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Report No: PAD4616

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF EUR 56.6 MILLION
(US\$60 MILLION EQUIVALENT)

AND A SHORTER MATURITY LOAN

IN THE AMOUNT OF EUR 311.1 MILLION
(US\$330 MILLION EQUIVALENT)

TO THE

REPUBLIC OF KENYA

FOR A

KENYA DIGITAL ECONOMY ACCELERATION PROJECT
AS PHASE I OF THE MULTIPHASE PROGRAMMATIC APPROACH

WITH AN OVERALL FINANCING ENVELOPE OF US\$570 MILLION EQUIVALENT

March 14, 2023

Digital Development Global Practice
Eastern and Southern Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective February 28, 2023)

Currency Unit = Kenya Shilling (KES)

US\$1 = KES 126.95

US\$1 = EUR 0.9426

FISCAL YEAR
July 1 - June 30

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ACRONYMS AND ABBREVIATIONS

A4AI	Alliance for Affordable Internet
AU	African Union
AWPB	Annual Work Plan and Budget
CA	Communications Authority
CBC	Competency-Based Curriculum
CERC	Contingent Emergency Response Component
CPF	Country Partnership Framework
CTM	Commercial Transactions Manual
DA	Designated Account
DE4A	Digital Economy for Africa Initiative
DFI	Development Finance Institution
DLP	Digital Literacy Program
EAC	East African Community
EARDIP	East Africa Regional Digital Integration Project (P176181)
EA-RTTDFP	East Africa Regional Transport, Trade and Development Facilitation Project
EHPMP	Environmental Health and Pollution Management Program
EHSG	Environment, Health and Safety Guideline
ERS	Economic Recovery Strategy
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESRS	Environment and Social Review Summary
FCS	Fragile and Conflict-Affected Situations
FM	Financial Management
GBV	Gender-Based Violence
GCRF	Global Crisis Response Framework
GDP	Gross Domestic Product
GESDeK	Program to Strengthen Governance for Enabling Services Delivery and Public Investment in Kenya
GHG	Greenhouse Gas
GoK	Government of Kenya
GRS	Grievance Redress Service
HKS	Huduma Kenya Secretariat
ICT	Information and Communications Technologies
ICTA	Information and Communications Technology Authority
ICDL	International Computer Driver's License
IFC	International Finance Corporation
IFMIS	Integrated Financial Management Information System
IFR	Interim Financial Report
IGAD	Intergovernmental Authority on Development

IMF	International Monetary Fund
IP	Internet Protocol
IPF	Investment Project Financing
IRU	Indefeasible Rights of Use
ISP	Internet Service Provider
ITU	International Telecommunication Union
KDEAP	Kenya Digital Economy Acceleration Project
KENET	Kenya Education Network Trust
KES	Kenya Shillings
KICD	Kenya Institute of Curriculum Development
KTCIP	Kenya Transparency and Communication Infrastructure Program (P094103)
LMP	Labor Management Procedures
M&E	Monitoring and Evaluation
MCDAs	Ministries, Counties, Departments, and Agencies
MFD	Mobilizing Finance for Development
MICDE	Ministry of Information, Communications and Digital Economy
MPA	Multiphase Programmatic Approach
MPSGAA	Ministry of Public Service, Gender and Affirmative Action
NAP	National Adaptation Plan
NOFBI	National Optic Fiber Backbone Infrastructure
NPV	Net Present Value
ODPC	Office of Data Protection Commissioner
OPEX	Operational Expenditure
PAD	Project Appraisal Document
PBC	Performance-Based Condition
PCM	Private Capital Mobilization
PDO	Project Development Objective
PforR	Program for Results
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PPSD	Project Procurement Strategy for Development
PrDO	Program Development Objective
PSC	Project Steering Committee
PWDs	Persons with Disabilities
RPF	Resettlement Policy Framework
SCD	Systematic Country Diagnostic
SEQUIP	Secondary Education Quality Improvement Program (P160083)
SEP	Stakeholder Engagement Plan
SLA	Service Level Agreement
SML	Shorter Maturity Loan
SOC	Security Operations Center
STEM	Science, Technology, Engineering, and Mathematics
STEP	Systematic Tracking of Exchanges in Procurement

SUW	Scale-Up Window (of IDA)
TESPOK	Technology Service Providers of Kenya
TTL	Task Team Leader
TVET	Technical and Vocational Education and Training
UCS	Unified Communications System
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
USF	Universal Service Fund
VMG	Vulnerable and Marginalized Group
VMGF	Vulnerable and Marginalized Groups Framework
VMGP	Vulnerable and Marginalized Groups Plan
WBG	World Bank Group



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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Kenya	Kenya Digital Economy Acceleration Project	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P170941	Investment Project Financing	Moderate

Financing & Implementation Modalities

☒ Multiphase Programmatic Approach (MPA)	☒ Contingent Emergency Response Component (CERC)
☐ Series of Projects (SOP)	☐ Fragile State(s)
☐ Performance-Based Conditions (PBCs)	☐ Small State(s)
☐ Financial Intermediaries (FI)	☒ Fragile within a non-fragile Country
☐ Project-Based Guarantee	☐ Conflict
☐ Deferred Drawdown	☐ Responding to Natural or Man-made Disaster
☐ Alternate Procurement Arrangements (APA)	☐ Hands-on Enhanced Implementation Support (HEIS)

Expected Project Approval Date	Expected Project Closing Date	Expected Program Closing Date
31-Mar-2023	31-Oct-2028	31-Oct-2030
Bank/IFC Collaboration	Joint Level	
Yes	Complementary or Interdependent project requiring active coordination	

MPA Program Development Objective

To enhance digital infrastructure, services and skills for inclusive participation in the national digital economy and to boost cross-border digital services

MPA Financing Data (US\$, Millions)



MPA Program Financing Envelope	570.00
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Proposed Project Development Objective(s)

To expand access to high-speed internet, improve the quality and delivery of education and selected government services, and build skills for the regional digital economy

Components

Component Name	Cost (US\$, millions)
1. Digital Infrastructure and Access	220.00
2. Digital Government and Services	104.00
3. Digital Skills and Markets	51.00
4. Project Management	15.00
5. Contingent Emergency Response Component	0.00

Organizations

Borrower: Republic of Kenya

Implementing Agency: Information Communications Technology Authority (ICTA)
Ministry of Information, Communications and Digital Economy (MICDE)

MPA FINANCING DETAILS (US\$, Millions)

MPA Program Financing Envelope:	570.00
of which Bank Financing (IBRD):	0.00
of which Bank Financing (IDA):	570.00
of which other financing sources:	0.00

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	490.00
Total Financing	490.00



of which IBRD/IDA	390.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	390.00
IDA Credit	390.00

Non-World Bank Group Financing

Commercial Financing	100.00
Unguaranteed Commercial Financing	100.00

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	SML Amount	Guarantee Amount	Total Amount
Kenya	60.00	0.00	330.00	0.00	390.00
National Performance-Based Allocations (PBA)	20.00	0.00	0.00	0.00	20.00
Regional	40.00	0.00	0.00	0.00	40.00
Scale-Up Window (SUW)	0.00	0.00	330.00	0.00	330.00
Total	60.00	0.00	330.00	0.00	390.00

Expected Disbursements (in US\$, Millions)



WB Fiscal Year	2023	2024	2025	2026	2027	2028	2029
Annual	1.00	30.00	50.00	75.00	95.00	110.00	29.00
Cumulative	1.00	31.00	81.00	156.00	251.00	361.00	390.00

INSTITUTIONAL DATA

Practice Area (Lead)

Digital Development

Contributing Practice Areas

Education, Governance, Health, Nutrition & Population

Climate Change and Disaster Screening

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

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Substantial
4. Technical Design of Project or Program	● Substantial
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	● Substantial
7. Environment and Social	● Moderate
8. Stakeholders	● Substantial
9. Other	
10. Overall	● Substantial
Overall MPA Program Risk	● Substantial



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

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

No later than six (6) months after the Effective Date, the Recipient shall establish and thereafter maintain, throughout the implementation of the Project, a project steering committee - to be chaired by the Principal



Secretary (State Department for ICT and Digital Economy) and comprising, amongst others, chief executive officer of ICTA, director general of Communications Authority and representatives of the Ministry of Education, the Ministry of Public Services, Gender and Affirmative Action, and the National Treasury, as well as the KDEAP Project Coordinator as secretary and - with mandate, powers and resources satisfactory to the Association.

