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Report No: PAD2285

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 53.4 MILLION
(US$72.4 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MALAWI

FOR THE

DIGITAL MALAWI PROGRAM PHASE I: MALAWI DIGITAL FOUNDATIONS PROJECT

May 11, 2017

Transport and ICT Global Practice
Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective March 31, 2017)

Currency Unit =	Malawi Kwacha (MWK)
726.20 MWK =	US$1
US$1 =	SDR 0.737026

FISCAL YEAR
January 1–December 31

ABBREVIATIONS AND ACRONYMS

ACB	Anti-Corruption Bureau
BESTAP	Business Environment Strengthening Technical Assistance Project
CAS	Country Assistance Strategy
CBA	Cost-Benefit Analysis
CEO	Chief Operating Officer
CERT	Computer Emergency Response Team
DA	Designated Account
DGS	Digital Government Strategy
ESCOM	Electricity Supply Corporation of Malawi
ESMP	Environmental and Social Management Plans
EU	European Union
FM	Financial Management
GDP	Gross Domestic Product
GNI	Gross National Income
GoM	Government of Malawi
GRS	Grievance Redress Service
GWAN	Government Wide Area Network
HA	Holding Account
ICT	Information and Communication Technology
ID	Identification
IDA	International Development Association
IDI	Information and Communications Technology Development Index
IFC	International Finance Corporation
IFMIS	Integrated Financial Management Information System
IFR	Interim Financial Report
IPF	Investment Project Financing
IRU	Indefeasible Right of Use
ISP	Internet Service Provider
ISR	Implementation Status and Results Report
IT	Information Technology
ITU	International Telecommunication Union
MACRA	Malawi Communications Regulatory Authority
MASDAP	Malawi Spatial Data Platform
MAREN	Malawi Research and Education Network
MDAs	Ministries, Departments, and Agencies

MICT	Ministry of ICT
MFEPD	Ministry of Finance, Economic Planning and Development
MJCA	Ministry of Justice and Constitutional Affairs
MTL	Malawi Telecoms Limited
NCC	National Computer Center
NACIT	National College of Information Technology
NPP	National Procurement Procedure
OA	Operating Account
OCL	Open Connect Limited
ODPP	Office of the Directorate of Public Procurement
PAD	Project Appraisal Document
PDO	Project Development Objective
PIU	Project Implementation Unit
PPA	Project Preparation Advance
PPP	Public-Private Partnership
PPPC	Public-Private Partnership Commission
PPSD	Project Procurement Strategy for Development
PURP	Public Utility Reform Project
RBM	Reserve Bank of Malawi
RCIP	Regional Communications Infrastructure Program
RCIPMW	Regional Communications Infrastructure Program - Malawi Project
REN	Research and Education Network
RFQ	Request for Qualification
RPF	Resettlement Policy Framework
SMS	Short Message Service
SOP	Series of Projects
SPV	Special Purpose Vehicle
STEP	Systematic Tracking of Exchanges in Procurement
TNM	Telekom Networks Malawi
UN	United Nations
UNDP	United Nations Development Program
USD	United States Dollars
USF	Universal Service Fund
USSD	Unstructured Supplementary Service Data
VLP	Virtual Landing Point
WFP	World Food Program
WiFi	Wireless Fidelity

Regional Vice President:	Makhtar Diop
Country Director:	Bella Bird
Senior Global Practice Director:	Jose-Luis Irigoyen
Practice Manager:	Boutheina Guermazi
Task Team Leader:	Casey Torgusson

BASIC INFORMATION

Is this a regionally tagged project?	Country(ies)	Financing Instrument
No		Investment Project Financing

[ ] Situations of Urgent Need of Assistance or Capacity Constraints

[ ] Financial Intermediaries

[✓] Series of Projects

Approval Date	Closing Date	Environmental Assessment Category
02-Jun-2017	30-Jun-2022	B - Partial Assessment

Bank/IFC Collaboration
No

Proposed Development Objective(s)

To increase access to affordable, high quality internet services for government, businesses and citizens and to improve the government's capacity to deliver digital public services.

Components

Component Name	Cost (US$, millions)
Digital Ecosystem	9.50
Digital Connectivity	34.00
Digital Platforms and Services	23.90
Project Management	5.00

Organizations

Borrower : Ministry of Finance, Economic Planning and Development

Implementing Agency : Public Private Partnership Commission

Safeguards Deferral

Will the review of safeguards be deferred?

[ ] Yes [ ] No

PROJECT FINANCING DATA (IN USD MILLION)

[ ] Counterpart Funding	[ ] IBRD	[✓] IDA Credit [ ] Crisis Response Window [ ] Regional Projects Window	[ ] IDA Grant [ ] Crisis Response Window [ ] Regional Projects Window	[ ] Trust Funds	[ ] Parallel Financing

Total Project Cost:	Total Financing:	Financing Gap:
72.40	72.40	0.00
	Of Which Bank Financing (IBRD/IDA): 72.40	

Financing (in US$, millions)

Financing Source	Amount
International Development Association (IDA)	72.40
Total	**72.40**

Expected Disbursements (in US$, millions)

Fiscal Year	2017	2018	2019	2020	2021	2022	2023
Annual	0.00	6.00	12.00	19.00	21.00	13.00	1.40

Cumulative	0.00	6.00	18.00	37.00	58.00	71.00	72.40

INSTITUTIONAL DATA

Practice Area (Lead)

Transport & ICT

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Moderate

7. Environment and Social	Moderate
8. Stakeholders	Moderate
9. Other	
10. Overall	Moderate

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

The Recipient shall monitor and evaluate the progress of the Project and prepare Project Reports in accordance with the provisions of Section 4.08 of the General Conditions and on the basis of indicators acceptable to the Association. Each Project Report shall cover the period of one (1) calendar quarter, and shall be furnished to the Association not later than forty-five (45) days after the end of the period covered by such report.

Sections and Description
The Recipient shall, not later than four (4) months prior to the mid-term review referred to in paragraph 3 of this Section II.A, furnish to the Association for comments, a report, in such detail as the Association shall reasonably request, on the progress of the Project, and giving details of the various matters to be discussed at such review.

Sections and Description
The Recipient shall, not later than thirty (30) months after the Effective Date, undertake, in conjunction with all agencies involved in the Project, a comprehensive mid-term review of the Project during which it shall exchange views with the Association and implementing agencies generally on all matters relating to the progress of the Project, the performance by the Recipient of its obligations under this Agreement and the performance by said implementing agencies, having regard to the performance indicators referred to in paragraph 1 of this Section II.A.

Conditions

Type	Description
Effectiveness	The Recipient has adopted the Project Implementation Manual, in form and substance satisfactory to the Association and in accordance with the provisions of Section I. B. 2 of Schedule 2 to the financing agreement.
Effectiveness	The Recipient has established the Steering Committee in accordance with the provisions of Section I.B.1 of Schedule 2 to the financing agreement.

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Casey Torgusson	Team Leader(ADM Responsible)		GTI11
Steven Maclean Mhone	Procurement Specialist(ADM Responsible)	Procurement Specialist	GGO01
Blessing Manyanda	Procurement Specialist	Procurement Assistant	AFMZW
Trust Chamukuwa Chimaliro	Financial Management Specialist	FM Specialist	GGO31
Boyenge Isasi Dieng	Safeguards Specialist	Social Safeguards	GSU07
Christine Makori	Counsel	Senior Counsel	LEGAM

Ida S Mboob	Team Member	ICT Policy Specialist	GTI11
Jane A. N. Kibbassa	Environmental Specialist	Environmental Safeguards	GEN01
Justina Kajange	Team Member	Operations Analyst	GTI11
Luda Bujoreanu	Team Member	e-Government Specialist	GTI09
Maiada Mahmoud Abdel Fattah Kassem	Team Member	Finance Officer	WFALA
Mary C.K. Bitekerezo	Safeguards Specialist	Social Safeguards	GSU07
Miriam Sangallo Kalembo	Team Member	Team Assistant	AFMMW
Shri Vasantt Kumar Jogoo	Environmental Specialist	Environmental Safeguards	GEN01
Stella Chepkorir	Team Member	Finance Analyst	WFALA
Tasneem Rais	Team Member	Program Assistant	GTI11
Timothy John Charles Kelly	Team Member	Connectivity and Enabling Env. Specialist	GTI11

Extended Team

Name	Title	Organization	Location

Malawi
DIGITAL MALAWI PROGRAM PHASE 1: MALAWI DIGITAL FOUNDATIONS PROJECT

TABLE OF CONTENTS

I. STRATEGIC CONTEXT

A. Country Context

1. **Malawi is a small, landlocked country of 17 million inhabitants with the world's fourth lowest gross domestic product (GDP) per capita of US$372 (2016).** Economic growth has been relatively strong since 2003, averaging 5.5 percent per annum, but slowed significantly in recent years to 2.8 percent in 2015 and 2.5 percent in 2016. The slowdown is a result of a number of factors, including a fiscal tightening since 2013 following revelations of a public financial management (FM) scandal and weather-related shocks, such as flooding in the southern region and nationwide drought as a result of El Niño. Even during periods of rapid economic expansion, Malawi's growth has not translated into a significant rise in average incomes, in part due to rapid population expansion of 3.1 percent per year. Poverty levels exceeded 50 percent at the last headcount in 2010. Malawi remains a very young country with 45 percent of the population under the age of 14 — the same proportion as in 1960 despite a 25-year increase in life expectancy over the same period.

2. **Malawi's economy features low levels of diversification, resilience, and dynamism.** Agriculture represents approximately one-third of GDP and 76 percent of employment, with women accounting for more than half of those working in the sector. Most Malawians live in rural areas with limited opportunities to increase productivity beyond subsistence level. Infrastructure development remains low, with poor roads and inadequate energy generation and distribution networks. Infrastructure and skills deficiencies, paired with heavy administrative burdens, result in a Doing Business ranking of 141 out of 189 countries surveyed in 2016[1]. They create challenges for citizens and businesses to access services and markets both within and outside of the country. Unemployment, particularly for youth, remains a persistent and growing challenge.

3. **Human development has been improving in some areas, but Malawi still ranked 173 out of 188 countries in the 2015 United Nations Development Program (UNDP) Human Development Index.** The Government faces challenges delivering basic health, education, and other social services, with citizens likewise facing challenges in accessing them, particularly in rural areas. Food security and malnutrition remain significant challenges, with 6.7 million people considered food insecure in 2017 according to the World Food Program (WFP). Although primary education is free, only 55 percent of boys and 45 percent of girls finish primary school. Secondary and tertiary enrollment rates of 17 percent and 0.4 percent, respectively, are among the lowest in Africa.

4. **Despite the many challenges identified, Malawi possesses a number of inherent comparative advantages and positive trends which can be built upon to accelerate sustainable development and economic diversification.** The country is peaceful, stable, and democratic and has undertaken a series of political and economic governance reforms in recent years which should put it on a more solid footing for sustained economic growth, improved service delivery, and effective policy making. It has a pleasant climate and scenic natural attractions, ideal for tourism. English is an official language and literacy rates

[1] World Bank, 2016. *Doing Business 2016: Measuring Regulatory Quality and Efficiency.* http://www.doingbusiness.org/reports/global-reports/doing-business-2016

have been steadily climbing along with school enrollment, opening opportunities in the services sector, and potential entry points to the global economy. Poverty is declining relatively rapidly in urban areas (though not yet in rural areas) and health indicators are improving — trends which could be accelerated through faster urban migration and improved access to services. The significant need for infrastructure investment also presents an opportunity to jump-start growth and create jobs outside of the agricultural sector if funds can be mobilized.

B. Sectoral and Institutional Context

5. **Digital technology is rapidly transforming the way people, businesses, and governments communicate, transact, and access information and services.** Some countries have embraced this trend, taking proactive steps to ensure that their citizens, businesses, and institutions are equipped to participate, innovate, and flourish in an increasingly online, digital-first environment. Within the region, Kenya stands out as an early leader, now reaping the rewards of digitally enabled services led growth built from years of investments and policy reforms aimed at increasing connectivity, spurring private sector information and communication technology (ICT) investment and innovation, developing a new generation of digital leaders, and creatively using technology to improve the efficiency and impact of its public services. Other countries have been far slower to recognize and prepare for these trends. As a result, their citizens, businesses, and institutions are increasingly being left behind and isolated from the digital world and economy of the future. Malawi clearly falls into this second category—with extremely low mobile and Internet penetration, high cost and low quality of ICT services, and a signifcant digital divide between rich and poor, as well as urban and rural citizens.

6. **Digital technology is not a 'luxury'; it is a necessity to accelerate growth, create new jobs, and improve access to information and services for all of Malawi's citizens.** Given the many economic and human development challenges noted earlier, one may ask whether expending resources and energy to increase access to and use of digital technology is a priority in a country where so many families are struggling to put food on the table, send their children to school, and get access to basic health care. However, this is a false choice. Smart use of digital technology can open up nearly limitless opportunities to address these challenges in new and more efficient ways. An investment in ICT is also an investment in economic growth, jobs, education, health, agriculture, and good governance.

Box 1. Transforming Livelihoods and Services with Mobile Technology

Digital technology, particularly mobile phones and mobile broadband, can be a powerful enabler and equalizer. It has the potential to dramatically reduce Malawi's inherent disadvantages as a remote, landlocked country and the disadvantages of citizens in rural areas. A few illustrative examples are included below:

- A child born in a remote village can get access to the same educational content and learning opportunities as a child in Blantyre or London through digital platforms.
- A pregnant mother can receive critical health information and medical consultations on her mobile phone without difficult and costly travel to a district center.
- Rural smallholder farmers can connect to markets and get the best prices for the crops and livestock and get extension advice and weather information cheaply and frequently through mobile apps.
- Poor, rural households who have never had a bank account can get access to financial services and insurance through mobile money companies.

- Small businesses and entrepreneurs can reach new customers and source inputs through online marketplaces.
- Households far from the grid can purchase lights and a cook stove powered by a solar panel that is paid for using pay-as-you-go mobile money technology.
- Citizens affected by floods and food shortages can receive timely digital transfer payments and vouchers to improve their resilience during a crisis.

While the potential is great, none of this is possible if citizens do not have affordable access to connectivity, mobile-enabled devices, and a basic level of digital literacy.

7. **Malawi significantly lags behind its peers in the development of its market for telecommunications and other digital services, and this is preventing it from achieving wider digital dividends.** The country is ranked 168 out of 175 countries in the 2016 edition of the International Telecommunication Union's (ITU) Global ICT Development Index[2]. Mobile penetration remains low, with subscriptions standing at 36 percent of the population, compared with 53 percent for countries with a similar GDP per capita and 80 percent across Africa at the end of 2015. Only 7 percent of households reported having access to the Internet in 2015 and fixed broadband subscriptions numbered only 4,000 as of March 2016.[3] Development of and access to digital public services is likewise extremely low. Malawi has fallen from 133 in 2004 to 166 of 193 countries in the 2016 United Nations (UN) e-government index[4], which measures provision of online services, telecommunication connectivity, and human capacity. The uptake of digital technologies by private firms is also low, with Malawi scoring just 0.07 on the business component of the World Bank's 2015 digital adoption index[5], lower than its scores for either citizen (0.17) or government (0.29) use of ICTs.

8. **Lack of affordability, availability, and quality of broadband connectivity, coupled with low human and institutional capacity, constrains access to digital technologies and services in Malawi and holds the country back from capitalizing on new opportunities.** Mobile voice tariffs are among the fourth least affordable in the world, costing as much as 48.9 percent of gross national income (GNI) per capita. The retail price of an entry-level mobile broadband package (500 MB per month of data) is equivalent to 24.4 percent of GNI per capita, while a fixed connection exceeds 111 percent, compared with the UN Broadband Commission affordability target of 5 percent or lower.[6] In a recent national survey, affordability was cited by 55 percent of citizens as the main barrier to Internet access, while 31 percent of the population reported a lack of knowledge of how to use the Internet as the main constraint.[7] Backbone and access network infrastructure is lacking or deficient in most rural areas and secondary cities, limiting the opportunity to deliver high-quality ICT services, even for those willing to pay a premium price. The Government does not have the needed connectivity, infrastructure, and capacity to deliver high-quality public services digitally to citizens.

9. **A number of related factors are responsible for these constraints, including a lack of competition in critical telecom market segments, insufficient infrastructure investment, and high costs**

[2] International Telecommunications Union, 2016. http://www.itu.int/net4/ITU-D/idi/2016/
[3] Malawi Communications Regulatory Authority (MACRA)
[4] United Nations, 2016. *UN e-Government Survey 2016*. https://publicadministration.un.org/egovkb/en-us/reports/un-e-government-survey-2016
[5] World Bank 2015. http://wbgfiles.worldbank.org/documents/dec/digital-adoption-index.html
[6] As calculated by World Bank, based on ITU and GNI per capita data
[7] Source: Malawi Communications Regulatory Authority (MACRA)

for international bandwidth. These factors aggravate the natural disadvantages of being a landlocked country with a small domestic market and few natural resources. A market structure that is effectively a duopoly has persisted in mobile communications between Airtel and Telekom Networks Malawi (TNM) for the past 15 years, despite the award of several additional licenses. The resulting lack of investment and competitive pressure on prices and quality has severely affected ordinary consumers—the vast majority of whom access both voice and broadband services through mobile phones. In the fixed broadband market, Open Connect Limited (OCL), a spin-off of the incumbent Malawi Telecoms Limited (MTL), owns the most extensive and, in many areas, the only fixed network infrastructure. Until recently, OCL/MTL also held a monopoly on international connectivity through access to the East Africa Submarine System (EASSy) submarine cable, though this has improved through the market entry of SimbaNet Malawi (see below) and investments from Electricity Supply Corporation of Malawi (ESCOM), Airtel, and others.

10. **High levels of taxation, weak regulatory authority and instruments, and low levels of income and digital literacy are also impeding investment, affordability, and demand for services.** Taxation and regulatory levies appear to account for a large and increasing proportion of operating costs and retail prices, including a 30 percent corporate tax; a 10 percent excise duty on voice, short message service (SMS) and mobile data; 16.5 percent value added tax (VAT) on Internet services and mobile data; a US$0.08 per minute levy on international voice traffic; and a 3 percent gross revenue levy to support the universal service fund (USF).[8] Attempts to cap retail prices by Malawi Communications Regulatory Authority (MACRA) have been stymied because of a lack of clear legal authority,[9] and there are no enforceable regulatory mechanisms for network interconnection, number portability, and infrastructure sharing between service providers. This has had the effect of discouraging new market entrants and reducing competition despite formal liberalization in the sector. Low income levels, lack of access to electronic devices, and a limited knowledge of using them limit demand and rollout of services to rural and impoverished urban areas.

11. **The institutions responsible for policy and governance of the ICT sector—MACRA and the Ministry of ICT (MICT) require strengthening to drive Malawi's Digital Development Agenda.** MACRA is an independent authority established under the Communications Act of 1998, responsible for regulation and promotion of development within the communications, postal and broadcasting sectors. The MICT is responsible for setting government policy and strategy within the sector and plays an oversight role for MACRA. The e-Government department within the MICT is responsible for setting government Information Technology (IT) policy and providing IT services to all ministries, departments, and agencies (MDAs). As a result of the rapid pace of sector development and the growth of ICT importance to government functions, these institutions have struggled to secure the technical expertise, financial resources, and institutional authority required to keep up.

12. **Against this backdrop of persistent challenges, there are nevertheless a number of highly encouraging recent legal, regulatory, and market competitiveness developments.** In July 2016, the Parliament approved a Revised Communications Act and a new E-Transactions Act. This legislation, prepared with technical assistance under the Regional Communications Infrastructure Program Phase III

[8] A fund established for projects and activities aimed at closing the digital divide (that is, increasing network and services coverage and affordability in underserved areas or among target populations).
[9] This authority has now been granted under the Revised Communications Act of 2016.

– Malawi Project (RCIPMW),[10] has helped modernize the governance framework for the ICT sector and empowers MACRA with a significant expansion of its mandate and confirms its authority in the areas of ensuring market competitiveness, protecting consumers, safeguarding information security, promoting universal access to telecoms services, and enabling digital transactions and innovation. As a result of the market entry of SimbaNet, also facilitated under the RCIPMW, the price of international connectivity has fallen precipitously from US$3,000 per Mbit/s per month in 2011 to a notional cost of just US$135, reducing one of the largest components of service providers' operating costs.[11] Interest also appears to be growing among both existing market players and potential new entrants to make significant network infrastructure investments and launch new service offerings, particularly in and between urban centers. For example, OCL is seeking a strategic investor to support upgrading and expansion of its fixed network. TNM launched the first fourth generation mobile services (4G/LTE) in Blantyre, Lilongwe, Mzuzu, and Zomba in June 2016. Mobile money services are expanding quickly. Three new innovation and technology hubs—mHub, Innovation Hub, and EMNET—have recently been launched with strong demand from budding innovators and entrepreneurs.

13. **It is critical that this positive momentum be reinforced and accelerated to transform Malawi's digital development trajectory and to ensure that digital dividends are reaped and shared widely.** A significant scale-up in private infrastructure investment needs to be encouraged, especially in rural and underserved areas. Public-private partnerships (PPPs) and coordination by the Government are needed to incentivize rollout in poor and rural areas that do not offer sufficient commercial return in the medium term or are too high risk for the private sector to undertake in isolation. Competition needs to be strengthened through progressive, forward-looking government policy and light touch regulation of the ICT sector. Affordability may need to take precedence over high sector taxation, and finally, digital skills need to be nurtured to equip citizens, especially youth, to build the digital society, government, and economy of tomorrow.

C. Higher Level Objectives to which the Project Contributes

14. **The overarching aim of the Digital Malawi program is to contribute to a 'digital transformation' of Malawi's economy, society, and government.** The program seeks to leverage digital technology to drive economic growth, innovation and job creation, access to services, information and markets, and to increase government efficiency and transparency.

