baseline (2008) to US$5.80/MB per month by project closing.

43. Finally, RCIPMW also financed last mile broadband connectivity for 145 educational and government institutions in various districts, including rural areas, increasing availability of high-speed Internet for strategic target groups such as students, teachers, and government officials.

44. *Mozambique:* **Substantial.** As part of a broader Government strategy for ICT sector development, MEGCIP offered strategic technical and financial support to achieve selected milestones, such as the introduction of new regulation and improved competition in the ICT sector. The project also laid the foundations for increased access to online public services. Six out of 7 PDO targets were achieved or surpassed[23]. From the 12 intermediate indicators and targets, 2 were dropped, and 10 were achieved or surpassed.

45. MEGCIP successfully *supported the Recipient's efforts to lower prices for international capacity, and extend the geographic reach of broadband networks*. The number of telecommunications service providers increased from 7 (3 fixed and mobile, and 4 ISPs) in 2008 to 33 (5 fixed and mobile providers, and 28 ISPs) in 2016, country wide. Because of this change in the market structure, the international wholesale price for an E1 capacity link dropped from US$9,000 (2008) to US$787 per month (2016), the average monthly retail price of 1 Mbps broadband Internet access went down from US$140 (2008) to US$30 (2016), and the average price of a monthly 3Mbit 3G mobile data subscription dropped from US$33 (2008) to US$11 (2016). The volume of international traffic also increased from 212 (2008) to 7,755 Mbit/s (2016). Access to mobile broadband reached 25.7 percent at project closing from 0.05 percent prior to the project. Total teledensity increased from 20 percent (2008) to 69.7 percent (2016).

46. Improved legislation and regulatory reforms and tools for licensing and cost modeling of telecommunications

[22] In other words, the retail market became less concentrated, hence more competitive. Source: GSMA. This is a new indicator introduced for the ICR.
[23] One PDO indicator was dropped during the course of the Project. See Section 1.B for more information.

services facilitated by the project under Component 1 (Enabling Environment) led to increased competitiveness in the sector. In particular, technical assistance related to award of a 3rd license had a huge impact on competition and investment in the mobile market, bringing along increased access to ICT, lower ICT costs, and better-quality services. In January 2011, a third mobile operator license was awarded to Movitel, breaking the incumbent duopoly. By its first anniversary the operator had rolled out very extensive fixed and mobile network facilities with a strong rural focus that covered all 128 administrative districts of Mozambique, and free-of-charge connection of thousands of schools to the Internet. Increased competition led to a spillover effect on the incumbent operators, which also intensified the rollout of cellular services in new areas of the country, and invested in upgrading their network capacity leading to improved quality of services. Furthermore, it also lowered retail costs as the three operators were forced to compete.

47. In addition to the increased competition and access discussed above, other activities under Component 2 (Connectivity) played an important role in increasing access to connectivity for targeted groups. The deployment of GovNet connected 425 government agencies throughout the country, strategically supporting the ongoing government decentralization process. The Mozambique Research and Education Network (MoRENet) provided low-cost high-speed connection to 82 universities and research centers, in each of the country's 10 provinces. By project closing, 54 Community Multimedia Centers (CMCs) in remote areas of the country had been connected to the Internet with bandwidth varying between 1.5 and 2 Mbps for download and 512 Kbps for upload, allowing for improved access to information and education.

48. MEGCIP successfully *supported the Recipient's efforts to contribute to improved efficiency and transparency through eGovernment applications.* The volume of yearly electronic records/events processed through selected eGovernment applications increased from zero (2008) to 230,000 (2016).

49. MEGCIP financed the purchase of equipment and tools to support the interoperability of systems and databases across government, and capacity building. Specifically, the project financed the expansion of the national data center; the creation of e-BAU (electronic *Balcão de Atentimento Único*), an electronic one-stop shop platform for public services[24]; a feasibility study to promote interconnectivity among data centers and server rooms; and the purchase of software for government agencies. It is worth mentioning that the aggregate contract for software and the resulting higher bargaining power resulted in a 30 percent price reduction of this cost to the Government.

50. Additionally, the project supported the development of two eGovernment applications, accessible through e-BAU. The *Registo Civil e Estatísticas Vitais* (e-RCEV[25]), (Civil Registry and Vital Statistics) allows citizens to use mobile phones to register births and deaths, request certificates, and request personal identification cards.

[24] By the end of the project, e-BAU included 6 hosted applications: (i) Sistema de Informação da Segurança Social (SISSMO - Social Security Information System); (ii) Provincial Government Website Integration (by which each province has the same structure for their respective government sites that includes information on the province, government, services, documents, information, pictures, and district level); (iii) business registration; (iv) Número Único de Identificação Tributária (NUIT) - Taxpayer´s Single Identification Number; (v) Sistema de Gestão de Informações de Terras (SiGIT – Land Information and Management System) processed via the provincial governments; and (vi) Registo Civil e Estatísticas Vitais (e-RCEV) – Civil Registry and Vital Statistics.
[25] *http://civil.registos.gov.mz/crvs* Accessed on May 21, 2018

Additionally, e-RCEV allows the Government to receive geo-mapping of such vital records. As of May 2018, there were 2,701 births registered using this system, 733 from the capital city of Maputo. The *Sistema de Gestão de Informações de Terras*[26] *(SiGIT)* or Land Information Management System (LIMS), is an instrument to support the Government program "*Terra Segura*" *(Secure Land)*, aiming at registering 4,000 communities and 5 million land parcels under good faith or customary practice occupation, to secure tenure rights of the population. The SiGIT application verifies the information received for Community Delimitations and individual Registrations and Regularizations and establishes quality control procedures and standards to ensure data integrity and accuracy during the processing. Both SiGIT Mobile and SiGIT Cloud modules have been developed, providing additional convenience to users.

51. *Tanzania*. **Substantial.** RCIPTZ was a fundamental pillar in the realization of the GoURT's goal to increase access to affordable connectivity and online public services. In particular, the project played a key role in offering technical and financial assistance for the deployment and operationalization of the NICTBB and improving access to connectivity for targeted groups (government agencies, rural communities); it also set a solid basis for the development of digital government. All targets for the 6 PDO indicators were achieved or surpassed, and targets for 5 out of 7 intermediate indicators were met.

52. RCIPTZ successfully *supported the Recipient's efforts to lower prices for international capacity and extend the geographic reach of broadband networks*. The international wholesale price for an E1 capacity link dropped from US$10,000 per month at baseline (2008) to US$110 per month at project closing (2017), and the average monthly retail price of 1 Mbps Internet access went down from US$800 (2008) to US$16 (2017). The drop in prices went hand in hand with the increase in coverage. Coverage of mobile networks increased from 65 percent (2008) to 94.5 percent (2017). Total teledensity (fixed and mobile) increased from 32 percent (2008) to 80 percent (2017). Internet user penetration jumped to 40 percent (it was as low as 0.98 percent at baseline). An additional 2.6 million Tanzanians from remote rural areas gained access to connectivity[27].

53. One of the key initiatives contributing to sector development was the deployment of the NICTBB, financed by the Government of Tanzania with a loan from the Government of China. Throughout the deployment of the NICTBB, RCIPTZ financed field supervision of the contractor, as well as direct technical assistance for its operationalization according to the open-access principle to ensure affordability. This support was instrumental for the NICTBB to be built in accordance with technical specifications, and to be operational early on, leading to a rapid and significant increase in coverage and a considerable reduction in price[28].

54. RCIPTZ also financed the government purchase of 51,512 Mbps of international uncontested Internet bandwidth (up from 302 at baseline)[29]. The expansion in government's purchase capacity gave it increasing

[26] http://www.portaldogoverno.gov.mz/por/Cidadao/Informacao/Direito-do-Uso-e-Aproveitamento-de-Terra
[27] Additional indicator collected at ICR stage.
[28] Recent comparable experiences in other countries in the region suggest that lack of such field supervision may be directly responsible for poor requirement specifications and significant delays in the operationalization of the backbone network. See "*Implementation in crisis: How can the National Transmission Backbone Infrastructure be realized?"* (2015). Uganda Ministry of Finance, Planning and Economic Development. BMAU Briefing Paper [14/15].
[29] Available exclusively to the government as a customer, under an indefeasible right of use (IRU) directly from an undersea cable provider.

bargaining power on wholesale prices for this type of bandwidth: the monthly price per Mbps went from US$52.96 (first government purchase in 2012) to US$33.33 in 2017[30]. The availability of more affordable wholesale Internet bandwidth is being leveraged by private telecom operators in Tanzania to increase affordability of retail prices.

55. A pioneer in the use of the "Maximizing Finance for Development" approach, RCIPTZ financed subsidies to create Public Private Partnership (PPP) infrastructure investments in rural areas. These last-mile connectivity initiatives, the first of their kind in design and scope in Tanzania at the time, were extremely successful and directly responsible for the extension of connectivity to 347 rural wards and 1,393 villages.

56. The project laid the foundations for the development of eGovernment in Tanzania, *supporting the Recipient's efforts to improve the government's efficiency and transparency through eGovernment applications.* At project closing, 16,009,714 electronic events were processed yearly with eGovernment applications (up from zero at baseline), and 73.3 percent of users were either highly satisfied or satisfied with the quality of digital public services.

57. RCIPTZ financed the necessary infrastructure to launch eGovernment in the country, including the deployment of GovNet connecting 77 Local Government Agencies (LGAs) and 72 other Ministries, Department and Agencies (MDAs); the purchase of bandwidth to provide subsidized Internet services to government agencies, schools and hospitals; and the purchase of key equipment for the Government Data Center.

58. The project financed the development of the Government Mobile Platform, a one-stop shop for online public services[31], and the development of several high-development-impact eGovernment applications. In particular, RCIPTZ helped to strengthen the Birth and Death Registration System (BRS) by developing a custom application for civil registration, and by financing the supply of front-end systems for automated BRS in 60 registration sites in remote areas, plus 4 registration sites at the Registration, Insolvency and Trusteeship Agency (RITA)[32]. The Telemedicine System connected three hospitals in each region to the Muhimbili National Hospital (MNH), a national referral hospital. The National Business Portal, now integrated with the Tax Identification Number verification system, and the government Electronic Payment Gateway, provides an online one-stop shop to set up and run businesses in Tanzania. The eOffice system, currently tested in 28 government institutions, automated government daily business operations[33].

59. The Unified National eProcurement System, supported through the development of a customized application software, and related training of administrators and users, decreased room for corruption in public procurement,

[30] Additional indicator collected at ICR stage.
[31] Several mobile services are now available to citizens through the Government Mobile Platforms, such as Voter's ID Verification & Polling Station Query, Water Bill Notifications, Health Insurance Card Verification and Claim Status Query, Pension Notifications, Fuel Cap Process Notifications, and other specific institutional push and pull messages.
[32] According to interviewed beneficiaries, the time to process a birth certificate in connected sites has been reduced from an average of seven days (pre-installment of BRS) to one hour (now), allowing registered babies to get earlier access to health insurance and other services.
[33] According to self-reported estimates by civil servants operating in sites where eOffice is being tested, the average time needed to search an official document decreased from 1 hour to 2 minutes, and the average time needed to prepare an official letter decreased from 1 hour to 3 minutes.

thanks to services such as eTendering, ePurchasing, eContract, eDispute, eAuction, and ePayment. The system is integrated with other government systems (Integrated Financial Management Information System (IFMIS) at the Ministry of Finance and Planning, Short Message Service (SMS) gateway, bank payment systems, and Enterprise Resource Planning (ERP) at the Government Procurement Service Agency) to ensure cross-check of public procurement information. RCIPTZ also supported the design and implementation of an eRecords system to ensure the management and preservation of digital records for government and business needs and citizen access. More than 60,000 documents are now accessible online through this system.

60. Finally, the project provided financing for the eGovernment Publicity Program to increase awareness of the government's ICT investments and progress on ICT policy in Tanzania and citizens' awareness of digital applications and services available. A total of 20 radio and 30 TV programs were produced, aired, and uploaded online, contributing to increased visibility of Tanzania's ICT policy and programs. Increased awareness is also captured in the number of followers on the eGovernment social media pages (23,735 followers within a few months).

Justification of Overall Efficacy Rating

61. **Substantial.** RCIP-APL 3's development objectives were substantially achieved. Overall in these three countries, available international Internet bandwidth increased from 4,867 Mbps at appraisal, to 70,947 Mbps at project closing and the average monthly price of a wholesale international E1 capacity link decreased by a factor of 20. Weighted by the respective population, average Internet penetration jumped from 0.9 to 29.4; average total teledensity increased from 25 to 70.4. These impressive developments in the ICT sector did not depend solely on RCIP APL3; still, the project *substantially supported the Recipients' efforts to lower prices for international capacity and to extend the geographic reach of broadband networks* in Malawi, Mozambique, and Tanzania. In Malawi, RCIPMW was the main financial and technical assistance instrument used by the Government to jumpstart sector development in the period under consideration. In Mozambique and Tanzania, MEGCIP and RCIPTZ played an important role in coordination with other key initiatives financed by the Government.

62. Where applicable (Mozambique and Tanzania), the project *substantially supported the Recipient's efforts to contribute to improved efficiency and transparency through eGovernment applications*. Key eGovernment infrastructure was deployed; and several eGovernment applications were developed and launched, creating room for improved efficiency in key sectors for development (personal identification, health, private sector development, public administration), and promoting transparency in areas that are commonly prone to disputes and corruption (land management, public procurement). Overall, more than 16 million electronic records/events were processed with these new eGovernment applications. Information on self-reported measures of efficiency, results on users' satisfaction with online services, increased audience reached by awareness programs and social media campaigns, and enablement of key legislation for eGovernment and eProcurement all seem to confirm positive effects of efficiency and transparency.

63. The aggregate rating is based on the discussion above around achievement of the PDOs in the respective

country (see Table 1). Sixteen out of 17 PDO indicators under the three country operations were achieved or surpassed.