Sections and Description

No later than three (3) months after the Effective Date, the Recipient shall deploy or recruit - and thereafter maintain, throughout the implementation of the Project - additional specialists to staff the project implementation unit in the ICTA (apart from Project coordinator, a procurement specialist, a financial management specialist, environmental specialist, social risks management specialist, in place by Effective Date) with terms of reference, composition (including education technology specialist, a part-time security consultant, a part-time sexual exploitation, harassment risks management consultant and technical specialists) and resources satisfactory to the Association, to be responsible for Project coordination, management, communication and monitoring and reporting including overseeing the day-to-day implementation and management of the Project.

Sections and Description

No later than thirty (30) months after the Effective Date, the Recipient shall, in conjunction with the Association, carry out a mid-term review of the Project (the “Mid-term Review”), covering the progress achieved in the implementation of the Project.

Sections and Description

For the purpose of facilitating mid-term review, the Recipient shall prepare – under terms of reference satisfactory to the Association – and furnish to the Association not less than three (3) months prior to the beginning of the Mid-term Review, a report integrating the results of the Project’s monitoring and evaluation activities, on the progress achieved in the carrying out of the Project during the period preceding the date of such report, and setting out the measures recommended to ensure the efficient carrying out of the Project and the achievement of the objective of the Project during the period following such date.

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	The Subsidiary Agreement has been executed on behalf of the Recipient and of the Project Implementing Entity, in accordance with the provisions of Section I.B of Schedule 2 of the IDA Blend Financing Agreement. The Subsidiary Agreement has been duly authorized or ratified by the Recipient and the Project Implementing Entity and is legally binding upon the Recipient



		and the Project Implementing Entity in accordance with its terms.
Type Effectiveness	Financing source IBRD/IDA	Description The Recipient has adopted the Project Implementation Manual, in accordance with the provisions of Section I.C.1(b)ii of Schedule 2 of the IDA Blend Financing Agreement
Type Effectiveness	Financing source IBRD/IDA	Description The Project Implementation Unit has been duly established - and is staffed with at least a Project coordinator, a procurement specialist, a financial management specialist, an environmental specialist and a social specialist, - in a manner and substance satisfactory to the Association.
Type Effectiveness	Financing source IBRD/IDA	Description The Recipient has prepared, consulted upon, adopted and publicly disclosed the Environmental and Social Management Framework, the Resettlement Policy Framework, the Vulnerable and Marginalized Groups Framework, the Social Assessment the Sexual Exploitation and Harassment (SEAH) Prevention and Response Plan, and the Security Management Plan, all in manner and substance satisfactory to the Association.
Type Disbursement	Financing source IBRD/IDA	Description No withdrawal shall be made under category (2) until ICTA has prepared and adopted the Commercial Transactions Manual in form and substance satisfactory to the Association.
Type Effectiveness	Financing source IBRD/IDA	Description The Recipient has updated the Stakeholder Engagement Plan in a manner and substance satisfactory to the Association.



Type Effectiveness	Financing source IBRD/IDA	Description The Recipient has established the Project grievance mechanism in form and substance satisfactory to the Association.
Type Disbursement	Financing source IBRD/IDA	Description No withdrawal shall be made under Category (3) until: (i) the Recipient's relevant authority has declared a disaster, emergency or catastrophic event in Recipient's territory; (ii) the Association and the Recipient have agreed in writing to address such disaster, emergency or catastrophic event under Part 5 of the Project and in accordance with the provisions of this Agreement; (iii) the Recipient has ensured that any environmental and social management instruments required for said activities have been duly prepared and disclosed, and the Recipient has ensured that any actions which are required to be taken under said instruments have been implemented, all in accordance with the applicable provisions of the Contingent Emergency Response Implementation Plan; (iv) the Coordinating Agency in charge of coordinating and implementing the CERC has/ have adequate staff and resources, for the purposes of said activities; and (v) the Recipient has adopted a Contingent Emergency Response Implementation Plan in accordance with the provisions of Section I.C.3 of Schedule 2 to this Agreement.
Type Effectiveness	Financing source IBRD/IDA	Description The SML Financing Agreement has been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to make withdrawals under it (other than the effectiveness of this



		Agreement) have been fulfilled.



I. STRATEGIC CONTEXT

A. Country Context

1. **Kenya is a young and urbanizing country with a mean age of 20.1 years and a growing population that reached 53 million in 2021¹ having increased rapidly over the previous 30 years².** Population growth has averaged 2.7 percent annually since 2000, with the urban population growing at 4.4 percent, reaching over 27 percent in 2020. However, a vast majority of Kenyans (73 percent) continue to reside in rural areas. Kenya's young population, coupled with the bulging urbanization, presents an opportunity to capitalize on a demographic dividend, paired with the challenge of creating enough jobs to support the boom in the working-age population. **Kenya is the world's seventh most ethnically diverse country** with an evolving political structure aimed at balancing competition and fostering national unity. Access to national resources and services mirrored access to political power in the past, fostering disparities across diverse communities and accentuating concerns over political exclusion, voice, and accountability. A new Constitution developed in 2010 aimed to alleviate this.

2. **The country's robust and resilient economic growth over the past decade has outperformed its Sub Saharan African and lower-middle-income country (LMIC) peers.** From 2010 to 2019, annual gross domestic product (GDP) growth averaged 5 percent. Kenya's economy showed considerable resilience during the COVID-19 pandemic. The economy rebounded from the slowdown of the pandemic with a 7.5 growth in GDP in 2021³. This growth was sustained through 2022 with a major contribution from Services and Industry⁴, and GDP is projected to grow by 5.2 percent through 2024⁵. Labor force expansion and rising capital stocks have both contributed to GDP growth (approximately 2.3 percent each from 2004 onward). However, growth in total factor productivity has contributed only 0.9 percentage points annually, lagging Kenya's neighbors, as well as its aspirational peers.

3. **However, Kenya continues to be affected by a series of overlapping crises.** Global crises include the COVID-19 pandemic and the fallout from Russia's invasion of Ukraine while local crises include intercommunal conflicts related to resource competition, displacement, drought, locust infestations and radicalization in the Horn of Africa. The north and northeast counties suffer from profound disparities, with poverty standing at 70 percent compared to 28 percent elsewhere in the country. Intercommunal violence continues over access to pastures and water resources in increasingly arid zones but also reflects historical ethnic and sectarian divisions. The scale of forced displacement across the greater Horn has seen Kenya hosting the fifth largest refugee population (over 500,000) in Africa (the majority in protracted displacement situations) in its Kakuma/Kalobeyi and Dadaab refugee camps, which are also located in Kenya's poorest counties. Finally, Kenya has been particularly affected by the rise of violent extremism in the Horn of Africa and thus plays a significant role in regional anti-terrorism activities.

¹ World Bank, World Development Indicators.

² Kenya National Bureau of Statistics. 2019. <https://www.knbs.or.ke/download/2019-kenya-population-and-housing-census-volume-iii-distribution-of-population-by-age-sex-and-administrative-units/>

³ Ibid.