15. **The Digital Malawi Program SOP will support a comprehensive, long-term investment in Malawi's digital transformation.** As emphasized in the 2016 World Development Report: 'Digital Dividends'[12], it is important, but not sufficient, to invest in digital equipment and broadband infrastructure. This investment must be accompanied by attention to a comprehensive set of complementary 'analog' enablers such as digital leadership, enabling policy and regulation, accountable institutions, and digital skills. Experience from previous IDA-supported digital development programs also suggests that long-term support and commitment is needed to ensure a continued progression along the

[10] RCIPMW (P111432) was a US$20 million IDA-financed project to improve the quality, availability, and affordability of broadband in Malawi. It closed on June 30, 2016.
[11] Still, this remains high in comparative terms, with a Mbit/s per month costing less than US$10 in Kenya, for example.
[12] World Bank, 2016. *Word Development Report 2016: Digital Dividends.* http://documents.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf

path from foundation to acceleration and finally digital transformation, but also to prevent backsliding.

16. **In line with these lessons, the Digital Malawi Program SOP is structured under two phases of support.** The first phase—the Malawi Digital Foundations Project—focuses on establishing a base level of connectivity, market competitiveness, digital skills, and digital service delivery infrastructure to catch up with the progress of peer countries. The second phase—the Malawi Digital Acceleration Project—will focus on leveraging improved connectivity and public digital service delivery capacity to accelerate growth of the digital economy, encourage private and public innovation utilizing digital technology, and support expansion of digital services offerings across sectors. The total expected resource envelope for the two phases is US$130 million, with each phase to be carried out over a five-year implementation period, with preparation for phase II to begin under phase I.

17. **A number of reforms and milestones are expected to be achieved under phase I, before undertaking phase II of the Digital Malawi Program SOP.** These include (a) adopting and implementating the forthcoming Digital Government Strategy and recommendations for institutional restructuring of the e-government/IT function within government; (b) addressing barriers to telecoms market competition and market entry, including adoption and enforcement of an interconnection regime, number portability, and economic regulation; and (c) undertaking meaningful sector taxation reform to improve affordability of ICT services and digital devices.

18. **The Digital Malawi program will support the country's aspirations to "build a knowledge-based economy and information rich society," as detailed in the 2013 National ICT Policy.** It will also help move the country toward the goal of achieving universal access to ICT services for all citizens and mainstreaming of ICT in all sectors of the economy as a means to deliver socioeconomic development, in line with the Malawi Growth and Development Strategy II.

19. **The Digital Malawi Program supports all three priority themes of the Malawi Country Assistance Strategy (CAS) for FY2013–2018[13]:**

(a) **The program will promote sustainable, diversified, and inclusive growth (CAS Theme 1),** through improvements to the business environment, competitiveness, increased infrastructure investment, and job creation in the ICT sector while promoting greater productivity economy-wide by enhancing the use of technology, spurring innovation, and providing greater access to information and new markets across all sectors. A wide range of studies have demonstrated that a 10 percent increase in fixed broadband penetration increases annual GDP growth between 0.24 percent and 1.5 percent and indirectly creates 1.5 to 4.5 jobs for every new job in the sector.[14] For mobile broadband, which dominates in Malawi, a recent study suggests that a 10 percent increase can boost GDP by between 0.53 percent and 0.67 percent.[15] Surveys of East African households have shown that those with access to ICTs increased their income compared to those without. Access to ICTs can play a significant role in boosting the productivity and incomes of Malawi's large population of

[13] Report No. 47159-MW. The original CAS was approved for FY 2013-2016, but later extended through FY2018.
[14] Minges, Michael. 2016. "Exploring the Relationship between Broadband and Economic Growth." WDR16 background paper http://pubdocs.worldbank.org/en/391452529895999/WDR16-BP-Exploring-the-Relationship-between-Broadband-and-Economic-Growth-Minges.pdf.
[15] Sepulveda, Edgardo. 2017. "Digital Infrastructure and Economic Development: Regression Analysis." Unpublished manuscript.

small-scale farmers by easing access to extension services and weather and market information. Without the Digital Malawi Program, sector development will likely be much slower and access to services will remain a privilege reserved only for urban elites, further entrenching rather than reducing economic and social divides.

(b) **The program will help strengthen human capital and reduce vulnerabilities (CAS Theme 2),** by building the Government's capacity for more efficient, innovative, and transparent public service delivery using digital platforms and support for improved connectivity for public institutions such as schools and hospitals. This will open opportunities for teachers and students to access online curriculum and distance learning tools, enable use of modern health information systems and telemedicine, and ease dissemination of public health messages and disease surveillance. It will also help strengthen resilience by enabling widespread use of digital payments for social protection schemes and sharing emergency information and rapid data collection in the event of natural disasters using mobile platforms.

(c) **Finally, the program will support the mainstreaming of governance for enhanced development effectiveness (CAS Theme 3).** The modern and effective economic, financial, and human resources management information systems needed to address Malawi's governance and management challenges rely on robust connectivity, secure and reliable data storage, and a delicate combination of data transparency and privacy protection. The Digital Malawi Program seeks to address these fundamental challenges and develop an efficient, secure, and shared digital platform upon which such systems will run. Improving connectivity and establishing a shared government data infrastructure and rules will open new opportunities to access and analyze data to increase transparency and inform policy making. Finally, the projected cost savings through aggregating demand for connectivity services and developing a shared IT infrastructure across government will be significant.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

20. **The Project Development Objectives (PDO) for Digital Malawi Program Phase I: Malawi Digital Foundations Project is to increase access to affordable, high quality Internet services for government, businesses, and citizens and to improve the Government's capacity to deliver digital public services.**

21. **The overall Program Objective for the Digital Malawi Program SOP is to contribute to ubiquitous access to the internet and digital public services and to facilitate private sector led digital investment, services and job creation.**

B. Project Beneficiaries

22. **The Malawi Digital Foundations Project and the wider Digital Malawi Program SOP are expected to benefit all citizens of Malawi.** At the macro level, the project and program will support increased economic growth, productivity, and job creation—both within the telecommunications and IT sectors and

through technology diffusion and innovation across all productive sectors. At the individual level, citizens will benefit from access to lower-cost, higher-quality digital communications services with an emphasis on broadband Internet, access to digital public and private services, digital skills development, and entrepreneurship opportunities. The public sector will also benefit through lower cost; higher quality access to the Internet within public institutions; more secure and reliable data storage; ability to launch new digital services much more quickly, cheaply, and securely than is possible today; and by taking advantage of data analytics to improve policy and decision making. Finally, private sector telecoms companies, IT companies, and individual digital entrepreneurs will benefit from the establishment of a seamless, open-access national fiber optic backbone and an improved enabling environment which will lower their operating costs and capital requirements to launch coverage in new areas and increase bandwidth and network reliability to enable rollout of new services and digital content.

23. **The project and program include a strong emphasis on closing the 'digital divide'—empowering rural populations, youth, and women and girls.** Rural connectivity activities will support improved access and affordability of services and connection to information and markets. Subcomponent 2.3 in particular, will seek to bring online the 1.8 million people who currently live in areas without even basic mobile coverage. Skills development and digital entrepreneurship activities and partnerships will be targeted at youth, aiming to create jobs and nurture tomorrow's digital leaders. Connectivity and skills development for girls will receive specific emphasis in recognition of the generally lower rates of access to digital services and much lower rates of participation in digital technology fields relative to men, across both developed and developing countries. A 2014 study of access and usage of ICT services in Malawi showed that, although mobile phone ownership is higher among women than men, the level of use of the Internet is about 13 percent lower.

C. PDO-Level Results Indicators

24. **The PDO-level results indicators for the Malawi Digital Foundations Project are as follows:**
- (a) Internet users per 100 people
- (b) Retail price of a Pre-Paid Mobile Broadband Monthly Bundle, 500 MB Data Volume
- (c) Number of public institutions utilizing high speed Internet access under the project
- (d) People obtaining new digital skills or knowledge under the project
  - Of which, percentage of women and girls obtaining new digital skills or knowledge under the project
- (e) Number of transactions per year utilizing the shared digital services platform
- (f) Direct project beneficiaries
  - Of which, percentage of beneficiaries that are female

25. **The Program-level results indicators for the Digital Malawi Program SOP are as follows:**
- (a) Internet users per 100 people
- (b) Percentage of population accessing digital public services
  - Of which, percentage of services users that are female
- (c) User satisfaction with digital public services
- (d) Contribution of digital economy to economic output (percentage of overall GDP)
- (e) Number of digital or digitally-enabled businesses registered

III. PROJECT DESCRIPTION

A. Project Components

26. **The Digital Malawi Program Phase I: Malawi Digital Foundations Project targets three core enablers of digital development:** (a) Digital Ecosystem: strengthening the laws, regulations, and institutional and human capacity needed to promote ICT infrastructure investment, market competitiveness, digital engagement, job creation, and innovation; (b) Digital Connectivity: promoting affordable, high quality Internet access for all citizens by incentivizing private sector network infrastructure development and service provision nationwide; and (c) Digital Platforms and Services: building the technical capacity, institutions, and IT infrastructure for the Government to deliver services to citizens and conduct its own business digitally. An overview is provided below, with a more detailed project description included in annex 2.

27. **The project utilizes a 'Cascade Approach' to maximize private investment and the impact of public investment.** The project places significant emphasis on creating a conducive enabling environment to encourage private sector investment in infrastructure and services. Public financing will only be utilized to meet public needs and to address market failures—providing incentives for private sector investment through PPPs rather than creating competing public infrastructure or services. Finally, the increase in digital skills, digital businesses, and new digital public service offerings is expected to drive demand for private investment in connectivity and complementary digital services and applications.

Component 1: Digital Ecosystem (US$9.5 million)

28. **The aim of Component 1 is to contribute to making Malawi a more attractive and competitive place for digital investment and innovation, ensuring that the benefits of digital technology are reaching all citizens and helping lay the groundwork for growth of the digital economy.** This will be accomplished by strengthening the many interrelated elements that characterize a thriving digital ecosystem—creating and implementing forward-looking laws, regulations and policies; building digital skills and capacity of institutions and citizens; developing a critical mass of innovators, entrepreneurs, and support services; and working toward closing the digital divide—ensuring that all citizens benefit from digital development. These goals will be supported through three subcomponents detailed below. While specific priority activities have been identified, the design of the component is intended to remain flexible, allowing the project to respond to new challenges and opportunities as they arise in this fast-changing sector.

Subcomponent 1.1: ICT Regulation, Strategy, and Policy Development (US$2.5 million)

29. **Subcomponent 1.1 will support MACRA to develop the strategies, regulations, guidelines, and data collection and analysis tools needed to implement the Communications and E-Transactions and Cybersecurity Acts of 2016 and to manage new mandates and policy objectives effectively.** Priority will be given for activities that directly contribute to enhancing citizens' access to ICT services and maximizing the development impact of ICTs, including improving affordability and service quality, as well as enabling efficient, secure, and reliable digital transactions and innovation. This will include (a) a review of existing and proposed regulatory instruments to align with the new legislation and policy objectives; (b) development of a National Broadband Strategy; (c) a review of sector taxation and fees; (d) technical

assistance related to quality of service monitoring; (e) development of a 'dig once' policy to coordinate infrastructure planning among agencies and the private sector; (f) development of an enabling environment for digital financial services, including mobile money; and (g) support for statistics, data collection, and network coverage/infrastructure mapping programs.

Subcomponent 1.2: Regulatory and Policy Implementation, Capacity Building, and Institutional Development (US$1.5 million)

30. **Subcomponent 1.2 will support MACRA and the wider government leadership through development of the skills and capacity necessary to carry out effective regulation and policy formation.** As a result of the new legislation,[16] as well as new technological and regulatory innovations and developments in the telecommunications sector, there is a need to examine the institutional structure of MACRA and to strengthen the capacity of key staff at MACRA, the MICT, the Ministry of Justice and Constitutional Affairs (MJCA), and the wider government to enable them to carry out effective regulation and policy implementation. This is particularly relevant in emerging areas such as privacy and data protection, cybersecurity, economic regulation, competition policy, ICT law, USF management, and broader ICT for development strategies. Subcomponent 1.2 will support (a) an institutional and capacity review and restructuring of MACRA; (b) implementation of the new Acts and associated regulations and strategies; and (c) implementation of a comprehensive capacity-building program for MACRA staff and wider government leadership, in line with the recommendations of the institutional and capacity review and forthcoming National Cybersecurity Strategy.

Subcomponent 1.3: Digital Skills Development and Innovation (US$5.5 million)

31. **Subcomponent 1.3 aims to help address Malawi's digital literacy and advanced ICT skills gaps; strengthen the digital innovation and entrepreneurship ecosystem; and encourage job creation, entrepreneurship, and creativity, particularly for youth.** By raising the level of basic digital literacy in Malawi and encouraging the development of a larger pool of advanced ICT professionals and supporting digital entrepreneurship and innovation, the subcomponent aims to assist the MICT in empowering citizens and small businesses to utilize ICTs to access online services and increase their sales opportunities, encourage growth of the digital economy, and help launch new digital startups and investment by leading tech/IT firms. The subcomponent will seek to establish partnerships[17] to leverage the resources and expertise of global and regional tech companies, foundations, and innovation networks to attract new skills development and entrepreneurship programs to Malawi. Support will include (a) recruitment of a coordinator for partnerships, outreach, and communications with responsibility for networking and crowding in skills and innovation resources; (b) development of a national digital skills assessment and strategy; (c) facilitation of academia-industry partnerships, challenge funds, and pitching events to encourage private sector or NGO-led digital skills, innovation, and job creation programs; (d) support to innovation networks/tech hubs through competitive grant awards which can be utilized to scale up operations to serve more digital entrepreneurs and expand services offerings; and (e) support for connectivity and technical assistance within tech hubs and ICT training centers. Partnerships and other support for skills development and innovation under this subcomponent will emphasize digital inclusion—

[16] Revised Communications Act (2016) and the E-Transactions and Cybersecurity Act (2016).
[17] A number of partnerships with leading tech companies and foundations have already been tentatively agreed, to be formalized following recruitment of the project partnerships and communications coordinator.

targeting youth and disadvantaged or disconnected populations, particularly women.

Component 2: Digital Connectivity (US$34.0 million)

32. **The aim of this component is to leverage strategic public investments and incentives to improve access to high-speed, affordable connectivity for government, citizens, and businesses across Malawi.** In addition to the measures to boost sector competitiveness and network investment through regulatory and other 'soft' mechanisms supported under Component 1, there is a need for more direct intervention to encourage private sector infrastructure deployment in geographical areas which do not offer sufficient short- to medium-term returns or are considered too risky to attract investment from the private sector alone. There is also a need to exert competitive pricing pressure, create network redundancy, and increase capacity along the most well-trafficked network routes that are currently served by a limited number of providers.

33. **The RCIPMW has helped lower the price of international connectivity but additional efforts are needed to extend access to connectivity nationwide.** Under the RCIPMW, the Government purchased a large volume of international bandwidth and related services for MDAs over a 10-year period through a competitive bidding process. To supply these services, SimbaNet constructed a new fiber-optic network linking Malawi to Zambia and Tanzania, terminating at a virtual landing point (VLP) on Capitol Hill in Lilongwe and eight drop points along the network. Telecom operators and Internet service providers (ISPs) are able to connect to the SimbaNet network on an open access basis and are also enjoying greatly reduced costs for wholesale bandwidth. This has enabled them to launch new services, with a reduced cost structure, which should in turn enable retail price reductions, provided that there is sufficient competition in this market segment.

34. **Malawi needs a seamless, nationwide fiber backbone offering high-quality, reliable, open-access, low-cost transit services.** Although Blantyre and Lilongwe are relatively well served by fiber backbones, MDAs, ISPs, businesses, and citizens throughout much of the rest of the country have limited connectivity. The private sector lacks the incentives to provide a national backbone to rural, remote, and impoverished areas. There is a need therefore to go beyond what the RCIPMW has supplied and to push toward universal broadband connectivity for the entire country.

Subcomponent 2.1: Connectivity for Public Institutions (US$26.0 million)

35. **Subcomponent 2.1 will support high-speed connectivity for priority public institutions throughout the country, including government offices, public services centers ('one-stop shops'), primary and secondary schools, and health centers.** It is proposed to utilize a PPP model similar to that which proved successful under the RCIPMW—demand aggregation for bandwidth and connectivity services across government, to prime the market and to attract private sector investment (subject to validation as part of the feasibility study noted below). Serving government institutions will not only meet the Government's connectivity needs but can also provide an anchor client to incentivize private sector network investment. Once a fiber backbone is established to serve the Government, the same infrastructure can be used to serve businesses and individuals. Support will include (a) a detailed mapping exercise, feasibility study, and PPP transaction advisory consultancy to identify priority institutions for connection based on projected bandwidth demands, location, cost, and overall impact; this consultancy will also review the PPP options and payment methods under the contract; (b) a competitive tender for

connectivity services (characteristics defined below) under a PPP; and (c) support for monitoring service levels/performance of the private contractor under both the Malawi Digital Foundations Project and the previous connectivity tender under the RCIPMW.

36. **To maximize benefits for both public institutions and the private sector, the connectivity services transaction will be structured to address bottlenecks within different parts of the Internet value chain identified to have a large impact on costs, competitiveness, and reliability of ICT services.** These correspond to the 'first', 'middle', and 'last mile', including the following:

(a) Purchase of additional international Internet bandwidth ('first mile'), delivered to one or more VLPs within the country, leveraging volume discounts to drive down unit costs of international transit for both government and private operators.

(b) Creation of a seamless, open access, wholesale fiber-optic backbone, a 'Virtual National Network' ('middle mile') to transit both domestic and international traffic, with drop points at strategic locations in every district. This will not only carry traffic for government and public institutions but also lower the barriers to market entry and lower operations costs for last mile services providers—distributing the cost of shared infrastructure across many market players and increasing retail level competition.

(c) 'Last mile" connectivity services direct to the premises of public institutions, ensuring high-speed, high-quality connectivity needed for communications and digital service delivery.

Subcomponent 2.2: Connectivity for Higher Education (US$4.0 million)

37. **Improving connectivity for higher education institutions is critical to empower the next generation of digital leaders for government and private sector.** Too many of Malawi's universities and technical schools lack sufficient connectivity to enable adequate access to the best global information and research collaboration. Where connectivity is available, it is often on shared connections, or at low speeds, which makes the network unusable for educational applications that often require live streaming of content, or transfer of huge files.

38. **Subcomponent 2.2 will support high-speed connectivity and access to online academic content for higher education institutions through the Malawi Research and Education Network (MAREN).** As a member of the Ubuntunet Alliance, a collective of research and education networks (RENs) in East and Southern Africa, MAREN has the opportunity to access very low-cost international connectivity, academic content, and training opportunities as part of Ubuntunet's Africa Connect 3 project, supported by the European Union (EU) enabling access to low-cost connectivity, online educational content and training.[18] Subcomponent 2.2 is expected to finance (a) Pre-payment of MAREN's membership fees for the Africa Connect 3; (b) international and domestic connectivity to connect member higher education institutions across Malawi; (c) campus wireless fidelity (WiFi) networks to reach university departments and halls of residence; (d) support for technical staff (Director and Network Engineers); (e) network equipment to support points presence around the country; and (f) a program of capacity building, in particular to train

[18] For Africa Connect 2, the membership fee was €280,000, and leveraged bandwidth and other services was worth €1.12 million from the EU. A similar leveraged funding structure is expected for Africa Connect 3. https://www.africaconnect2.net/Pages/Home.aspx.

student interns to maintain and expand the network at the local level. It is expected that MAREN will gain full self-sustainability through a gradual increase in member institution fee collection or other sources of funding before close of the project.

Subcomponent 2.3: Innovative Rural Broadband Access Solutions (US$4.0 million)

39. **Despite efforts to increase competition and private sector infrastructure investment, additional measures will be needed to ensure availability of affordable Internet access in some rural areas and among the most marginalized populations.** Areas with low population density and/or very low average incomes will not likely provide sufficient short- to medium-term returns to drive affordable, private sector broadband services rollout without additional government incentives and coordination. Subcomponent 2.3 will leverage recent and emerging technological and business model innovations in broadband service delivery and the financial resources of the USF to incentivize and enable the private sector to deploy affordable broadband Internet services in rural areas. It will support (a) a gap analysis to better understand the areas of poor coverage in the existing mobile networks; (b) the design and institutional setup of the USF; (c) financing of least-cost subsidy 'reverse auctions' for private sector deployment of shared infrastructure and mobile broadband services (3G/4G) in targeted rural areas; and (d) partnerships with the private sector, MACRA, and academia for piloting and scale-up of innovative technologies or business models for rural broadband deployment, through a challenge fund offering matching grants.

Component 3: Digital Platforms and Services (US$23.9 million)

40. **Increased access to affordable, high-quality connectivity will create an opportunity to transform the way that the Government conducts its business and provides services to citizens using digital technology.** Offering public services through mobile and online platforms can create significant benefits to citizens who must otherwise travel great distances and spend significant time and resources to access services. This is particularly important for Malawi's rural residents who may lack access to public transport and quality roads but are likely to have access to a mobile phone. Likewise, digital platforms offer opportunities to deliver new categories of services and transactions such as digital cash transfers under social protection or payroll schemes, lowering administrative and logistical barriers, and reducing opportunities for corruption. Digital information and communications systems are also increasingly important tools for the Government to efficiently and transparently manage its internal operations.

41. **The aim of Component 3 is to build the core infrastructure and capacity necessary to support digital public service delivery and to enhance the efficiency of the Government's internal operations.** At present, the Government lacks sufficient human resources, institutions, policies, and IT infrastructure to deploy high-quality digital services in a secure, reliable, and cost-effective manner. The limited number of digital services that have been developed by individual MDAs are typically isolated and have proven expensive and challenging to launch, maintain, and secure. While these deficits represent a significant challenge, the advantage is that the relative lack of investment in outdated, legacy IT infrastructure presents an opportunity to leapfrog to the latest technology and adopt best practices and policies informed by global experience.