Table 1. RCIP APL 3 country-specific development objectives and ratings

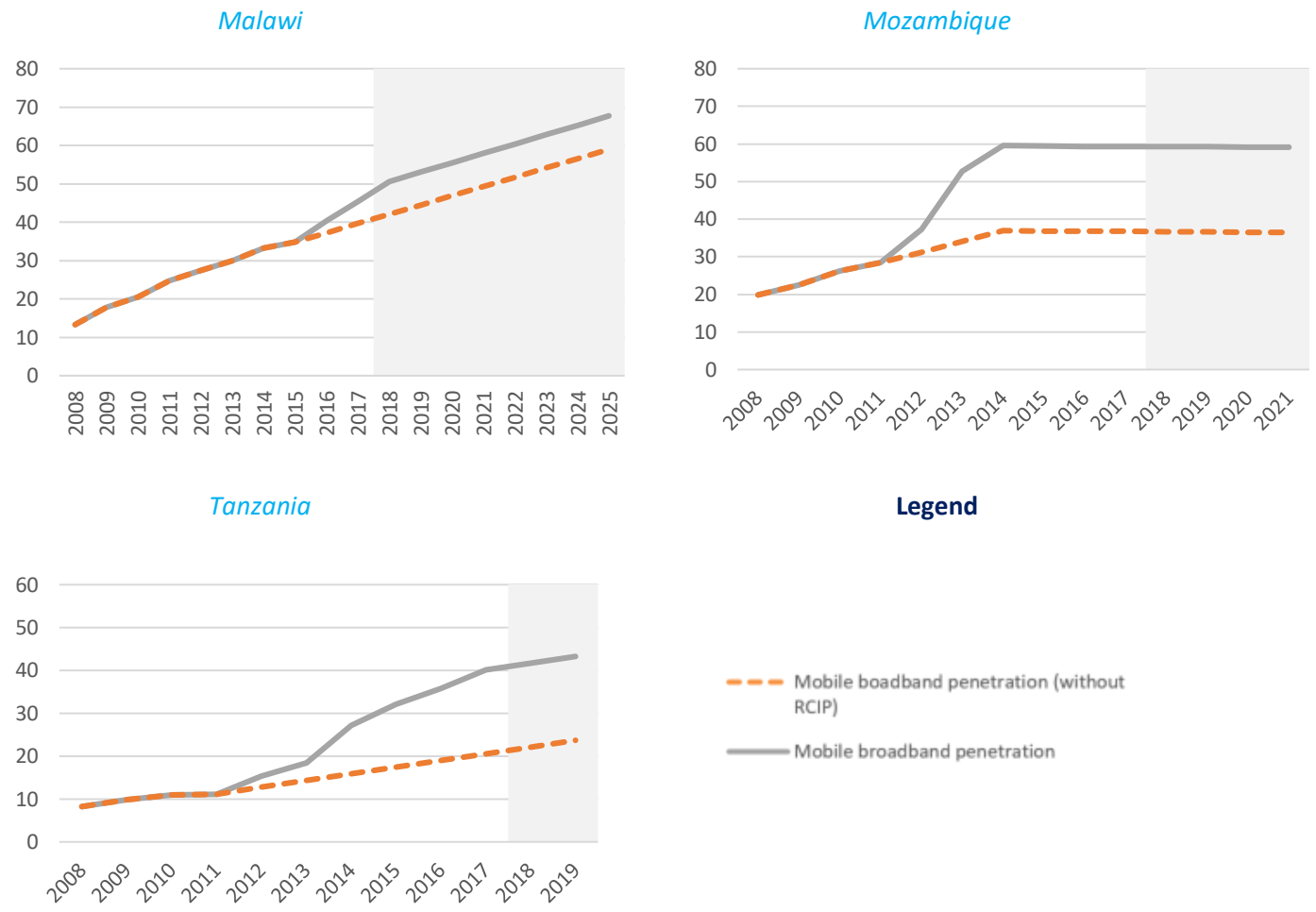
	Connectivity objective	*Transparency objective*	*Efficacy rating*
Malawi	To support the Recipient's efforts to improve the **quality**, **availability** and **affordability** of broadband within its territory for both public and private users.	Not applicable.	**High**
Mozambique	To support the Recipient's efforts to contribute to **lower prices for international capacity**, and to **extend the geographic reach of broadband networks**.	To support the Recipient's efforts to contribute to contribute to **improved efficiency and transparency through eGovernment applications**.	**Substantial**
Tanzania	To support the Recipient's efforts to contribute to **lower prices for international capacity**, and to **extend the geographic reach of broadband networks**.	To support the Recipient's efforts to contribute to contribute to **improved efficiency and transparency through eGovernment applications**.	**Substantial**

C. EFFICIENCY

Assessment of Efficiency and Rating

64. *RCIP APL 3:* **Substantial.** The Efficiency Analysis in Annex 4 presents evidence on the efficiency of the RCIP project. For each country-specific operation, it discusses the economic and social returns to some of the key activities financed under the project. Specifically, the analysis provides quantitative estimates of the economic benefits attributable to the activities supported under the Enabling Environment and Connectivity components (capturing the largest share of financial commitment in all three country operations), relative to their cost. Additionally, the analysis draws on international evidence to discuss the likely efficiency of activities supported under the eGovernment Applications component. Finally, it compares Project Management costs to administrative costs incurred in other comparable projects in the region. The aggregate rating is based on the discussion around efficiency of country-specific operations, discussed below.

Figure 2. Mobile broadband subscribers (per 100 population)



Source: Own calculations based on TeleGeography (Malawi, Mozambique) and TCRA (Tanzania).

65. *Malawi:* **Modest.** The deployment of regional fiber links and a VLP, supported by the Government of Malawi (with financing from RCIPMW, Enabling Environment and Connectivity components) and SimbaNET, was completed in 2015. By 2017, mobile broadband penetration in the country had already increased by 10 percentage points[34]. The project is estimated to create value equal US$82 to US$103 million (depending on the strictness of assumptions used) over ten years, or 0.7 percent to 0.9 percent of total Malawi GDP during 2016-2025. Discounted at 16 percent[35], the Net Present Value (NPV) of the expected contribution ranges between US$62 and US$77 million. Considering both public and private costs incurred in the PPP, the internal rate of return (IRR) on this investment is estimated to range between 30 percent and 47 percent, much above the 16 percent discount rate. The magnitude of estimated return on investments suggests that conclusions on efficiency of these components are fairly robust to even more conservative assumptions and stricter considerations on attribution.

[34] TeleGeography, GlobalComms Database, accessed May 2018.
[35] Malawi Central Bank discount rate.

66. Despite the highly positive returns, some implementation issues reduced RCIPMW's efficiency, resulting in disproportionally high project management costs (Project management component). Project management costs were 23 percent of total project costs, compared to an average of 8 percent observed among comparable connectivity projects in East and West Africa (Table 2). Some possible causes of the higher than average costs may be found in: (i) the set-up of a stand-alone Project Implementation Unit (PIU), rather than Government-paid public servants to implement the project (as has been done with other comparable connectivity projects in East and West Africa). The PIU was also relatively large, amounting to 6 to 9[36] staff depending on the implementation period; (ii) large overhead costs, including rental expenses, and per diem for public servants receiving training. On rental in particular, once it was decided to locate the PIU within the Privatization Commission (PC), RCIPMW was charged for rental space for both the PIU and the PC for the first two-and-a-half years of project implementation until the Mid-Term Review (MTR) in June 2012, when this issue was addressed; (iii) longer than envisaged implementation period.

Table 2. Project management cost as percentage of total implementation cost

	RCIP - APL 3			RCIP - APL 1			WARCIP APL 1A		WARCIP APL 1C
	Malawi	Mozambique	Tanzania	Kenya	Burundi	Madagascar	Liberia	Sierra Leone	Benin
Project management	4.5	3.2	4	11.8	2.9	1.8	1.7	1.5	1.7
Total costs	20	31	100	199.6	20.6	15.0	25.4	31.0	34.5
Project management as % of total costs	23%	10%	4%	6%	14%	12%	6%	5%	5%

Source: Own calculations based on the respective project documents.

67. *Mozambique:* **Substantial.** In Mozambique, the increased competition in the ICT market promoted under the Enabling Environment component allowed an additional 9 million Mozambicans to gain access to mobile broadband[37]. Associated economic benefits are estimated to range between US$296 and US$370 million, or 2.1 percent and 2.7 percent of total GDP created in Mozambique during the period 2012-2019. Most of these benefits was accrued in the three years after the launch of services by the third operator: mobile broadband penetration increased by 9 percentage points in 2012 with respect to the previous year, 15 percentage points in 2013, and 7 percentage points in 2014. The magnitude of estimated benefits and contribution to GDP suggests that conclusions on efficiency of these components are fairly robust to even more conservative assumptions and stricter considerations on attribution.

68. In addition to connectivity, MEGCIP also supported the development of eGovernment applications (eGovernment Component). Unfortunately, it is difficult to provide a robust estimation of expected economic benefits, as the econometric literature on eGovernment is very limited. The few studies available present country-

[36] A Project Manager, a deputy Project Manager, a Procurement Specialist, a Financial Management Specialist, a Safeguards Specialist, an M&E Specialist, and approximately 3 Assistants or Junior Staff.

[37] TeleGeography, 2017.

specific evidence that may or not apply to other countries. The Economic Analysis applies the parameters found in a recent study on Sri Lanka to the case of Mozambique, to provide an approximation of the potential economic benefit deriving from the introduction of eGovernment applications. As discussed, the external validity limitations make this a purely indicative exercise. According to this estimate, the average annual expenditure of a Mozambican household on public services would decrease from US$5.70 in 2017 to US$2.74 in 2020. At the country level, this would result in savings in household expenditure equal to US$42 million over the period 2017-2020.

69. Finally, MEGCIP's management costs (Project management component) accrued to 10 percent of total project costs. This figure is slightly higher than the 8 percent average observed among the RCIP and WARCIP projects used as comparators (see Table 2), but does not seem to indicate major inefficiencies.

70. *Tanzania:* **Substantial.** In Tanzania, the proper deployment and operationalization of the NICTBB (Phase I completed in 2010, Phase II completed in 2012) allowed landlocked regions to benefit from high-speed Internet brought along by SEACOM and EASSy. The increase in broadband penetration (from 42 percent in 2010 to 69 percent in 2017[38]) is estimated to have translated in a contribution to GDP ranging from US$1,186 to US$1,483 million, or from 1.6 percent to 2 percent of total GDP created in Tanzania during the period 2011-2020. Considering the cost incurred by the Government to deploy Phase I and Phase II of the NICTBB, plus the cost of field supervision and technical assistance financed under RCIP, the IRR on this investment is estimated to range between 27 percent and 32 percent, significantly higher than the current interest rate in Tanzania (12 percent). The magnitude of estimated return on investments suggests that conclusions on efficiency of these components are fairly robust to even more conservative assumptions and stricter considerations on attribution.

71. The same exercise used to estimate the economic benefits of eGovernment applications in Mozambique was replicated in Tanzania. Results suggest that the average annual expenditure of a Tanzanian household on public services would decrease from US$8.69 in 2017 to US$4.18 in 2020. At the country level, this would result in savings in household expenditure equal to US$122 million over the period 2017-2020.

72. Finally, RCIPTZ project management costs (Project management component) are equal to 4 percent of total project costs, a much lower proportion than the one observed in comparator countries, suggesting that the project benefitted from an efficient implementation.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

73. *Rating:* **Satisfactory**. The operation remains highly relevant to the World Bank regional integration strategy in Africa, and to the development objectives identified in the most recent CPF in Malawi, Mozambique, and Tanzania. The PDO was substantially achieved, and 16 out of 17 PDO targets under the country-specific operations were met or surpassed. Efficiency is rated substantial in Mozambique and Tanzania, and Modest in Malawi due to high project management costs as a proportion of total costs.

Table 3. Outcome ratings* by country-specific operation, and regional operation

	Malawi	*Mozambique*	*Tanzania*	*RCIP APL 3*
Relevance	High	High	High	High
Efficacy	High	Substantial	Substantial	Substantial
Efficiency	Modest	Substantial	Substantial	Substantial
Overall outcome	**Moderately Satisfactory**	**Satisfactory**	**Satisfactory**	**Satisfactory**

**The overall outcome rating for each country project is derived from the combination of the relevance, efficacy, and efficiency ratings as per Appendix H, Bank Guidance on ICR for IPF Operations.*

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

74. The project did not explicitly incorporate a gender dimension into its design or implementation. A "corporate" gender sub-indicator was added in MEGCIP and RCIPTZ but then removed in 2015 because of the impossibility of monitoring it, given the nature of project activities. In Mozambique, the CMC communication programs provide gender-specific content in Portuguese and selected local languages, such as information on domestic violence[38], women's health, nutrition during pregnancy, and girls' education[39].

Institutional Strengthening

75. Activities under the Enabling Environment components in the three country operations were designed and implemented to ensure institutional strengthening, improve the policy framework, and hence promote sustainability of achievements.

76. Under RCIPMW, about 75 Government staff from PPPC, the Ministry of Information and Civic Education, the Ministry of Finance, the Department of Information Systems and Technology Management Services, and the sector regulator MACRA were provided training under the project. The topics covered included cross-border regulation, developing new ICT legislation, the ICT Civil Service Policy, and international best practice in licensing, regulation, and legislation. In addition, the project financed technical assistance that resulted in the creation of a new Communications Act and an Electronic Transactions Act, which were approved by Parliament in July 2016, one month after project closing, and came into force in November 2016. Together, these two Acts give MACRA a much clearer and stronger role to play in the digital economy. The Communications Act is technology- and service-neutral, giving MACRA much greater flexibility to regulate and license services. It also allows MACRA to conduct economic regulation in the ICT sector, e.g., identifying dominant market players, preventing anti-competitive practices, enforcing interconnection agreements, regulating tariffs, managing spectrum, and promoting universal service. The Electronic Communications Act gives MACRA responsibilities in cybersecurity and consumer protection for electronic communications.

[38] *https://www.caicc.org.mz/index.php/radios/projecto-mulher* Accessed on May 21, 2018.
[39] *https://www.caicc.org.mz/index.php/radios/portugues* Accessed on May 21, 2018.

77. MEGCIP financed technical support and equipment to promote decentralization of government functions to all provinces and selected districts. In 2015, there were 68 district portals online providing information and services via e-BAU. Specialized ICT capacity building was provided to 11,504 government staff. Additionally, technical assistance financed under MEGCIP supported the strengthening of the ICT policy framework with a series of legislations that were passed after project closing. In 2017, after project closing, the Government approved the Electronic Transactions Law[40] that led to the establishment of an agency focused on eGovernment services (INAGE). In 2018, the Government passed the eGovernment Interoperability Framework Decree that includes provisions related to regulating and formalizing the principles of data sharing between government information systems. Finally, in 2018 the Government approved an updated ICT policy, the Information Society Policy of Mozambique.

78. In Tanzania, RCIPTZ provided technical assistance for the enactment of the Cybercrimes Act and the eTransactions Act in 2015, which significantly improved the policy framework environment for increased use of digital information. RCIPTZ also supported the strengthening of institutional capacity for eGovernment by providing 2,850 government staff with digital skills training. Additionally, the GovNet connectivity initiative, as well as some key eGovernment applications as eOffice and eRecords, contributed to strengthening the ability of the Government to provide public services in a more inclusive and efficient way.

Mobilizing Private Sector Financing

79. RCIP was a pioneer in the approach currently known as "Maximizing Financing for Development". All three country operations included a substantial participation of the private sector, while creating the enabling environment for private operators to invest.

80. In Malawi and Mozambique, the pre-purchase of international bandwidth under the project reduced investment risk for private operators and stimulated network development. This simple arrangement to incentivize private sector investment was likely more efficient than traditional Cooperative/Equity/Concession PPP models that would instead commonly require setting up complex legal arrangements (with consequent delays in implementation), and in which the government would maintain a share of ownership in the connectivity infrastructure (potentially giving it the right to interfere with the market).

81. In Tanzania, RCIPTZ adopted a very innovative reverse subsidy auction method, by which operators were competitively selected. Private partners offering the highest financial contribution to the PPP (or, in other words, requesting the lowest Government subsidy to participate to the PPP) were awarded the contract. Since all the bidders were required to meet the same technical specifications to participate in the PPP, the reverse subsidy auction method ensured the highest value for money. Additionally, the PPP model allowed the Government flexibility to choose a different operator after completion of the PPP; and did not require the Government to pay operating costs, nor to cover maintenance and technology upgrade costs.

[40] *file:///C:/Users/wb247468/Downloads/LEI_DE_TRANSACCOES_ELECTRONICAS.pdf Accessed on May 20*, 2018.

82. In Malawi, the ratio of private to public investment in the regional connectivity initiative and the establishment of the VLP was approximately 3:2. In Mozambique, Movitel alone invested US$436 million between 2011 and 2015[41]. In Tanzania, the ratio of private to public capital investment in rural connectivity was approximately 2:1, with operating costs being covered entirely by private operators.