⁴ Services and industry increased COVID 19 rebound in Kenya <https://www.worldbank.org/en/news/press-release/2022/12/08/kenya-s-economic-recovery-remains-strong-although-slowed-by-drought-and-inflation>

⁵ World Bank. 2022. *Kenya Economic Update - June 2022* | Edition No. 25 9. Pg 9, at:

<https://documents1.worldbank.org/curated/en/099430006062288934/pdf/P17496106873620ce0a9f1073727d1c7d56.pdf>.



4. **Adding to overlapping stressors, Kenya has been identified as highly vulnerable to climate change on the Notre Dame Global Adaptation Index** (rank 149/182 in 2020).⁶ More than 80 percent of the landmass is arid and semi-arid land with poor infrastructure, and the economy is highly dependent on climate-sensitive sectors such as rain-fed agriculture. While temperatures vary across Kenya, a distinct warming trend is evident, particularly since the 1960s. Extreme rainfall events are occurring with greater frequency and intensity, as well as aridity and droughts in certain areas. These climatic trends are expected to persist and increase in climate scenarios. Repeating patterns of floods and droughts have had large socio-economic impacts and high economic costs (droughts impacting 8 percent of GDP roughly every five years). Lower-income populations reside in more hazard prone locations, with high potential for significantly increased exposure of already underserved populations.⁷

5. **The strong economic growth over the last 15 years has contributed significantly to poverty reduction in Kenya, but the pace of the decline has slowed in recent years.** Over the medium term, Kenya is expected to sustain an annual GDP growth of approximately 5 percent (similar to the pre-pandemic pace of about 4.7 percent during 2015–2019). This presumes the Government’s continued implementation of critical reforms and the necessary fiscal consolidation (supported by prospective Development Policy Financing programs and an ongoing program of support from the International Monetary Fund [IMF]). Robust GDP per capita growth since 2005, primarily associated with a strong growth in private consumption, saw the share of the population living below the national poverty line fall from 46.8 to 33.5 percent and below the international poverty line⁸ from 43.8 to 35.8 percent between 2005 and 2019. Although poverty in Kenya remains below the Sub-Saharan Africa average and among the lowest in the East African Community (EAC), it is still notably higher than other LMICs (12.8 percent in 2018).

6. **The decline in poverty has been accompanied by an increase in vulnerability.** The average poverty gap decreased by 7.5 percentage points between 2005 and 2019 as consumption levels of the poor increased. However, the share of population with expenditure levels increased just up to 20 percent above this threshold. Subsequently, the COVID-19 pandemic is estimated to have increased Kenya’s poverty rate by around 4 percentage points. Nationwide more than one-third of non-poor Kenyans are classified as vulnerable. Vulnerability is most common in households that derive most of their income from agriculture and with low levels of education or that are headed by women. It is of concern that the poverty elasticity of growth, already lower than other African LMICs, has slowed in recent years from 0.43 during 2005–2015 to 0.27 during 2015 to 2020. To eradicate extreme poverty by 2030, Kenya’s annual poverty reduction rate must rise to at least 0.4 percent.

7. **The country faces gender disparity in access to critical infrastructure and skills.** The persistence of discriminatory social norms continues to propagate gender inequality that traditionally prescribes social roles and the conduct of women within a society. Social norms continue to play an outsized role in regulating women’s mobility, access to gainful employment and by extension access to resources in Kenya. There is also a lack of gender disaggregated data which makes it hard to monitor progress.

8. **The country’s vision to become a middle-income country by 2030 is underpinned by its commitment to leverage Information and Communication Technologies (ICT) to accelerate growth and poverty reduction.** To achieve this, the country must reinvigorate private investment (and trade) and productivity improvements as drivers of growth.

⁶ A country’s ND-GAIN index score is composed of a vulnerability score and a readiness score. Vulnerability measures a country’s exposure, sensitivity, and ability to adapt to the negative impact of climate change. ND-GAIN measures the overall vulnerability by considering vulnerability in six life-supporting sectors—food, water, health, ecosystem service, human habitat, and infrastructure; see <https://gain.nd.edu/our-work/country-index/rankings/>.

⁷ World Bank, Climate Knowledge Portal, at: https://climateknowledgeportal.worldbank.org/sites/default/files/2021-05/15724-WB_Kenya%20Country%20Profile-WEB.pdf

⁸ The poverty line is US\$1.90 in purchasing power parity terms.



Digital technologies are a key enabler of the new Government's manifesto promises, playing a catalytic role in enhancing productivity and service delivery by both the public and private sectors in education, agriculture, health care, and manufacturing. The Government's 'Vision 2030'⁹ recognizes that information technology enabled services is a core economic pillar, viewed as critical to enabling the country to bypass more 'traditional' pathways to shared prosperity and poverty reduction.

B. Sectoral and Institutional Context

9. **Kenya stands out as the digital leader in the East African Region, earning an early reputation as an innovator in digital services.**¹⁰ The country continues to benefit from its early liberalization of the telecom sector, strategic public investments in the national fiber optic backbone infrastructure (NOFBI), and a vibrant private sector that has used this market openness and public infrastructure to invest in network expansion and roll out innovative digital services. As a result, Kenya boasts over 98 percent population coverage of mobile broadband networks of 3G and higher¹¹. Nationally, broadband penetration stood at 60 percent in September 2022, but this was mainly provided from 3G and 4G mobile services, with a fixed broadband penetration of only 1.7 percent.¹² The country had a 70.6 percent mobile money penetration in September 2022 (the highest in the world¹³), and a thriving technology ecosystem.¹⁴ Kenya is ranked third in the continent in the 'Networked Readiness Index' 2022 rankings.¹⁵ Kenya's digital agenda is championed by the country's top leaders and is reflected in the ambitious 'Vision 2030' aim of transforming Kenya into a regional ICT hub, coupled with a dedicated government ministry and agencies established to drive the digital agenda, principally the Ministry of Information, Communications and Digital Economy (MICDE), the Information and Communication Technology Authority (ICTA), and the Communications Authority (CA).

10. **Kenya's regional leadership sets important precedents for other countries in East Africa.** As a key member of several regional economic communities, Kenya can contribute to regional harmonization of regulatory and policy frameworks to support digital market integration. The heads of state of Kenya, Rwanda, Uganda, and South Sudan committed to form a Single Digital Market at the Northern Corridor Summit in June 2018, which has been taken on board by the East African Community (EAC) as well, of which Kenya is a member. Similarly, Kenya joined other countries in the region to participate in the Horn of Africa initiative, and currently hosts its secretariat.¹⁶ It is also a member of the Intergovernmental Authority on Development (IGAD) where it has the potential to help its neighbors in the Horn of Africa, in particular South Sudan and Somalia, climb the digital ladder.

11. **While the country has made impressive gains, there remains a lingering digital divide in access to broadband, digital public services, and the skills needed for individuals and businesses to thrive in an increasingly digitized**

⁹ Government of Kenya. 2018. Vision 2030, Sector Progress and Project Updates, at : <http://vision2030.go.ke/wp-content/uploads/2018/09/Kenya-Vision-2030-Sector-Progress-Project-Updates-June-2018.pdf>.

¹⁰ Hruby, Audrey and Bright, Jake. 2015. *The rise of Silicon Savannah*, at <https://techcrunch.com/2015/07/23/the-rise-of-silicon-savannah-and-africas-tech-movement/>.

¹¹ GSMAintelligence.com.

¹² Penetration rate is total broadband subscriptions/population (2019, World Bank) × 100. Communications Authority of Kenya. 2023. "First Quarter Sector Statistics Report for the Financial Year 2022/23." <https://www.ca.go.ke/wp-content/uploads/2022/11/Sector-Statistics-Report-Q1-2022-2023.pdf>.