42. **The Digital Malawi Program SOP will support a long-term, phased approach to upgrading Malawi's digital service delivery infrastructure, capacity, and services offerings.** The Malawi Digital Foundations Project (phase I) will first support development of human and institutional capacity,

development of a shared digital services platform and a few demonstration applications. The Malawi Digital Acceleration Project (phase II) is expected to support a wide range of digital applications that leverage the shared platform developed under phase I in collaboration with relevant MDAs.

Subcomponent 3.1: Strengthening Institutional Capacity to Deliver Digital Services (US$3.4 million)

43. **A significant scale-up of digital services offerings will require an equivalent upgrade of the strategies, policies, institutions, and capacity of technical staff and leadership responsible for championing and executing this ambitious agenda.** Responsibility for the Government's IT needs rests primarily with the e-Government department under the MICT, which maintains a cadre of IT common service staff embedded in MDAs throughout the Government. The department faces several interrelated problems, namely lack of a strategic vision and work plan, lack of funding and authority over IT investments by other MDAs, and insufficient human resources and technical skills to effectively fulfill its mandate.

44. **Subcomponent 3.1 will support a comprehensive institutional strengthening and capacity-building program to strengthen the Government's ability to deliver digital services.** This will include (a) recruitment of a digital government advisor to support the strategy, skills development, and implementation activities at the outset of the project; (b) development of a Digital Government Strategy (DGS) and Action Plan, including an institutional structure and capacity review; (c) development of an Enterprise Architecture and Interoperability Framework; (d) a training program for 'digital leaders' and IT professionals across the government; (e) a change management and outreach program to sensitize stakeholders about government IT policies and use of the shared infrastructure and services; (f) support for regulatory development in the areas of digital government, data privacy, protection-sharing policies, cybersecurity, interoperability, and shared infrastructure solutions including cloud and an update of the IT Procurement Policy; and (g) digitization of key registries to enable digital migration of services and access to critical data.

Subcomponent 3.2: Shared Digital Public Services Delivery Platform (US$15.0 million)

45. **By establishing a Shared Digital Public Service Delivery Platform, the Government can significantly reduce the cost and time taken to develop and maintain new digital services, utilizing a 'Build once, re-use always' philosophy.** Currently, MDAs planning to offer a service digitally spend considerable time and money to develop, implement, and operate stand-alone IT systems. They could significantly speed up the deployment of digital services and cut costs by leveraging a shared infrastructure and services platform. This approach would allow MDAs to focus on the areas of core technical competency and user interface when developing a new digital service rather than worry about 'back end' IT issues.

46. **Subcomponent 3.2 will support development of the common elements of the shared public services delivery platform.** This will include, though not be limited to, development of (a) a shared data hosting solution/government cloud; (b) common digital service enablers such as user authentication, electronic identification (ID) integration, mobile delivery platform, SMS notification platform, electronic payment module, interoperability, and data-sharing platform; (c) the Malawi Digital Services Portal—a single point of entry ('one-stop shop') for access to government information and digital services on any device; and (d) shared IT services to improve government efficiency such as e-mail, electronic document

management system, and other shared applications.

Subcomponent 3.3: Demonstration Digital Applications and Services (US$5.5 million)

47. **Subcomponent 3.3 will support a select number of digital applications and services to demonstrate the use of the shared platform once sufficient capacity is built and the Shared Digital Public Services Delivery Platform is in place.** This will include development of (a) an e-Procurement system in collaboration with the Office of the Directorate of Public Procurement (ODPP); and (b) citizen-facing services, with priority to agriculture and health given the wide impact on livelihoods and numbers of citizens served. The e-Procurement system will be rolled-out within selected 'champion' MDAs and LGAs to test the system across a range of sectors, locations and size of procurement volume. Support will also be provided for business process re-engineering, training and change management within the champion MDAs and LGAs to ensure successful implementation and impact of the system. Mobile survey tools will be utilized to gather citizen input on the other priority applications to be developed. Hackathons or partnerships with technology hubs will also be used to incentivize local content creation, development of mobile-based apps, and services that address local problems.

Component 4: Project Management (US$5.0 million)

48. **This component will support essential project management functions of the project.** This will include support for an overall project manager; a digital government services coordinator; a connectivity/ICT technical specialist; and specialists in procurement, FM, and safeguards. It will also include funding for strategic communications, monitoring and evaluation (M&E), audits, logistics, and operational overhead.

B. Project Cost and Financing

49. **The Malawi Digital Foundations Project will be financed through a US$72.4 million equivalent IDA credit to the GoM.** The project will use the Investment Project Financing (IPF) instrument and will serve as phase I of the two-phase Digital Malawi Program SOP. The estimated cost of the full Digital Malawi Program is US$130 million. A breakdown of the project financing allocation by component is included in the table below. The project will be fully financed through the IDA credit with no additional counterpart funds or co-financing expected. It is nevertheless anticipated that the project funds will leverage investment from other sources, notably the private sector investors bidding for contracts under Subcomponents 2.1 and 2.3, and from the EU under the AfricaConnect program for Component 2.2. This additional leveraged investment is estimated to be about US$10 million.

Component	IDA Financing (US$, million)
Component 1: Digital Ecosystem	**9.5**
1.1: ICT Regulation, Strategy, and Policy Development	2.5
1.2: Regulatory and Policy Implementation, Capacity Building, and Institutional Development	1.5
1.3: Digital Skills Development and Innovation	5.5
Component 2: Digital Connectivity	**34.0**

2.1: Connectivity for Public Institutions ("Virtual National Network")	26.0
2.2: Connectivity for Higher Education	4.0
2.3: Innovative Rural Broadband Access Solutions	4.0
Component 3: Digital Platforms and Services	**23.9**
3.1: Strengthening Institutional Capacity to Deliver Digital Services	3.4
3.2: Shared Digital Public Services Delivery Platform	15.0
3.3: Demonstration Digital Applications and Services	5.5
Component 4: Project Management	**5.0**
Total	**72.4**

C. Lessons Learned and Reflected in the Project Design

50. **A comprehensive, long-term commitment is needed to support digital transformation.** The Digital Malawi Program SOP builds upon the achievements of the RCIPMW and will continue to assist the Government over the long term to build its 'digital foundations' under phase I, and to accelerate development of the digital economy and digital public service delivery under phase II. The ICT sector is rapidly changing, creating the need for ongoing innovation, upgrading of skills and infrastructure, and constant vigilance and proactivity to prevent regulatory and competition backsliding. Countries with a long-term, comprehensive vision and support from the World Bank such as Kenya demonstrate the potential to achieve digital transformation, while others such as Burundi have experienced significant backsliding after the World Bank's projects and engagements concluded.

51. **The project will maximize private sector investment, utilizing a 'cascade' approach and seek to minimize the complexity of PPP transactions.** The advanced capacity purchase PPP model (Build, Own, Operate) for international connectivity utilized under the RCIPMW has proven to be highly successful at maximizing private investment, increasing market competition, and placing responsibility for ongoing operations and maintenance of infrastructure entirely with the private sector. This method will be repeated for improving domestic connectivity under Digital Malawi. A 'reverse auction' method will be utilized for rural connectivity investments based on successful experience in Tanzania to ensure that public resources will only be utilized to meet only the minimum subsidy required for private sector operators to roll out infrastructure and services in rural areas considered too risky or with an average revenue per user too low for a purely private investment.

52. **Digital inclusion will be a key focus to ensure that those at the bottom of the pyramid benefit from ICTs and digital services.** Studies demonstrate that proactive intervention is needed to ensure that ICT services are affordable and accessible to the poorest and most marginalized citizens to empower them with the significant opportunities and benefits this can create. Without such interventions, only those already at the top of the pyramid will benefit, exacerbating inequality. The project explicitly aims to lower retail costs of services, expand access to rural areas and marginalized populations, and focus skills development and entrepreneurship opportunities on youth and women.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

53. **Project implementation will be led by the Public-Private Partnership Commission (PPPC).** A project implementation unit (PIU) within the PPPC has been established to manage the project. The PIU will feature a project manager, procurement specialist, FM specialist, senior ICT adviser, safeguards specialist, and a partnerships and communications specialist and will add other roles as needs arise. The PIU will be responsible for day-to-day project management and coordination and execution of FM, procurement, safeguards, and M&E. All positions have been recruited and are in place, with the exception of the partnerships and communications specialist, who is expected to be recruited prior to project effectiveness. The consultants serving in the project manager, procurement, and FM positions have been retained from the RCIPMW in recognition of high performance. Project management, procurement, and FM assessments under the RCIPMW have all been satisfactorily rated and strong oversight systems are in place within the PIU and wider PPPC. The Chief Executive Officer (CEO) of the PPPC will serve as the supervisor of the PIU.

54. **Key project stakeholders, including the e-Government department, MACRA, ODPP, MAREN, and other MDAs, as relevant, will serve as the lead on technical matters for components and activities within their purview.** The stakeholders will be responsible for providing strategic direction and technical oversight, while the PIU, under the PPPC, will continue to lead on all procurement and fiduciary functions. As with the RCIPMW, the working relationship between the PIU and the relevant stakeholders is expected to be collaborative given the need for close cooperation and some areas of joint responsibility. A senior ICT advisor has been recruited to provide strategic guidance and knowledge transfer during the first few years of project implementation. An additional digital government services coordinator, officially part of the PIU but embedded within the e-Government department, may also be considered if needed during implementation to facilitate coordination between the PIU, the e-Government department, and other key MDAs under Component 3. Lead counterparts within the e-Government department, MACRA, and ODPP have been identified and have already been working closely with the PIU during project preparation. This is expected to help strengthen institutional knowledge and sustainability after project completion.

55. **Guidance on implementation arrangements and priority setting will be provided by a project Steering Committee throughout the life of the project.** The steering committee will bring in voices from across government and stakeholder groups and will be leveraged to help support change management with regard to use of the shared digital platform and the necessity to partner with the e-Government department when developing new digital services and applications. Members of the steering committee may include, but are not limited to, the Ministry of Finance, Economic Planning and Development (MFEPD), MJCA, MICT, PPPC, ODPP, e-Government department, Reforms Unit, and MACRA.

56. **A US$3 million project preparation advance (PPA), approved in October 2016, is supporting capacity building and preparation of key studies, strategic frameworks, and project implementation road maps.** As a result of the activities funded through the PPA, the project should be well positioned for rapid implementation upon declaration of effectiveness, with the National Broadband Strategy, Digital Government Strategy, Enterprise Architecture and Interoperability Framework, Connectivity Services Feasibility Study, and Transaction Advisor consultancy either completed or well advanced. The PPA is also

enabling implementation of a significant training program and exchange visits for key staff at MACRA and the MICT; hiring of critical project management, advisory, and compliance consultants to staff the PIU; and undertaking of time-sensitive reviews of draft regulatory instruments and an audit of the Government Wide Area Network (GWAN).

B. Results Monitoring and Evaluation

57. **The M&E framework for the project will rely primarily on standardized, routinely collected data sources from international organizations and MACRA to ensure continuous availability and consistency of data and to minimize any additional administrative burden.** The project will also support a more frequent undertaking of the national ICT usage survey undertaken by MACRA, which was first conducted in 2015, reducing the gap between surveys from five years to two- or three-year intervals. Specifications for the shared services portal will include tools for monitoring usage/transaction rates. The PPPC will have the responsibility for routinely collecting the M&E data from the relevant international data sources, MACRA, and the e-Government department. It is not envisaged that a separate M&E expert will be retained under the project as this can be carried out under the scope of work of the project manager with support from existing PIU consultants and technical counterparts. However, this may be considered during implementation if needed.

58. **Rapid mobile/SMS survey tools, as well as user satisfaction surveys embedded within digital public services application offerings will be leveraged as a means of citizen engagement and feedback.** Such tools will be used to identify priority digital services and public skills development offerings and to provide insights and identify course corrections related to public services applications as needed. Locally developed mobile survey tools will be given preference as a means to stimulate demand and innovation.

C. Sustainability

59. **While some of the core public services needs such as connectivity and digital infrastructure and services will continue to require public financing beyond the life of the Digital Malawi Program, significant efforts will be made to transition-specific activities toward self-sufficiency and to minimize costs.** Specific measures for each component are outlined in table 1.

Table 1. Sustainability mechanisms by component

Component	Sustainability Mechanisms
Component 1: Digital Ecosystem	• Technical assistance is being provided to increase capacity of MACRA staff. • MACRA will have significant revenue going forward as a result of fee structure established with new legislation. • Partnerships with private sector tech companies will facilitate most skills development and entrepreneurship activities; this can be continued after project closure as relevant.
Component 2: Digital Connectivity	• Advanced purchase PPP model will ensure connectivity services for more than 10 years with no additional operations and maintenance costs on behalf of the Government and resulting in significant savings compared with current practice of securing many different connectivity services contracts for each institution; Digital Malawi Phase II may consider additional funding for government connectivity services as needed through another competitive

	tender (at which point pricing should be much lower than at present). • USF will be utilized to maintain and expand rural connectivity program after project closure. • While the project will provide the initial support for connectivity and Africa Connect 3 membership, MAREN will gradually take full financial responsibility for its connectivity needs and technical operations through membership fees collected from member institutions.
Component 3: Digital Platforms and Services	• The whole of government shared infrastructure and services approach will allow for significant savings versus MDAs maintaining their current IT infrastructure, though continual funding will be needed for operations, maintenance, and upgrading. • Development of future digital services offerings could target revenue/fee-generating services, the partial proceeds of which can be used for IT needs. • E-Procurement System will result in significant cost savings due to increased transparency and competition for tenders.
Component 4: Project Management	• Lead counterparts have been identified within MACRA and the e-Government department which will help retain institutional knowledge and skills after program closure; the capacity building/training and institutional reform activities under Components 1 and 3 will also support strengthening of the main counterparts which should persist after program closure. • The programmatic, SOP approach will provide longer term support; phase II will consider more direct implementation responsibility within lead MDAs to build capacity.

D. Role of Partners

60. **Partnerships will be leveraged to complement and build upon the Digital Malawi Program.** The project is coordinating closely with the International Finance Corporation (IFC) to introduce additional financing opportunities for operators looking to enter the market, expand existing infrastructure and operations, or to participate in the connectivity services tenders under Subcomponent 2.1. Partnerships with global tech companies will be fundamental to crowd in resources and expertise under the skills development and innovation activities under Subcomponent 1.3. While several partnerships with private sector firms have been informally agreed in advance under their corporate social responsibility programs, these are expected to be formalized and expanded upon following recruitment of the partnerships coordinator under the project. The project has also been coordinating with the UN High Level Panel on Women's Economic Empowerment as part of a working group of tech companies offering digital skills development, entrepreneurship and connectivity enhancement programs targeted toward women and girls. Coordination with the national ID program under implementation with the support of UNDP will also be critical to ensure full compatibility and integration of the ID system within the digital services platform.

61. **The project will also be closely aligned with the ongoing government program to improve public services and will support World Bank financed operations across many sectors.** The project will provide high-speed connectivity to the government's 'one-stop' service centers, which will also serve as physical locations for accessing the Malawi Digital Citizen Services Portal to be developed under Component 3. The project will also be an enabler of digital service delivery and other objectives across many sectors. An overview of the linkages with key projects supported by the World Bank is included in Annex 5. Once the Digital Public Services platform nears readiness, the project will support efforts toward sensitization and

partnership with other World Bank Operations and other MDAs to ensure that existing digital services are migrated to the shared platform and that any new services utilize the shared infrastructure.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

62. **Overall risk is assessed as Moderate.** The operation builds off of the successful RCIPMW, including the core implementation team. The Government has demonstrated a strong commitment to digital development through passage of the new ICT sector legislation and request for substantial financial and technical assistance from the World Bank to improve access to the Internet and support digital public services delivery capacity. A new Digital Government Strategy and National Broadband Strategy are under development which will further consolidate and prioritize digital technology at the center of Malawi's overall development strategy.

63. **Three risks are considered Substantial—Macroeconomic, Sector Strategy and Policy, and Political and Governance**. Macroeconomic factors such as the devaluation of the Kwacha relative to the U.S. dollar, fiscal tightening, and low GDP per capita may dampen interest in the market from new investors and raise the cost for existing operators to import U.S. dollar-denominated equipment needed for network expansion and upgrades. This risk will be mitigated through U.S. dollar-denominated contracts—an approach successfully demonstrated under the RCIPMW. The project is also coordinating closely with IFC to introduce additional financing opportunities for operators looking to enter the market, expand existing operations, or to participate in the connectivity services tenders under Component 2.

64. **The sector strategy and policy and political and governance risks relate to the increasing role of the state-owned ESCOM in the telecoms market.** ESCOM has reached a financing agreement with China Export-Import Bank to extend its fiber network to nearly all districts in Malawi, backed by a government guarantee. While additional fiber backbone infrastructure investment is much needed in principle, the deal raises several concerns and risks. The investment risks displacing private investment along some routes and may send mixed signals about the Government's continued commitment to sector liberalization and competition. The noncompetitive nature of the deal and resulting high unit price may lead to these costs being passed on to other operators purchasing transit service and ultimately consumers. The presence of a significant state-owned player in the market could potentially undermine MACRA's regulatory independence. There is also a danger of duplication between the ESCOM investment and that financed by IDA.

65. **Several measures will be implemented to mitigate the downside risks of the ESCOM infrastructure investment.** ESCOM intends to establish an independent special purpose vehicle (SPV) to own the network and will contract with a private operator to manage operations and maintenance, along the lines of current practice under its network, helping to ensure technical quality. The Government will also continue to be advised to consider divestment/privatization in the future and to emphasize the benefits of lower cost services and greater access relative to short-term revenue maximization. Finally, the connectivity services transaction under Component 2 of the Digital Malawi Project will provide significant incentives and competitive pressure to ensure that network operations are of high quality and services are being offered at low cost. As a state-owned entity, ESCOM (or the resulting SPV) would not

be eligible to participate directly in the connectivity services tender. However, provided that certain best practices criteria for ownership structure and operations are met (network is operated by a private entity, it is operated strictly on a wholesale, open access, nondiscriminatory basis, meets quality/reliability requirements, and so on), it is envisioned that a standard term sheet could be developed for transit services or dark fiber on its network that will be offered on equal terms to all potential bidders. If the network quality and price of the offering is not considered competitive, bidders will have the opportunity to build new infrastructure or make arrangements with competing infrastructure holders.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

66. **The Malawi Digital Foundations Project is intended to reduce barriers to connectivity in Malawi by targeting the affordability, availability, and quality of broadband service.** The project will strengthen the enabling environment for private sector ICT investment and leverage PPPs to accelerate infrastructure and services rollout throughout the country. These efforts will improve network coverage, quality, and reliability while lowering the price of services by rationalizing investment and creating greater competition and market size.

67. **The project will increase the number of Internet users and boost GDP growth.** It will empower businesses to leverage ICT tools to boost productivity, lower transaction and information costs for citizens, and offer the Government the ability to improve records management and gain service delivery efficiencies. Estimates indicate that the Digital Malawi Program will result in an additional 3.16 million Internet users in 2027 compared with the increase that would happen organically, without the project, rising from 10.4 per 100 people in 2016 to 46.9 in 2027, compared with a base case estimate of 33.9. Based on this estimate, the projected increased connectivity will lead to a 0.06–0.08 percentage point increase in Malawi's GDP per capita growth in 2027.[19] The resulting increase in GDP ranges from US$0.38–US$0.48 million in 2018 to US$45.98– US$47.76 million in 2027. The cost-benefit analysis (CBA) presents a benefit-cost ratio between 2.21 and 2.35 for an investment of US$37 million in the Internet penetration components of the project (Subcomponents 1.1, 1.2 and Component 2). The expected internal rate of return (using CBA calculations) is between 22.6 percent and 23.8 percent.

68. **There is a strong rationale for public financing across all three proposed project components.** Establishing a strong legal and regulatory enabling environment for the ICT sector, promoting skills development and job creation and delivering public services are all core government functions. The government also has needs for connectivity and core IT infrastructure in order to carry out its duties in an efficient, effective and transparent manner.

69. **Public resources are also essential to ensuring widespread and affordable access to the internet.** Even in the most advanced, competitive telecoms markets, such as in the United States and Europe, there

[19] The regression analysis by the World Bank estimates the results for the impact of mobile broadband in developing countries that are relatively robust across both the base specification and a wide series of different full-period (2005–2015) specifications, suggesting that a 10 percentage point increase in the mobile broadband penetration rate (say, from 20 percent to 30 percent) increases annual GDP/capita growth by approximately 0.48–0.60 percentage points. This range has been used to provide the range for the CBA.

is a need for public intervention to ensure access to broadband in rural areas and among the most disadvantaged populations. The case is even stronger in developing countries such as Malawi with low per capita incomes and limited private infrastructure and services offerings in rural areas. The project aims to achieve wider and more affordable internet access for citizens primarily by utilizing funds that the government is already spending to meet its own internal connectivity needs in a smarter way. The PPP model chosen actively encourages private investment rather than displacing it (purchasing services in order to incentivize private sector infrastructure investment rather than direct financing and public ownership of network infrastructure).

70. **Increased connectivity will allow citizens to benefit from digital access to services offered by the Government and private sector.** At present, citizens typically interact with the Government and the private sector in person. By enabling migration of public and private services to digital platforms, citizens will increasingly save time and money by avoiding time consuming in person visits and travel to access services. It is predicted that new Internet subscribers will substitute around 10 percent of their travel time for Internet or SMS/Unstructured Supplementary Service Data (USSD) based applications solutions which, in turn, is projected to generate savings of 0.04 percent of GDP over 10 years.

71. **The project will support the adoption of e-Procurement which is expected to generate significant cost savings for the Government of up to 25 percent of its annual procurement budget.** Currently, the Government uses a paper-based procurement system which has high transaction costs and low transparency. Introducing an e-Procurement system is expected to achieve cost savings by enhancing transparency, reducing administrative costs, and improving process efficiency. E-Procurement will enable the Government to consolidate multiple bids across MDAs, leading to savings from larger scale and seamlessly advertise in multiple national and international venues, increasing interest and competition for bids.