Poverty Reduction and Shared Prosperity

83. RCIP APL3 had a strong focus on the most vulnerable population by design. In Malawi, the project reached underserved areas by supplying broadband connectivity to 145 selected public and educational institutions, most of them in rural areas.

84. Mozambique was able to extend broadband to underserved communities through the rural areas reached by Movitel. The creation of CMCs and community radios enabled the dissemination of public information and training of citizens in technology, communication, and entrepreneurship.

85. A key activity under RCIPTZ was to support the creation of a PPP to bring connectivity to rural areas. Access to mobile and Internet-based applications can extend the range of business services that become available to the rural population. A very interesting example is offered by mobile money, which in rural areas often constitutes the major channel of financial inclusion. In rural Tanzania, the percentage of adults with a mobile money account increased dramatically in just three years, from 28 percent in 2014 to 38 percent in 2017. Although there is not enough evidence to claim that this 10-percentage increase is due solely to RCIPTZ, it is reasonable to think that the project played a key role, as it was by far the largest and most far-reaching last-mile connectivity initiative implemented in Tanzania during the period under consideration.

86. There is growing evidence of the economic and social impact of mobile money. Using country-specific data from Tanzania, Economides and Jeziorski (2016) find that mobile money ameliorates significant amounts of crime-related risk arising from short-distance self-transportation and money storage. Using data from Kenya, Jack and Suri (2014) show that access to mobile money allows individuals to protect themselves against income and health risks. Individuals can draw on a wider network of social support, and they receive more remittances more quickly from more different types of people in response to negative shocks. In the longer term, the authors show that access to mobile money boosts per capita income and lowers both poverty and extreme poverty (Jack and Suri, 2016). This evidence of the impact of mobile money on poverty alone already suggests important economic arguments for investing in rural connectivity.

87. eGovernment applications financed under RCIPTZ were also designed to bring benefits to the most vulnerable population. The TeleMedicine system, for instance, improves the productivity of health resources by saving health practitioners' travel time and allowing information about patients to be sent to hospitals for analysis. Tanzania has limited availability of specialized medical equipment, doctors, and technicians. One of the consequences is that diseases are not diagnosed in time or they are diagnosed wrongly, with a negative impact on people's lives and health costs. TeleMedicine enabled people in remote areas to access new services and information that

[41] Bloomberg, 2010. *https://www.bloomberg.com/news/articles/2010-11-16/movitel-to-invest-436-million-in-mozambique-mobile-operation-by-2015*

otherwise would be unavailable. Patients in these regions can now access specialized health services through eReferral, eRadiology, and eConsultation, without having to incur expensive and time-consuming travel to Dar-es-Salaam.

Other Unintended Outcomes and Impacts

88. In Tanzania, the TeleMedicine system, set up to serve the most vulnerable population in rural areas, also had the positive spillovers of knowledge exchange between doctors and technicians from the reference hospital (Muhimbili National Hospital, MHN) and those from local hospitals, increasing capacity at the local level.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

89. *RCIP APL3:* The RCIP series was drawn from the Africa Action Plans of 2003 and 2005, which highlighted ICT's potential to leapfrog stages of development, support national development strategies and measure results, improve governance, and support drivers of growth. The RCIP umbrella program offered a customizable menu of activities, allowing Governments to choose a set of country-specific interventions, depending on their particular context, needs, and readiness. This flexible design was already praised by the Quality Assurance Group (QAG) during its review of RCIP APL 1, for its relevance and effectiveness. Its regional approach promoted a coherent and synchronized action on ICT development in the sub-region, likely leading to stronger sustainability of results and potentially positive spillovers in sector development.

90. Preparation of the three country projects benefitted from a quality review of RCIP APL 1 carried out by the World Bank QAG. Special actions and mitigation measures were put in place already at the design stage to overcome shortcomings identified in RCIP 1. Specifically, a Project Preparation Advance (PPA) was set up and used to step up project implementation capacity even before RCIP became effective; a longer implementation period was envisaged (5 versus 4 years in RCIP1); and preparatory work was undertaken prior to appraisal in order to minimize the conditions for effectiveness.

91. *Malawi:* Resources from an ongoing Bank project, the Business Environment Strengthening Technical Assistance Project (BESTAP), were available to help build implementation capacity for RCIPMW, including recruiting an ICT PPP specialist. In addition, the Privatization Commission (PC), which had already been implementing Malawi's successful privatization program and had acquired strong capacity through this and through previous Bank project experience, was chosen as the implementation agency for RCIPMW. The Government also conducted extensive consultations with stakeholders, both internally within the public sector and externally with consumers and the private sector. This allowed those stakeholders to have inputs into project design (e.g., the ownership structure of the Virtual Landing Point). An inter-ministerial Project Steering Committee was also established early on and held its first meeting during project preparation. Potential risks were adequately identified at preparation and the suggested mitigation measures undertaken were adequate

and effective.

92. *Mozambique:* A PPA was processed to carry out a comprehensive list of preliminary studies and a series of workshops to discuss sector issues and strategy, and enabled a wide participation of various institutions in the preparation of the project led by the Ministry of Science and Technology (MST), in coordination with the Ministry of Transport and Communications (MTC). Activities under the PPA included, *inter alia*: definition of the architecture of the eGovernment platform; preparation of the tender for the third mobile license; IXP structure and financial model; and draft of the CMC Program's management strategy, business model, and technical specifications.

93. *Tanzania:* RCIPTZ was designed as complementary to other ICT initiatives active in Tanzania at that time. This ensured: (i) RCIPTZ' scope was limited to those areas where the Government felt more technical assistance was needed to make the overall National ICT Infrastructure Development Program successful; (ii) Government's full ownership of the project; (iii) use of existing governance structure (e.g., the multi-Ministry ICT Steering Committee for ICT Development). Early coordination and complementarity were also ensured through the World Bank Performance Results and Accountability Project (PRAP), a public sector modernization project supporting the Government in developing an eGovernment strategy and an eGovernment Executive Agency, among other things. Potential risks were adequately identified at preparation stage. Mitigation measures were adequate and effective, but not sufficient for the specific risks related to procurement (related residual risk was correctly rated "Substantial" in the PAD) and multi-stakeholder implementation (related residual risk was correctly rated "Substantial" in the PAD).

B. KEY FACTORS DURING IMPLEMENTATION

94. *RCIP-APL 3:* Implementation of RCIP APL3 depended on the implementation of the country-specific operations in Malawi, Mozambique, and Tanzania, discussed below. With respect to coordination, project implementation documents suggest substantial knowledge sharing between Task Team Leaders (TTLs) (including sharing of key technical instruments such as bidding documents to overcome procurement issues arising in the three countries) and Project Coordinators (a joint workshop for all RCIP Project Coordinators was organized in Kenya in 2013). Some of the activities financed under one project had clear positive spillovers for the achievement of the PDO in other countries: the technical assistance financed for the proper deployment and the open-access operationalization of NICTBB in Tanzania lowered the cost of broadband for Malawi as well, as high-speed Internet from submarine cables was transiting through the NICTBB before reaching Malawi. Nevertheless, the three country projects were implemented very much independently. RCIPMW, MEGCIP and RCIPTZ invested in different activities, pursued different implementation strategies, and their implementation timelines did not coincide. From a procedural point of view, implementing three distinct projects under one World Bank administrative code probably resulted in insufficient Bank Budget for implementation support and limited flexibility and timeliness in implementation support and reporting.

95. *Malawi:* There were several positive factors during implementation that led to the successful project outcomes. Firstly, there was very good coordination among the principal Government agencies involved

throughout the project (PC, MACRA, MICE, MOF, etc.). The meetings on regulatory and other project-related cross-border issues for key Government staff with Tanzania, Kenya, Burundi, and Mozambique financed by the project were also an important factor. In addition, the Government did a very good job in continuing the process of public consultations in major cities and in rural areas to sensitize citizens on the project's objectives and secure their buy-in.

96. The project also faced several challenges during implementation. The contract to SimbaNET was awarded late in the implementation schedule, due in part to long delays in providing the necessary clearances by the World Bank procurement review committee given the unique nature of the tender/PPP arrangements and turnover in the responsible procurement team. Once SimbaNET obtained the contract and was awarded the corresponding license, it was slow to secure the necessary financing due to unforeseen complications in the due diligence process resulting from the way the company was registered and its corporate governance structure relative to the parent corporation. A Level II Restructuring was processed in November 2013 to extend the project closing date 16 months to June 30, 2016 to give adequate time for the SimbaNET contract to be finished (see Section II. B. 4. Other Changes). Intensive negotiations among the Bank team, the PIU, and the Government with SimbaNET resulted in agreement on an exceptionally fast implementation schedule once works began, which in turn enabled the fiber-optic network to be completed by December 2015, six months before project closing.

97. Negotiations between the Government, SimbaNET, and the Bank, were concluded with SimbaNET agreeing to add eight additional drop points near government centers along its network, in additional to the originally planned VLP. Through these landing points and the existing Government Wide Area Network (GWAN) plus some additional build out of new GWAN links to connect MDAs near the drop points, many MDAs were able to connect to the international capacity.

98. Because of US$-SDR exchange rate fluctuations toward the end of the project, the Government experienced a funding shortfall that threatened its final contract payment to SimbaNET, but as a result of discussions between the Bank, the Government, and the firm, the Government was able to cover the shortfall.

99. Another challenge was related to the Project Management Component. There was an overrun in project management costs, especially escalating costs related to office space (see Section II.C on Efficiency). The issue was identified at the MTR in June 2012 and the rental arrangements were modified accordingly. The allocation of funds to the project management component was increased at MTR to account for the larger-than-estimated expenses incurred up to that time and was again slightly increased in the following restructuring to account for the need to manage the SimbaNET contract within the closing data extension period.

100. *Mozambique:* In implementing the project, the Bank team adopted a commendable coordination approach with other agencies and donors to avoid overlaps and to ensure synergies, leading to some important joint results. The CMCs network, initiated by MEGCIP, was later expanded with the support of the Finnish Cooperation, UNESCO (through the Swiss Cooperation), UNDP, and private providers and foundations. The Italian Cooperation Agency offered additional financial resources to support GovNet activities. Technical coordination with the Millennium Challenge Corporation (from the United States) complemented the developments of a Land

and Management Information System. Observing the results achieved by MEGCIP in terms of sector development, IFC positively evaluated the digital maturity of the country and established new business incubators in Mozambique.

101. Project implementation also faced several challenges. The implementation of the eGovernment component was particularly complex as it involved coordination with several government agencies, "clients" for the eGovernment applications being developed under MEGCIP. Negotiations between these different stakeholders required constant follow-up by the PIU. The World Bank TTL, based in Mozambique, was also able to offer significant and continuous support.

102. The initial business model for MoRENet was not developed as recommended in the project design. While the Bank proposed a revenue generation/fee-based service model so MoRENet could build reserve funds for further capacity upgrades and to cover operating costs, the Government decided to use "an introductory period" free-of-charge model during MoRENet's inception. These seemingly diverging viewpoints between the Mozambique Government and the Bank led to some delays. Nonetheless, MoRENet was able to modify its business model and now provides its services using a fee-based model, which is anticipated to enable an upgrade of its equipment and improvement in the capacity of its personnel.

103. *Tanzania:* There were delays in project implementation, especially in its early stages. Implementation of RCIPTZ depended, in fact, on the implementation of other activities under the National ICT Infrastructure Development Program, whose main focus in 2010 was still on the NICTBB deployment. Consequently, activities under the Enabling Environment component in support of NICTBB were initiated early on, while other connectivity-related activities were delayed as the Ministry of Works, Transport and Communications (MWTC) capacity was being fully invested in the deployment of the core of the backbone. The purchase of international capacity was finalized in 2012; the first rural connectivity PPP agreements were signed in 2013; and the deployment of GovNet started only in 2014. From a sequencing point of view, it was logical for last-mile connectivity activities to be initiated only once the NICTBB was operational, although it is unclear from the PAD if this sequencing was already envisaged at preparation stage. To account for the observed implementation schedule of other activities under the National ICT Infrastructure Program upon which RCIPTZ relied, the project closing was extended from 5 to 7 years, through two Level II restructurings (see Section B.4).

104. The first tender for rural connectivity received no response from operators. The reverse subsidy auction model was new and poorly understood by local private partners. The project team (both World Bank and Government) then proactively engaged to raise private operators' interest. Consultants were hired to streamline tender procedures and accompany firms through the bidding process. The team also organized workshops to educate operators on the reverse subsidy auction model, and on the benefits of investment in rural connectivity. This intense, proactive effort was rewarded by increased participation of private partners in PPPs.

105. The eGovernment component also suffered from significant delays. The project did not envisage the development of a comprehensive eGovernment strategy and implementation plan, nor of a strong eGovernment Executive Agency to coordinate among various stakeholders developing their own eGovernment applications, as

these strategic institutional strengthening measures were part of the World Bank PRAP project. In the absence of this central agency, the implementation of this component suffered from poor coordination among the various MDAs involved (Business Registration and Licensing Agency (BRELA), Registration, Insolvency, and Trusteeship Agency (RITA), Ministry of Health (MoH), Records and Archives Management Department (RAMD)), and RCIPTZ implementing agencies. Once the eGovernment Agency started to work at full capacity, coordination improved, boosting implementation of activities under this component. Most eGovernment applications started to be developed only in 2015, and only in 2017 were all of them officially launched.

106. Finally, among the external factors resulting in a delayed implementation, it is worth noting that in remote areas unreliable access to electricity was a constraint to deployment and use of last-mile connectivity, as well as the operationalization of some eGovernment applications (Birth Registration System, TeleMedicine).

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

107. The RCIP3 Project used industry standard indicators as PDO indicators, providing consistency and well-established methodologies. It also allowed information to be aggregated across countries in order to report on progress at the regional level. However, this regional harmonization of the M&E framework might have somehow limited the adequacy of PDO indicators to fully capture results from country-specific operations. In some cases (Malawi and Tanzania, for example), the choice of indicators to be monitored took into account the type of data already monitored by the telecom regulator, which facilitated data gathering. A few indicators were dropped at restructuring as they were difficult to monitor (See Annex 1.A for further details).

M&E Implementation

108. *Malawi:* Data collection was spotty during the first part of RCIPMW, but was tightened up after MTR. The sector regulator MACRA was selected as the primary agency to carry out M&E and most of the project indicators were ones already collected by it as part of its regular sector monitoring.

109. *Mozambique:* Data was collected by a dedicated M&E specialist within the PIU from different sources. The indicators in the results framework were not among the information monitored by the regulator, which made data collection difficult at times.

110. *Tanzania:* The data was collected by MWTC, President's Office, Public Service Management (PO-PSM), and TCRA according to their respective mandates and responsibilities. As part of RCIPTZ, capacity building was provided to these institutions to support the M&E activities. The appropriate data was collected on a timely basis and made available to the Bank team.

M&E Utilization

111. *Malawi:* The PDO and outcome indicators were used by the Government as one way to monitor the implementation of ICT-related objectives in the Malawi Growth and Development Strategy II (MGDS II). The National Statistics Office (NSO) and MACRA also released a very thorough Survey on Access and Usage of ICT Services in Malawi (2014), which included RCIPMW-related indicators on penetration rates and prices of ICT services, and will do so again in 2019.