¹³ World Bank. 2022. "Global Findex Database, 2021." <https://www.worldbank.org/en/publication/globalfindex/interactive-executive-summary-visualization>.

¹⁴ In 2019, Kenya had the third highest number of tech hubs (48) in Sub-Saharan Africa, after Nigeria (85) and South Africa (80). <https://www.gsma.com/mobilefordevelopment/blog/618-active-tech-hubs-the-backbone-of-africas-tech-ecosystem/>.

¹⁵ Kenyan was ranked 77 worldwide, behind South Africa (68) and Mauritius (72) in Africa <https://networkreadinessindex.org/countries/#ranking-wrapper>

¹⁶ Horn of Africa Initiative, at: <https://hoainitiative.org/who-we-are/>



economy and society. A World Bank Digital Economy Diagnostic study, published in 2020,¹⁷ revealed gaps in digital infrastructure and access to broadband, especially in rural areas, and gaps and a lack of integration in government infrastructure for digital service delivery and in its platforms and practices. While there are pockets of excellence, the study also found wide disparities in digital skills and barriers to scaling up digitally-enabled firms and employment opportunities. Sustaining Kenya's digital leadership will require significant private and public investments and forward-looking policies to close the broadband connectivity divide. It will also require focused efforts to improve accessibility, uptake, and user experience for e-Government services. Likewise, the growing privacy and security risks of the digital era will need to be mitigated to boost trust and uptake of digital transactions and services. Highlights of the key challenges to be tackled and opportunities to be harnessed are outlined below.

12. Kenya also needs the economies of scale and network effects of a larger and more competitive regional market for its technology startups and IT firms to grow and achieve its vision to be one of the premier digital investment and innovation hubs in the continent. Likewise, the lagging countries in the region would benefit from greater access to Kenyan innovations and services and lower costs of connectivity. Cross-cutting issues, such as trade in digital services, e-Commerce, cybersecurity and data protection, also require a regional approach. Despite Kenya's relatively strong presence in the EAC, its total trade in cross-border services within the EAC countries is a meager 2.1 percent of its total services trade. Further, over 90 percent of such trade is related to transport and travel services,³⁶ suggesting that cross-border digital services remain low in the region, despite Kenya's regional leadership in financial and telecom services.

Need to expand access to broadband

13. Broadband network coverage remains insufficient, particularly in rural and underserved areas where over 70 percent of the population resides. Starting as early as 2007, the Government of Kenya (GoK) has today deployed around 60 percent of the country's terrestrial backbone infrastructure, including NOFBI which spans some 8,900 km, built in three phases, and connects all major cities and county and sub-county headquarters. But the oldest parts of the network are now in need of upgrade and the overall level of network uptime is low relative to both other networks in the country and the region, with some segments out of service for months.¹⁸ Territorial coverage of fiber remains quite patchy in the less populated parts of the country. Kenya's national broadband strategy 2018–23 notes that people often have to walk more than 2 km to access a mobile cellular signal, with no fixed line internet access possibilities.¹⁹

14. Last mile connectivity remains low, hindering delivery of key public services such as education, health, and judicial services. Many thousands of primary and secondary schools, health centers, and government offices are located within less than 1 km of a fiber node, yet these have not been connected to broadband.²⁰

- All 64 **universities** are connected, with around half a million users, mainly through the Kenya Education Network Trust (KENET). But only a small proportion of around 300,000 users in the 2,420 technical and vocational education and trainings (TVETs) are connected, and most of these are on *ad hoc*, month-to-month, commercial connections, which may not be sustainable.
- For **schools**, there is a patchwork of initiatives aiming to connect to the internet, with several institutions active,

¹⁷ Key findings are featured in the 20th edition of the World Bank Kenya Economic Update.

<http://documents.worldbank.org/curated/en/968481572468094731/pdf/Kenya-Economic-Update-Securing-Future-Growth-Policies-to-Support-Kenya-s-Digital-Transformation.pdf>.

¹⁸ An example here is the fiber link between Eldoret and Lokichoggio, on the South Sudan border, which was part of the first phase, constructed from 2009 onward. But the link has been nonoperational since around 2013, due to a combination of flash floods and vandalism. It has been refurbished (and in parts fully reconstructed) with funds from the World Bank's regional roads and fiber lending program, EA-RTTDF, P148853.

¹⁹ RoK. 2018. *National Broadband Strategy, 2018-2023*, at: <https://www.ict.go.ke/wp-content/uploads/2019/05/National-Broadband-Strategy-2023-FINAL.pdf>.

²⁰ Salience for World Bank. 2022. *Kenya Public Digital Infrastructure Options Assessment and Pre-Feasibility Study*.



including KENET, ICTA (with support from Huawei), the CA (using funds from the Universal Service Fund [USF]), and the UN Giga²¹ initiative (with support from Liquid Intelligent Technologies). Nevertheless, it is estimated that fewer than 4 percent of schools have actually been connected through these initiatives. The true figure may be higher, as many schools, particularly in the private sector, may be paying for the connections themselves. But equally, many of the ‘connected’ schools, such as the 900 supported by the USF, have lost their connections because of their inability to bear ongoing operational costs once the funding ended.

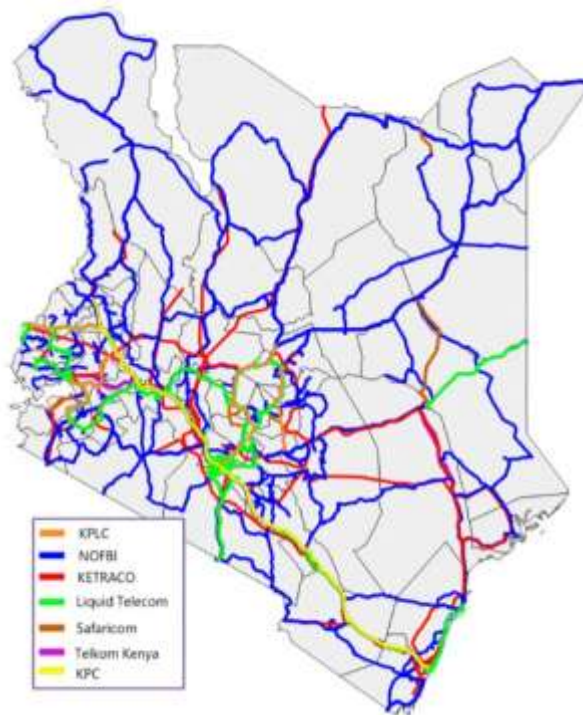
- **For government offices**, all 47 counties have been connected by ICTA, with some support of Liquid Telecom and others. However, the connection terminates at county and sub-county level and wards still need to be connected.

15. **The NOFBI is a palimpsest of fiber constructed in different phases, by different vendors, with different contracts awarded for operations and maintenance**, a structure which is not conducive to efficient management and service uptime has fallen below 90 percent. Over time, other fiber providers have taken up much of the slack from NOFBI and have built a more extensive fiber backbone (see Figure 1), though NOFBI generally remains the provider of last resort in rural areas. The alternative fiber providers include both public institutions—energy providers, Kenya Electricity Transmission Company (KETRACO) and Kenya Power and Lighting Company (KPLC); the pipeline company, Kenya Pipeline Company and the recently renationalized Telkom Kenya—and private operators, including Liquid, Safaricom, and Frontier Optical Networks (FON). In 2022, Telkom Kenya relinquished its management contract for NOFBI, and ICTA now has full responsibility for its operations. While this imposes a management and financial burden on the state, it also provides an opportunity to take a fresh look at options for commercializing the ownership and operation of NOFBI. The feasibility study carried out in preparation for this project evaluated a large number of possible options for future operation of NOFBI and whittled this down to three main options – a PPP for new-build operations only; an open access wholesale provider network; or full privatization.