72. **The Government and the private sector will gain operational efficiencies and cost savings by adopting digital technologies and bundling shared infrastructure and ICT services needs across government.** It will support the expansion of a government-wide e-mail system and enable the use of Voice over Internet Protocol (VOIP) for voice calls, improving efficiency, reliability, and transparency of communications and driving down expenditures on paper, physical correspondence and meetings, and high phone and Internet bills. Businesses will similarly benefit by adopting ICT tools to improve communications, service delivery, and transaction processing. It is estimated that connectivity costs for the Government and other public institutions will be reduced by between 10 percent and 20 percent despite the expected increase in volume of traffic.

73. **The project will also reduce connectivity costs for Malawi's educational institutions and enable access to world-class educational content and research.** The prevailing wholesale market rate for international bandwidth is US$135 per Mbit/s per month in Malawi. Retail, non-bulk purchase rates are much higher. Through support to MAREN and participation in the Africa Connect 3 project, bulk bandwidth costs are expected to drop to as little as US$25 per Mbit/s month, a fivefold reduction in spending, per unit price (though capacity usage is expected to rise because of increased bandwidth).

74. **The project will improve the enabling environment for ICT innovation, helping create new digitally driven jobs, businesses, and services across all sectors and create opportunities for those at the bottom of the pyramid.** The impact is expected particularly in the health, financial services, agriculture,

and education sectors which offer significant scope for disruption and innovation and which can have a disproportionate effect on the lives of rural, marginalized populations.

B. Technical

75. **The project components were designed as an integrated and interlinked program to maximize the development impact of the investments**. Investment is being complemented by technical assistance, reform and skills development support to both increase access to ICTs and digital services while also enabling citizens, businesses, and government with the skills, capacity, and incentives to use them to maximum advantage. This approach aligns with lessons learned from other operations and the findings of the World Development Report (WDR) 2016, which highlights the need for both access to technology and complementary 'analog' enablers.

76. **The technical design is consistent with international best practices.** The design of the project is based on a model of competitive, private sector delivery wherever possible, utilizing a 'cascade approach' to leverage private sector expertise and financing and to contribute to overall sector development. This is fully consistent with international experience and experience with the RCIPMW which show that this is a more cost-effective and efficient way of delivering ICT services rather than through direct government financing, ownership, and operation of telecoms infrastructure. Principles of open access and nondiscriminatory pricing for first and middle mile infrastructure investments (made by contractors who secure the winning tenders under Subcomponents 2.1 and 2.2) will be emphasized to facilitate infrastructure sharing, lower overall sector operating costs, and move competition toward the retail level.

C. Financial Management

77. **The FM risk of the project is assessed as Moderate.** The PPPC has a good FM track record, including under three previous World Bank-financed projects: the Public Utility Reform Project (PURP) which closed on December 31, 2007, the Business Environment Strengthening and Technical Assistance Project (BESTAP) which closed on December 31, 2012, and the RCIPMW which closed on June 30, 2016. The PPPC has well-qualified and experienced FM staff who have worked in the three projects noted above. It has a computerized system that is used for transaction processing and reporting. Interim financial reports (IFRs) under the previous project have been submitted on time and were considered to be of good quality. The audited financial statements with clean audit opinions were always submitted before due dates and the management letters did not have serious control and accountability issues.

D. Procurement

78. **Procurement will be carried out in accordance with the requirements in the Procurement Regulations for IPF Borrowers:** Goods, Works, Non-Consulting Services and Consulting Services dated July 1, 2016; 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants' revised as of July 1, 2016; and provisions stipulated in the Financing Agreement.

79. **The proposed project will use the Systematic Tracking of Exchanges in Procurement (STEP) system.** STEP is a planning and tracking system, which would provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance.

80. **A Project Procurement Strategy for Development (PPSD) has been developed which assesses the market and sets out the strategy and selection methods to be followed for procurement of goods, works, and non-consulting and consulting services.** The strategy notes that there are a number of broadband providers in the market, but a limited number of domestic IT firms capable of providing some of the more advanced digital public services platform elements. International competitive bidding is planned for such activities. For other less complex activities where there is an adequate domestic market, national competitive bidding is planned. The underlying Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

81. **The overall project procurement risk rating is Substantial.** A procurement capacity and risk assessment has been carried out by IDA to review the organizational structure for implementing the project. The project will be implemented by the dedicated PIU established under the PPPC which has been assessed to have the requisite procurement capacity to implement the project. The risks identified and the mitigation measures are detailed in the PPSD, which has also been summarized in annex 2.

E. Social (including Safeguards)

82. **The project will have an overall positive impact on the country's population**, as it is expected to promote affordable Internet coverage in areas with low access to communications infrastructure and services. In addition, it will increase efficiency of public service delivery and promote more equitable and easier access to services by citizens.

83. **The project triggers OP 4.12 - Involuntary Resettlement because some of the activities may involve direct financing for construction of government-owned fiber-optic networks, a national datacenter, and other associated infrastructure that will involve civil works which may require land acquisition.** Initial project screening and experiences from the RCIPMW, however, indicate that land acquisition and involuntary resettlement of people will be minimal, as the bulk of these activities will mainly follow existing road reserves and land acquisition will be done on a willing buyer/seller basis. Network alignment will also be adjusted to address any risks of affecting sites of cultural significance and others.

84. **Because the project's footprint is largely unknown at this stage, a Resettlement Policy Framework (RPF) has been prepared, in consultation with relevant stakeholders and disclosed in country March 17, 2017.** The RPF provides guidance on the process for preparing, reviewing, approving, and implementing subsequent Resettlement Action Plans (RAPs) where necessary and prior to the commencement of any civil works. The RPF also provides guidance on the process of public consultations, establishment of a functional grievance handling mechanism, and disclosure requirements.

85. **OP 4.12 will be triggered only for activities involving direct project financing for infrastructure development or in which infrastructure works are undertaken by a private provider solely for the purpose of providing services to the project beneficiary.** For cases in which works are not directly financed by the project nor solely and specifically undertaken in order to serve the project beneficiary (e.g. network or datacenter infrastructure that are intended to, and will serve many clients), the Bank safeguard policies are not required to apply. The private sector services provider would still be encouraged to use the RPF and ESMF to guide their own policies and comply with national law in those

situations.

86. **A safeguards specialist will be recruited to support mainstreaming of social issues in the project including gender, social inclusion, conflict management, involuntary resettlement, and vulnerable or marginalized groups. As part of the project preparation, the capacity of the PIU to implement, monitor, and report on social issues, including safeguards, was assessed. It was recommended that the specialist be recruited (on retainer) within six months of project effectiveness.** The specialist will coordinate the preparation and implementation of RAPs and work closely with the environmental specialist to do the same for Environmental and Social Management Plans/Environmental and Social Impact Assessments (ESMPs/ESIAs) and to develop social action plans resulting from these documents. Depending on the profile and experience of the selected consultant, the role of social and environmental specialist (see below) may be combined as appropriate. The specialist will also work with service providers contracted under the project to encourage the use of the RPF to inform their own resettlement policies and practices.

F. Environment (including Safeguards)

87. **The project activities are expected to be site specific, with small ecological footprints, and generating impacts that are of low to moderate significance that can be easily mitigated.** The project is therefore categorized as 'B'. Consequently, environmental assessment policy OP/BP 4.01 is triggered. The policy on Physical Cultural Resources (OP 4.11) is likewise triggered as the construction of the planned network may involve movements of earth in areas that may contain sites of physical cultural importance to communities.

88. **Given that the project will be implemented nationwide, and the exact locations of physical interventions are not precisely known at this stage, an Environmental and Social Management Framework (ESMF) has been prepared, consulted upon, and disclosed in country on March 20, 2017.** The purpose of this ESMF is to provide a set of procedures and measures aimed at facilitating the integration of environmental and social considerations in the preparation, planning, and implementation of the project activities. Specific ESMPs will be prepared after a screening process, the criteria of which have been detailed in the ESMF. The ESMF also includes chance finds procedures to guide private contractors on the proper management of physical cultural resources after discovered during project implementation, in line with OP 4.11.

89. **Malawi has a very varied landscape, ranging from agricultural lands, plantations, commercial farms, valleys and gorges, and forested areas to mountains and hills, city environs, townships, rural settlements, trading centers, and others.** To ensure that physical interventions do not affect sensitive areas, safeguard policies OP 4.04 (Natural Habitats) and OP 4.36 (Forests) are also triggered to ensure that relevant procedures and guidelines intended to protect the natural resource base are included in the ESMF.

90. **The above policies are triggered only for activities involving direct project financing for infrastructure development or in which infrastructure works are undertaken solely for the purpose of providing services to the project beneficiary.** As noted in the 'Social' section above, it is expected that most project activities will be structured as a purchase of services from private sector providers. Should the private provider undertake any new investments in infrastructure and related civil works in order to provide these services, they will be encouraged to use the ESMF to guide their own policy on

environmental management and thereby conform to national laws and policies as well as international best practices.

G. World Bank Grievance Redress

91. **Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit *http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service*. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY : Malawi
Digital Malawi Program Phase I: Malawi Digital Foundations Project

Project Development Objectives

To increase access to affordable, high quality internet services for government, businesses and citizens and to improve the government's capacity to deliver digital public services.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Internet Users per 100 people		Percentage	17.60	30.00	Annual	MACRA Industry Performance Report	MACRA
Description: Percentage of population reporting regular use of the internet (though they may not have a personal subscription). Data reported with 1 year lag. Supported through components 1 and 2. Baseline is for year end 2015 (2.786 million subscribers as reported by MACRA). Includes both mobile and fixed connections. Additional users beyond baseline trend increase as a result of the project is modelled under the economic and financial analysis section of the PAD.							
Name: Retail Price of Pre-Paid Mobile Broadband Monthly Bundle, 500MB Data Volume		Amount(USD)	4.08	3.00	Annual	MACRA Industry Performance Report	MACRA

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: This indicator will measure affordability of broadband services using the retail price of a typical entry level broadband package as a proxy. The price is measured in local currency for a mobile-broadband handset-based prepaid tariff with 500MB volume of data, converted to USD. The indicator will be supported through component 1 and component 2. Baseline figure is for year end 2016, reported by MACRA, based on K3,000 price for a 500MB monthly mobile bundle.							
Name: Number of Public Institutions Utilizing High Speed Internet Connections Under the Project		Number	0.00	400.00	Annual	Project Data	PPPC, e-Government Department, MAREN
Description: Indicator will measure the number of public institutions connected to the internet through components 2.1 and 2.2.							
Name: People obtaining new digital skills or knowledge under the project		Number	0.00	1500.00	Annually	Project Data	PPPC, MACRA, e-Government Department
Of which, Percentage of Women and Girls obtaining new digital skills or knowledge under the project		Percentage	0.00	50.00			
Description: This indicator measures the number of people benefitting from capacity building, ICT skills development and entrepreneurship support activities financed directly by the project and through strategic partnerships. It will be supported through all four components.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of Transactions Per Year Utilizing the Shared Digital Services Platform		Number	0.00	25000.00	Annual	Statistics will be collected through the portal	e-Government Department, PPPC
Description: This indicator will measure the volume of digital transactions utilizing the shared infrastructure (both internally within government and externally through transactions with citizens and businesses). It will be supported through component 3 and outreach to user MDAs.							
Name: Direct project beneficiaries		Number	0.00	6280000.00	Yearly	Total beneficiaries calculated based upon number of internet users in Malawi. Project based upon an estimated target of 30% usage and a total population projection of 20.9 million in 2022. Beneficiaries of all other skills development, digital services, etc. activities are assumed to be captured within the internet users figure.	PPPC, MACRA, National Statistics Office
Female beneficiaries		Percentage	46.00	48.00	Percentages updated every 3 years (when the national survey will be conducted)	National Survey on Access to and Usage of ICT Services in Malawi, % of Males and Females reporting access to the internet. Baseline set using data from 2015	PPPC, MACRA, Nationa Statistics Office

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
						survey.	
Description: Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.							

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Percentage of the population covered by at least a 3G mobile network		Percentage	32.00	60.00	Annual	ITU World Telecommunications/ICT Indicators Database.	PPPC, MACRA
Description: This indicator tracks the percentage of the population within range of at least a 3G mobile-cellular signal (capable of mobile broadband), irrespective of whether or not they are subscribers. This is supported by Components 1 and 2. Data reported with 1 year lag							
Name: Publication and Adoption of National Strategies for Broadband Access and Digital Government		Number	0.00	2.00	Annual	MACRA, e-Government Department	MACRA, e-Government Department, PPPC

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: This indicator will measure progress toward policy setting, institutional reform and establishment of a concrete implementation plan for rural connectivity and the shared digital services platform. This will be supported by components 1 and 3.							
Name: Number of Higher Education Students Provided with Enhanced with Access to the Internet Under the Project		Number	0.00	10000.00	Annual	MAREN	PPPC, MAREN
Description: This indicator will capture the number of students benefitting from enhanced access to broadband on university campuses connected to the MAREN network supported under component 2.2.							
Name: Number of e-Services and Applications Utilizing the Shared Services Platform		Number	0.00	8.00	Annual	Project Data	e-Government Department
Description: The number of separately identifiable digital services or applications using the shared services platform							
Name: Number of MDAs and LGAs using eProcurement System		Number	0.00	6.00	Annual	ODPP	ODPP, e-Government, PPPC
Description: This indicator will measure usage of the e-procurement system by Ministries, Departments and Agencies (MDAs) and Local Government Agencies (LGAs). The project intends to rollout the system through six pilot MDAs and LGAs prior to future scale up							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Average wholesale monthly price per Mbit/s of international internet bandwidth		Amount(USD)	466.00	50.00	Annual	MACRA	MACRA and PPPC
Description: This indicator will measure the wholesale price for international connectivity - a key driver of operator costs. A lower price should translate into lower retail prices provided there is adequate retail level competition. The baseline has been drawn using the average price per Mbit/s per month among all universities reporting to MAREN. Baseline data is from February 2017. During implementation, data will need to be gathered from a sample of ISPs and operators.							
Name: Digital services developed based on priorities identified through citizen engagement (Yes/No)		Yes/No	N	Y		SMS/Mobile rapid surveys	
Description:							

Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Internet Users per 100 people	17.60	20.00	23.00	25.00	27.00	30.00	30.00
Retail Price of Pre-Paid Mobile Broadband Monthly Bundle, 500MB Data Volume	4.08	4.00	3.75	3.50	3.25	3.00	3.00
Number of Public Institutions Utilizing High Speed Internet Connections Under the Project	0.00	0.00	22.00	200.00	400.00	400.00	400.00
People obtaining new digital skills or knowledge under the project	0.00	300.00	600.00	900.00	1200.00	1500.00	1500.00
Of which, Percentage of Women and Girls obtaining new digital skills or knowledge under the project	0.00						50.00
Number of Transactions Per Year Utilizing the Shared Digital Services Platform	0.00	0.00	0.00	10000.00	15000.00	25000.00	25000.00
Direct project beneficiaries	0.00	4300000.00	4700000.00	5200000.00	5700000.00	6280000.00	6280000.00
Female beneficiaries	46.00	46.00	46.00	47.00	47.00	48.00	48.00

Intermediate Results Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Percentage of the population covered by at least a 3G mobile network	32.00	38.00	44.00	50.00	56.00	60.00	60.00
Publication and Adoption of National Strategies for Broadband Access and Digital Government	0.00	0.00	2.00	2.00	2.00	2.00	2.00
Number of Higher Education Students Provided with Enhanced with Access to the Internet Under the Project	0.00	0.00	2000.00	5000.00	10000.00	10000.00	10000.00
Number of e-Services and Applications Utilizing the Shared Services Platform	0.00	0.00	0.00	2.00	4.00	8.00	8.00
Number of MDAs and LGAs using eProcurement System	0.00	0.00	0.00	2.00	4.00	6.00	6.00
Average wholesale monthly price per Mbit/s of international internet bandwidth	466.00	400.00	300.00	200.00	100.00	50.00	50.00
Digital services developed based on priorities identified through citizen engagement (Yes/No)	N	N	N	Y	Y	Y	Y

ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Malawi
DIGITAL MALAWI PROGRAM PHASE I: DIGITAL FOUNDATIONS Project

Project Components

Component	IDA Financing (US$, million)
Component 1: Digital Ecosystem	**9.5**
1.1: ICT Regulation, Strategy, and Policy Development	2.5
1.2: Regulatory and Policy Implementation, Capacity Building, and Institutional Development	1.5
1.3: Digital Skills Development and Innovation	5.5
Component 2: Digital Connectivity	**34.0**
2.1: Connectivity for Public Institutions ("Virtual National Network")	26.0
2.2: Connectivity for Higher Education	4.0
2.3: Innovative Rural Broadband Access Solutions	4.0
Component 3: Digital Platforms and Services	**23.9**
3.1: Strengthening Institutional Capacity to Deliver Digital Services	3.4
3.2: Shared Digital Public Services Delivery Platform	15.0
3.3: Demonstration Digital Applications and Services	5.5
Component 4: Project Management	**5.0**
Total	**72.4**

Component 1: Digital Ecosystem (US$9.5 million)

1. **The aim of Component 1 is to make Malawi a more attractive and competitive place to invest and innovate while ensuring that the benefits of digital technology are reaching all citizens.** This will be accomplished by strengthening the many inter-related elements that characterize a thriving digital ecosystem – creating and implementing forward-looking laws, regulations and policies; building digital skills and the capacity of institutions and citizens; developing a critical mass of innovators and supportive services; and working to close the digital divide – ensuring that all citizens benefit from digital development. These objectives will be supported through three subcomponents:

Subcomponent 1.1: ICT Regulation, Strategy, and Policy Development (US$2.5 million)

2. **The Revised Communications Act and Electronic Transactions Act, approved in July 2016, have modernized Malawi's legislative framework for the telecommunication sector and created a formal legal basis for a wide spectrum of digital transactions that are critical for digital commerce and service delivery.** In addition, a new Converged License Framework (CLF) is being introduced. The Acts have also widened MACRA's mandate to encompass new responsibilities in the areas of cybersecurity, e-commerce consumer protection and data privacy and promoting universal access to telecoms services.

3. **The challenge is now for MACRA to develop the strategies, bylaws (regulations), guidelines and data collection and analysis tools it needs to implement these laws, new mandates and policy objectives effectively.** The project prioritizes support for those elements, such as affordability and service quality, which most directly contribute to enhancing citizen's access to ICT services, as well as enabling efficient, secure and reliable digital transactions and innovation. The scope will remain flexible, allowing MACRA to tackle new issues as they arise in a fast changing sector. However, based on analysis during appraisal, the following activities have been identified as the top short to medium term interventions requiring project support:

(a) review of the existing and proposed regulatory instruments to align with the new legislation and policy objectives, including but not limited to the converged licensing framework, interconnection regime, mobile number portability, spectrum management, dispute resolution and infrastructure sharing;

(b) development of a National Broadband Strategy;

(c) review and benchmarking of sector taxation and fees, including for devices and network equipment, and development revenue models and recommendations;

(d) technical assistance to develop methodologies related to quality of service monitoring;

(e) development of a "dig once" policy to ensure that ducts or fiber networks are installed simultaneously alongside new road or rail works, and associated incentives for infrastructure sharing amongst operators;

(f) developing an enabling environment for digital financial services, including mobile money, by reviewing existing regulations and legislation, in coordination with MACRA, the Reserve Bank and other relevant stakeholders, and building consumer confidence in online transactions; and

(g) support for statistics and data collection programs (ICT usage surveys, online financial services and data collection from operators), including establishing an ICT statistical observatory within the National Statistical Office.

Subcomponent 1.2: Regulatory and Policy Implementation, Capacity Building, and Institutional Development (US$1.5 million)

4. **As a result of the new legislation, as well as new technological and regulatory innovations and developments in the telecommunications sector, there is a need to examine the institutional structure of MACRA and to strengthen the capacity of key staff at MACRA, the MICT, the MJCA, and the wider government to enable them to carry out effective regulation and policy implementation.** This is particularly relevant in emerging areas such as privacy and data protection, economic regulation, competition policy, ICT law and USF management. As with Subcomponent 1.1, critical short to medium-term priorities for project support have been identified, but it is anticipated that additional activities will be identified during implementation to respond dynamically to evolving sector developments and institutional needs. Priority activities include:

(a) An institutional structure and capacity review of MACRA and development and implementation of a corresponding institutional restructuring and capacity building work plan;

(b) Support for the implementation of the new Acts, the converged licensing framework, the interconnection regime and the new national broadband strategy, including developing an enforcement regulation, as required; and

(c) Support for implementation of a comprehensive capacity building work program, including longer-term professional certification, for regulation, cost modelling, spectrum management, use of ICT for development, cybersecurity (including the Computer Emergency Response Team (CERT)), data/privacy protection (as defined in the exercise above and the National Cybersecurity Strategy currently under development).

Subcomponent 1.3: Digital Skills Development and Innovation (US$5.5 million)

5. **Malawi faces a significant digital skills gap.** Low basic digital literacy rates are a key barrier to the greater use of ICTs by citizens and increased uptake of digital technology by the private sector. This is hindering Malawi's participation in the digital economy and constraining the ability of its citizens and businesses to access digital services. The lack of more advanced ICT skills -- namely computer scientists, app developers and IT professionals -- are a constraint to sector growth and innovation. Digital skills within government are likewise a concern, including challenges of recruitment and retention of qualified professionals within the IT common service and slow uptake of digital technology to improve efficiency across the public service. By raising the level of basic digital literacy in Malawi, and encouraging the development of a larger pool of advanced ICT professionals and supporting digital entrepreneurship and innovation, the subcomponent aims to assist MICT in empowering citizens and small businesses to utilize ICTs to access online services and increase their sales opportunities, encourage growth of the digital economy, and help launch new digital startups and investment by leading tech/IT firms.