Justification of Overall Rating of Quality of M&E

112. Based on the above discussion on M&E design, implementation and utilization, the M&E quality rating is **Modest.**

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

113. The risks associated with the kind of infrastructure financed under this program are generally moderate, and the project was therefore assigned to environmental category B under OP 4.01 (Environmental Assessment). Land acquisition for terrestrial facilities triggered OP 4.12 (Involuntary Resettlement) considerations. An Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) for each country was prepared, consulted upon, and approved by the World Bank. They were published and disclosed on InfoShop and locally in each country by April 15, 2009.

114. *Malawi*: ESMP and RPF were approved before appraisal. The PIU hired an Environmental Safeguards specialist. An Environmental Action Plan (EAP) was prepared in 2014 for the deployment of the fiber-optic link, and it was approved by the Bank and the Government. At Project completion, and Environmental and Social Safeguards audit was commissioned. The audit found that the project complied with the environmental and social requirements outlined in the ESMF, RFP and EAP, although the timing of consultation and compensation procedures was not always adequate.

115. *Mozambique*: ESMP and RPF were produced in Portuguese and English and were properly consulted upon, approved, and disclosed before appraisal. The main works identified as risk-triggering were related to remodeling of existing infrastructure to accommodate the CMCs' servers; the Internet Exchange Point; a national eGovernment Operation Center; a network operating center for MoRENet; and networks in existing public/government buildings or facilities. No environmental or social issues were reported under MEGCIP.

116. *Tanzania*: ESMP and RPF were produced and were properly consulted upon, approved and disclosed before appraisal. At Project completion, and Environmental and Social Safeguards audit was commissioned. The audit report confirmed that the construction of ICT networks and infrastructure in rural connectivity sites complied with the environmental and social requirements outlined in the ESMF and RF.

Fiduciary compliance

117. RCIP-APL3 carried out an overall assessment of the financial aspects in each country. The project closure audit highlighted that (a) the fiduciary team conducted their activities in accordance with their terms of reference, (b) the Annual Work Plan and Budget was prepared in accordance with the Financial Procedures Manual and was successfully revised by the team, (c) operations have been regularly and properly recorded from an accounting point of view during the life of the project, (d) the team appropriately replenished the Designated Account when needed, (e) the team submitted Interim Financial Reports on time throughout the life of the project and in accordance with the standards, (f) the audit was conducted annually by qualified external auditors throughout the life of the project, and (g) no complaints about violation of the Governance principles nor any act of corruption were raised at any point. Annual audits were performed on a regular basis, in compliance with the World Bank's rules, with Satisfactory results.

118. The overall RCIP-APL3 disbursed 98 percent of the available funds. Malawi disbursed 100 percent of the funds, Mozambique disbursed 100 percent of the funds, and Tanzania disbursed 97.24 percent of the funds.

C. BANK PERFORMANCE

Quality at Entry

119. *RCIP 3:* The Bank team engaged in a comprehensive policy dialogue and in the development of an extensive body of analytical work that started in 2004/05, including, but not limited to: (a) Detailed Feasibility Study for the EASSy cable, co-financing with Development Bank of Southern Africa and Agence Française de Développement; (b) funding an exercise to structure backhaul network for the Eastern Loop (including Tanzania); and (c) national backbone studies on Tanzania, Malawi, and Mozambique, to estimate aggregate traffic forecasts for each country over the next decade; propose an appropriate business, commercial, and financing structure for possible PPPs; and make recommendations on the regulatory framework and needed changes. The Bank team engaged in an extensive review of the lessons learned from the QAG of RCIP APL 1, and lessons learned informed the preparation of RCIP, making it possible to anticipate some implementation risks and identify adequate mitigation measures.

120. *Malawi:* The Bank was a ready and willing partner to support development objectives that were strategic to the Government through RCIPMW. During preparation, implementation capacity was ensured by securing cross-financing from the World Bank BESTAP project, and by choosing the PC, which had already been implementing Malawi's successful privatization program, as the implementation agency (it later housed a separate PIU). All the PIU staff had been hired by project approval. The implementation arrangements were clear with responsibilities well spelled out for each agency playing a role.

121. *Mozambique:* A PPA was provided to support Mozambique with preparation of the project. Safeguard documents (ESMP and RPF) as well as technical documents were prepared. The PIU was put in place: staff were hired and all the necessary elements of the office were running by project approval.

122. *Tanzania:* Preparatory work was undertaken prior to appraisal funded by a PPA in order to expedite implementation and minimize the conditions for effectiveness. The Bank team engaged in comprehensive dialogue with national stakeholders, as well as other World Bank teams working on related projects in the country (as for instance the PRAP project). The team worked extensively to design the project in the most sustainable way possible, leveraging existing governance structures and procedures, as well as giving a primary coordination role to government staff, ensuring project ownership by the Borrowers.

Quality of Supervision

123. *Malawi:* As noted in Section III.B., the project offered valuable technical assistance in ensuring that the PPP was structured properly, that the PPP transaction proceeded smoothly, and that the new e-legislation benefitted from international best practice. The project restructuring was timely, and the proposed changes appropriate. Aide Memoires and ISRs were candid and submitted on time.

124. There were, however, some moderate shortcomings in Bank supervision. Tardiness in receiving the required procurement approvals from the Bank is among the causes of the delay in bid evaluation and contract award to SimbaNET. In addition, the significant overrun in project management costs might have been reduced if the Bank team had given greater oversight to the PIU budgets or considered other PIU arrangements earlier on in the project implementation. Finally, in the restructuring the Team missed an opportunity to update targets in the M&E framework to reflect results observed up to that time.

125. *Mozambique:* MEGCIP had the extensive support of the Bank team as the TTL was based in the country for most of the project implementation. That made it possible to offer extensive technical support and to strengthen coordination among the different actors in the Government and other stakeholders (see donor coordination details above). The restructurings were timely and appropriate given the changing circumstances and observed implementation to date. The team also took advantage of the restructuring to scale up many of the PDO and intermediate indicator targets, strengthening the relevance of the results framework.

126. Although the project funded technical assistance to support the drafting of several key ICT-related legislations, there were delays in putting these forward through the legislative process, and some were approved only after project closing, such as the Electronic Transactions Law and the eGovernment Interoperability Framework Decree, both approved in 2017. In 2018, the Government produced an update of its ICT Policy, the Information Society Policy of Mozambique.

127. *Tanzania:* The Bank's team was able to react quickly to implementation issues. An example can be found in the team's response to the low participation of private operators in the first tender for rural connectivity

PPPs (see Section III.B). The Bank team was comprised of both connectivity and digital government experts, able to offer technical support on these two different areas of implementation. The two restructurings properly responded to the implementation opportunities and challenges observed to date (reflected in extension of closing date and changes to the implementation schedule); changing circumstances (reflected in dropping activities such as the ILMIS, which fell under the scope of another operation), and progress against achievement of targets (many targets were modified to reflect results observed to date).

128. There were, however, some shortcomings in Bank supervision. The change in TTLship caused delays in implementation support. The frequency of missions was not regular during this transition period, with consequent shortcomings in both implementation support and reporting of information (Aide Memoires). Additionally, during implementation there was limited coordination with the World Bank team supervising the PRAP project, whose activities were central to the success of the eGovernment component under RCIPTZ.

Justification of Overall Rating of Bank Performance

129. Based on the considerations above, the Bank performance is rated **Moderately Satisfactory.**

D. RISK TO DEVELOPMENT OUTCOME

130. *Malawi:* ***Low.*** The risk to development outcome is low in Malawi. ICT is a key priority area for Malawi's development both in its Vision 2020 and the Malawi Growth and Development Strategy III (MGDS III). The Government and the Bank will continue to support sustainability of the achieved outcomes by investing in the follow-up *Digital Malawi Program*. The first project in this multi-phased program, the currently active *Malawi Digital Foundations Project*, aims to bring forward the objectives achieved under RCIPMW by further strengthening the policy and regulatory framework, promoting digital skills development, improving access to high-speed broadband connectivity to government, citizens, and businesses across the country, and promoting shared digital platforms and services, thus fostering overall market development.

131. *Mozambique:* ***Low.*** The risk to development outcome is low in Mozambique. ICT is a key priority area for Mozambique's development in its National Financial Inclusion Strategy 2016-2022[42]. The ICT market liberalization process is continuing, and the Government is further strengthening the ICT and eGovernment policy environment as proven by the key legislation passed after project closing (see the discussion on Institutional Strengthening in Section II.F). Among sustained results after MEGCIP completion (2016), it is also worth noting that MoRENet has grown to 110 institutions in 2017, and increased its access to international capacity to 20 Synchronous Transmission Mode (STM)-1s (3.12 Gbps) in 2018.

132. *Tanzania:* ***Low.*** The risk to development outcome is low in Tanzania. Digital development is at the top of the country's agenda, as stated in the Tanzania Development Vision 2025 (stressing the importance of both connectivity and digital government), and the Tanzania National Development Strategy 2016-2020

[42] *National Financial Inclusion Strategy 2016-2022*, Accessed on May 20, 2018.

(highlighting the critical role of digital government). The Government and the Bank are currently preparing a follow-up operation, *Digital Tanzania*, which aims to bring forward the objectives achieved under RCIPTZ through strengthening the ICT policy and regulatory framework and promoting broadband for rural communities, connected government, and shared digital platforms and services.

V. LESSONS AND RECOMMENDATIONS

133. ***Regional approach*. Although the adoption of a regional approach brought added value to the project design and significantly increased the project's likelihood of achieving sustainable objectives, the administration of the three-country operations under one World Bank administrative code was probably detrimental to implementation support.** In terms of design, RCIP APL 3 promoted a coherent and synchronized action on ICT investment in the sub-region, likely leading to positive cross-country spillovers in sector development, and stronger sustainability of results. The regional approach also favored knowledge exchange between Governments, PIUs, and Project teams working on RCIP APL 3. Nevertheless, implementing three distinct projects under one World Bank code probably resulted in insufficient Bank budget for preparation and supervision; limited flexibility in implementation support; and possibly less-than-adequate reporting (this ICR, for instance, is being published 1.5 years after completion of RCIPMW and MEGCIP due to extension of the Tanzania portion of the project. In order to minimize these drawbacks while maintaining the advantages of a regional approach, this ICR recommends developing a common, consistent, and customizable regional umbrella program for digital development in a specific region, but also ensuring that each country project is administered and implemented as a stand-alone operation.

134. ***Modular approach.* Defining a clear sequencing of activities at the preparation stage and designing the operation using a multi-phase approach could enable smoother implementation and strengthen the Project's relevance throughout its course.** From the review carried out in this ICR, a certain logical sequencing of implementation of activities is emerging. The identification of this sequencing already at the preparation stage, perhaps reflected by a modular approach, might have made a more efficiently organized implementation possible. Additionally, there exists a trade-off between time needed for proper implementation and the relevance of activities designed. This is particularly relevant in the ICT sector, where technology and priorities evolve very fast. A multi-phased approach would have allowed for more flexibility in adapting the project's design to changing circumstances in the ICT sector, or in the country context, to ensure the project's relevance throughout its life.

135. ***Coordination.* For a successful implementation of ICT sector reforms, projects within a country much be fully aligned with governments' priorities, timeline, and institutional capacity, as well as other ongoing initiatives in the country. An integrated approach is always best.** In the case of Tanzania, for instance, the achievement of project objectives and the realization of some of the activities depended directly on results pursued by the Government outside the scope of RCIPTZ. The project provided direct support to the proper deployment and operationalization of the NICTBB, even if this was not explicitly envisaged in the PAD, as the team timely and correctly recognized NICTBB as a key element to the achievement of RCIPTZ's objectives and the realization of activities under the connectivity component. On the other hand, the team was less prompt in

recognizing results to be achieved under the World Bank PRAP project as key to the progress of eGovernment activities. Establishing some formal mechanisms for collaboration already at the design stage might have helped the implementation of both projects and enabled earlier achievement of results under the eGovernment component.

136. ***Digital government.*** **The Bank might want to consider focusing its investments in building the foundations of digital government (interoperability modules and Application Programming Interfaces (APIs), cloud technology, cybersecurity, data warehouses, etc.) instead of developing specific eGovernment applications.** eGovernment applications might become obsolete during the life of the project, especially if the implementation period is significantly extended. Additionally, developing eGovernment applications requires strong coordination between different branches of government, and therefore involves significant coordination risk that the Bank might not be best placed to address.

137. ***PPP models.*** **The project proved the simplicity of PPP arrangements is incredibly important, and provided examples of different but equally effective PPP models.** In Malawi and Mozambique, the pre-purchase of wholesale bandwidth by the government created the incentives and reduced investment risk for private operators to build out new backbone infrastructure which could serve both government and the private market. This significantly reduced the investment costs for government and eliminated ongoing maintenance and operations risks and liabilities. This created many of the same benefits of alternative PPP models such as consortiums or management contracts whereby the government retains some level of shareholding/ownership of the network while avoiding complex legal arrangements for joint ownership (which can lead to delays in operationalization) and financial and operational risks (government interference in management of the network or overall market, financial liabilities for maintenance and upgrades). In Tanzania, the reverse subsidy auction model adopted for rural mobile connectivity ensured highest value for money and maximum leveraging of private financing through the competitive award process while shifting all financial and operational risk for the mobile sites and services offerings to the private sector operators. Government equity or partial/full ownership of the mobile sites would have created a more complicated legal and operational structure and risks. The positive outcomes from RCIP APL 3 suggest these models are both effective in delivering results, and efficient in their cost structure and organization, and could be adopted in future connectivity operations leveraging the “Maximizing Finance for Development” principle.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

33. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: (i) To contribute to lower prices for international capacity, and to extend the geographic reach of broadband networks ("Connectivity objective").

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: International Internet bandwith (Mbps)	Number	180.00 31-Dec-2008	400.00 28-Feb-2015		11680.00 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Internet user penetration	Percentage	0.70 31-Dec-2008	2.00 28-Feb-2015		15.70 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Total teledensity (fixed and mobile)	Percentage	12.00 31-Dec-2008	20.00 28-Feb-2015		41.80 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Price of wholesale international E1 capacity link (US$/month)	Amount(USD)	21230.00 31-Dec-2008	10000.00 28-Feb-2015		1000.00 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: International Internet bandwith (Mbps)	Number	213.00 31-Dec-2008	2500.00 28-Feb-2015	6500.00 30-Dec-2016	7755.00 30-Dec-2016
Comments (achievements against targets): Target overachieved. Target revised upwards during the 2015 restructuring to reflect observed results to date and longer implementation period.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

MOZAMBIQUE: Internet user penetration	Percentage	1.00 31-Dec-2008	5.00 28-Feb-2015	8.00 30-Dec-2016	17.45 30-Dec-2016
Comments (achievements against targets): Target overachieved. Target revised upwards during the 2015 restructuring to reflect observed results to date and longer implementation period.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Total teledensity (fixed and mobile)	Percentage	20.00 31-Dec-2008	35.00 28-Feb-2015		69.70 30-Dec-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Price of wholesale international E1 capacity link (US$/month)	Amount(USD)	9000.00 31-Dec-2008	500.00 28-Feb-2015		782.00 31-Dec-2015
Comments (achievements against targets): Target achieved at 81%.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: International	Number	302.00	3000.00	50000.00	51512.00

Internet bandwidth (Mbps)		31-Dec-2008	25-Feb-2015	31-Dec-2017	31-Dec-2017

Comments (achievements against targets): Target overachieved. The target was revised upwards in the 2016 Restructuring to reflect progress to date, and extension of closing date.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Internet user penetration	Percentage	0.98 31-Dec-2008	7.00 25-Feb-2015	40.00 31-Dec-2017	40.00 31-Dec-2017

Comments (achievements against targets): Target achieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Total teledensity (fixed and mobile)	Percentage	32.00 31-Dec-2008	50.00 25-Feb-2015	80.00 31-Dec-2017	80.00 31-Dec-2017

Comments (achievements against targets): Target achieved. The target was revised upward in the 2016 Restructuring to reflect progress to date and extension of closing date.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Price of wholesale international E1 capacity link (US$/month)	Amount(USD)	10000.00 31-Dec-2008	1000.00 25-Feb-2015	100.00 31-Dec-2017	70.00 31-Dec-2017

Comments (achievements against targets): Target overachieved. A more ambitious target was introduced with the 2016 Restructuring, to reflect progress to date, and extension of closing date.