²¹ Giga is a UNICEF-ITU initiative, supported by the World Bank, which aims to connect every school to the internet. See: <https://giga.global/>. To date, GIGA has connected 264 schools in Kenya.



Figure 1. Kenya's National Fiber Routes



Source: Salience for World Bank. 2022. *Kenya Public Digital Infrastructure Options Study*.

Need to strengthen Kenya's connectivity with the region

16. **In addition to addressing bottlenecks for internet access in Kenya, there is also an urgent need to strengthen Kenya's cross-border links with its neighbors.** Kenya serves as an important transit link for international traffic with its landlocked neighbors, potentially also with South Sudan which is currently connected only via Uganda. The fiber link to Ethiopia also needs to be reinforced, especially now that Kenyan company Safaricom is also active in Ethiopia, having been awarded a full-service license to operate there in June 2021. Even with Somalia, which has an extensive coastline but only two landing stations, Kenya is the main source of connectivity to the south of that country. The Government plans to increase the number of cross-border links from 8 to 18 to provide for redundancy and resilience, which would complement infrastructure investments in South Sudan and Somalia financed by the upcoming World Bank financed Eastern Africa Regional Digital Integration Project (EARDIP, P176181). There is a need to equally ensure connectivity to South Sudan by complementing the installed core new 600km fiber optic cable from Eldoret to Nadapal/common border area with South Sudan, under the East Africa Regional Transport, Trade and Development Facilitation Project (P148853). Kenya is also an increasingly popular choice for private data center providers, content distribution networks and so-called hyperscalers that manage cloud-based data. Thus, improved regional connectivity will bring benefits to its neighboring countries, in particular those that are landlocked and are further behind in their digital development.

Need to enhance government institutions, infrastructure and service digitization for improved service delivery

17. **Capacity gaps in government communication infrastructure are holding back gains in productivity and threaten continuity of operations.** While efforts have been made, such as the *Shirikiana* initiative²² that centralizes shared software license regimes, central hosting of emails by ICTA, and a unified communications system (UCS) that was rolled

²² *Shirikiana* was an initiative of the Kenya Transparency Communication Infrastructure Project (KTCIP), supported by the World Bank.



out in 2012, these have been slow paced. For instance, the UCS has only been able to achieve 40 percent coverage across Ministries, Counties, Departments and Agencies (MCDAs), and some of the software licenses, acquired in the later stages of a prior World Bank-funded Kenya Transparency and Communications Infrastructure Project (KTCIP, P149043)²³, have now lapsed. Today, many MCDAs operate outdated and isolated digital communications and productivity platforms and civil servants lack comfort in using these tools. The lack of a unified, secure, and modern communications platform has limited productivity and efficiency and made continuity of operations during a crisis, such as the COVID-19 pandemic, challenging. These constraints have led many central- and county-level government institutions to adopt individual connectivity and data hosting solutions at much higher aggregate cost, with reduced security. This limits opportunities for data exchange, integration of systems, and adoption of cloud-based solutions across governments. In the absence of a shared service architecture, information management systems for tax and financial management, amongst others, have been installed but these operate in silos, or shadow networks, dampening the impact on operational efficiency.

18. Government digitization and e-Services expansion have created an opportunity to harness data-driven insights to enhance public service quality and efficiency. Significant progress has also been made in increasing the number of digital services on offer—the eCitizen web/mobile portal, for instance, provides access to over 300 services from 22 MCDAs and county administrations.²⁴ But the country still falls well short of its ICT Masterplan’s target of 80 percent of Government services online (equivalent to around 5,000 services). The country ranks 113th on the UN’s eGovernment Development Index 2022, and only 10th in Africa.²⁵ Kenya is ranked in the second category of countries (B) in the 2022 GovTech Maturity Index of the World Bank.²⁶ Furthermore, with the expanding digital economy and increasing complexity of threats to cybersecurity and data protection and privacy, having the requisite talent base to support appropriate mitigation and response measures is key.

Need to enhance Kenya’s capacity to drive regional data integration

19. A thriving digital market requires enabling frameworks that ensure that data can be securely, seamlessly, and cost-effectively exchanged. While Kenya ranks relatively high on enablers under the Global Data Regulation Diagnostic Survey of 2020–2021 in the region, it scores lower than other African peers on their data safeguards. Challenges to a trusted online environment not only limit the uptake, accessibility, and user experience of digital services in Kenya, but also create a bottleneck for expanding Kenyan digital services in the region and beyond. While regulatory and institutional mechanisms such as the Data Protection Act of 2019 and the Office of Data Protection Commissioner (ODPC) have been set in place, their operationalization is still in its early stages, and budget is lacking. Strengthening the GoK’s capacity, in line with international best practice and with the requirements for regional digital integration, will not only support the update of digital (public and private) services in Kenya but also across the whole region. Different data regimes are emerging for cross-border data exchange around the world, notably the European Union (EU) “adequacy” certifications, the EU-US Privacy Framework, and the Asia-Pacific Economic Cooperation Cross-Border Data Rules, and Kenya should not align itself without regional backing. Adequate protection of personal and sensitive data is also critical to instill trust in digital systems and services if they are to be adopted widely across the region. An enabling environment for cross-border data flows will require regionally harmonized rules and regulations for data protection, privacy, and data exchange laws and regulations, which will be supported at the EAC and IGAD level under EARDIP. Kenya’s adoption of such rules

²³ Kenya Transparency and Communications Infrastructure Project, closed in 2017.

²⁴ <https://www.ecitizen.go.ke/>.

²⁵ UN Department of Economic and Social Affairs, 2022. *E-Government Survey 2022: The future of Digital Government*, at: <https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf>.

²⁶ World Bank. 2022. *GovTech Maturity Index*.

<https://documents1.worldbank.org/curated/en/099035001132365997/pdf/P1694820bcef0903e091160315d2050d03b.pdf>



and regulations can set the precedent for other countries in the region, facilitating the safe and trusted cross-border flow of data across the region, with a focus on interoperability.

20. **While Kenya is above the global average in cybersecurity preparedness, managing the growing and evolving cybersecurity risks remains a challenge, which undermines trust in the national and regional digital environment.** Reportedly, in 2018, Kenya lost US\$295 million, or 0.4 percent of its GDP, to malicious cyber activities. Furthermore, 20 percent of internet users report experiences of online harassment.²⁷ There is still a need to develop cybersecurity and cybercrime policies, laws, and strategies based on international best practice, but also institutions and, within them, cybersecurity officials that have the technical and operational capabilities to identify, respond to, and mitigate cyber incidents and protect critical information infrastructure. EARDIP will be supporting the EAC and IGAD in strengthening regional collaboration over cybersecurity issues as well as helping member states adhere to international best practice and conventions; however, this will require national-level implementation and Kenya can set an important precedent.

Need to boost digital skills, and access to affordable devices and to regional and global markets to position Kenya as a regional digital hub

21. **Digital skills—ranging from basic digital literacy to more advanced skills—are needed to ensure that a higher rate of digitization and digital adoption can yield the desired economic and social benefits.** While Kenya has made concerted efforts to embed digital skills in its national education system through instituting the new competency-based curriculum (CBC)²⁸ and the flagship Digital Literacy Program (DLP)²⁹, substantial gaps remain in the delivery of basic digital skills training in primary and secondary education. The effectiveness and reach of the current efforts could be enhanced to ensure universal coverage. For instance, while DLP distributed some 1.2 million devices, covering 91 percent of primary schools, only around a third of schools are using the equipment as intended, due to a lack of internet connectivity, unreliable electricity supply, and a lack of teacher training³⁰ and content to support digital delivery of the new curriculum. Further, there is no equivalent DLP for junior or senior secondary schools. As a consequence, Kenyan citizens exhibit low levels of digital literacy. While only limited quantitative data on the level of basic digital skills attainment are currently available, the 82.6 percent adult literacy rate in 2021 would suggest a corresponding digital literacy gap of at least 17.4 percent. There is a particular need to improve the level of digital skills in government, at both the national and country levels.