6. **Malawi's tech innovation ecosystem is relatively undeveloped, but offers significant potential for job creation, particularly for youth.** There are a small number of tech hubs/digital business incubators emerging (see table) and a growing pool of developers and digital entrepreneurs. There is also a dedicated National College for IT (NACIT), and several higher education institutions that teach computer science, notably Chancellor College, MUST, Polytechnic and Mzuzu University. However, the support structures remain limited and underfinanced. There is a lack of equipment, insufficient co-working and meeting space, high internet connectivity costs, limited training and mentoring opportunities in business plan development and other entrepreneurial skills, and limited financing opportunities to scale up good ideas. There is also a lack of co-working space that could also serve not only to facilitate business incubation, but also serve as a space for creative arts and culture (for example, music, poetry, theatre).

7. **Partnerships will be leveraged as the primary mechanism for addressing the skills gap and supporting innovation and digital entrepreneurship.** There are a wide range of global initiatives to promote digital skills, innovation and entrepreneurship in developing countries, supported by tech industry leaders as part of corporate social responsibility efforts, private foundations, academic institutions and other donors. Likewise, there are a growing roster of for-profit and non-profit startups aimed at building skills and connecting individuals to jobs through digital platforms. Within Malawi, there

are a number of universities and training institutes offering degree programs and trainings in computer sciences, private firms offering certifications and a small number of tech hubs/digital business incubators offering support services to budding digital innovators and entrepreneurs. Given the scale of the skills and innovation deficit relative to the limited project resources available, support will be concentrated on forging partnerships with tech companies to bring new skills development and entrepreneurship programs and resources to Malawi and to scale up promising ventures.

Table 1.1. Tech Hubs and ICT Training Centers in Malawi

Institution	Background	Location	Business Model	Funding Need
mHub	Created in 2013, with support from US Embassy. Focused on ICT innovation, entrepreneurship and training – particularly for youth, women and girls.	Co-working space in Lilongwe, with activities also in Blantyre	Mainly grant funding, with small amount from membership fees, space rental and application/software development for hire	Connectivity, premises, training, investment fund for startups, event sponsorship
Innovation Hub	Created in 2015, with initial funding from UNICEF. Not focused in ICT but has several ICT start-ups. Offers coding courses for kids	Co-working and event space located within Polytechnic University, Blantyre	Dependent on UNICEF grant, with support from Polytechnic (free space), membership fees and equity investments in start-ups	Connectivity, staffing, event sponsorship. Possible investment fund for startups
EMNET	Created in 2015 with funding from MTL	Co-working space in commercial premises in Blantyre, with plans to expand to Limbe and Zomba	Commercial funding, supplemented by membership/rental fees, and pitching events	Event Sponsorship (“reverse” pitch nights)
NACIT	Created in 1986 as Government ICT training college, but now offers courses also to general public, using syllabus from NCC (UK)	Training college, with residential facilities in Blantyre (350 students) and Lilongwe (250)	Offers courses in return for fees. Registration fee paid to NCC and annual fee paid to NACIT	Connectivity, lecturer training. Campus WiFi. Possible loans or scholarships to assist with registration fees.

Source: Project team.
Note: NCC = National Computer Center.

8. **Partnerships and other support for skills development and innovation will emphasize digital inclusion – targeting youth and disadvantaged or disconnected populations – particularly women and girls and citizens in rural areas.** As with the other elements of Component 1, flexibility will be key to allow for taking advantage of new opportunities as they arise during implementation, but a number of priority activities were identified during appraisal:

(a) recruitment of a coordinator for partnerships, outreach, and communications with

responsibility for networking and crowding in skills and innovation resources;

(b) development of a national digital skills assessment and strategy; (c) facilitation of academia-industry partnerships, challenge funds, and pitching events to encourage private sector or NGO-led digital skills, innovation, and job creation programs;

(d) support to innovation networks/tech hubs through competitive grant awards which can be utilized to scale up operations to serve more digital entrepreneurs and expand services offerings. Such grants would be awarded in in accordance with eligibility criteria, guidelines and procedures acceptable to the Association as further elaborated in the Project Implementation Manual and Project Financing Agreement; and

(e) support for connectivity and technical assistance within tech hubs and ICT training centers. Development of a national digital skills assessment and strategy, including benchmarking with neighboring countries;

Component 2: Digital Connectivity (US$34.0 million)

9. **The aim of component two is to incentivize infrastructure development and services rollout by the private sector, to enable delivery of high speed, affordable connectivity for government, citizens and businesses across Malawi.** In addition to the measures to boost sector competitiveness and network investment through regulatory and other "soft" mechanisms supported under Component 1, there is a need for more direct intervention to encourage infrastructure deployment in geographical areas which do not offer sufficient short to medium term returns, or are considered too risky to attract investment from the private sector alone. There is also a need to exert competitive pricing pressure, create network redundancy and increase capacity along the most well trafficked network routes that are currently dominated by a limited number of providers.

10. **The RCIPMW has helped lower the price of international connectivity but additional efforts are needed to extend access to connectivity nationwide.** Under RCIPMW, the Government purchased a large volume of international bandwidth and related services over a 10-year period through a competitive bidding process. To supply these services, the winning bidder, SimbaNet, constructed a new fiber-optic network linking to Zambia and Tanzania, terminating at a VLP on Capitol Hill in Lilongwe and connecting select MDAs near those locations. Telecoms operators and ISPs able to connect to the SimbaNet network are also enjoying greatly reduced costs for wholesale bandwidth, enabling launch of new services and reducing their cost structure which should enable retail price reductions provided that there is sufficient competition in this market segment (see Box 1.1). However, the US$135 per Mbit/s per month benchmark achieved for wholesale international bandwidth is still well above that experienced in other countries, such as Kenya where it is below US$10. Furthermore, the US$135 price point is only available at the VLP and for bulk purchase; the prevailing retail price of bandwidth is over US$450 per Mbit/s.

11. **Malawi needs a seamless, nationwide fiber backbone offering high quality, reliable, open-access, low-cost transit services.** Although, Blantyre and Lilongwe are relatively well served, MDAs, ISPs, businesses and citizens throughout the rest of the country are not connected and are not yet experiencing the benefits of digital dividends. The private sector lacks the incentives to provide a national backbone to rural, remote and impoverished areas, or to serve public sector clients with limited ability to pay. Serving

public institutions in those areas (for example, schools, hospitals, local government) can provide an anchor tenant for network investment, and once a fiber backbone is established it can easily be used by businesses and individuals. It is proposed to use the same mechanism used under RCIPMW – namely demand aggregation and advanced purchase of international bandwidth--to prime the market and to attract private investment. Advance purchase contracts would be made available on a competitive basis, and with the principle of open access to the network, once constructed, being respected.

Box 1.1. Using Demand Aggregation and Internet Pre-purchase to Crowd-in Private Sector Investment

The World Bank's Regional Communications Infrastructure Program (RCIP), has brought enhanced international connectivity to ten countries in Eastern and Southern Africa since its inception in 2007. Each country program shared a common objective of leveraging private sector investment and growth to drive down the price of connectivity. However, the mechanism to achieve this objective has varied between countries. In Burundi and Comoros, for instance, funds from the International Development Association (IDA) were invested into an SPV which combined public and private funds to construct network capacity. In Tanzania, funds were focused on rural connectivity. In Uganda IDA is supporting to the government to invest in missing links in the country's national broadband infrastructure, to be managed and maintained by a private firm.

Under RCIP Malawi, which was completed in June 2016, a unique approach was used, with some significant advantages compared to these other approaches. Rather than investing directly in fiber which leads to higher capital and recurring costs, or trying to create an SPV, which can lead to delays and commercial disputes, the approach taken under RCIP Malawi, was to aggregate government bandwidth demand into a single competitive tender. This was used to purchase 10-year indefeasible rights of use (IRU), as a managed data service, for government use. The contract obliges the vendor to make available the same price offered to government available to ISPs and Mobile Operators on a wholesale, open-access basis. The contract therefore provides an anchor tenant to attract private sector investment.

The tender was won by SimbaNet, which utilized its own resources to construct a nearly 900 km network of overhead fiber optic cable, with eight landing points plus a VLP in Lilongwe (see map). The network connects internationally via Tanzania (with a cable landing station in Dar es Salaam) and via Zambia. Previously Malawi's backbone network had been dominated by state-owned companies, such as MTL and ESCOM. This transaction brought a new privately-owned player into the market and reduced the price of bandwidth to around a third of its previous level. The government's risk is lower than it would have been if a more direct investment had been used, because it has not undertaken any capital investment, and is not required to manage any assets. Furthermore, the network was completed much more quickly than if an SPV had been created.

The "Malawi model" is now being replicated elsewhere, notably in Somalia where, Dalkom, a private contractor, has financed the construction of a Government Backbone Network around Mogadishu, incentivized by a bandwidth contract for government offered by Multi-Partner Fund.

Map of SimbaNet's network in Malawi (Note the map is rotated 90 degrees)

Source: SimbaNet.

12. **Three subcomponents are proposed to address connectivity gaps for public institutions and private consumers:**

Subcomponent 2.1: Connectivity for Public Institutions (US$26.0 million)

13. **Subcomponent 2.1 will support high-speed connectivity for priority public institutions throughout the country, including government offices, public services centers ('one stop shops'), primary and secondary schools, and health centers.** It is proposed to utilize a PPP model similar to that which proved successful under RCIPMW - demand aggregation for bandwidth and connectivity services across government, to prime the market and to attract private sector investment (subject to validation as part of the feasibility study noted below). Serving government institutions will not only meet the government's connectivity needs, but can also provide an anchor client to incentivize private sector network investment. Once a fiber backbone is established to serve government, the same infrastructure can be used to serve businesses and individuals. Support will include (a) a detailed mapping exercise, feasibility study and PPP transaction advisory consultancy to identify priority institutions for connection based on projected bandwidth demands, location, cost and overall impact. This consultancy will also review the PPP options and payment methods under the contract; (b) a competitive tender for connectivity services (characteristics defined below) under a PPP; and (c) support for monitoring service levels/performance of the private contractor under both the Malawi Digital Foundations Project and the previous connectivity tender under RCIPMW.

14. **In order to maximize benefits for both public institutions and the private sector, the connectivity services transaction will be structured to address bottlenecks within different parts of the internet value chain identified to have a large impact on costs, competitiveness and reliability of ICT services.** These correspond to the "first", "middle" and "last mile", including (a) purchase of additional international internet bandwidth ("first mile"), delivered to one or more VLPs within the country, leveraging volume discounts to drive down unit costs of international transit for both government and private operators; (b) creation of a seamless, open access, wholesale fiber-optic backbone, a 'Virtual National Network' ("middle mile") to transit both domestic and international traffic, with drop points at

strategic locations in every district. This will not only carry traffic for government and public institutions, but also lower the barriers to market entry and lower operations costs for last mile services providers – distributing the cost of shared infrastructure across many market players and increasing retail level competition; and (c) "last mile" connectivity services direct to the premises of public institutions, ensuring high speed, high quality connectivity needed for communications and digital service delivery. The winning service provider(s) will be expected to operate their networks on a wholesale, open access, non-discriminatory pricing basis open to all interested operators and ISPs at service levels and quality as stipulated in the terms of the contract. A "matching" price cap may be considered, whereby the price obtained by the government for services would apply for other operators and ISPs buying capacity on the network.

15. **This approach would bring multiple benefits for both government and private consumers, including:**

(a) capitalizing on economies of scale to significantly lower the unit connectivity costs of government and other public institutions by aggregating demand under unified, low price contracts;

(b) providing incentives for the private sector to invest in new network infrastructure (backbone and access network) in areas throughout the country where it does not currently exist;

(c) leveraging significant private sector financing – thereby lowering government's up-front capital costs for infrastructure investment;

(d) reducing the need for government to retain technical expertise to operate a network and eliminating ongoing operating, maintenance and upgrade costs;

(e) preventing unnecessary duplication or displacement of planned private sector investment (compared with direct government financing and ownership of network infrastructure);

(f) significantly lowering the barriers and costs for the private sector to offer services in currently underserved areas by utilizing the same shared infrastructure;

(g) avoiding complex legal structures that would be necessitated by setting up an SPV, or other PPP structure; and

(h) enabling access for government institutions to cloud based applications and services, and providing a unified service offering available to all public institutions.

Subcomponent 2.2: Connectivity for Higher Education (US$4.0 million)

16. **Improving connectivity for higher education institutions is critical to empowering the next generation of digital leaders for government and private sector.** Too many of Malawi's universities and technical schools lack sufficient connectivity to enable adequate access to the best global information and research collaboration. Where connectivity is available, it is often on shared connections, or at low speeds, which makes the network unusable for educational applications, that often require live streaming of content, or transfer of large files. For instance, the 600 students at NACIT, the Government IT training

college, share just 1 Mbit/s of connectivity. The way forward is to aggregate demand for connectivity among higher education institutions to drive down costs. Over 120 countries worldwide have established dedicated national research and education networks (NRENS) that offer enhanced connectivity but also a range of shared educational services, such as learning management systems, open educational resources, and massively open online courses.[20]

17. **Subcomponent 2.2 will support high speed connectivity and access to online academic content for higher education institutions through support to MAREN.** MAREN was established in 2005, following the Tunis phase of the World Summit on the Information Society (WSIS). However, until now it has lacked funding for a permanent secretariat. It currently charges fees of around US$3,000 per year, but only four of the 22 higher educational institutions in Malawi have been able to pay on a consistent basis. Seven institutions, as reported in a recent survey of bandwidth costs, pay on average, US$466 per Mbit/s per month for bandwidth, with a range that stretches from US$390 (Chancellor College) to over US$700 (Malawi University of Science and Technology).

18. **MAREN is a founding member of the Ubuntunet Alliance**, **a collective of RENs in East and Southern Africa**. Ubuntunet is also the implementing partner for the European Union's Africa Connect program in Southern and Eastern Africa. As such, MAREN has the opportunity to access very low-cost international connectivity, academic content and training opportunities as part of the upcoming third phase of the program, "Africa Connect 3," supported by the European Union, and expected to be worth €50 million.[21]

19. **Subcomponent 2.2 will finance**: (a) Pre-payment of MAREN's Africa Connect 3 membership fee, on a one-time basis. This will leverage additional funding from the EU on a 1:3 basis (that is, a US$300,000 membership fee will leverage total value of training and international connectivity worth US$1.2 million); (b) international and domestic connectivity to connect member higher education institutions across Malawi to MAREN's points of presence; (c) campus WiFi networks to reach university departments and halls of residence; (d) support for leadership and technical staff (Director and Network Engineers); (e) network equipment to support points presence around the country; and (f) a program of capacity building, in particular to train student interns to maintain and expand the network at the local level. It is expected that MAREN will gain full self-sustainability through a gradual increase in member institution fee collection or other sources of funding before close of the project.

Subcomponent 2.3: Innovative Rural Broadband Access Solutions (US$4.0 million)

20. **Despite efforts to increase competition and infrastructure investment, additional measures will be needed to ensure availability of affordable internet access in some rural areas and among the most marginalized populations.** The latest figures from MACRA suggest that 11 percent of Malawi's population (around 1.8 million people) live in areas that are unserved by mobile coverage of any kind. Areas with low population density and/or very low average incomes are unlikely to be able to provide sufficient short to medium term returns to drive affordable, private sector broadband services rollout without additional

[20] Foley, Michael. 2016. The role and status of NRENs in Africa. World Bank Education, Technology & Innovation: SABER-ICT Technical Paper Series (#05). Washington, DC: The World Bank. Available at: *http://saber.worldbank.org*

[21] For Africa Connect 2, the membership fee was €280k Euros, and leveraged bandwidth and other services worth €1.12 million from the EU. A similar leveraged funding structure is expected for Africa Connect 3. https://www.africaconnect2.net/Pages/Home.aspx.

government incentives and coordination. This is true in even the most developed and competitive markets such as the United States and Europe, which invest significant public funds to close the rural digital divide. The need for such intervention is even stronger in a country with high poverty levels and a large population of rural smallholder farmers such as Malawi, in order to ensure that those at the bottom of the pyramid benefit from digital access to information, services and markets.

21. **Subcomponent 2.3 will leverage recent and emerging technological and business model innovations in broadband service delivery and the financial resources of Malawi's new USF to incentivize and enable the private sector to deploy affordable broadband internet services in rural areas.** Specifically, the subcomponent will support:

(a) Carrying out a gap analysis of the current level of mobile coverage, especially for 2G, 3G and 4G coverage in rural areas, to establish a baseline for this project component. This activity will be closely coordinated with the digital mapping exercise under Subcomponent 2.1. The gap analysis may use crowd-sourced data, for instance on social media use, in addition to official coverage maps provided by mobile operators;

(b) Support for design and institutional set-up of the USF, building on the new legislation, including establishing operational guidelines and other necessary instruments;

(c) Financing of least-cost subsidy "reverse auctions" for deployment, by the private sector, of radio antennae (masts) in unserved areas and mobile broadband services (3G/4G) in targeted rural areas. This would be conducted in collaboration with the USF and in line with the National Broadband Strategy (both supported under Subcomponent 1.1); and

(d) Partnerships with the private sector, MACRA and academia for piloting and scale-up of innovative technologies or business models for rural broadband deployment, and coverage of operations and maintenance costs. These may include low-orbit satellites, drones, balloons, TV White Spaces, differential spectrum pricing, solar-powered base station, 'zero-rated' services and other innovations. It is proposed that this initiative be run as a challenge fund, to offer matching grants, in association with the USF. Such grants would be awarded on a competitive basis in in accordance with eligibility criteria, guidelines and procedures acceptable to the Association as further elaborated in the Project Implementation Manual and Project Financing Agreement.

Component 3: Digital Platforms and Services (US$23.9 million)

22. **Increased access to affordable, high quality connectivity, as supported under Components 1 and 2, will create an opportunity to transform the way that the government conducts its business and interacts with citizens using digital technology.** Offering public services through mobile and online platforms can create significant benefits to citizens who must otherwise travel great distances and spend significant time and resources to access services. This is particularly important for Malawi's rural residents, who may lack access to public transport and quality roads but are likely nonetheless to have access to a mobile phone. Likewise, digital platforms offer opportunities to deliver new categories of services and transactions such as digital cash transfers under social protection or payroll schemes, lowering administrative and logistical barriers and reducing scope for corruption. Digital information and

communications systems are also increasingly important tools for governments to efficiently and transparently manage its internal operations.

23. **The aim of Component 3 is to build the shared infrastructure and capacity necessary to support digital public service delivery and to enhance the efficiency of the government's internal operations.** At present, the Government lacks sufficient human resources, institutions, policies and IT infrastructure to deploy high quality digital services in a secure, reliable and cost effective manner. The limited number of digital services that have been developed by individual MDAs are typically isolated and have proven expensive and challenging to launch, maintain and secure. While these deficits represent a significant challenge, the advantage is that the relative lack of investment in outdated, legacy IT infrastructure and service offerings presents an opportunity to leapfrog to the latest technology and adopt best practices and policies informed by global experience.

24. **The Digital Malawi program will support a long-term, phased approach to upgrading Malawi's digital service delivery capacity and services offerings.** The Malawi Digital Foundations Project (Digital Malawi Program Phase I) will first support development of human and institutional capacity, development of a shared digital services platform and a few demonstration applications. The Digital Acceleration Project (Digital Malawi Program Phase II) is expected to support a wide range of digital applications that leverage the shared platform developed under Phase I in collaboration with relevant MDAs.

Subcomponent 3.1: Strengthening Institutional Capacity to Deliver Digital Services (US$3.4 million)

25. **A significant scale up of digital services offerings will require an equivalent upgrade of the policies, institutions and capacity of technical staff responsible for championing and executing this ambitious agenda.** Responsibility for the Government's IT needs rests primarily with the e-Government department under MICT, which maintains a cadre of IT common service staff embedded in MDAs throughout the government. The department faces several interrelated problems, namely a lack of authority over IT purchasing by other MDAs, weak reputation, funding and sufficient human resources and technical skills to effectively fulfill its mandate. This subcomponent will seek to address these challenges through a number of activities, including:

(a) Recruitment of a digital government advisor to support the strategy, implementation and skills development activities at the outset of the project;

(b) Development of a comprehensive Digital Government Strategy and Action Plan, including an institutional and capacity review of the e-government function and development of a corresponding capacity building program and work plan for rollout of shared digital infrastructure and services;

(c) Development of an Enterprise Architecture and Interoperability Framework to guide strategic decisions on the use of ICT for cost-effective, transparent and client-friendly delivery of electronic public services in the country with a whole-of-government perspective.

(d) Financing an extensive training program to create the next generation Digital Leaders and IT professionals in government entities. The project will support:

(i) **Training for future Digital Leaders** - this will target Minister and deputy Minister level officials, agency heads, department heads and other key staff at line ministries and local governments. This will include a variety of change management activities, such as high level seminars with practitioners from aspiring countries and study visits to countries that are leaders in leveraging ICT for development.

(ii) **Training of government officers** - this will target civil servants in line ministries and Local Governments in charge of delivering e-services to citizens. The focus will be on change management to motivate and engage each one of the individuals and obtain their buy-in to leverage technology for improved services delivery in key sectors.

(iii) **Training of IT Common Service and other technical staff** - this will finance training for the existing IT specialists and IT developers working for various government agencies with the focus on embracing new technologies and processes introduced through this project.

(e) Support for change management and outreach programs to sensitize stakeholders about government IT policies and use of the shared infrastructure and services;

(f) support for policy and regulatory development in the areas including but not limited to digital government, data privacy, protection-sharing policies, cybersecurity, interoperability, and shared infrastructure solutions including cloud and an update of the IT Procurement Policy; and

(g) Digitization of key government data to enable digital migration of selected services and electronic document management.