Objective/Outcome: (iii) To contribute to improved Government efficiency and transparency through eGovernment applications ("Transparency objective").

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: User Perception of Quality of Public Services (%)	Percentage	0.00 31-Dec-2008	50.00 28-Feb-2015		0.00 30-Dec-2016

Comments (achievements against targets): Indicator dropped during the 2015 restructuring, and not monitored. A timely survey was difficult to complete before project closing given the early delays encountered in implementation.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Volume of yearly electronic records/events processed with the eGovernment applications (using Lands and Civil Registration Systems)	Number	0.00 31-Dec-2008	25000.00 28-Feb-2015		230000.00 04-Mar-2016

Comments (achievements against targets): Target overachieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

TANZANIA: User Perception of Quality of Public Services (%)	Percentage	0.00 31-Dec-2008	50.00 25-Feb-2015	31-Dec-2017	73.30 31-Dec-2017

Comments (achievements against targets): Target overachieved. Evaluated digital public services assessed are Telemedicine; Birth and Death Registration system; and e-Office system. The scale used was 1= Highly Satisfied, 2= Satisfied, 3= Moderately Satisfied, 4= Dissatisfied, 5= Not at all Satisfied. 33.3 per cent of users declared to be highly satisfied, 40 percent of the users were satisfied or moderately satisfied, 25 percent were satisfied, and 1.7 were dissatisfied.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Volume of electronic records/events processed with eGovernment applications (yearly)	Number	0.00 31-Dec-2008	3000000.00 25-Feb-2015	31-Dec-2017	16009714.00 31-Dec-2017

Comments (achievements against targets): Target overachieved.

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Direct Project Beneficiaries	Number	0.00 31-Dec-2008	1320000.00 30-Jun-2016		1065957.00 30-Dec-2016
MOZAMBIQUE: Female beneficiaries	Percentage	0.00 31-Dec-2008	0.00 30-Jun-2016	50.00	0.00 30-Dec-2016

Comments (achievements against targets): Not monitored.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Direct project beneficiaries	Number	0.00 31-Dec-2017	1320000.00 25-Feb-2015	31-Dec-2017	2619110.00 31-Dec-2017
TANZANIA: Female beneficiaries	Number	0.00 31-Dec-2017	50.00 25-Feb-2015	31-Dec-2017	0.00 31-Dec-2017

Comments (achievements against targets): "Corporate" indicator included in the 2016 Restructuring. This figure was calculated including beneficiaries of rural connectivity, GovNet, Bandwidth purchase, identification system, Telemedicine, eProcurement, eRecords. The percentage of female beneficiaries was not monitored.

A.2 Intermediate Results Indicators

Component: Component 1: Enabling Environment.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Average price of mobile calls (US$ per minute)	Amount(USD)	0.20 31-Dec-2008	0.15 28-Feb-2015		0.11 30-Jun-2016

Comments (achievements against targets): Target overachieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised	Actual Achieved at

				Target	Completion
MOZAMBIQUE: Number of operational telecommunicatons service providers (fixed, mobile/ISP)	Text	3 and 4 31-Dec-2008	5 and 8 28-Feb-2015	5 and 22 30-Jun-2016	5 and 28 30-Dec-2016
Comments (achievements against targets): Target revised in 2015 to reflect market changes, increasing the number of ISPs in the market.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Monthly price of E1 dedicated line for 500km	Amount(USD)	12000.00 31-Dec-2008	1000.00 28-Feb-2015		720.00 30-Dec-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Price of broadband Internet Access (1 Mbps, monthly, US$) - Retail price of internet services	Amount(USD)	140.00 31-Dec-2008	30.00 28-Feb-2015		30.00 30-Dec-2016
Comments (achievements against targets): Target achieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

MOZAMBIQUE: Average price of monthly 3Mbit 3G mobile data subscription	Amount(USD)	33.00 05-Jan-2015	15.00 30-Dec-2016		11.00 30-Dec-2016
Comments (achievements against targets): Target overachieved. Indicator added in the 2015 restructuring. 3G service was introduced in 2010, and this new indicator was added to reflect this type of service most commonly used by consumers at the retail level.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Average monthly price of Internet access	Amount(USD)	800.00 31-Dec-2008	400.00 28-Feb-2015	60.00 31-Dec-2017	16.00 31-Dec-2017
Comments (achievements against targets): Target overachieved. The definition of this indicator was modified in the 2016 Restructuring to reflect increased use of 1 Mbps bandwidth with respect to the 128 Kbps bandwidth (more common at the time of Appraisal but currently obsolete). Both baseline and targets were revised accordingly. The target was further revised downward to reflect the observed decreasing trends in prices.					

Component: Component 2: Connectivity

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Number of market players accessing capacity on submarine cables	Number	0.00 31-Dec-2008	6.00 28-Feb-2015		8.00 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised	Actual Achieved at

				Target	Completion
MALAWI: Retail price of Internet access (US$ per month)	Amount(USD)	120.00 31-Dec-2008	50.00 28-Feb-2015		5.80 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Number of operational ISPs	Number	12.00 31-Dec-2008	20.00 28-Feb-2015		21.00 30-Jun-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MALAWI: Number of public Internet access points	Number	400.00 31-Dec-2008	800.00 28-Feb-2015		89.00 30-Jun-2016
Comments (achievements against targets): Target underachieved. This was most likely due to market and technology evolution, as reflected in the Internet user penetration results (PDO Indicator 2), since more people started using mobile broadband during the project period, rather than public Internet access points such as Internet cafes.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

MOZAMBIQUE: Volume of traffic going through IXP: Max annual bandwith (Mbps)	Number	2.80 31-Dec-2008	28.00 28-Feb-2015	250.00 30-Dec-2016	380.00 31-Dec-2015
Comments (achievements against targets): Target overachieved. Target scaled up during the 2015 restructuring to reflect implementation to date.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Number of university campuses and research institutions with access to broadband	Number	0.00 31-Dec-2008	20.00 28-Feb-2015	50.00 30-Dec-2016	82.00 30-Dec-2016
Comments (achievements against targets): Target overachieved. MoRENet connects universities and other technical and professional institutions.Target scaled up during the 2015 restructuring to reflect implementation to date.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Number of CMCs with Internet access	Number	3.00 31-Dec-2008	30.00 28-Feb-2015	50.00 30-Dec-2016	54.00 30-Dec-2016
Comments (achievements against targets): Target overachieved. Target scaled up during the 2015 restructuring to reflect implementation to date.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

MOZAMBIQUE: Number of GovNet POPs	Number	143.00 31-Dec-2008	500.00 28-Feb-2015		567.00 30-Dec-2016
Comments (achievements against targets): Target overachieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Average monthly price of Internet access	Amount(USD)	800.00 31-Dec-2008	400.00 28-Feb-2015	60.00 31-Dec-2017	16.00 31-Dec-2017
Comments (achievements against targets): Target overachieved. The definition of this indicator was modified in the 2016 Restructuring to reflect increased use of 1 Mbps bandwidth with respect to the 128 Kbps bandwidth (more common at the time of Appraisal but currently obsolete). Both baseline and targets were revised accordingly. The target was further revised downward to reflect the observed decreasing trends in prices.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Coverage of mobile networkds (% of population)	Percentage	65.00 31-Dec-2008	90.00 28-Feb-2015	95.00 31-Dec-2017	95.00 31-Dec-2017
Comments (achievements against targets): Target achieved. The target was revised upwards in the 2016 Restructuring to reflect progress to date and the extension of closing date.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

TANZANIA: Number of Government institutions connected to Government network (GovNet)	Number	0.00 31-Dec-2008	22.00 28-Feb-2015	149.00 31-Dec-2017	149.00 31-Dec-2017
Comments (achievements against targets): Target achieved. The target was revised upwards in the 2016 Restructuring to reflect progress to date and the extension of closing date.					

Component: Component 3: Transparency and eGovernment applications

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Percentage of ministries adhering to established standards for ICT	Percentage	0.00 31-Dec-2008	65.00 28-Feb-2015		0.00 30-Dec-2016
Comments (achievements against targets): This indicator was dropped on 2016 restructuring, as it did not measure results from activities financed by the project.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Number of sectoral eGovernment applications using the Enterprise Service Bus	Number	0.00 31-Dec-2008	5.00 28-Feb-2015		6.00 30-Dec-2016
Comments (achievements against targets): Target overachieved. The following e-Government application are using enterprise service bus: Mozambique Social Security Information System (SISSMO); Court Case Registration; Infrastructure Management System (SGIT); Taxpayer´s Single Identification Number					

(NUIT); Land Information and Management System (SiGIT), and Vital Statistics and Civil Registrations (e-RCEV)

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Establishment of an Integrated Civil Registry system	Text	No system in place 31-Dec-2008	50% of citizens records entered into system 28-Feb-2015		0 30-Dec-2016

Comments (achievements against targets): This indicator was dropped, as this activity has been primarily funded outside of the project, by UNICEF and other donors.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MOZAMBIQUE: Cost savings of introducing framework contract for software licenses across government (contract aggregation)	Amount(USD)	0.00 31-Dec-2008	30.00 28-Feb-2015		30.00 30-Dec-2016

Comments (achievements against targets): Target achieved. New indicator added in the 2015 restructuring to reflect actual activities undertaken and cost savings achieved directly attributable to the project.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Number of	Number	0.00	4.00		6.00

Ministries with operational eGovernment applications		31-Dec-2008	28-Feb-2015	31-Dec-2017	31-Dec-2017

Comments (achievements against targets): Target overachieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Ratio of walk-in requests for land records compared to electronic requests	Text	100:0 31-Dec-2008	70:30 28-Feb-2015	31-Dec-2017	Not applicable. 31-Dec-2017

Comments (achievements against targets): This indicator was dropped in the 2016 Restructuring. This implementation of this activity had been transferred under the Private Sector Competitiveness Project (P147951), making this indicator irrelevant in the context of RCIPTZ.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Number of patients served by telemedicine system (including eDiagnosis, eRadiology, and eConsultations)	Number	0.00 31-Dec-2008	1500.00 28-Feb-2015	31-Dec-2017	129.00 31-Dec-2017

Comments (achievements against targets): Target not achieved. The telemedicine system was launched only in 2017, much later than originally expected.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised	Actual Achieved at Completion

				Target	
TANZANIA: Number of sites connected to the Vital Registrations System	Number	5.00 31-Dec-2008	60.00 28-Feb-2015	31-Dec-2017	60.00 31-Dec-2017
Comments (achievements against targets): Target achieved.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Number of hits on the Business Portal websites (yearly)	Number	0.00 31-Dec-2008	2000.00 28-Feb-2015	31-Dec-2017	401.00 31-Dec-2017
Comments (achievements against targets): Target not achieved. Although an Online Registration System was available already in 2015, the National Business Portal intended as a one-stop-shop for business registration, licensing and other services, including electronic payments, was launched only in 2017, later than what was originally foreseen at appraisal.					

Component: Component 4: Project Implementation

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Average per minute cost of national mobile call (TSh)	Amount(USD)	276.00 31-Dec-2008	180.00 28-Feb-2015	300.00 31-Dec-2017	251.00 01-Jul-2015

Comments (achievements against targets): This indicator was dropped in the 2016 Restructuring as change in trends in this indicator were not directly linked to activities financed under RCIPTZ. The indicator was not monitored afterwards.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
TANZANIA: Annual investments in the ICT sector	Text	US$ 200m 31-Dec-2008	US$ 400m 28-Feb-2015	31-Dec-2017	Not applicable. 31-Dec-2017

Comments (achievements against targets): This indicator was dropped in the 2016 Restructuring as it was not considered to be directly linked to the RCIPTZ project. The indicator was not monitored, as it was cumbersome to get data from private operators.

A. KEY OUTPUTS BY COMPONENT

Malawi

Inputs	Outputs	Outcomes	Development Objective:
Cross-border meetings with Tanzania, Kenya, Burundi, Mozambique on regulatory and other project cross-border related issues Recruitment of consultant to conduct feasibility study for regional connectivity and Virtual Landing Point Recruitment of Transaction Advisor	Creation of PPP for regional connectivity Award of license for regional fiber links and a Virtual Landing Point to SimbaNET Western regional fiber link completed in August 2015 Northern/Eastern fiber link and permanent Virtual Landing Point completed in Dec 2015 7755 Mbps of international bandwidth (up from 1687.40 at baseline)	Indicator chosen to measure this was international Internet bandwidth. Baseline was 180 and target value was 400 Mbps, but it had skyrocketed to 11,680 by project closing.	(i) Support the Recipient's efforts to improve the quality of broadband within its territory for both public and private users

Inputs	Outputs	Outcomes	Development Objective
Cross-border meetings with Tanzania, Kenya, Burundi, Mozambique on regulatory and other project cross-border related issues Recruitment of consultant to conduct feasibility study for regional connectivity and Virtual Landing Point Recruitment of Transaction Advisor	Creation of PPP for regional connectivity Award of license for regional fiber links and a Virtual Landing Point to SimbaNET Western regional fiber link completed in August 2015 Northern/Eastern fiber link and permanent Virtual Landing Point completed in Dec 2015 11,680 Mbps of international bandwidth (up from 180 at baseline)	US$962 per month was the international wholesale price of E1 capacity link at project closing (down from US$21,230 at baseline) Price of international connectivity fell to US$135 per Mbit/s for public users and US$85 at project closing from US$3000 at project launch Average price of mobile calls was US$0.11 per minute at project closing (down from US$0.20 at baseline) Retail price of Internet access was US$5.80/MB per month at project closing (down from US$120 at baseline)	(ii) Support the Recipient's efforts to improve the affordability of broadband within its territory for both public and private users

Inputs	Outputs	Outcomes	Development Objective
Last mile broadband connectivity procured in three phases for institutions in rural areas	145 educational and government institutions in various districts supplied with last mile broadband connectivity	15.7% Internet user penetration at project closing (up from 0.7% at baseline)	(iii) Support the Recipient's efforts to improve the availability of broadband within its territory for both public and private users
Cross-border meetings with Tanzania, Kenya, Burundi, Mozambique on regulatory and other project cross-border related issues Recruitment of consultant to conduct feasibility study for regional connectivity and Virtual Landing Point Recruitment of Transaction Advisor	Creation of PPP for regional connectivity Award of license for regional fiber links and a Virtual Landing Point to SimbaNET Western regional fiber link completed in August 2015 Northern/Eastern fiber link and permanent Virtual Landing Point completed in Dec 2015 11,680 Mbps of international bandwidth (up from 180 at baseline)	41.8% total teledensity at project closing (up from 12% at baseline) 21% of population covered by mobile networks at project closing (up from 10% at project effectiveness) (GSMA)	