22. **There is also a need to scale labor market initiatives geared toward nurturing and linking digital talent, particularly youth, to income-generation opportunities in the digital age.** Approximately half of Kenya's population is younger than 18, and some 9 million individuals are expected to enter the labor force between 2015 and 2025. While the Government of Kenya has rolled out several initiatives, such as the Presidential Digital Talent Program³¹ or the Kenya Youth Employment and Opportunities Project (P151831)³², more initiatives are needed to absorb such a supply of youth entering the jobs market for which Kenya needs to create an average of a million new jobs every year.³³ Kenya elected a

²⁷ Web Foundation. *Women's Rights Online Digital Gender Gap Audit*. 2016 Kenya Report. <https://webfoundation.org/research/digital-gender-gap-audit/>.

²⁸ The CBC aims to better incorporate digital skills and behaviors.

²⁹ The DLP, now in its third phase, seeks to equip schools with digital devices, content, and teacher training to expose students to technology at an early age.

³⁰ Despite conducting teacher training sessions under the DLP, the Teacher Service Commission reports that some 80 percent of primary school teachers felt they still lacked the ICT knowledge to translate training into practice.

³¹ Presidential Digital Talent Program, at: <https://www.opportunitiesforafricans.com/government-of-kenya-presidential-digital-talent-programme-cohort-vi/>

³² The project aims to increase employment income generation opportunities for vulnerable youth in the formal and informal sectors, including trainings, internships and apprenticeships, support to developing businesses and innovation grants to reach the most vulnerable.

³³ World Bank, 2021, Kenya Economic Update 23: Rising Above Wages



new Government in 2022, which set out to focus on further development of the ‘creative economy’, combined with digital initiatives, to absorb some of this overhang and connect Kenyan youth to new types of job opportunities and to promote Kenya as regional hub for digital services exports. Creative industries have the potential to provide more, better, and inclusive jobs for young people. Digital technologies are disrupting traditional business models in the cultural and creative industries, for example, transforming the way creative content is produced, distributed, and accessed. Therefore, it is important to equip youth, especially women, with the digital tools and skills they need to participate effectively in the creative economy.³⁴

23. As in many developing countries, gender gaps exist in access and use of digital technologies in Kenya and the region. The latest available survey from the Kenya National Bureau of Statistics (KNBS) estimates that the level of internet use in 2019 was 22.7 percent for the population above the age of 3. Based on this, it is estimated that male use stood at 25.2 percent and female use at 20.2 percent (i.e., a gender gap of around 11 percent)³⁵. Women were more likely than men to access the internet exclusively through mobile devices, highlighting the importance of increasing women's ownership of smartphones to enable access to more applications and services. The affordability of handsets is a huge barrier, with 54 percent of women in Kenya citing it as the top reason for not owning a smartphone.³⁶ Another gender gap that manifests itself around digital skills is evident in the historical bias of more men than women opting for courses and careers in Science Technology Engineering and Mathematics (STEM) as women conform to social norms³⁷ of not pursuing technical careers. Data suggests that only 17 percent of Kenyan students pursuing degrees in STEM subjects are women.³⁸

24. Strengthening Kenya's digital talent also needs to be paired with access to market opportunities in domestic, regional and global markets. The Government of Kenya has set out to increase its software exports based on its manifesto and is currently developing its e-Commerce strategy to enhance the enabling environment for trade in digital services and goods. While Kenya is generally considered a “digitally open” country, there are still gaps in its regulatory and policy framework that hold back Kenyan firms and consumers from taking full advantage of regional market opportunities and beyond.³⁹ Initiatives like the recent African Continental Free Trade Area and the implementation of EAC's E-Commerce Strategy have the potential to remove bottlenecks to intra-regional digital trade and e-commerce.⁴⁰ But, for Kenya to take full advantage of the various regional digital integration initiatives, implement its own e-commerce strategy, and expand its digital services across borders, it must address domestic regulatory constraints and adopt global standards for e-commerce and electronic transactions, such as intermediary liability or e-signatures. This agenda aligns with EARDIP, which will support regional regulatory harmonization for e-commerce at the EAC and IGAD level.

³⁴ Dalberg. 202. *Kenya's Digital Economy – A People's Perspective*, at:

https://www.digitaleconomy.ke/assets/download/Kenyas_Digital_Economy_Full_report_Aug_2021.pdf

³⁵ Other estimates, for instance based on Facebook user data, suggest a slightly higher gender gap at 13.6 per cent; see: www.digitalgendergaps.org, data for July 2022.

³⁶ Web Foundation. 2016. *Women's Rights Online Digital Gender Gap Audit. Kenya Report*, at: <https://webfoundation.org/research/digital-gender-gap-audit/>.

³⁷ IMF. 2022. *The Digital Gender Gap*, at: <https://www.imf.org/en/Publications/fandd/issues/2022/12/the-digital-gender-gap-khera-ogawa-sahay-vasishth>

³⁸ UNESCO. 2021. *Unlocking the potential of girls in STEM in Kenya*, at:

https://en.unesco.org/sites/default/files/unescos_stem_mentorship_programme.pdf

³⁹ United Nations Economic Commission for Africa. 2020. *Digital Trade Regulatory Integration – Country Profile: Kenya*

⁴⁰ UNECA (United Nations Economic Commission for Africa), *Creating a Unified Regional Market: Towards the Implementation of the African Continental Free Trade Area in East Africa* (Addis Ababa, Ethiopia: UNECA, 2020).



C. Relevance to Higher Level Objectives

25. The project is aligned to the World Bank Group (WBG) Country Partnership Framework (CPF) for Kenya FY23–28 (Report No. 172255-KE) discussed by the Board in November 2022 and the 2020 Systematic Country Diagnostic (SCD)⁴¹. The project will help operationalize the World Bank/African Union (AU) Digital Economy for Africa (DE4A) initiative, and the Horn of Africa Initiative. The project supports several CPF outcomes, most notably Objective 5 ‘Extend infrastructure services to the last mile’, by extending the backbone fiber network to some 100,000 km. The Project also supports Objective 2 ‘Improve public expenditure transparency and effectiveness’, among others, by improving the potential for MCDAs and county administrations to participate in the government’s Integrated Financial Management Information System (IFMIS) and e-Procurement system. It will further contribute to Objective 4 ‘Shrink disparities in learning and health outcomes’ through increased connectivity, content and digital skills programs for educational institutions, and increased connectivity for health clinics in its next phase. The project is also fully aligned with the 2020 SCD that identifies digital technologies as a cross-cutting pathway to support enhanced economic growth and job creation as well as improve service delivery and resilience. The project activities directly support operationalizing the recommendations of the DE4A (2019) assessment for Kenya, arrived at through a detailed diagnostic study and stakeholder consultations.

26. The project also advances Kenya’s National Digital Masterplan, 2022–2032,⁴² National Information Communication and Technology Policy Guidelines,⁴³ Digital Economy Strategy,⁴⁴ Digital Economy Blueprint,⁴⁵ the EAC’s eCommerce Strategy and the AU’s Digital Transformation Strategy for Africa.⁴⁶ While the country has no shortage of policy visions for ICT, the new Government, elected in August 2022, has set a series of new and measurable targets for digital development in its manifesto, all of which can be supported by the project (Table 1). The Digital Economy Blueprint, and Digital Economy Strategy set an agenda for creating “a nation where every citizen, enterprise and organization have digital access and the capability to participate and thrive in the digital economy.” The AU outlines a bold vision: to ensure that every African individual, business, and government is digitally enabled by 2030. The project advances these objectives by taking a comprehensive approach, covering digital infrastructure, digital services and platforms, and digital skills and markets. The project is aligned with the Africa Region strategy (2019-2023), through creating jobs and transforming economies, building up the digital economy and making institutions more efficient and accountable.