Subcomponent 3.2: Shared Digital Public Services Delivery Platform (US$15.0 million)

26. **By establishing a Shared Digital Public Service Delivery Platform, the government can significantly reduce the cost and time taken to develop and maintain new digital services, utilizing a "build once, re-use always" philosophy.** Currently, MDAs' are planning to offer a service digitally spend considerable time and money to develop, implement and operate their own stand-alone IT systems. They could significantly speed up the deployment of digital services and cut costs by leveraging a shared infrastructure and services platform for their data hosting, information security, data sharing, citizen authentication, e-payment, professional IT support and other IT related needs. This approach would allow MDAs to focus on the areas of their areas of core technical competency and user interface when developing a new digital service, rather than worry about 'back-end' IT issues.

27. **Elements of the Shared Public Service Delivery Platform to be supported will include**:

(a) Shared Data Hosting/Government Cloud: financing for a short term and long term data hosting and disaster recovery solution;

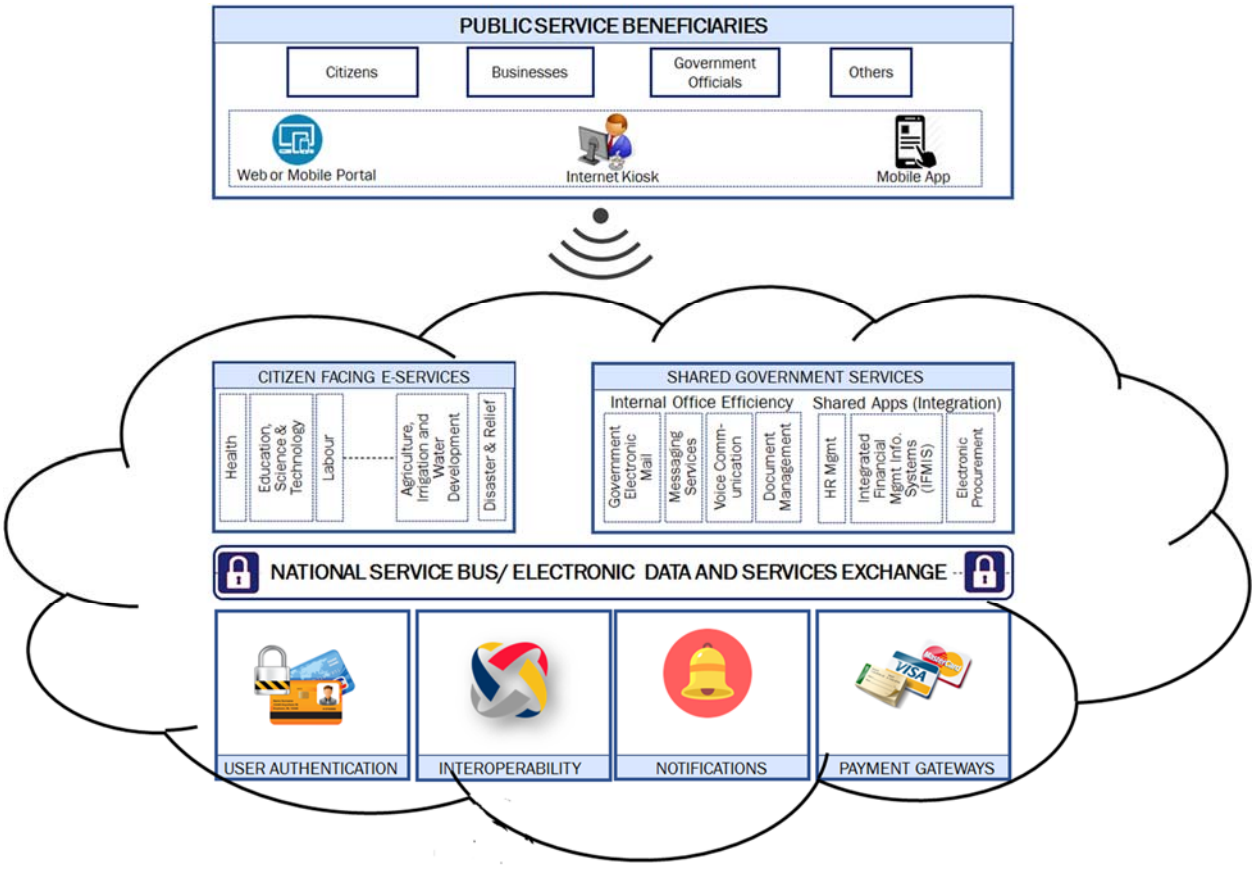
(b) Common Digital Service Enablers: this will include, but not be limited to, user authentication, integration with national ID, mobile delivery platform, SMS notification platform, electronic

payment module, interoperability and application/data-sharing platform, etc. (See figure 1.1);

(c) Malawi Digital Services Portal: Development of a single point of entry ("one stop shop") for access to the government information and digital services, regardless of the type of device used. This will also include the development of a mobile app store and a call center/service desk for single-point access for electronic services; and

(d) Shared IT services to improve Government efficiency: government email, electronic document management system, other shared applications like workflow management, etc.

Figure 1.1. Shared Digital Public Services Delivery Platform



Subcomponent 3.3: Demonstration Digital Applications and Services (US$5.5 million)

28. **Once sufficient capacity is built and the Shared Digital Public Services Delivery Platform is in place, the Subcomponent 3.3 will support a select number of digital applications and services, including an e-procurement system, to demonstrate the use of the shared platform.** This will include development of an e-Procurement system in collaboration with the ODPP. The e-Procurement system will be rolled-out within selected 'champion' MDAs and LGAs to test the system across a range of sectors, locations and

size of procurement volume. Support will also be provided for business process re-engineering, training and change management within the champion MDAs and LGAs. Pending successful rollout under the champion MDAs and LGAs, support can be provided for rollout to additional entities either under the Digital Malawi Phase I project or as part of Phase II. The sub-component will also support development of a few citizen facing services, with priority given to agriculture and health given the wide impact on livelihoods and numbers of citizens served. The selected services will be developed by leveraging shared government infrastructure, including e-payment and mobile money solutions developed under this project and linked to the national IDs planned to be rolled out in 2017–2018 with support from UNDP. Mobile survey tools will be utilized to gather citizen input on priority applications to be developed. Hackathons or partnerships, with technology hubs, will also be used to incentivize local content creation, development of mobile based apps and services that address local problems. It is anticipated that the Digital Malawi Phase II project will support development of a wider range of digital services in collaboration with the relevant MDAs, utilizing the shared digital public service delivery platform.

Component 4: Project Management (US$5.0 million)

29. **Component four will support essential project management functions of the project.** This will include support for an overall project manager, a digital government services coordinator, a connectivity specialist and specialists in procurement, FM and safeguards. It will also include funding for strategic communications, M&E activities as well as funding for audits, logistics and operational overhead. Project management will continue to be led by the PPPC in collaboration with key stakeholders and technical counterparts including MICT (e-Government department), MACRA, ODPP, and MAREN.

ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY: Malawi
DDigital Malawi Program Phase I: Digital Foundations

Project Institutional and Implementation Arrangements

1. **Project implementation will be led by a PIU within the PPPC.** The PIU will feature a project manager, procurement specialist, FM specialist, senior ICT advisor, safeguards specialist, a partnerships and communications specialist and will add other roles as needs arise. The PIU within the PPPC will be responsible for day-to-day project management and coordination and execution of FM, procurement, safeguards and M&E. All positions have been recruited and are in place since the appraisal stage, with the exception of the partnerships and communications specialist, which is expected to be recruited prior to project effectiveness. The consultants serving in the project manager, procurement and FM positions have been retained from the RCIPMW in recognition of high performance. Project management, procurement and FM assessments under RCIPMW have all been satisfactorily rated and strong oversight systems are in place within the PIU and wider PPPC. The CEO of the PPPC will serve as the supervisor of the PIU.

2. **Key project stakeholders, including the e-Government department, MACRA, MAREN, ODPP and other MDAs as relevant will serve as the lead on technical matters for components and activities within their purview.** The stakeholders will be responsible for providing strategic direction and technical oversight, while the PIU within PPPC will continue to lead on all procurement and fiduciary functions. As with RCIPMW, the working relationship between the PPPC and the relevant stakeholders is expected to be collaborative given the need for close cooperation and some areas of joint responsibility. A senior ICT advisor has been recruited to provide strategic guidance and knowledge transfer during the first few years of project implementation. An additional digital government services coordinator, officially part of the PIU but embedded within the e-Government department, may also be considered if needed during implementation to facilitate coordination between the PPPC, the e-Government department and other key MDAs under Component 3. Lead counterparts within the e-Government department, MACRA, MAREN and ODPP have been identified and have already been working closely with the PPPC during project preparation. This is expected to help strengthen institutional knowledge and sustainability after project completion.

3. **Guidance on priority setting and cross-MDA coordination will be provided by a project Steering Committee throughout the life of the project.** The steering committee will bring in voices from across government and stakeholder groups and will be leveraged to help support change management with regard to use of the shared digital platform and the necessity to partner with the e-Government department when developing new digital services and applications. Members of the steering committee may include, but are not limited to, MFEPD, MJCA, MICT, PPPC, ODPP, e-Government department, Reforms Unit, and MACRA.

Financial Management and Disbursement

Summary

4. **The FM capacity, procedures and systems of the PIU and wider PPPC are assessed as satisfactory.** An FM assessment of the PIU was carried out to determine whether (a) the funds will be used for the purposes intended in an efficient and economical manner and the entity is capable of correctly and completely recording all transactions and balances related to the project; (b) the project's financial reports will be prepared in an accurate, reliable and timely manner; (c) the assets acquired under the project will be safely guarded; and (d) the project will be subjected to auditing arrangements acceptable to the World Bank. The assessment complied with the (1) Bank Directive: Financial Management Manual for World Bank Investment Project Financing Operations (Catalogue number OPCS5.05-DIR.01) Issued (Retrofitted): February 4, 2015 and effective from March 1, 2010 and (2) World Bank Guidance: Reference Material-Financial Management in World Bank Investment Project Financing Operations (Catalogue Number OPCS5.05-Guid.02) Issues and effective February 24, 2015.

5. **The PPPC has a good financial and project management track record and has successfully implemented three World Bank funded projects to date.** These include the Public Utility Reform Project (PURP) (P063095) which closed on December 31, 2007, the BESTAP (P103773) which closed on December 31, 2012 and finally the Regional Communications Infrastructure Project Malawi (RCIPMW) (P111432) which closed on June 30, 2016. The PIU has well-qualified and experienced FM staff that have worked in all three World Bank funded projects as summarized above. The entity has a computerized system that is used for transaction processing and reporting. The IFRs were submitted on time and were of good quality. The audited financial statements, with clean audit opinions, were always submitted before due dates and the management letters did not have serious control and accountability issues.

Risks and Mitigation Measures

6. **Table 2.1 shows the results of the assessment from the Risk Rating Summary.** This identifies key risks that project management may face in achieving project objectives and provide a basis for determining management action to address these risks.

Table 2.1. Risks and Mitigation

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Residual Risk	Board or effectiveness Condition
Country Level: (a) Lack of accountability; poor enforcement & compliance with existing regulations/procedures; and lack of, and lukewarm implementation of auditors' recommendations; and the lack of sanctions for offenders; (b) Weak accounting system, including poor control environment of the automated Integrated Financial Management Information System (IFMIS), which affects the quality of	H	The PPPC is a quasi-government entity that has maintained good FM arrangements for project management including World Bank funded projects	S	N/A

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Residual Risk	Board or effectiveness Condition
financial statements produced by ministries implementing projects; (c) weak audit committees in government ministries that do not follow up on the issues raised in the audit reports to ensure they are addressed by the project; (d) Weak legislative scrutiny of external audit reports; and (e) problem of timeliness and regularity of various accounts reconciliations including bank reconciliations				
Entity Level The PPPC being under government might fall under undue influence and this may affect proper project implementation	S	PPPC will have an independent PIU which will not be directly under government	M	N/A
Project Level Complex, IT heavy project	S	The PPPC/PIU has experience in similar projects	M	N/A
Budgeting Relevance and completeness of the budget process. Budget lacks enough details and budget monitoring systems are weak	M	The PPPC/PIU has experience in preparing detailed activity based budgeting and has budget monitoring system in place.	M	N/A
Accounting Weak accounting systems not able to process and report on transactions properly	M	PPPC/PIU has been successfully using a computerized system for transaction processing and reporting	M	N/A
Internal Control Weak control environment resulting from poor enforcement of existing regulations; weak management oversight and inadequate internal audit function	M	The PPPC/PIU has a strong control environment as demonstrated by good audit reports with very few control and accountability issues. The project will have a Project Manager, together with the PPPC CEO to provide adequate oversight. Internal functions will be outsourced	M	N/A
Funds Flow Bottlenecks in funds flow would delay implementation	M	A simple funds flow function will be maintained. PPPC/PIU is already experienced in handling funds from World Bank.	M	N/A
Financial Reporting Delays in submission of reports	M	PPPC/PIU staff are familiar with World Bank reporting	M	

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Residual Risk	Board or effectiveness Condition
		requirements		
Delays in production of audit reports	L	PPPC has been using private auditors and has always submitted project audit reports on time.	L	
Overall FM Risk Rating	M	The overall risk rating is considered Moderate.	M	

7. **Budgeting.** The Malawi Digital Foundations Project will adopt the Malawi Government and PPPC fiscal budget year that runs from July 1 to June 30. The project will follow the PPPC budget process which starts in March. PPPC budgeting is zero based and consultative. Drawing information from the project costs table and the annual work plans of the project as approved broken down to quarterly expenditures, the project Finance Manager will compile the project's annual budgets broken down into quarters. The budget will be agreed with the Project Manager and presented to the entire PPPC Management at a management meeting. After discussing the draft at management level, the Commission (Board of Directors) will approve the budget at a board meeting. The approved budget will then be sent to the Treasury in the Ministry of Finance for authorization.

8. **Accounting.** The PIU's FM section will maintain adequate books of accounts using a computerized accounting system. The accounting system will be used to record, track, analyze and summarize its financial transactions. The project accounts will be prepared on a cash basis in line with the Financing Agreement and international public sector accounting standards. The accounting system will allow for the proper recording of the project's financial transactions, including the allocation of expenditures in accordance with its components, disbursement categories and its source of funds. Appropriate controls over preparation and approval of transactions are already in place. A new FM manual for the project will be prepared.

9. **Staffing.** The PIU has currently two skilled and experienced FM staff. This staffing is adequate for the management of the PPA but for the main project there will be need for one more additional staff in order to achieve better separation of duties and ensure back up in cases where required. Other technical staff in the PIU include Project Manager, Procurement Specialist, and M&E. The Project Manager will provide oversight to the project. The PPPC CEO's presence will further enhance the oversight.

10. **Information Systems.** The FINPRO accounting software will be the accounting system that will record transactions and produce the IFRs and financial statements. The system has already been tested and is capable of recording and production of reports as required by IDA. FM staff at the PPPC have been trained on use of FINPRO. The software service providers are in Mauritius and the software consultant visits Malawi almost on a quarterly basis.

11. **Financial Reporting.** The PIU will be submitting to IDA, IFRs for the project in format and substance acceptable to IDA every calendar quarter no later than 45 days after the quarter end. The IFR will comprise

(a) Sources and Uses of Funds Statement by component in summary and in detail;

(b) Use of Funds Statement by cost category;

(c) Designated Account (DA) Activity Statement; and

(d) The accounting policies and procedures adopted will be disclosed in Notes to the Accounts.

12. The Project will also produce the annual financial statements which will be audited by an independent and qualified auditor.

13. The current Financial Reporting environment of PPPC indicates that PPPC successfully produces monthly management accounts within tight deadlines and gets its annual financial statements audited within the statutory four month's limit. The entity also produced IFRs on time for the closed projects.

14. **Funds Flow, Bank Accounts, and Disbursements.** The PPPC will open and maintain a DA which will be in United States Dollars at the Reserve Bank of Malawi (RBM) under terms and conditions acceptable to IDA. Amounts will be transferred from this account quarterly (based on the project's cash flow projections) to the Malawi Kwacha Holding Account (HA) also to be opened at RBM quarterly. The PC will also open an operating account (OA) at a commercial bank in Malawi Kwacha where the funds from the HA will be paid out. It should be noted that foreign contracts would be paid out directly from the DA. The regulations governing signing arrangements and DA, HA and OA monthly reconciliations will be included in the updated FM manual.

Figure 2.1. Funds Flow Diagram

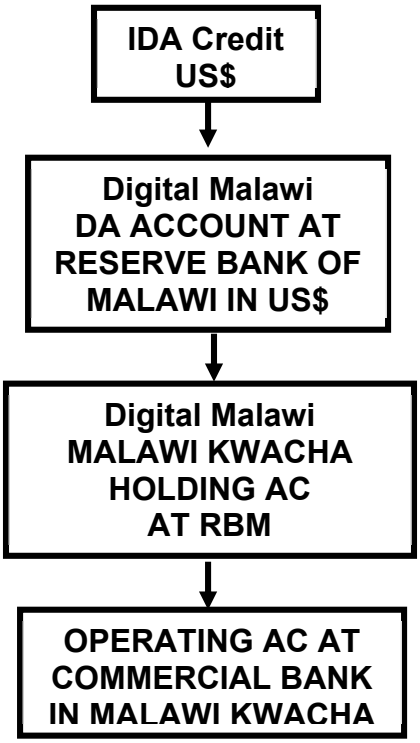


Table 2.2 – Eligible expenditures and categories

Category	Amount of the Financing Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Membership Fee, Training and Operating Costs for the Project	46,400,000	100%
(2) Innovation Grants under Parts 1. 1.3 (c) 1. 1.3(d) and 2. 2.3(d) of the Project	2,200,000	100%
(3) Least-cost Subsidy under Part 2 2.3(c) of the Project	2,600,000	100%
(4) Refund of Preparation Advance	2,200,000	Amount payable pursuant to Section 2.07 of the General Conditions of the Financing Agreement
TOTAL AMOUNT	53,400,000	

15. **Disbursement Method.** The project will use the Report based disbursement procedures. Disbursements will be based on the unaudited IFRs that provides financial information on the entire project as described above under "Financial Reporting" that reflect all project activities, expenditure and financing. The format and content of the IFR will be agreed between the Bank and PPPC. Detailed disbursement procedures will be documented in the FM manual and further information is available from the IDA Disbursement Hand Book and the Disbursement Guidelines which are both available on-line.

16. The initial disbursement will be based on the first year agreed budget and work plan. IDA will then **transfer** funds equivalent to six months of expenditure into the DA at RBM. Thereafter, the quarterly IFR will be used as a basis for requesting disbursements from IDA into the DA by completing a Withdrawal Application (WA) form. The disbursement request will result from the IFR forecast for the next six months which must be in line with the approved work plans as reviewed and agreed with IDA. The funds transferred to the DA will only finance eligible project expenditures.

17. **Disbursement Letter.** IDA will issue disbursement letters as part of the Financing Agreement with the recipient. The disbursement letters will set out and summarize all the disbursement arrangements and procedures under the project.

18. **Internal Control and Internal Audit.** The PPPC has internal controls in place which are working well. The controls around approvals and authorization of transactions are sound. The PPPC has strong oversight controls relating to budget approvals which will be adopted and adapted to the Project. The PPPC PIU has currently only two accounting staff making proper segregation of duties problematic. It is therefore recommended that one additional staff should be recruited to bring the total FM staff to three in order to have basic segregation of duties in the accounting function. The physical controls and other controls including passwords are working for the ICT system and will be replicated in the project. All the controls described above will be documented in the project's FM manual. The PPPC makes use of an externally contracted Internal Audit function which will be extended to the project.

19. **External Auditing.** While the primary responsibility for the project audit lies with the Auditor General, the current external auditors for the PPPC could also be engaged to audit the project. The appointment of the external auditor must be approved by the Auditor General. The auditing Terms of Reference will be cleared by the World Bank's Financial Management Specialist (FMS) prior to the auditors signing the engagement contract. The auditors will be required to express a single audit opinion on the financial statements and its underlying records. In addition, the auditors will issue a management letter giving detailed observation and recommendations for addressing FM weaknesses and improving the FM system. The audit report will be reviewed and approved by the Auditor General before submission to IDA. Digital Malawi will be required to submit audited financial statements complete with a management no later than six months after the end of the fiscal year. The audits of PPPC and closed projects since 2010 have been reviewed. They all have clean audit opinions with very few control and accountability issues. The cost of the audit will be included in the Cost Table and IDA will finance reasonable audit costs out of the proceeds of the credit.

20. **Governance and Accountability.** Due to the national interest that PPPC draws because of its role in privatizing public institutions, the PPPC is under great scrutiny from the public. The print and electronic media, the Anti-Corruption Bureau (ACB), the National Audit Office and the general public has over the years taken a lot of interest in the way PPPC conducts its business. This scrutiny is positive because it means that the general public, the media and the ACB play an oversight role in addition to that of the Board, the internal and external auditors, the Ministry of Finance and the department of Statutory Corporations.

21. **Supervision Plan.** The residual FM risk of the project is assessed as moderate. As such, the project will be supervised for two weeks a year broken down into one week's supervision twice a year. At each supervision mission, the FM arrangements of the project will be reviewed and the FM risk updated and an FM Rating of Digital Malawi provided. Should the assessed risk change, the supervision intensity will also change. The FM Implementation Status and Results Report (ISR) will be produced, filed and included in the Project's ISR.

Procurement

22. **Guidelines.** Procurement will be carried out in accordance with the requirements in the Procurement Regulations for Borrowers under IPF: Goods, Works, Non-Consulting Services and Consulting Services dated July 1, 2016; "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants (revised as of July 1, 2016)"; and provisions stipulated in the Financing Agreement.

23. **Systematic Tracking of Exchanges in Procurement (STEP).** IDA's STEP system will be used to prepare, clear, and update Procurement Plans (PPs) and conduct all procurement transactions for the project. Three staff from the PIU have attended STEP training during project preparation. Other procurement staff will be trained in STEP as needed.