Mozambique

Inputs (Enabling Environment)	Outputs	Outcomes	Development Objective:
Advisory support to update Mozambique's ICT laws and regulatory framework.	• Telecomm and Broadband strategies • Updated legislation for the telecomm sector • Regulatory tools for licensing • Cost modeling of telecomm services	Traffic data on the backbone US$787 per month is the international wholesale price for E1 capacity link (down from US$9,000 at baseline) US$11 the average monthly price of 1 Mbps Internet access (down from 33 at baseline) US$30 Broadband Internet service (from 140) 17% internet User penetration (from 0.05%)	(i) Support the Recipient's efforts to lower prices for international capacity
Advisory support for the Mozambique National Institute of Communications (INCM), National Institute of ICT (INTIC) business incubator	• migration from analog to digital TV in the cities of Maputo, Beira, Quelimane, Nampula, Pemba and Tete • Strategic Telecommunications Infrastructure Map & Database (SGIT) • Award of the third mobile operator license – Movitel		
Provision of broadband connectivity to selected public, educational and technical institutions	• 54 CMC in rural areas and connected with high quality internet service.		
support investments for rural areas. provision of shared community access points (Community Media Centers - CMC)	• Provision of IT equipment, technical assistance and capacity building for the Land Information Management System in six provinces (Maputo, Gaza, Tete, Inhambane, Sofala, and Manica)		

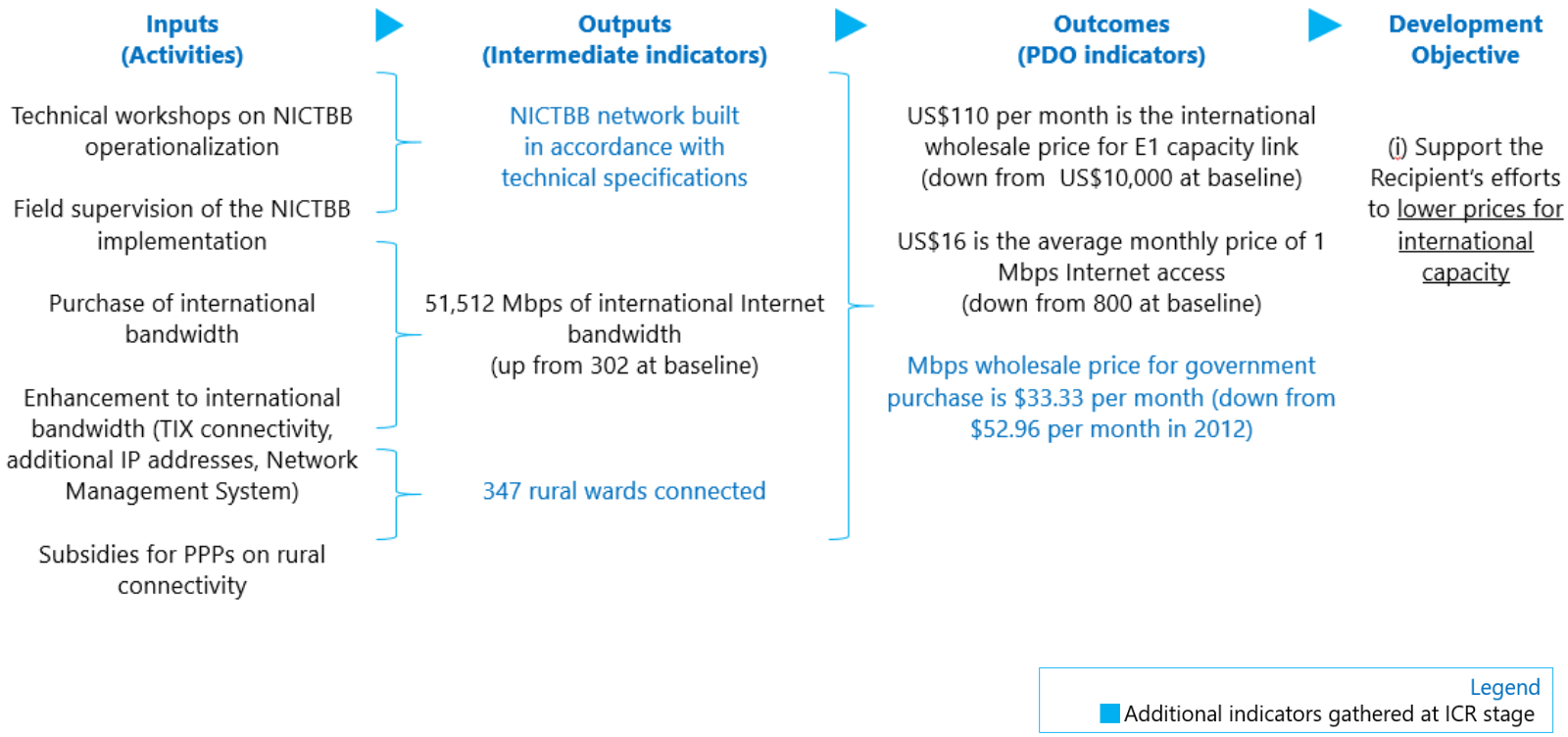
Legend
■ Additional indicators gathered at ICR stage

Inputs (Connectivity)	Outputs	Outcomes	Development Objective:
Advisory support and equipment to Mozambique Research and Education Network (MoRENet). Provision of broadband connectivity to selected public, educational and technical institutions	• Connectivity and Network Equipment Contracts • 82 institutions linked through MoRENet and 16 wireless campuses • Strategy for revenue generation and value added services • Connection to UbuntuNET • 54 Community Media Centers properly equipped, connected to high quality internet service and a sustainable business model	40% access to internet services (up from 0.05% at baseline) 80% total teledensity (mixed and mobile) (up from 32% at baseline) 69.7% access to telephone services (up from 20% at baseline)	(ii) Support the Recipient's efforts to extend the geographic reach of broadband networks
Advisory support and equipment to Community Media Centers (CMC)	• 21,000 citizens have received various forms of computer and other trainings at the CMCs (some to certification level) • 74,000 citizens with internet connectivity to access telemedicine services and diagnoses, agricultural extension and market information • 123,945 citizens have accessed other services (photocopying, etc.).	82 University Campus and Reseach Institutions with Broadband access (from 0 at baseline) 534 CMCs With Internet (down from 3 at baseline)	
Advisory support and equipment Mozambique Internet Exchange Point (MOZIX)	• MOZIX association was formally approved as an independent legal entity by the Ministry of Justice on May 20, 2016	380 Mbps Volume of traffic going through IXP: Max annual bandwidth (from 2.8)	

Inputs (e-Gov Applications)	Outputs	Outcomes	Development Objective:
Deployment of GovNet Purchase of international bandwidth	149 government institutions connected to GovNet	567 Number of GovNet POPs (from 143)	(iii) contribute to improved efficiency through eGovernment applications.
eGovernment Fundamentals to support the interoperability of systems and databases across government as well as commonality of hardware, software and communications	6000 Microsoft licenses to the Gov Instinst. Provision of IT equipment, technical assistance and capacity building for the Land Information Management System in six provinces (Maputo, Gaza, Tete, Inhambane, Sofala, and Manica)	250,000 Volume of Electronic Record processed by eGov Applications (from 25,000) 6 number of eGov application (from 0)	
Support for targeted eGovernment Applications	Social Security (SISSMO), legal registration, infrastructure management system (SGIT), Tax filing (NUIT), Land registrations System (SiGIT), and Civil Registry (e-RCEV)	30% cost savings from software licensed	

Inputs (e-Gov Applications)	Outputs	Outcomes	Development Objective:
Deployment of GovNet Purchase of international bandwidth	149 government institutions connected to GovNet	567 Number of GovNet POPs (from 143) 250,000 Volume of Electronic Record processed by eGov Applications (from 25,000) 6 number of eGov application (from 0) 30% cost savings from software licensed	(iv) contribute to improved transparency through eGovernment applications.
eGovernment Fundamentals to support the interoperability of systems and databases across government as well as commonality of hardware, software and communications	6000 Microsoft licenses to the Gov Instinst. Provision of IT equipment, technical assistance and capacity building for the Land Information Management System in six provinces (Maputo, Gaza, Tete, Inhambane, Sofala, and Manica)		
Support for targeted eGovernment Applications	Social Security (SISSMO), legal registration, infrastructure management system (SGIT), Tax filing (NUIT), Land registrations System (SiGIT), and Civil Registry (e-RCEV)		

Tanzania



Note: International Internet bandwidth was identified as a PDO indicator at time of Appraisal. In the case of RCIPTZ, the ICR Team evaluates this indicator to measure outputs, rather than outcomes. Average monthly price of Internet access was identified as an intermediate indicator at time of Appraisal. The ICR Team evaluates this indicator to measure outcomes, rather than outputs. These proposed changes have been supported by participants to the RCIP APL 3 ICR Workshop (3 April 2018). During the workshop, organized in preparation for the ICR, TTLs and team members who worked at the three country-projects came together to discuss projects outcomes and lessons learned in their respective countries.

Inputs	Outputs	Outcomes	Development Objective:
Technical workshops on NICTBB operationalization Field supervision of the NICTBB implementation	NICTBB Network built in accordance with technical specifications	40% internet user penetration (up from 0.98% at baseline) 80% total teledensity (mixed and mobile) (up from 32% at baseline) 94.5% coverage of mobile networks (up from 65% at baseline) +2.6 million population from rural areas with access to network	(ii) Support the Recipient's efforts to extend the geographic reach of broadband networks
Deployment of GovNet	149 government institutions connected to GovNet		
Purchase of international bandwidth	51,512 Mbps of international Internet bandwidth (up from 302 at baseline)		
Subsidies for PPPs on rural connectivity	347 rural wards connected		

Inputs	Outputs	Outcomes	Development Objective
Technical support to policymaking capacity at MoWTC	Enactment of the Cybercrimes Act	73.3% users highly satisfied or satisfied with quality of digital public services (no data at baseline)	(iii) Support the Recipient's efforts to improve the government's efficiency through eGovernment applications
ICT Training to Government Staff	2,850 Government staff trained	3 minutes to fill in an official letter (down from 1 hour in absence of eGov)	
Deployment of GovNet	149 government institutions connected to GovNet	2 minutes to search a documents (down from 1 hour absence of eGov)	
Purchase of international bandwidth	129 patients served by the telemedecine system (up from 0 at baseline)	1 hour to get Birth or Death registration (down form 7 days in absence of eGov)	
Purchase of equipment for Government Data Center	40 sites connected to the Vital Registrations System (up from 5 at baseline)		
Development of eGovernment applications	eOffice management system in 28 government institutions		
Development of the Government Mobile Platform	16,009,714 electronic records/events processed yearly with eGov apps (up from 0 at baseline)		

Inputs	Outputs	Outcomes	Development Objective
Technical support to policymaking capacity at MoWTC	Enactment of the E-Transactions Act	Increased access to public documents through eRecords Decreased room for corruption through the Unified ePayments and eProcurement Systems Increased awareness as captured by 23,735 followers on social media visualized/liked eGov programs	(iv) Support the Recipient's efforts to improve the government's transparency through eGovernment applications
ICT Training to Government staff	2,850 Government staff trained		
Development of the Unified National eProcurement system Purchase of equipment for Government Data Center Development of eGovernment applications (National Business Portal, eProcurement, eRecords) Development of the Government Mobile Platform eGovernment Publicity Program	60,000 archived documents accessible through eRecords 16,009,714 electronic records processed yearly with eGov apps (up from 0 at baseline) (eProcurement?) 41 programs aired to increase awareness about eGovernment applications		

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Supervision/ICR	
Rajendra Singh	Task Team Leader(s)
Gisbert Joseph Kinyero, Winter M. Chinamale, Raymond Joseph Mbishi	Procurement Specialist(s)
Michael Eriu Okuny	Financial Management Specialist
Mather B. Pfeiffenberger	Team Member
Tasneem Rais	Team Member
Shri Vasantt Kumar Jogoo	Environmental Safeguards Specialist
Monica Sawyer	Team Member
Naomi J. Halewood	Team Member
Justina Kajange	Team Member
Faith-Lucy Matumbo	Team Member
Edward Charles Anderson	Team Member
Timothy John Charles Kelly	Team Member
Bernard O. Olayo	Team Member
Sara Troiano	Team Member
Boyenge Isasi Dieng	Social Safeguards Specialist

89. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY08	18.989	79,278.71

FY09	82.063	497,814.34
FY10	1.665	12,865.61
FY18	0	4,653.00
Total	**102.72**	**594,611.66**
Supervision/ICR		
FY10	45.776	265,928.58
FY11	55.037	266,058.55
FY12	35.138	283,169.57
FY13	53.012	283,231.07
FY14	51.774	345,880.02
FY15	36.239	259,166.59
FY16	46.622	304,866.44
FY17	37.728	175,660.97
FY18	40.632	190,782.22
Total	**401.96**	**2,374,744.01**

ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US$M)	Actual at Project Closing (US$M)*	Percentage of Approval (US$M)
MALAWI - Component 1: Enabling Environment	2.0	2.0	100%
MALAWI - Component 2: Connectivity	14.5	13.4	93%
MALAWI - Component 3: Project Management	2.3	4.5	191%
MALAWI - Price contingency	1.5	0	
MOZAMBIQUE - Component 1: Enabling Environment	3.2	4.3	132%
MOZAMBIQUE - Component 2: Connectivity	14.6	15.5	106%
MOZAMBIQUE - Component 3: eGovernment	10.4	6.6	63%
MOZAMBIQUE - Component 4: Project Management Support	2.3	3.2	135%
TANZANIA - Component 1: Enabling Environment	14	6	43%
TANZANIA - Component 2: Connectivity	60	63	105%
TANZANIA - Component 3: eGovernment Applications	22	20	91%
TANZANIA - Component 4: Project Management Support	4	4	100%
Total	**151**	**143**	**94%**

ANNEX 4. EFFICIENCY ANALYSIS

1. This Annex presents evidence to support the efficiency of the RCIP project. For each country-specific operation, it discusses the economic and social returns to some of the key activities financed under the project. Specifically, the analysis provides quantitative estimates of the economic benefits attributable to the activities supported under the Connectivity component (the largest component in terms of financial commitment in all the three country operations), relative to their cost. Additionally, the analysis draws on international evidence to discuss the likely efficiency of activities supported under the eGovernment Applications component. Finally, it compares Project Management costs to administrative costs incurred in other comparable projects in the region.

2. At appraisal, an economic analysis was prepared for the three country projects. All estimates in terms of expected increase in the number of mobile, Internet, and broadband users were surpassed at completion. The economic analysis in the PAD provides estimations of some specific economic benefits expected from the activities financed (in Malawi, +US$86 million in tax revenues to the Government over a 10-year period; in Mozambique, +US$205 million from investment in connectivity; in Tanzania, +0.11 percent of GDP in ten years due to lower transportation costs among rural residents following increased access to connectivity). No IRR was estimated at appraisal.

3. Overall, results from this economic analysis confirm the efficiency of RCIP investment supporting broadband expansion in Malawi, Mozambique, and Tanzania. In Malawi, the project is estimated to contribute US$82 to US$103 million[43] to national GDP[44], or 0.7% to 0.9% of total GDP forecast to be created in Malawi during 2016-2025[45]. In Mozambique, benefits from the entry of the third operator are estimated to range between US$296 and US$370 million, or 2.1% and 2.7% of total GDP created in Mozambique during 2012-2019. In Tanzania, the increase in broadband is estimated to have translated into a contribution to GDP ranging from US$1,186 to US$1,483 million, or from 1.6% to 2% of total GDP created in Tanzania during 2011-2020. The magnitude of estimated benefits and return on investments (30% to 47% in Malawi, 27% to 32% in Tanzania) suggest that conclusions on RCIP efficiency are fairly robust with more conservative assumptions and stricter considerations on attribution.