Table 1. Government Commitments as Reflected in Kenya Digital Economy Acceleration Project (KDEAP)

Government Commitments	KDEAP Action
Universal broadband within 5 years - construct a digital superhighway of 100,000 km of national fiber networks.	Subcomponent 1.1 - Middle mile connectivity; and R1.5 – Regional connectivity
Reduce costs of calls and data to allow for entrepreneurs and youth to use online platforms for entertainment, information, and business. Establish a special service tariff for all learning institutions.	Subcomponent 1.2 - Pre-purchase of internet capacity for universities, TVETs and other selected institutions
Improve learning outcomes by pledging to connect all schools to the	Subcomponent 1.2 - Last mile connectivity for

⁴¹ No. 152949. <https://openknowledge.worldbank.org/bitstream/handle/10986/34465/Kenya-Systematic-Country-Diagnostic.pdf?sequence=5&isAllowed=y>

⁴² ICTA. 2022. Kenya’s Digital Masterplan 2022-32, at <https://cms.icta.go.ke/sites/default/files/2022-04/Kenya%20Digital%20Masterplan%202022-2032%20Online%20Version.pdf>.

⁴³ Kenya Gazette. August 7, 2020. <https://www.ca.go.ke/wp-content/uploads/2020/10/National-ICT-Policy-Guidelines-2020.pdf>.

⁴⁴ MICDE. 2020. Digital Economy Strategy, at: <https://ncs.go.ke/wp-content/uploads/2021/02/DRAFT-DIGITAL-ECONOMY-STRATEGY.pdf>.

⁴⁵ ROK. 2019. Digital Economy Blueprint, at: <https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf>.

⁴⁶ AU. 2020. Digital Transformation Strategy, 2020-2030, at : <https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030>.



Government Commitments	KDEAP Action
internet.	schools
Government digitization - make available 80 percent of government services online.	Subcomponents 1.3, 2.1 and 2.2 - Support for Government connectivity, digitization of services and a shared services architecture
Pay for in-service teacher training.	Subcomponent 3.1 - Support for digital literacy program
Promote Africa Regional Hub for promotion of software exports. Expand space for the creative economy.	Subcomponents 3.1 DLP; 3.2 Digital skills; 3.3 Device affordability and R3.4 – Digital hub

Source: *The Kenya Kwanza Plan: Bottom-up Economic Transformation Agenda, 2022–27*, <https://uda.ke/downloads/manifesto.pdf>.

27. **The project forms part of a regional strategy for digital market integration, directly complementing the Eastern Africa Regional Digital Integration Project (EARDIP, P176181, Series of Projects [SOP], Phase 1 US\$172 million, expected delivery in May 2023).** It is expected to contribute to boosting economic potential in Kenya and across Eastern Africa encompassing East Africa and the Horn of Africa (together referred to as “Eastern Africa”) through positive spillovers in particular to other countries that are further behind in their digital development. EARDIP SOP-1 is proposed to provide financing to Somalia, South Sudan, as well as the EAC and IGAD which are expected to manage and facilitate the regional digital integration efforts, whereas SOP-2 is proposed to include Ethiopia and Djibouti. The investments in connectivity infrastructure and enhancement of Kenya’s telecom regulatory environment under KDEAP, in line with regional efforts, will bring benefits to its neighboring countries, in particular to South Sudan, Somalia and Ethiopia. Beyond connectivity, Kenya, as a regional digital leader and member of the EAC and IGAD, plays a key role in regional digital market integration, which is critical for EARDIP implementation. Cross-cutting issues for regional digital market integration, such as trade in digital services, e-commerce, data protection and cybersecurity, require a regional approach. KDEAP will strengthen regional regulatory harmonization interventions for the EAC, IGAD and the Horn of Africa to be financed under EARDIP by aligning Kenya’s digital enabling environment with these regional efforts and implementing regionally adopted instruments in Kenya, which can create a precedent and an opportunity for leapfrogging for other countries in the sub-region. The two projects will ensure a coordinated approach, including representation of the Government of Kenya on the Project Steering Committees and technical workings groups under EARDIP.

28. **The project is aligned with the WBG Global Crisis Response Framework (GCRF) and the IDA20 Commitments.** The project aligns with all four pillars of the WBG’s GCRF,⁴⁷ and the *Green Resilient and Inclusive Development* agenda, but especially Pillar 4 on “*Strengthening policies, institutions, and investments for building back better*”⁴⁸. It will also contribute to five IDA20 technology policy commitments, including the *Jobs and Economic Transformation* agenda⁴⁹. The project’s support on broadband access (Component 1) will help further close the digital infrastructure gap by expanding broadband penetration and last-mile connectivity. Activities supporting digital government (Component 2) aim to further the ‘*adoption of universally accessible GovTech solutions*’, supporting persons with disabilities (PWDs), and those advancing digital skills (Component 3) will enable access to better opportunities and jobs, bringing down barriers to ownership of digital devices, particularly for women and PWDs, while increasing the private sector’s access to digital talent.

29. Finally, the project accords to the targets of the IDA Scale-Up Window (SUW), notably because of the planned scale-up from 10,000 to 100,000 km of fiber in the backbone, and from 300 to 5,000 Government services online.

⁴⁷ World Bank Group. 2022. *Global Crises Response Framework Paper*, at: <https://documents1.worldbank.org/curated/en/099640108012229672/pdf/IDU09002cbf10966704fa00958a0596092f2542c.pdf>.

⁴⁸ Analysis of the alignment with the GCRF is available as a complementary document.

⁴⁹ Analysis of the contribution to the IDA 20 commitments is available as a complementary document.



30. **The project would support the ICT vision of National Policy on Gender and Development.** The National Policy on Gender and Development seeks to promote inclusion of women in ICT through increasing access to STEM education, removing social barriers, and fostering opportunities for women in ICT.⁵⁰ The project aims to support this vision through (a) furthering internet access for women; (b) offering customized training on digital literacy training and safe use of internet in schools; (c) providing targeted support for female STEM student's access to laptops and tablets; and (d) supporting collection of gender-disaggregated ICT usage data.⁵¹

31. **The project will help advance the Kenya's climate goals.**⁵² Kenya is one of a few countries where the government explicitly recognizes the role of the digital sector for climate action. The 2019 National Information, Communications and Technology Policy has a section on the environment and envisions ICT as a tool for adaptation and mitigation. It specifically states, "*the Government will ensure that ICT players and consumers minimize the effect of infrastructure, appliances, machines, devices and tools on the environment.*" In the Digital Economy Blueprint, Green ICT is considered cross-cutting with the goals of putting in place mechanisms to e.g., minimize e-waste and ensure the efficiency of ICT equipment. The country's current National Adaptation Plan (NAP) notes the need to 'climate proof' infrastructure, ensuring that infrastructure investments are not compromised in the future. The project will support these goals through for example, a focus on resilience of investments considering country and location specific risks, targeting use-cases (education) that enhance resilience of population, and considering relevant mitigation measures for greenhouse gas (GHG) emissions from project investments.