24. **Procurement Templates.** The World Bank's Standard Procurement Documents (SPDs) shall be used for procurement of goods, works, and non-consulting services under International Competitive Procurement. National Bidding documents may be used under National Procurement Procedures (NPP) subject to the exceptions stipulated in the textual part of the Procurement Plan. Similarly, selection of consultant firms shall use the World Bank's SPDs, in line with procedures described in the Procurement Regulations.

25. **Fiduciary oversight by IDA.** IDA shall prior review contracts as provided in the procurement plan. All contracts not covered under prior review by IDA shall be subject to post review during implementation support missions and/or special post review missions, including missions by consultants hired by the World Bank.

26. **Frequency of Procurement Supervision.** In addition to the prior review supervision to be carried out from local World Bank offices, the capacity assessment of the implementing agencies recommends one supervision mission every 12 months to visit the field to carry out post review of procurement actions.

27. **Operating Costs.** These items will be procured using the Borrower national procurement and administrative procedures acceptable to IDA, including selection of project implementation support personal.

28. **PPSD and Procurement Plan:** As per the requirement of the Regulations, the Borrower has developed a PPSD as summarized below:

(a) **Summary of the proposed procurement contracts:**

(i) Provision of Connectivity Services for Public Institutions;

(ii) Various ICT equipment, software and systems;

(iii) Various types of consultancy services including advisory services to the Government on various ICT related transactions, that is, e-government platforms and applications;

(iv) Contracts to supply connectivity services and/or connectivity infrastructure to higher education institutions and rural areas; and

(v) Supply of Vehicles, IT equipment, air-conditioner, office furniture, etc.

(b) **Operating Context:**

(i) **Governance aspects.** Malawi is a stable democratic country, and has a presidential system of government with separation of powers amongst the executive, the legislative and the judiciary. However, fraud, corruption and financial irregularities are a major

challenge in the public sector. Public Procurement in Malawi is governed by the Public Procurement Act of 2003 and the Public Procurement Regulations of 2004. Security in Malawi is good for contractors to set up businesses and work without any form of interruption. As a result, contractors carry out their work in a conducive environment which encourages competition.

(ii) **Economic aspects.** Malawi is a small economy relying heavily on rain-fed agriculture with limited irrigation. The local currency, the Malawi Kwacha, has been unstable for a number of years. Malawi has a high unemployment rate that allows bidders to have a competitive edge, as they are able to attract reasonably priced labor on the labor market.

(iii) **Technological aspects.** Access to Internet is poor but improving, particularly in urban areas. Further, there are no government restrictions on use of internet. Cell phone access and coverage is relatively high even in remote areas of the country. This makes people, including bidders to exchange and access information relatively easily. This access to information brings in competition amongst bidders.

(c) **PIU Assessment.** Project implementation will be led by the PPPC, under the same team that implemented the RCIPMW. Key staff, including the project manager, procurement specialist, FM specialist and other support staff from RCIPMW, have been retained to develop and implement this project. The latest project management, procurement and FM assessments have all been satisfactorily rated. The PIU has good track record of contract management and monitoring tools have been developed by the PIU to monitor contracts from start to finish. The PIU has demonstrated good management in handling large contracts stretching over extended periods of time. The Government under the Malawi Public Procurement Law and Regulations allows bidders who may suffer loss or injury due to breach aggrieved through the procurement process to lodge complaints and the mechanism of the compliant handling has been detailed.

Though the PIU has prior experience implementing IDA financed projects, considering the overall procurement capacity, the market condition, the governance environment, etc. the overall procurement risk of the project is considered **Substantial**. As the project progresses it might call for additional procurement staff to strengthen procurement processing. A Project Implementation Manual will be developed to guide procurements.

(d) **Market research and analysis.** There are a reasonable number of broadband service providers on the market, and their number has increased recently with the entry of SimbaNet and the creation of OCL as a spin off from MTL, and the planned expansion of the ESCOM backbone network. With regard to the e-Services platform, the market is quite limited as there are not many domestic IT organizations that are working in this area. It is expected that some activities supporting connectivity services and the eService platform, will require international competitive bidding. For the mobile coverage to provide additional radio masts in rural areas of the country, providers will need a mobile services infrastructure license (around six have been already awarded). It is expected that for these contracts international bidders would likely participate in a joint venture with local players, or be

required to obtain a license.

(e) **Risk management.** As indicated above, the overall Project Procurement Risk is **Substantial.** The following risks have been identified under the project and mitigation measures have also been proposed.

Table 2.3. Risks and Mitigation

Sl. No.	Risk	Mitigation Measure	Time frame	Responsibility
1	Record Keeping and documentation not maintained	All implementation agencies will maintain all procurement records	Life of project	PIU/PPPC
2	Fiduciary Risk relating to Main principles of the World Bank Procurement Guidelines not being followed	• Experienced procurement staff/consultant shall be positioned to guide implementing agencies • Attend training in World Bank procurement • Conduct training on new World Bank procurement procedures • Regular supervision support and monitoring	Life of project	PIU/PPPC and IDA
3	Inefficiencies and delays in procurement process especially preparation of ToRs and Bid specifications	• Regular monitoring through procurement plan • Timely preparation of ToRs/ bid specifications • Train staff in preparation of ToRs/bid specifications	Life of project	PIU/PPPC and IDA
4	Insufficient competition in procurement	Aggregation of smaller contract packages wherever feasible	Life of project	PIU/PPPC
5	Contract Management	Disclosure of all contracts awards in UNDB for prior review contracts and post review contracts in local newspapers and website of Office of Director of Public Procurement	Life of project	PIU/PPPC
6	Probability of staff handling procurement leaving the project/ transferred	Continue dialogue with Government to retain trained staff	Life of Project	PPPC
7	Fraud and Corruption risks (including collusion and outside interference in contracting process	• Disclosure of procurement plan • Disclosure of contract awards • Creating awareness on effects of fraud and corruption • Regular reviews such as PPR, internal audit, external audit	Whole life time of project	PIU/PPPC

Sl. No.	Risk	Mitigation Measure	Time frame	Responsibility
8	Weak complaint redress system	• Disclosure of complaint redress procedure through Office of Director of Public Procurement • Bi-annual report of all complaints received and action taken	Whole life time of project	PIU/PPPC

(f) **Procurement Arrangements.** Based on the risks identified above the following procurement arrangements are proposed:

(i) **Approach to Market.** Based on previous experience, and available local market, the following thresholds will generally be used for open national/international and request for qualification (RFQ) bidding unless otherwise indicated in the Procurement Plan: (All figures in US$, millions)

(ii) **Thresholds for Procurement Approaches and Method (US$, millions):**

Works			Goods, IT and Non-Consulting Services			Shortlist of National Consultants	
Open International ≥ 7	Open National < 7	Request for Quotation ≤ 0.2	Open International ≥ 1	Open National < 1	Request for Quotation ≤ 0.1	Consulting Services ≤ 0.2	Engineering and Construction Supervision ≤ 0.3

For consultancy services, open international advertisement shall be used for all procurements equal and above US$300,000.

(iii) **Selection method for goods, works and non-consultancy services.** Request for Bid, RFQ and Direct Contracting will be used as appropriate. The procurement of most items from local market shall be done by the open NPPs as recommended by the Procurement Regulation for IPF, July 2016, paragraphs 5.3 to 5.6.

(iv) **Selection method for consultancy services.** The preferred method is Quality- and Cost-Based Selection, however, other methods including direct selection can be used, in accordance with the provisions of the Procurement Regulation for IPF, July 2016 and as stipulated in the Procurement Plan.

(v) **Contract strategy.** Goods, services and civil works will be packaged in economical packages to attract bidders who are qualified and can offer good prices and complete contracts within stipulated period resulting into value for money.

(g) **Procurement Plan (PP).** A PP for the first 18 months of project implementation has been prepared that sets out the selection methods to be followed by the Borrower during project

implementation in the procurement of goods, works, non-consulting services, and consulting services. The PP will be updated at least every 12 months, or as required, to reflect the actual project implementation needs, but each update shall require no-objection from IDA.

(h) **Contract Management.** For contracts identified to be "complex" as indicated in the procurement plan, a mandatory Contract Management Plan will be put in place. The PIU will develop the key performance indicators (KPIs) for these contracts, to be monitored during the execution of the contract.

Environmental and Social (including safeguards)

29. **The activities connected with the Digital Malawi project will be site specific, with small ecological footprints, and generating impacts that are of low to moderate significance that can be easily mitigated.** The project is therefore categorized as "B". Consequently, environmental assessment policy OP/BP 4.01 is triggered. The policy on Physical Cultural Resources (OP 4.11) is likewise triggered as the construction of the planned network will likely involve movements of earth in areas that may contain sites of physical cultural importance to communities.

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP/BP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

30. **Malawi has a very varied landscape, ranging from agricultural lands, plantations, commercial farms, valleys and gorges, and forested areas to mountains and hills, city environs, townships, rural settlements, trading centers, and others.** To ensure that physical interventions do not impact on sensitive areas, safeguard policies OP/BP 4.04 (Natural Habitats) and OP/BP 4.36 (Forests) are also triggered.

31. **As the construction of the planned network and associated infrastructure will likely require land acquisition that might lead to involuntary resettlement of people and/or loss of assets, means of livelihoods or resources, the policy on Involuntary Resettlement (OP/BP 4.12) is also triggered.** As such, the Borrower has drafted a RPF, to adequately deal with issues of land acquisition and compensation and/or the physical displacement of people. The RPF has been duly consulted upon cleared by IDA and adequately disclosed both in country, and on the World Bank's webpage. RAPs will be developed once the network's footprint and locations of the associated infrastructure have been established.

32. **In view of the fact that the project will be implemented nationwide, and the exact locations of physical interventions are not precisely known at this stage, an Environmental and Social Management**

Framework (ESMF) has been prepared, consulted upon and disclosed. The purpose of this ESMF is to provide a set of procedures and measures aimed at facilitating the integration of environmental and social considerations in the preparation, planning and implementation of the DMP activities. ESMPs will be prepared after a screening process, the criteria of which have been spelt out in the ESMF. The ESMF also includes chance finds procedures to guide private contractors on the proper management of physical cultural resources once discovered during project implementation, in line with OP/BP 4.11. Specifically, the ESMF outlines a number of strategies including: a systematic procedure for screening of project sites and project activities for environmental and social considerations; a step by step procedure for predicting the main potential environmental and social impacts of the planned project activities; a typical environmental management and monitoring plan for addressing negative impacts in the course of project implementation, operations within environs, and for M&E of implementation of mitigation measures; and an outline of recommended capacity building measures for environmental planning and monitoring of the project activities.

33. **The above policies are triggered only for activities involving direct project financing for infrastructure development.** It is expected that most connectivity related project activities (Component 2) will be structured as a purchase of services from private sector providers. Should the private service provider undertake any new investments in infrastructure and related civil works utilizing their own financing in order to provide these services, they will be encouraged to use the ESMF and RPF to guide their own policy on environmental management and resettlement and thereby conform to national laws and policies as well as international best practices. However, the safeguards policies will not be triggered in such cases. In cases where works or infrastructure is the responsibility of the Borrower rather than a private service provider, the policies would apply.

34. **With the implementation of the RCIPMW in 2009, the Borrower has shown commitment to sustainable implementation of development projects by demonstrating full compliance with the laws of Malawi and international best practices.** The Borrower has developed an effective environmental management system that is well integrated with the prevailing national environmental management systems and international best practices. Overall, it has adopted an environmental management approach that values the importance of natural resources, ecosystem functions, people's lives and the built environments in order to guarantee a sustainable and clean approach to development. This is in line with the national environmental management policies and in line with World Bank frameworks. The Project Management Unit, under the aegis of the PPPC, will be responsible for overall coordination, M&E of the project, while ensuring that all mitigation measures proposed in the ESMF and site-specific ESMPs and other safeguards instruments are effectively implemented.

Monitoring and Evaluation

35. **The M&E framework for the project will rely primarily on standardized, routinely collected data sources from international organizations (ITU, UN) and by MACRA to ensure continuous availability and consistency of data and to minimize any additional administrative burden.** The project will also support a more frequent undertaking of the national ICT usage survey undertaken by MACRA, which was first conducted in 2015, reducing the gap between surveys from five years to two or three year intervals. Specifications for the shared services portal will include tools for monitoring usage/transaction rates. The PPPC will have responsibility for routinely collecting the M&E data from the relevant international data sources, MACRA and the e-Government department. It is not envisaged that a separate M&E expert will

be retained under the project as this can be carried out under the scope of work of the project manager with support from existing PIU consultants. However, this may be considered during implementation if needed.

36. **Rapid mobile/SMS survey tools, as well as user satisfaction surveys embedded within digital public services application offerings will be leveraged as a means of citizen engagement and feedback.** Such tools will be used to identify priority digital services and public skills development offerings and to provide insights and identify course corrections related to public services applications as needed. Locally developed mobile survey tools will be given preference as a means to stimulate demand and innovation.

ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Malawi
DIGITAL MALAWI PROGRAM PHASE I: DIGITAL FOUNDATIONS Project

Strategy and Approach for Implementation Support

1. **The comprehensive nature of the Malawi Digital Foundations Project and the wider Digital Malawi program will require significant implementation support.** The project and program span across a wide variety of technical areas, multiple stakeholders and involve a combination of technical assistance, reforms, change management and hard investments. The relatively large number of project activities will require close monitoring and adherence to timelines in order to avoid implementation delays as well as careful sequencing of dependent activities. Partnerships with other projects, MDAs, donors and private sector also feature prominently in the project, requiring additional hands-on, proactive support from the World Bank team and coordination of missions and interventions.

2. **Mitigation of the sector strategy and policy and political and governance risks outlined in Section V of the PAD will require close monitoring and proactive engagement with key policy and decision makers.** This will require active engagement not only from the task team, but also country unit management through the policy dialogue with the government at the highest levels. Linkages with policy lending operations will also be critical to help push needed reforms and to prevent any policy backsliding. Positioning a team member within the country or region would be helpful to better understand sector and political economy developments in real time.

3. **Implementation support will be organized along two dimensions:**

   (a) **Sectoral and technical aspects, including** (i) General task team management; (ii) Regulatory support covering Subcomponents 1.1 and 1.2; (iii) Digital Skills and Innovation support covering Subcomponent 1.3; (iv) Telecoms/Network and PPP support covering Component 2; and (v) Digital platforms and services design and implementation and digital government strategy development covering Component 3.

   (b) **Continuous fiduciary and compliance oversight, including** regular implementation support and supervision oversight of procurement, FM, safeguards and M&E.

Implementation Support Plan and Resource Requirements

Time	Focus	Skills Needed	Resource Estimate (US$)	Partner Role
First twelve months	1. Supporting speedy project approval by Parliament/project effectiveness 2. Technical Assistance for Development of	1. TTL, Communications specialist 2. TTL, Regulatory expert; Telecoms/network	250,000	Coordination with UNDP (National ID) to ensure compatibility/integration with shared services platform; collaboration with IFC on Digital Connectivity

Time	Focus	Skills Needed	Resource Estimate (US$)	Partner Role
	Strategies, Studies and Implementation Roadmaps (Broadband Strategy, MACRA Institutional Review; Connectivity PPP transaction advisory and feasibility study; Digital Government Strategy and Institutional Review; Enterprise Architecture, and so on) 3. Technical assistance for development of Terms of Reference/Bidding Docs for major investments 4. Supporting Training and Capacity Building Activities 5. Support for establishment of strategic partnerships	expert; e-Government expert; Skills and innovation expert; 3. TTL, Regulatory expert; Telecoms/network expert; e-Government expert; Skills and innovation expert; 4. TTL, e-Government expert and Skills and Innovation expert; 5. TTL; Telecoms/network expert; e-Government expert; Skills and innovation expert;		components; Coordination with World Bank Task Teams with linked projects; Collaboration with Private Sector Partners on design and implementation of Skills and Innovation components
12–48 months	1. Ongoing technical support for Components 1–3 2. Fiduciary, safeguards and project management support 3. Continued policy dialogue/support for sector reforms	TTL, Regulatory expert; Telecoms/network expert; e-Government expert; Skills and innovation expert; Procurement Expert; FM Expert; Safeguards Expert	200,000	Collaboration with IFC on Digital Connectivity components; Coordination with World Bank Task Team developing Policy Lending Operations; Coordination with World Bank Task Teams with linked projects; Collaboration with Private Sector Partners on implementation of Skills and Innovation components

Skills Mix Required			
Skills Needed	**Number of Staff Weeks**	**Number of Trips**	**Comments**
Task Team Leader	20 SWs Annually	3 in year 1; 2 in year 2+	Based in Washington
ICT/Regulatory Specialist	5 SWs Annually	3 in year 1; 2 in year 2+	Based in Washington
ICT/Network Specialist	5 SWs Annually	3 in year 1; 2 in year 2+	Based in Washington
Communications Specialist	1 SW Annually	Field trips as needed	Country Office Based
Environmental Safeguards Specialist	1.5 SWs Annually	Field trips as needed	Based in Region
Social Safeguards Specialist	1.5 SWs Annually	Field trips as needed	Based in Region
Procurement Specialist	4 SWs Annually	N/A	Country Office Based
FM Specialist	2 SWs Annually	N/A	Country Office Based

Partners	
Institution/Country	**Role**
UNDP	National ID project (to be incorporated as user ID in shared services platform)
IFC	Potential provision of financing for private sector telecoms or digital services investments which would contribute to Digital Malawi project objectives
Commonwealth Telecommunications Organization (CTO)	Support to the government toward development of the national cybersecurity strategy (expected to be completed prior to project effectiveness)
Private Sector Global Technology leaders	Complimentary activities and programs to support digital skills development, innovation, entrepreneurship and digital mapping

ANNEX 4: DETAILED ECONOMIC AND FINANCIAL ANALYSIS

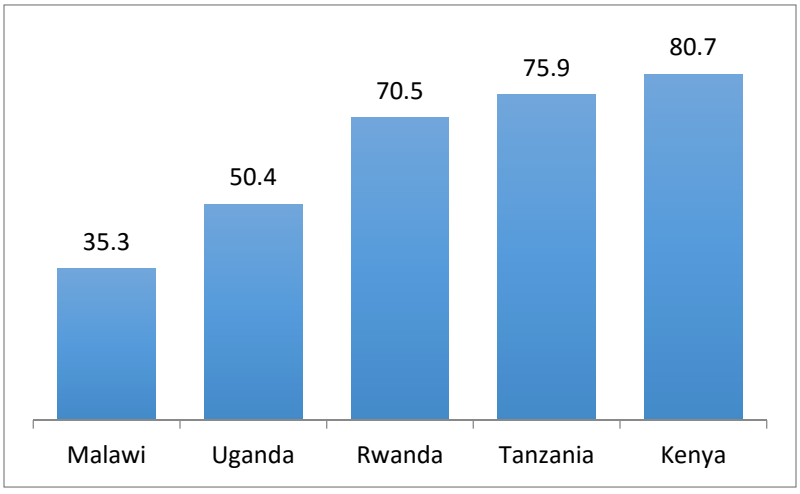
COUNTRY: Malawi
DIGITAL MALAWI PROGRAM PHASE I: DIGITAL FOUNDATIONS Project

1. The current status of Internet and digital services availability and affordability in Malawi:

Mobile Communications in Malawi

2. Malawi has shown a strong increase in mobile cellular subscriptions over the past five years. From 2010 to 2015, mobile subscribers doubled from 3.1 million to 6.7 million nationwide.[22] It is estimated that 34 percent of these subscriptions included mobile internet with 2.5G (20 percent) and 3G (12 percent) connections.[23] Mobile penetration rate was 35 percent in 2015, up from 20 percent in 2010, showing a steady year-over-year increase. Despite these increases, mobile penetration in Malawi is still substantially lower than Uganda (50 percent), Rwanda (70 percent) and Tanzania (75 percent). Furthermore, these rates differ between urban and rural areas. Approximately, 85 percent of urban households had a mobile phone compared to only 42 percent rural households.[24] However, only 11 percent of households from the lowest income quintile own a mobile phone. One reason for the lower penetration rates in Malawi is lack of affordability. The price of prepaid mobile cellular voice calls in Malawi (US$0.59 PPP/min) is much higher, for example, than in Uganda (US$0.29 PPP/min).

Figure 4.1. Mobile Cellular Subscriptions (per 100 people)



Source: ITU World Telecommunication/ICT Development Indicators (WDI) Extracted on Feb 2017.

[22] TeleGeography.
[23] GSMA Intelligence.
[24] MACRA, "National Survey on Access to and Usage of ICT Services in Malawi" (2015).

Internet and Broadband in Malawi

3. Internet users were estimated at 9.3 percent of the population in 2015, up from 5.8 percent in 2014.[25] This is lower than comparable internet penetration rates in Uganda (19 percent) and Rwanda (18 percent).[26] The international internet bandwidth is 6.1 Kbit/s per user.[27] In 2015, mobile broadband subscriptions were estimated at 16.6 percent of the population in Malawi, lower than Uganda (18.3 percent) and Rwanda (25.9 percent). In comparison, fixed broadband subscriptions in the country were estimated at 0.03 percent in 2015 which is similar to rates in Uganda (0.3 percent) and Rwanda (0.4 percent).[28] It is also estimated that only 5 out of every 100 households had access to a personal computer in 2015.[29] Fixed broadband connections are relatively expensive in Malawi with internet tariffs at US$80.54 PPP/month.[30]

Fixed Line Telephone Services in Malawi

4. With the rise of mobile phone penetration and internet access, fixed line subscriptions have been declining in Malawi. In 2015, only 0.2 percent of the population had a fixed telephone line subscription. This marks a decline from 1.4 percent in 2012. In 2015, fixed telephone line subscriptions were estimated at 0.1 percent for Rwanda, 0.2 percent for Tanzania and 0.8 percent for Uganda, of households, respectively. This decline will potentially have a negative impact on the future adoption of fixed broadband services, such as digital subscriber line (DSL), and implies that future broadband use will be dominantly from mobile devices.