4. Unfortunately, due to lack of country-specific data on household expenditure on public services, or generally applicable parameters from international evidence, this analysis is unable to present robust quantitative estimations of the expected impact of eGovernment applications implemented in Mozambique and Tanzania. Preliminary calculations, however, suggest that the average annual expenditure of a Mozambican household on public services would decrease from US$5.70 in 2017 to US$2.74 in 2020, thanks to the introduction of online services. At the country level, this would result in savings in household expenditure equal to US$42 million over the period 2017-2020, more than 4 times the amount invested in this component. In Tanzania, average annual

[43] Assuming Sepulveda's conversion factor's lower (0.48) or upper (0.60) bound.
[44] Measured in constant prices, US$2011.
[45] IMF Economic Outlook.

household expenditure on public services would decrease from US$8.69 in 2017 to US$4.18 in 2020[46]. At the country level, this would result in savings in household expenditure equal to US$122 million over the period 2017-2020, more than 5 times the amount invested in this component. This exercise, together with arguments from the international literature on expected economic and social benefits from eGovernment, points to a satisfactory efficiency of the eGovernment component.

5. Project management costs (as a percentage of total implementation costs) of RCIP in Malawi, Mozambique and Tanzania were compared to project management costs incurred in six recently completed regional connectivity projects in East and West Africa. This comparison suggests that project management costs were very high in Malawi, average in Mozambique, and low in Tanzania, pointing at some inefficiencies in Malawi, and some efficiency gains in the case of Tanzania.

Connectivity

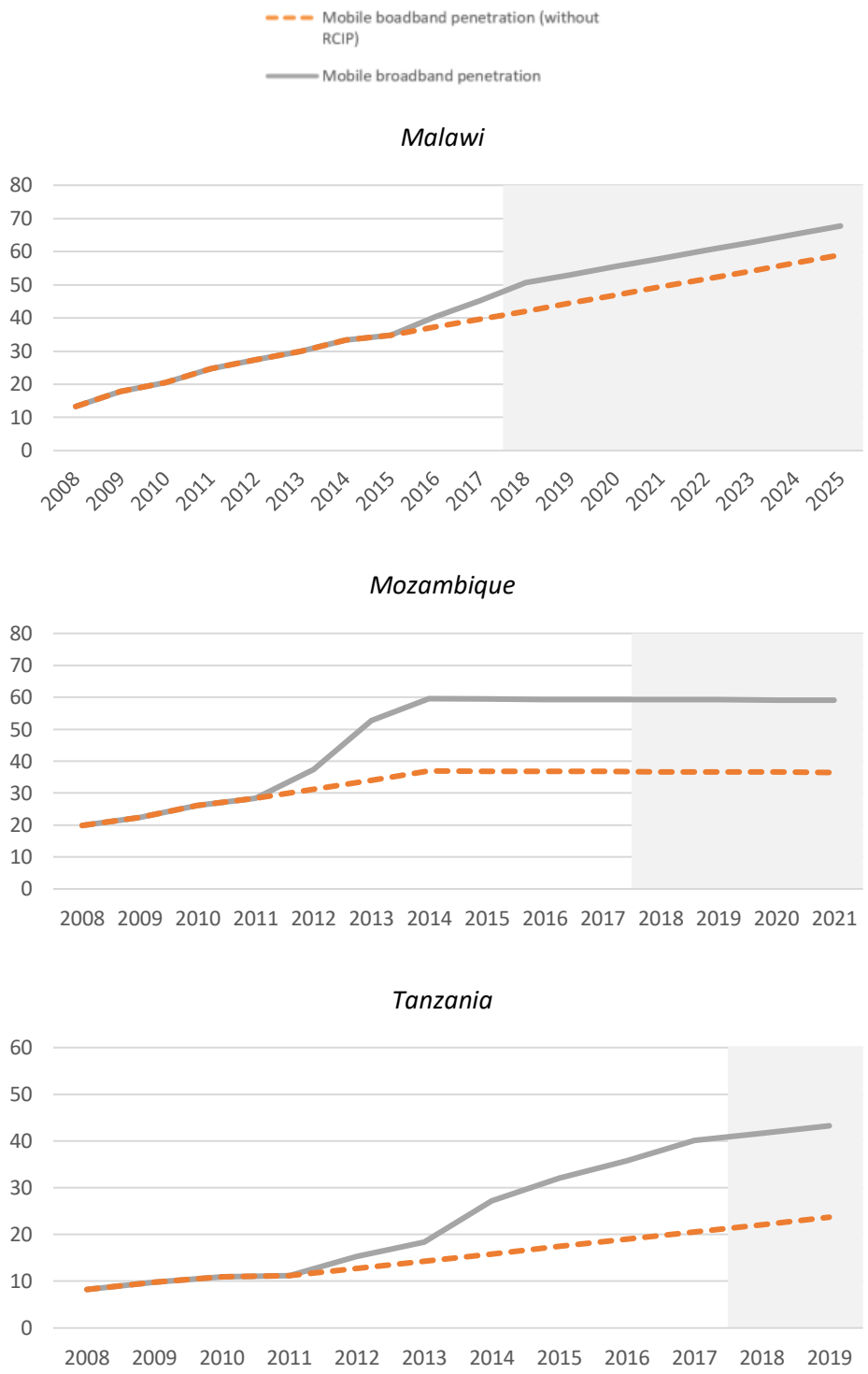
Broadband penetration

6. The activities financed under the operations in Malawi, Mozambique and Tanzania, played a key role in increasing access to broadband, and particularly mobile broadband, in these three countries in Eastern Africa[47]. In Malawi, the deployment of regional fiber links and a VLP, supported by the Government of Malawi with financing from RCIPMW, and SimbaNET, was completed in 2015 and by 2017 has already led to a 10-percentage point increase in mobile broadband penetration (TeleGeography, 2017). In Mozambique, an additional 9 million Mozambicans gained access to mobile broadband (TeleGeography, 2017), thanks to the opening of the ICT market to a third operator following the change in the regulatory framework (strongly supported by MEGCIP). In Tanzania, the proper deployment and operationalization of the NICTBB (Phase I completed in 2010, Phase II completed in 2012) allowed internal regions to benefit from the high-speed Internet brought along by SEACOM and EASSy. Internet penetration in Tanzania increased from 10 percent in 2009 to 40 percent in 2017 (TCRA, 2017).

7. To quantify economic benefits from RCIP activities supporting broadband, this analysis applies the following steps: (i) it estimates the economic benefits from increased access to mobile broadband in Malawi, Mozambique, and Tanzania; (ii) it simulates the trend in broadband penetration in the absence of RCIP; (iii) based on points (i) and (ii) above, it calculates a counterfactual GDP ("Without RCIP" scenario); (iv) the difference between actual and counterfactual GDP represents the economic impact of GDP[48].

[46] The estimation of benefits is calculated over a period of 4 years. Compared to infrastructure investment in connectivity, eGovernment applications are assumed to become obsolete within a shorter time horizon.
[47] See Section II.B in this document for more details on Achievement of Objectives and attribution.
[48] Discounted at present value, where applicable.

Figure A4.1. Mobile broadband subscribers (as percentage of population)



Source: Own calculations based on TeleGeography (Malawi, Mozambique) and TCRA (Tanzania).

8. The impact of increased mobile broadband penetration is estimated by applying an econometric model correlating the growth in mobile broadband subscriptions to increases in per capita income. Sepulveda (2017) uses a two-stage IV regression analysis combined with a classical growth model to explore whether and how mobile broadband penetration rates impact economic growth in developing countries. He finds that a 10-percentage point increase in the mobile broadband penetration rate increases annual GDP per capita growth by 0.48 to 0.60 percentage points[49]. This analysis considers both the lower- and upper-bound estimates of the mobile broadband to GDP conversion factor in two different scenarios to ensure that results are robust within the econometric specifications.

9. The counterfactual trend in broadband penetration ("Without RCIP" scenario) is calculated by assuming that, in absence of the achievements under RCIP, trends in broadband penetration would have remained unchanged. In other words, broadband penetration would have kept increasing at a constant rate equal to the one observed before the change in trend (in 2016 in Malawi after the launch of regional connectivity and VLP; in 2012 in Mozambique after the launch of services by the third operator; in 2011 in Tanzania following the operationalization of Phase I of the NICTBB[50]). The attribution of changes in broadband penetration trends to the aforementioned activities is discussed in more details in Section II. B, and seems to be sustained by the observed timing of changes.

10. Table A4.1 presents the results of the calculations for Malawi, Mozambique, and Tanzania, respectively. Benefits are calculated over a span of 10 years, a realistic amortization period for this type of infrastructure investment. In the case of Malawi, where benefits are expected to accrue in a future period from now (after 2017), it is assumed that the growth rate of broadband penetration will level off to pre-shock levels after only three years of operations. This conservative assumption is consistent with what was observed in other countries in the region (e.g., Mozambique).

11. In Malawi, the project is estimated to contribute as much as US$82 to US$103 million[51] to national GDP[52], or 0.7% to 0.9% of total GDP forecast to be created in Malawi during 2016-2025[53]. Discounted at 16%, the NPV of expected contribution ranges between US$62 and US$77 million. Considering both public and private costs incurred in the PPP, the IRR on this investment is estimated to range between 30% and 47%, much above the current Central Bank rate of 16%[54]. In Mozambique, benefits from the entry of the third operator are estimated to range between US$296 and US$370 million, or 2.1% and 2.7% of total GDP created in Mozambique during 2012-2019. The quasi totality of these benefits was accrued in the three years from the launch of services by the third

[49] Sepulveda's estimation is far more conservative than previous ones by Qiang et al. (2009) (1.38 percentage point increase in pc growth following a 10-percentage point increase in broadband penetration) and Scott (2012) (1.35 percentage point increase in pc growth following a 10-percentage point increase in broadband penetration). Based on a comprehensive and up-to-date time series and cross-country (110 countries) compilation, Sepulveda's analysis updates and provides more comprehensive estimates than previously available.
[50] Phase II operational since 2013.
[51] Assuming Sepulveda's conversion factor's lower (0.48) or upper (0.60) bound.
[52] Measured in constant prices, US$2011.
[53] IMF Economic Outlook.
[54] Reuters, 20 Dec 2017 (*https://www.reuters.com/article/malawi-rates/malawis-central-bank-cuts-key-lending-rate-to-16-percent-idUSJ8N1O800V*). The same conclusions hold even considering the 2016 discount rate of 24% (CIA World Factbook).

operator: mobile broadband penetration increased by 9 percentage points in 2012, 15 percentage points in 2013, and 7 percentage points in 2014. In Tanzania, the increase in broadband is estimated to have translated into a contribution to GDP ranging from US$1,186 to US$1,483 million, or from 1.6% to 2% of total GDP created in Tanzania during 2011-2020. Considering the cost incurred by the government to deploy Phase I and Phase II of the NICTBB, plus the cost of field supervision and technical assistance financed under RCIP, the IRR on this investment is estimated to range between 27% and 32%, significantly higher than the current interest rate in Tanzania (12%)[55].

12. Overall, results from this economic analysis confirm the efficiency of RCIP investment supporting broadband expansion in Malawi, Mozambique, and Tanzania. The magnitude of estimated benefits and return on investments suggest that conclusions on RCIP efficiency are fairly robust with more conservative assumptions and stricter considerations on attribution.

13. Importantly, these estimations are limited to economic benefits, and do not consider potential additional social benefits that are relevant to the World Bank Group mission. Hjort and Poulsen (2017) show that fast internet significantly affects both levels and quality of employment in Africa. The employment rate in connected areas relative to unconnected ones increased by between 4.2% and 10% when fast internet became available, thanks to increased firm entry, productivity, and exports, leading to higher job creation among both educated and less educated workers. Additionally, investment in broadband has the potential to improve public service levels in areas such as health, education, e-government, and democratic participation at lower cost than would be available offline (Bilbao-Osorio et al, 2013). Social benefits arising from the use of online public services are discussed later in this document.

Rural connectivity

14. A key activity under the RCIP Tanzania Project was to support the creation of a PPP to bring connectivity to rural areas. The effect of extending Internet access could be particularly important for rural communities. Constraints on the flow of information have limited these communities' access to wider markets and to a variety of employment opportunities. Access to mobile and Internet-based applications can extend the range of business services that become available to the rural population.

15. A very interesting example is offered by mobile money. In Tanzania, almost 40 percent of the adult population (15+) has a mobile money account. In 2017, 88 percent of the population receiving remittances in Tanzania did so through mobile money. Mobile money is particularly relevant in rural areas, where it often constitutes the major channel of financial inclusion among the vulnerable population[56]. In rural Tanzania, the percentage of adults with a mobile money account increased dramatically in just three years, from 28 percent in 2014 to 38 percent in 2017[57]. Although there is not enough evidence to claim that this 10-percentage increase is due to RCIP only, it is reasonable to think that the project played a key role. The rural connectivity initiative under

[55] Tanzania Central Bank.
[56] http://www.worldbank.org/en/news/immersive-story/2018/05/18/gains-in-financial-inclusion-gains-for-a-sustainable-world
[57] World Bank, Global Financial Inclusion Database, 2018. Unfortunately, there is no data available on Tanzania before 2014.

RCIP was by far the largest and most far-reaching last-mile connectivity initiative implemented in Tanzania during the period under consideration.

16. There is growing evidence of the economic and social impact of mobile money. Using country-specific data from Tanzania, Economides and Jeziorski (2016) find that mobile money ameliorates significant amounts of crime-related risk arising from short-distance self-transportation and money storage. Using data from Kenya, Jack and Suri (2014) show that access to mobile money allows individuals to protect themselves against income and health risks. Individuals can draw on a wider network of social support, and they receive more remittances more quickly from more different types of people in response to negative shocks. In the longer term, the authors show that access to mobile money boosts per capita income, and lowers both poverty and extreme poverty (Jack and Suri, 2016). This evidence on the impact of mobile money on poverty alone already suggests important economic arguments for investing in rural connectivity.

eGovernment Applications

17. The Tanzania and Mozambique projects supported the development of several eGovernment applications. Because of their design and the specific type of services targeted (National Business Portal, eProcurement, eOffice, etc.), these applications have a high potential to increase efficiency and transparency. In Tanzania, for example, citizens can now complete the birth registration system in one hour, down from an average of 7 days prior to the introduction of the digital Birth Registration System. Additionally, the introduction of eOffice resulted in a drastic reduction in the average time it takes a civil servant to search for a document (2 minutes, down from 1 hour).

18. Unfortunately, it is difficult to provide a robust estimation of expected economic benefits, as the econometric literature on eGovernment is very limited. The few studies available present country-specific evidence that may or not apply to other countries. In Sri Lanka, for example, average amount spent by citizens obtaining a public service before the introduction of e-services in 2011 was LKR 1,553 (US$13.74) or 0.31% of average annual household expenditure. The cost includes travel, opportunity cost, service fees, food, accommodation and any other costs associated with obtaining a public service. By 2013, this figure had dropped to LKR 747 (US$5.79) or 0.15% of average annual household expenditure. This is an annual reduction of 22%.[58]

19. Applying the parameters found for Sri Lanka to the Tanzania and Mozambican cases can give an approximate idea of the potential economic benefit deriving from the introduction of eGovernment applications (Table A4.2). This implies the following assumptions: (i) a typical household in Tanzania and Mozambique spends on offline public services 0.31% of its average annual household expenditure; (ii) substituting online for offline public services brings a 22% yearly reduction in the amount a household spends on public services. Under this assumption, the average annual expenditure of a Tanzanian household on public services would decrease from US$8.69 in 2017 to US$4.18 in 2020[59]. At the country level, this would result in savings in household expenditure

[58] Information and Communication Technology Agency of Sri Lanka (ICTA). 2013. *E Government Survey – Final Evaluation*. https://www.icta.lk/icta-assets/uploads/2016/03/ICTA_eGov_FR_16-1-14.pdf.
[59] The estimation of benefits is calculated over a period of 4 years. Compared to infrastructure investment in connectivity,

equal to US$122 million over the period 2017-2020. In Mozambique, the average annual expenditure of a Mozambican household on public services would decrease from US$5.70 in 2017 to US$2.74 in 2020. At the country level, this would result in savings in household expenditure equal to US$42 million over the period 2017-2020.

20. As discussed, these assumptions made cannot be considered robust, and this exercise is purely illustrative. First, we do not have empirical information on the proportion of household expenditure devoted to obtaining public services in Tanzania and Mozambique. Second, the few observations in terms of time gain from the introduction of online services in Tanzania suggest that proportional gains could actually be higher in Tanzania with respect to Sri Lanka. However, these observations refer to two specific applications (BRS, eOffice) and cannot be generalized.

21. Importantly, eGovernment applications are likely to offer not only economic, but also social benefits. The TeleMedicine system implemented in Tanzania, for instance, led to an improvement in the productivity of health resources, by saving health practitioners' travel time and allowing information about patients to be sent to hospitals for analysis. Tanzania has limited availability of specialized medical equipment, doctors, and technicians. One of the consequences is that diseases are not diagnosed in time or they are diagnosed wrongly, with a negative impact on people's lives and health costs. TeleMedicine enabled people in remote areas to access new services and information that otherwise would have been unavailable.

Project management costs

22. Disbursement figures for RCIP implementation in Malawi, Mozambique, and Tanzania suggest that project management costs were equal to 23%, 10% and 4% of total project cost implementation, respectively. Table A4.3 compares these figures to project management costs incurred in regional connectivity projects recently completed in East and West Africa. Project management in Malawi was significantly more expensive than in comparable projects. In Mozambique, project management costs (normalized by total implementation costs) were slightly above the average observed among the six comparator countries (8%). Project management costs of RCIP in Tanzania were significantly lower than in other regional connectivity projects. Overall, these figures suggest some significant inefficiencies in project management in Malawi, some inefficiencies in project management in Mozambique, and a highly efficient project management in Tanzania.

eGovernment applications are assumed to become obsolete within a shorter time horizon.

Table A4.1. Estimated economic benefits from increased mobile broadband penetration achieved under RCIP

Malawi

	Mobile broadband penetration (per 100 population)	Mobile broadband penetration (per 100 population) (without RCIP)	Change with RCIP (pcg pts)	Counterfactual change	GDP$m (PPP, constant 2011 US$)	Revised GDP$m without RCIP - Lower bound	Revised GDP$m without RCIP - Upper bound	Difference US$m (Lower bound)	Difference US$ (Upper bound)
2008	13.30	13.30							
2009	17.82	17.82	4.52	4.52	14,659				
2010	20.55	20.55	2.73	2.73	15,667	15,667	15,667	0	0
2011	24.67	24.67	4.12	4.12	16,428	16,428	16,428	0	0
2012	27.46	27.46	2.78	2.78	16,737	16,737	16,737	0	0
2013	29.97	29.97	2.51	2.51	17,608	17,608	17,608	0	0
2014	33.31	33.31	3.35	3.35	18,611	18,611	18,611	0	0
2015	34.80	34.80	1.49	1.49	19,132	19,132	19,132	0	0
2016	40.33	37.22	5.52	2.45	19,608	19,579	19,571	29	36
2017	45.31	39.64	4.98	2.45	20,357	20,332	20,326	25	31
2018	50.57	42.06	5.25	2.45	21,069	21,041	21,034	28	35
2019	53.02	44.48	2.45	2.45	22,017	22,017	22,017	0	0
2020	55.46	46.89	2.45	2.45	23,118	23,118	23,118	0	0
2021	57.91	49.31	2.45	2.45	24,390	24,390	24,390	0	0
2022	60.36	51.73	2.45	2.45	25,853	25,853	25,853	0	0
2023	62.81	54.15	2.45	2.45	27,534	27,534	27,534	0	0
2024	65.26	56.57	2.45	2.45	29,254	29,254	29,254	0	0
2025	67.71	58.98	2.45	2.45	31,083	31,083	31,083	0	0

Mozambique

	Mobile broadband penetration (per 100 population)	Mobile broadband penetration (per 100 population) (without RCIP)	Change with RCIP (pcg pts)	Counterfactual change	GDP$m (PPP, constant 2011 US$)	Revised GDP$m without RCIP - Lower bound	Revised GDP$m without RCIP - Upper bound	Difference US$m (Lower bound)	Difference US$m (Upper bound)
2009	22.44	22.44	2.60	2.60					
2010	26.17	26.17	3.72	3.72	22,230	22,230	22,230	0	0
2011	28.39	28.39	2.23	2.23	23,812	23,812	23,812	0	0
2012	37.29	31.24	8.90	2.85	25,526	25,452	25,433	74	93
2013	52.73	34.09	15.44	2.85	27,349	27,183	27,142	165	207
2014	59.56	36.94	6.83	2.85	29,385	29,328	29,314	56	70
2015	59.46	36.84	-0.10	-0.10	31,322	31,322	31,322	0	0
2016	59.36	36.74	-0.10	-0.10	32,528	32,528	32,528	0	0
2017	59.36	36.74	0.00	0.00	34,661	34,661	34,661	0	0
2018	59.29	36.67	-0.07	-0.07	32,528	32,528	32,528	0	0
2019	59.23	36.60	-0.07	-0.07	34,661	34,661	34,661	0	0
2020	59.16	36.53	-0.07	-0.07	36,914	36,914	36,914	0	0
2021	59.09	36.47	-0.07	-0.07	39,461	39,461	39,461	0	0

Tanzania

	Mobile broadband penetration (per 100 population)	Mobile broadband penetration (per 100 population) (without RCIP)	Change with RCIP (pcg pts)	Counterfactual change	GDP$m (PPP, constant 2011 US$)	Revised GDP$m without RCIP - Lower bound	Revised GDP$m without RCIP - Upper bound	Difference US$m (Lower bound)	Difference US$ (Upper bound)
2009	9.80	9.80	1.57	1.57	87,991				
2010	10.98	10.98	1.17	1.57	93,587	93,604	93,609	-18	-22
2011	11.16	11.16	0.19	1.57	100,984	101,051	101,068	-67	-84
2012	15.32	12.73	4.16	1.57	106,176	106,044	106,011	132	165
2013	18.39	14.30	3.07	1.57	113,887	113,805	113,785	82	103
2014	27.22	15.87	8.83	1.57	121,820	121,395	121,289	425	531
2015	32.04	17.43	4.82	1.57	130,298	130,094	130,043	204	255
2016	35.74	19.00	3.70	1.57	139,380	139,238	139,202	143	178
2017	40.12	20.57	4.38	1.57	148,952	148,751	148,700	201	252
2018	41.69	22.13	1.57	1.57	158,187	158,187	158,187	0	0
2019	43.26	23.70	1.57	1.57	168,469	168,469	168,469	0	0
2020	44.82	25.27	1.57	1.57	179,925	179,925	179,925	0	0

Table A4.2. Cost of obtaining a public service (US$)

Mozambique

	Cost of obtaining a public service (2010 constant US$)				
	Per household		All households		
	Without e-services	With e-services	Without e-services	With e-services	Difference
2017	$5.70	$5.70	$35,243,071	$35,243,071	$ -
2018	$5.70	$4.47	$36,264,458	$28,413,904	-$ 7,850,554
2019	$5.70	$3.50	$37,309,973	$22,904,687	-$ 14,405,286
2020	$5.70	$2.74	$37,309,973	$17,946,265	-$ 19,363,708
TOTAL			**$146,127,475**	**$104,507,927**	**-$ 41,619,547**

Tanzania

	Cost of obtaining a public service (2010 constant US$)				
	Per household		All households		
	Without e-services	With e-services	Without e-services	With e-services	Difference
2017	$8.69	$8.69	$101,641,409	$101,641,409	$ -
2018	$8.69	$6.81	$104,800,739	$82,113,404	-$ 22,687,334
2019	$8.69	$5.34	$108,032,415	$66,321,374	-$ 41,711,041
2020	$8.69	$4.18	$111,333,076	$53,551,711	-$ 57,781,365
TOTAL			**$425,807,638**	**$303,627,898**	**-$ 122,179,739**

Table A4.3. Project management cost as percentage of total implementation cost

	RCIP - APL 3			RCIP - APL 1			WARCIP APL 1A		WARCIP APL 1C
	Malawi	Mozambique	Tanzania	Kenya	Burundi	Madagascar	Liberia	Sierra Leone	Benin
Project management	4.5	3.16	4	11.81	2.91	1.76	1.65	1.45	1.71
Total costs	20	31	100	199.59	20.64	15.00	25.44	31.00	34.48
Project management as % of total costs	23%	10%	4%	6%	14%	12%	6%	5%	5%

ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

Malawi: RCIPMW Borrower ICR (P111432)
http://wbdocs.worldbank.org/wbdocs/component/drl?objectId=090224b085c2d5df

Mozambique: MEGCIP Borrower ICR (P111432)
http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b085c0d0c9

Tanzania: RCIPTZ Borrower ICR (P111432)
http://wbdocs.worldbank.org/wbdocs/component/drl?objectId=090224b085c22a81

ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

Banco de Moçambique (2016). *"National Financial Inclusion Strategy of Mozambique 2016-2022".*

Economides, Nicholas and Jeziorski, Przemyslaw (2016). "*Mobile Money in Tanzania*". Marketing Science.

Government of the United Republic of Tanzania (1999). *"Tanzania Development Vision 2025".*

Government of the United Republic of Tanzania, Tanzania Development Partners Group, World Bank Group World Bank (2007). "*Joint Assistance Strategy for The United Republic of Tanzania FY2007 - FY2010".*

Hjort, Jonas and Poulsen, Jonas (2017). *"The Arrival of Fast Internet and Employment in Africa*". NBER Working Paper No. 23582

Information and Communication Technology Agency of Sri Lanka (2013). "*E Government Survey – Final Evaluation*".

International Monetary Fund. "*World Economic Outlook Database"*. Accessed May 2018.

Katerere, Fred and Cohen, Mike (2010). *"Movitel to Invest $436 Million in Mozambique Network"*. Bloomberg.

Jack, William and Suri, Tavneet (2014). "*Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution*." American Economic Review.

Malawi Government (1998). *"Communications Act of 1998"*.

Malawi Government (1998). "*Malawi Vision 2020"*.

Malawi Government (2003). *"An Integrated ICT-Led Socio-Economic Development Policy for Malawi".*

Malawi Government (2013). *"National ICT Policy: An ICT-led Malawi"*.

Malawi Government (2013). *"National ICT Master Plan 2014-2031"*.

Malawi Government (2016). *"Communications Act of 2016"*.

Malawi Ministry of Finance and Development Planning (2005). "*Malawi Growth and Development Strategy: From Poverty to Prosperity, 2006-2011".*

Malawi Ministry of Finance and Development Planning (2010). "*Malawi Growth and Development Strategy II 2011-2016".*

Malawi Ministry of Finance and Development Planning (2017). "*Malawi Growth and Development Strategy III 2017-2020".*

Malawi National Statistical Office (2015). *"Survey on Access and Usage of ICT Services in Malawi – 2014"*.

Malawi Public Private Partnership Commission (2018). *"Regional Communications Infrastructure Program – Malawi Project. Environmental and Social Compliance Audit"*.

Qiang, Christine, Rossotto, Carlo Maria and Kimura, Kaoru (2009). "*Economic Impacts of Broadband."* In Information and Communications for Development. World Bank.

República De Moçambique (2006). "*Plano De Acção Para A Redução Da Pobreza Absoluta, 2006-2009 (PARPA II)".*

Scott, Colin (2012). "*Does Broadband Internet Access Actually Spur Economic Growth?*". Berkeley University.

Sepulveda, Edgardo (2017). *"Broadband & Economic Development: Regression Analysis".* World Bank.

Suri, Tavneet and Jack, William (2016). "*The long-run poverty and gender impacts of mobile money*". Science.

Tanzania Ministry of Finance and Planning (2016). "*National Five Year Development Plan 2016/17 – 2020/21".*

Tanzania Communications Regulatory Authority (2017). "*Quarterly Communications Statistics Report".*

TeleGeography. *"GlobalComms Database".* Accessed May 2018.

Uganda Ministry of Finance, Planning and Economic Development (2015). "*Implementation in crisis: How can the National Transmission Backbone Infrastructure be realized?*". BMAU Briefing Paper [14/15].

World Bank (2007). *"Country Partnership Strategy for The Republic of Mozambique, 2007-2011".*

World Bank (2007). *"Malawi - Country Assistance Strategy for the Period FY 2007 – 2010".*

World Bank (2007). *"Tanzania Performance Results and Accountability Project (PRAP). Project Appraisal Document".*

World Bank (2009). "*Regional Communications Infrastructure Program – APL3. Project Appraisal Document".*

World Bank (2009). "*Regional Communications Infrastructure Program – APL3. Project Appraisal Document. Malawi Technical Annex".*

World Bank (2009). "*Regional Communications Infrastructure Program – APL3. Project Appraisal Document. Mozambique Technical Annex".*

World Bank (2009). "*Regional Communications Infrastructure Program – APL3. Project Appraisal Document. Tanzania Technical Annex".*

World Bank (2010). *"Africa – Third Phase of Regional Communications Infrastructure Program Project:*

restructuring." (Mozambique)

World Bank (2012). *"Country Partnership Strategy for The Republic of Mozambique, 2012-2015".*

World Bank (2013). *"Africa – Third Phase of Regional Communications Infrastructure Program Project: restructuring."* (Malawi)

World Bank (2013). *"Malawi - Country Assistance Strategy for the period FY 2013 – 2016".*

World Bank (2014). *"Africa – Third Phase of Regional Communications Infrastructure Program Project: restructuring."* (Tanzania).

World Bank (2015). *"Africa – Third Phase of Regional Communications Infrastructure Program Project: restructuring."* (Mozambique)

World Bank (2015). *"Performance and Learning Review of the Country Assistance Strategy for the Republic of Malawi for the Period FY13-FY16"*.

World Bank (2016). *"Africa – Third Phase of Regional Communications Infrastructure Program Project: restructuring."* (Tanzania).

World Bank (2009-2017). *Aide Memoires and Implementation Status Reports for Africa – Third Phase of Regional Communications Infrastructure Program Project.*

World Bank (2017). *"Digital Malawi Program Phase I: Malawi Digital Foundations Project – Project Appraisal Document"*.

World Bank (2017). *"Mozambique - Country Partnership Framework for the Period FY17 - FY21".*

World Bank (2018). *"Tanzania - Country Partnership Framework for the Period FY18 - FY22".*