5. **Expected effects of the Malawi Digital Foundations Project on connectivity.** Malawi's projected user growth rate was benchmarked against average internet user growth rates in Tanzania and Rwanda over the past three years, weighted by their ratio to Malawi's per capita GDP.[31] This was further adjusted by 20 percent to reasonably and conservatively predict 10-year growth rate projections. Tanzania was chosen because it has similarly implemented a US$100 million Tanzania RCIP investment since 2009. Rwanda was chosen because it has invested in internet connectivity and has one of the fastest growing rates of connectivity in Africa.[32] In order to meet the target of 30 percent internet penetration by 2022, the analysis used 1.2 times this projected growth rate until 2022, and then reduced it to 0.5 times the projected growth rate from 2022 to 2027. The base case scenario uses Malawi's growth rate in internet users over the past three years, adjusting for the growth rate in 2015 (which was unusually high as compared to past trends, mainly due to the launch of 3G/4G mobile services). This growth rate was

[25] MACRA, "National Survey on Access to and Usage of ICT Services in Malawi" (2015).
[26] World Bank Development Indicators.
[27] World Economic Forum, "The Global Information Technology Report" (2016).
[28] International Telecommunication Union.
[29] MACRA, "National Survey on Access to and Usage of ICT Services in Malawi" (2015).
[30] World Economic Forum, "The Global Information Technology Report" (2016).
[31] Tanzania and Rwanda's average growth rate over the past three years was weighted by their ratio to Malawi's GDP. The ratio of Malawi's per capita GDP to Tanzania and Rwanda's per capita GDP is 0.42 and 0.53 respectively. Further, since Malawi is less economically developed, the access to internet in Malawi will be lower given the income of the citizens. Therefore, the weighted average was adjusted to a rate 40% lower than the weighted average.
[32] Rwanda has been investing in ICT since 2007, along with the World Bank supported eRwanda Project (FY07-FY11). Rwanda's per capita GDP growth in 2006-2007 is similar to the current per capita GDP of Malawi. Rwanda has been noted for its significant progress in ICT penetration. World Bank Information and Communications technology: Results Profile (*http://www.worldbank.org/en/results/2013/04/13/ict-results-profile)*, ICT – Rwanda Development Board (http://www.rdb.rw/rdb/ict.html)

examined against the average growth rate in Uganda and further adjusted given the trends in the two countries and the region. The base case scenario estimates the average annual growth rate in internet users in Malawi will be 14.66 percent (building on the recently completed RCIP Malawi project). The Malawi Digital Foundations Project is projected to accelerate the growth rate of Internet users in Malawi to 24.43 percent per year until 2022. This growth rate is projected to reduce to 12.72 percent from 2022 to 2027. The benefits from the project are expected to accrue as of 2018, given the improvements in the regulatory environment arising from both RCIP Malawi and the Malawi Digital Foundations Project. This estimate translates to an additional increase of 3.16 million internet users in Malawi by 2027 above the base case scenario. The penetration of internet users is projected to grow to 46.9 per 100 inhabitants by 2027, which translates into a 13-percentage point increase compared with the base case scenario.

Figure 4.2. Projected Increase in Total Internet Users (in millions)

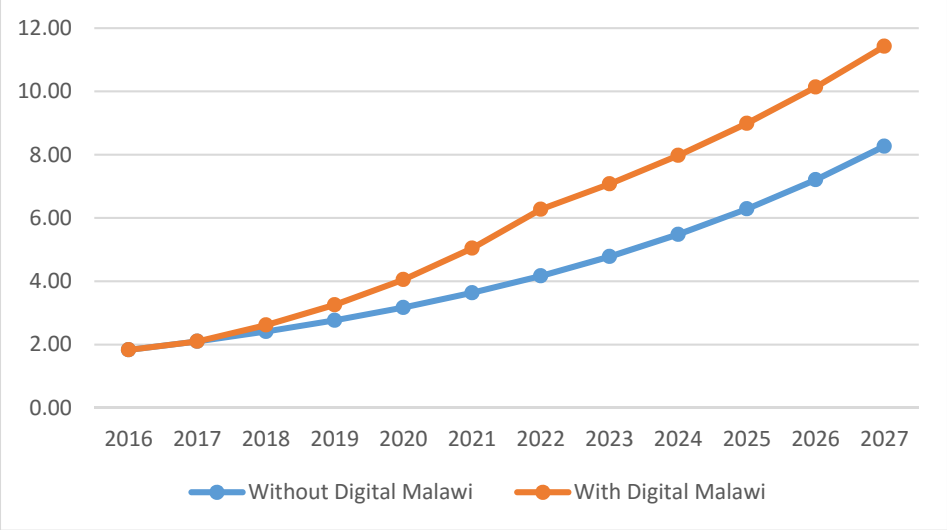
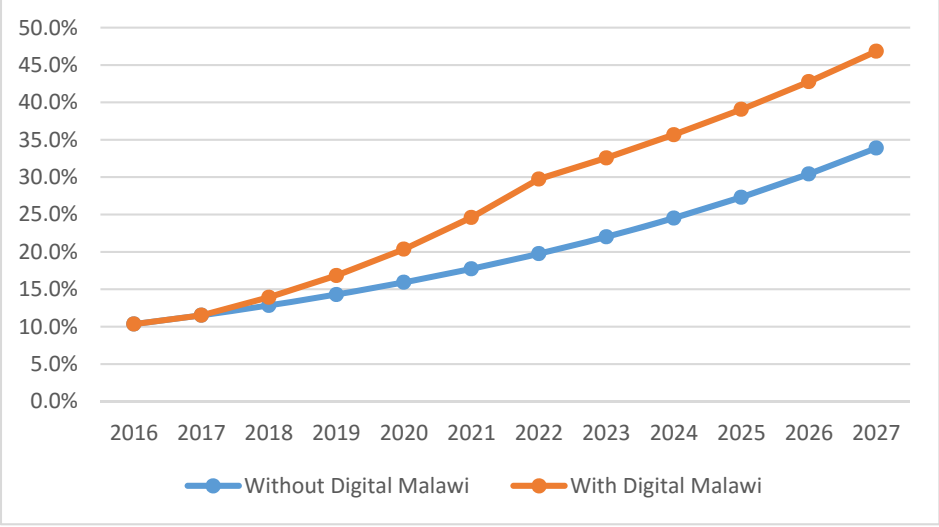


Figure 4.3. Projected Increase in Total Internet Users, per 100 Inhabitants



6. **The increased connectivity, attributed to the Malawi Digital Foundations Project, will contribute to GDP growth.** The accelerated connectivity supported by Digital Malawi will lead to a 0.06–0.08 percentage point increase in Malawi's GDP growth in 2027.[33] The resulting increase in GDP ranges from US$0.38–US$.48 million in 2018 to US$45.98–US$47.76 million in 2027. The analysis presents a benefit-cost ratio between 2.21 and 2.35 for an investment of US$37 million in the internet penetration components of the project (Subcomponents 1.1, 1.2 and Component 2). The expected internal rate of return (using CBA calculations) is between 22.6 percent and 23.8 percent.

Table 4.1. Benefits of Increased Internet Penetration on GDP

Projection	Without Digital Malawi (B)	With Digital Malawi (C)	Addition of Internet Subscribers with Digital Malawi (in millions) (C-B)	Without Digital Malawi (D)	With Digital Malawi (E)	Percentage Point Addition of Internet Users with Digital Malawi (E-D)	Addition to GDP with Digital Malawi (Lower Bound)[a]	Addition to GDP with Digital Malawi (Higher Bound)[b]
Year	Total Internet Users in Millions			Internet Users % (population growth adjusted)				
2016	1.84	1.84		10.4	10.4			
2017	2.10	2.10		11.5	11.5			
2018	2.41	2.62	0.21	12.8	13.9	1.1	US$382,815	US$478,519
2019	2.77	3.26	0.49	14.3	16.9	2.5	US$1,337,175	US$1,570,858
2020	3.17	4.05	0.88	15.9	20.4	4.4	US$3,118,578	US$3,546,790
2021	3.64	5.05	1.41	17.8	24.6	6.9	US$6,070,216	US$6,768,155
2022	4.17	6.28	2.11	19.8	29.8	10.0	US$10,650,141	US$11,717,320
2023	4.78	7.08	2.29	22.0	32.6	10.6	US$15,945,039	US$17,132,259
2024	5.48	7.98	2.49	24.5	35.7	11.2	US$22,035,849	US$23,354,182
2025	6.29	8.99	2.70	27.3	39.1	11.8	US$29,009,489	US$30,470,462
2026	7.21	10.14	2.93	30.4	42.8	12.4	US$36,958,589	US$38,574,045
2027	8.27	11.43	3.16	33.9	46.9	13.0	US$45,980,992	US$47,762,888
NPV							US$40,725,797	US$45,399,905
Benefit-Cost Ratio							2.21	2.35
Internal Rate of Return (IRR)							22.60%	23.80%

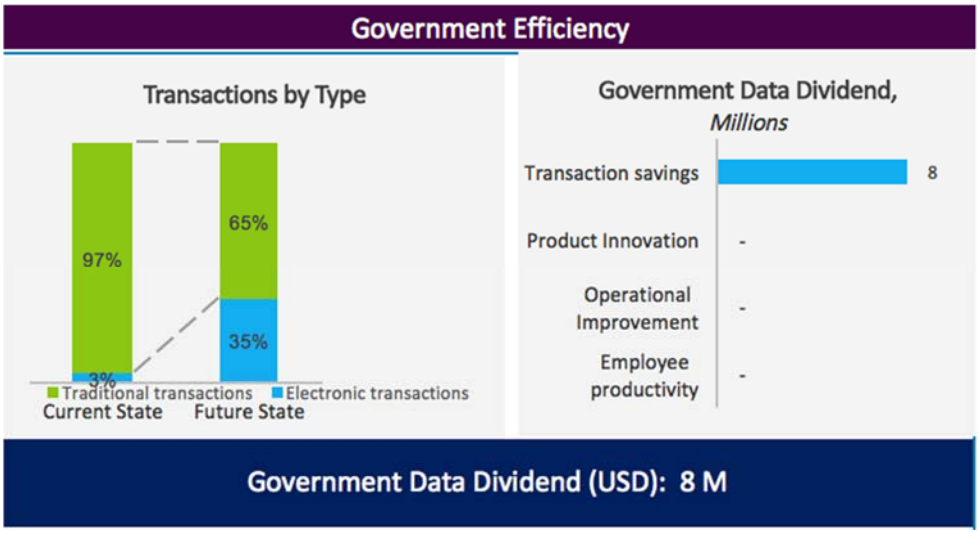
Note: a. The lower bound uses the 0.0048 percentage points as the addition to annual GDP/capita for a 1 percentage point increase in internet penetration.
b. The higher bound uses the 0.0060 percentage points as the addition to annual GDP/capita for a 1 percentage point increase in internet penetration

[33] The regression analysis by the World Bank estimates the results for the impact of mobile broadband in developing countries that are relatively robust across both the base specification and a wide series of different full-period (2005-2015) specifications, suggesting that a ten percentage point increase in the mobile broadband penetration rate (say, from 20% to 30%) increases annual GDP/capita growth by approximately 0.48-0.60 percentage points. This range has been used to provide the range for the CBA above.

7. **Increased connectivity will enable the digital economy to grow and will allow citizens to reduce spending on travel, which is expected to result in savings of approximately 0.04 percent of GDP over ten years (2027).** As of 2011, it was estimated that 5.6 percent of Malawi's per capita consumption was spent on transport which is higher than Uganda (4.5 percent). Total household consumption expenditure in Malawi is 80 percent of GDP while in Uganda, household consumption is 73 percent of GDP. Savings will be realized if new internet users substitute as little as 10 percent of their travel time by accessing services and information over the internet/digital platforms (such as health advice, access to government services such as business licenses, tax payments, utility payments, extension information and market prices for agricultural goods). Based on a cross-country comparison with Uganda, savings of 0.04 percent of GDP will be attained over 10 years.

8. **The Government will gain cost savings from the project by developing bundled and shared IT infrastructure and services for public institutions throughout the country**. Bundling and sharing IT infrastructure and services will allow Government to reduce IT-related expenditures. Sharing and bundling connectivity costs for government, universities and other public institutions will result in savings between 10 percent and 20 percent. In addition, the cost for the Government to retain technical expertise to operate a network will be reduced between 2.5 percent and 10 percent. Savings of 5–10 percent will also be realized from consolidating ongoing operating, maintenance and upgrade costs. In addition, enabling government access to cloud based applications and services is expected to generate savings of 2.5–10 percent in the long run.[34] Over the next five years, when the Government transitions from traditional paper-based transactions to electronic transactions there will be an expected US$8 million in savings.[35] This assumes that 35 percent of all government transactions will move to an electronic platform by 2022.

Figure 4.4. Estimated Savings from e-Government Services

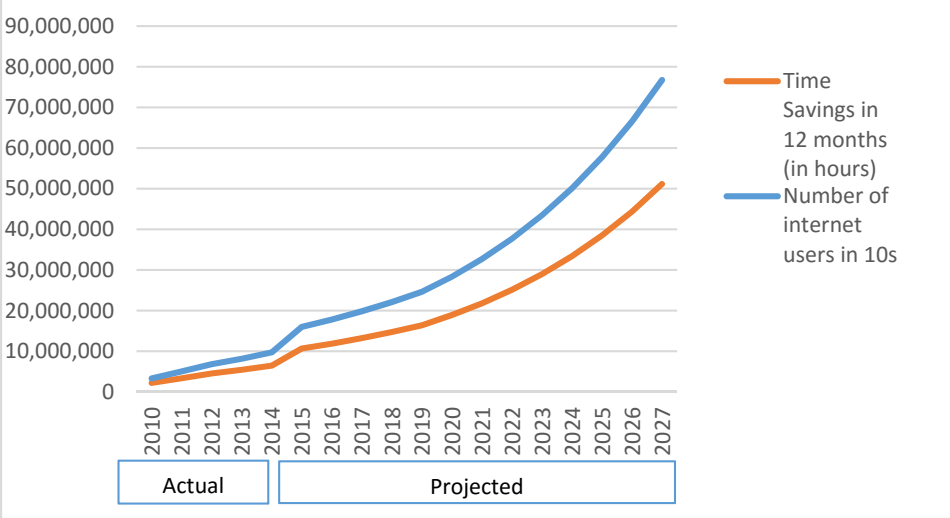


[34] A.T. Kearney, Jeff Sorenson, "Sustainable Cost Savings in Government IT" (estimated savings are based on A.T. Kearney's analysis on consolidated government IT spending; percentage of savings have been reduced by half, because the study was conducted using US government data).
[35] Microsoft Tool, "Digital Government Maturity Model" (estimated savings are based on reaching an anticipated e-government maturity level in five years, starting 2017)

9. **Shared infrastructure and services will support the implementation of IFMIS which is expected to bring cost savings to the government by automating FM.** Malawi Financial Sector Technical Assistance Project (P122616) is currently underway and will benefit from enhanced connectivity throughout the country. IFMIS roll-out will also benefit from improved communications and connectivity across the government.

10. **The Malawi Digital Foundations Project will create an enabling environment for digital innovation, economic growth and greater access to information**. The potential is especially high in sectors such as education, health, finance, and agriculture. The project will provide for increased bandwidth at lower costs for universities, linking teachers and students to e-Learning opportunities and internet-facilitated curriculum enhancements. Agricultural stakeholders will be able to reduce market imperfections through information sharing on input prices, market prices for crops, while improving access to credit and insurance markets and mitigating crop failures and weather risks. It will facilitate an increase in the adoption e-Health services, improving delivery and access to health information and services and reducing time and money spent traveling and waiting to visit a health service center.

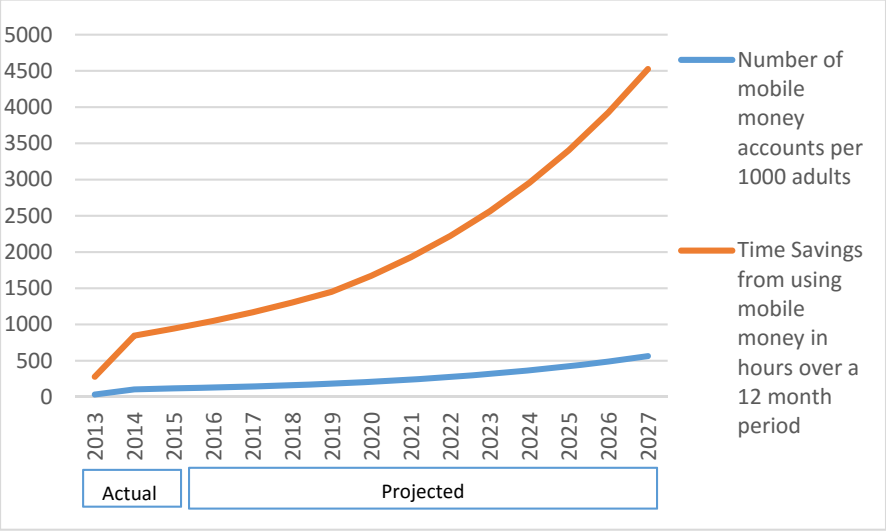
Figure 4.5. Projected Time Savings from using Digital Health Services



11. **An increase in mobile broadband and smartphone users and support for a conducive digital financial services regulatory environment under the project will enable increased use of mobile money.** These efforts will leverage the Government's e-Transaction legislation which was supported by RCIP Malawi. Supporting the development of a shared digital services platform will enable the Government to receive digital payments for services (taxes, utility bills, driver's license fees, school fees, business registration, etc.) and send digital payments to employees and citizens, creating efficiencies and driving demand/adoption of mobile money by citizens. Growing mobile money use further has the potential to improve security, stimulate job growth while enabling private sector innovation.[36] This increase in mobile money use will reduce friction throughout the economy and correspond to a reduction in transaction costs and an increase in financial inclusion.

[36] Kevin Donovan, "Mobile Money for Financial Inclusion" (2012).

Figure 4.6. Projected Time Savings from using Mobile Money



12. **Increased connectivity, digital skills and entrepreneurship support will lead to growth of Malawi's private sector.** Investing in digital skills, innovation hubs and more affordable and reliable connectivity, will help foster a conducive digital ecosystem for private sector led growth and innovation. New digitally driven companies will be established and technology will be adopted more widely by traditional companies, increasing efficiency and access to new domestic and international markets using digital platforms. Digital literacy and digital inclusion efforts will help ensure that more citizens are equipped to take advantage of digital technologies and services and are better equipped for the jobs and economy of tomorrow.

ANNEX 5: LINKAGES TO WORLD BANK OPERATIONS ACROSS SECTORS

COUNTRY: Malawi
Digital Malawi Program Phase I: Malawi Digital Foundations Project

Sector	Project	P#	Link with Digital Malawi Program
Agriculture	Malawi Agricultural Commercialization Project (2017) - US$95 million	P158434	Increased access to ICTs will enable development of agricultural value chains through access to digital marketplaces to source inputs and sell outputs and improvements in logistics and dissemination of new research and methods. Access to digital financial services will ease transactions and contracting between supply chain elements
Education	Malawi Education Sector Improvement Project (MESIP) (2017) - US$44.9 million	P154185	Connectivity for schools will enable use of e-learning tools and access to digital curriculum/digital content. Digital platforms can enable digital teacher salary payments and tracking of attendance.
	Malawi Skills Development Project (SDP) (2014) - US$50.9 million	P131660	Academia-Industry Partnerships for Digital Skills Development, Innovation and Entrepreneurship will complement the efforts under SDP to improve IT related curriculum/programs. Connectivity for higher education institutions will empower the SDP sponsored programs which suffer from insufficient connectivity
Energy & Extractives	Malawi Energy Sector Project (2011) - US$84.7 million	P099626	Increasing mobile money uptake will enable spread of pay-as-you-go off grid solar solutions driven by private sector
Finance & Markets	Malawi - Financial Sector Technical Assistance Project (FSTAP) (2011) - US$28.2 million	P122616	Facilitating collaboration between MACRA (telecoms regulator) and the financial services regulator to develop progressive regulations and policies to encourage growth and security of digital financial services
Governance	Malawi Financial Reporting and Oversight Improvement Project (FROIP) (2013) - US$19 million	P130878	Collaboration on shared data hosting and disaster recover solutions. Linking MDAs to high speed network to enable sharing of data on the IFMIS platform. Integration of IFMIS with the e-Procurement system.
Health, Nutrition & Population	Malawi Nutrition and HIV/AIDS Project (2012/2016) - US$102.6 million	P125237	Connectivity for health centers will enable use of digitized health information systems, logistics, spread of public health messages, telemedicine consultations, etc.
Macro Economics & Fiscal Management	Malawi Agricultural Support and Fiscal Management DPO (2017) - US$80 million	P153753	Potential for embedding policy and regulatory reform issues within future DPO series - particularly around ICT sector taxation policy and reform the IT/e-Government Institutional Structure

Sector	Project	P#	Link with Digital Malawi Program
Social Protection & Labor	Strengthening Safety Nets Systems - MASAF IV (2014) - US$177.8 million	P133620	Digital payments and SMS notification platforms will enable transparent, efficient and rapid delivery of social protection payments
Social, Urban, Rural and Resilience	Malawi Drought Recovery and Resilience Project (2017) - US$104 million	P161392	Digital payments and SMS notification platforms will enable rapid delivery of social protection payments, vouchers and emergency messages. Strengthening the national digital map (Malawi Spatial Data Platform [MASDAP]) will enable better coordination and assessment in case of natural disasters
	Malawi Floods Emergency Recovery (2015) - US$80 million	P154803	Digital payments and SMS notification platforms will enable rapid delivery of social protection payments, vouchers and emergency messages. Strengthening the national digital map (MASDAP) will enable better coordination and assessment in case of natural disasters
Water	Shire Valley Transformation Program - I (2018 Pipeline) - US$160 million	P158805	Improved connectivity in rural areas will enable new livelihoods opportunities and supply chain development. Digital technology can enable smart irrigation systems, support development of a secure land registry and provide data for improved planning and innovation