D. Multiphase Programmatic Approach

Rationale for using MPA

32. **The project uses a Multiphase Programmatic Approach (MPA) that provides a more flexible and adaptive environment to achieve the program goals with consistency and focus over the long term and alignment with a continuously evolving regional digital market.** This is preferred over two other possible approaches, that is, Investment Project Financing (IPF) combined with Additional Financing or an IPF Series of Projects approach, because of the following:

- **The scalable and modular design of the program is best suited to be achieved through sequencing via an MPA.** The nature of a number of the activities is such that they inherently support sequencing (for example, ensuring access to connectivity and building foundational IT platforms/infrastructure in phase 1 followed by expanding the range of digitized services utilizing this connectivity and backend platforms/infrastructure in phase 2). The design is modular in that it provides a framework through which more services and additional sectors can be added to maximize results over time. This design also allows for piloting interventions before rolling them out in subsequent phases.
- **A longer-term engagement sends a powerful signal of commitment to an ambitious vision for digital transformation.** This design will retain a level of ambition in line with Kenya's ICT Master Plan, and the new Government's commitments. This MPA will also signal, to the Government and development partners, the World Bank's willingness to engage over the long term and thereby build trust and provide opportunity for sustained policy

⁵⁰ RoK. 2019. *National Policy on Gender and Development*, at: <http://psyg.go.ke/wp-content/uploads/2019/12/NATIONAL-POLICY-ON-GENDER-AND-DEVELOPMENT.pdf>.

⁵¹ Analysis of how KDEAP proposes to mainstream gender issues is available as a complementary document.

⁵² Kenya has ratified Multilateral Environmental Agreements such as the UNFCCC, Kyoto Protocol, the Paris Agreement, and others and formulated national policies such as the National Climate Change Response Strategy in 2010, the National Climate Change Action Plan (2013–2017) in 2012, and the current NAP (2015–2030).



dialogue. It will also cement Kenya's role in regional digital market development and integration, running in parallel with EARDIP.

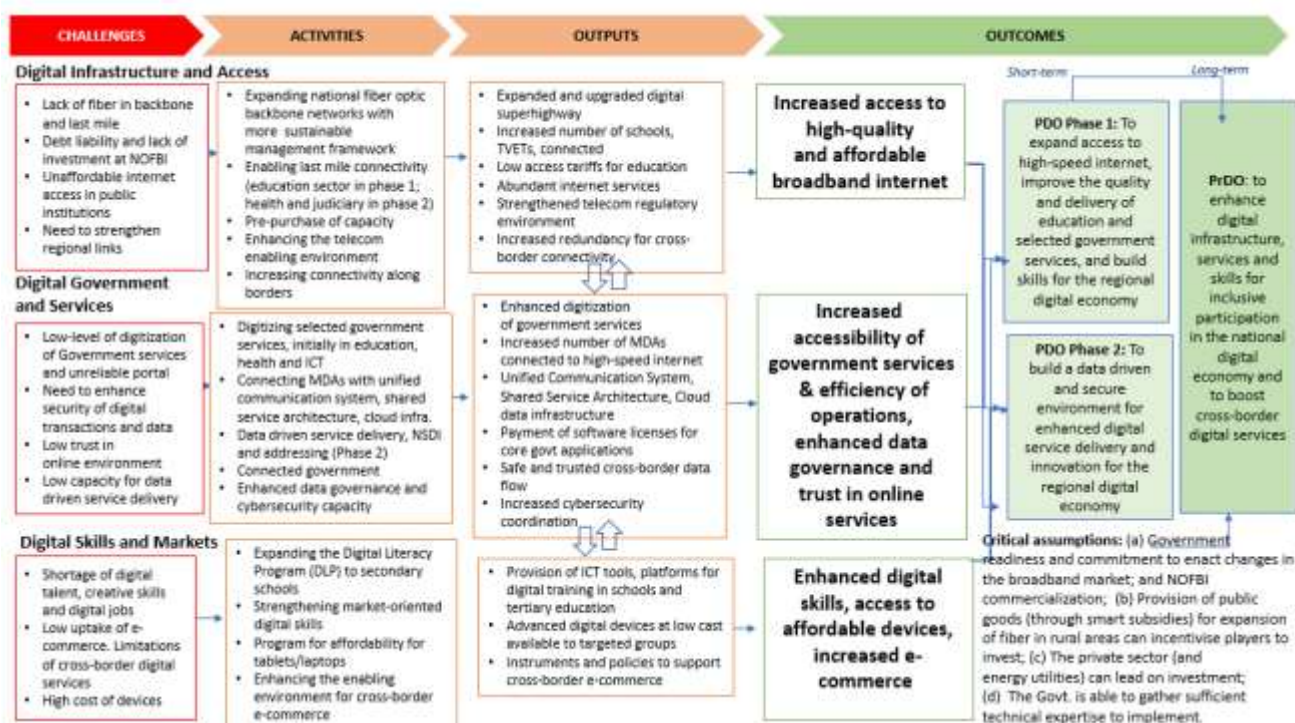
- **It provides a risk mitigation approach to implementation as it enables adaptive management and offers flexibility for change.** An MPA can avoid the need for a large and likely overly complex operation that would be at heightened risk of failure. Research by the World Bank Development Economics shows that larger and more complex World Bank operations are less successful.⁵³ An MPA would provide flexibility and opportunity for learning between phases which may be important in light of rapid technological changes in the sector. To ensure lessons are captured quickly, each of the phases will have robust monitoring and evaluation (M&E).
- **It allows building incremental capacity with the counterpart government agency to address unforeseen challenges.** An MPA can provide the counterpart agency with incremental support and allow capacity building in a sustainable fashion.

Program Theory of Change

33. The Theory of Change (

34. Figure 2) considers the country's strengths and unique context, highlighting some of the key critical assumptions made for achieving the Program Development Objective (PrDO).

Figure 2. Results Chain



⁵³ The World Bank. 2011. "Good Countries or Good Projects? Macro and Micro Correlates of World Bank Project Performance." DEC Policy Research Working Paper No. 5646. <https://openknowledge.worldbank.org/handle/10986/21859>.



Program Development Objective (PrDO)

35. The Program Development Objective is to enhance digital infrastructure, services and skills for inclusive participation in the national digital economy and to boost cross-border digital services.

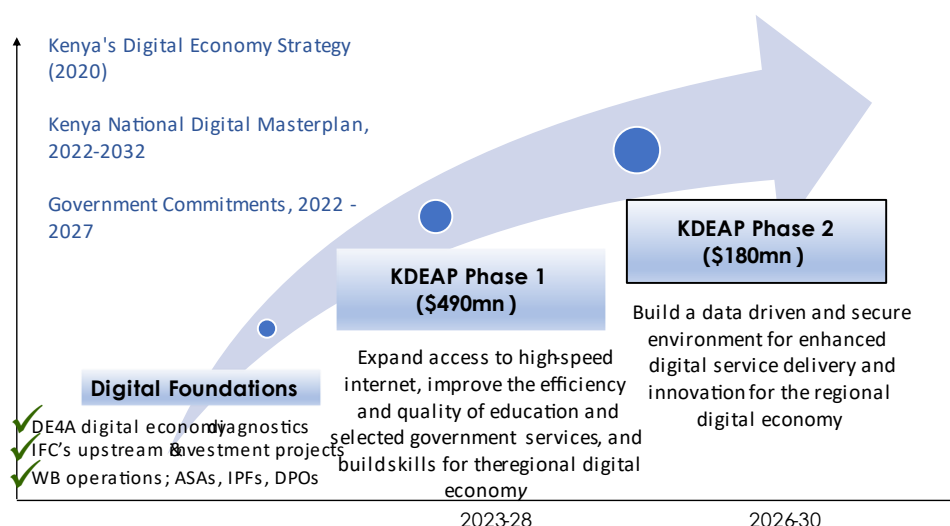
36. The PrDO will be measured by the following results indicators:

- Estimated percentage of the population who are users of high-speed internet (of which, % female);
- Increase in number of people accessing Government services online (of which, number female)
- Increase in number of people with employment-ready digital skills (of which, number female).
- Increase in volume of cross-border internet traffic with Kenya's neighbors (Gbit/s);

MPA Program Framework

37. The proposed MPA is structured as two overlapping phases. Phase 1 focuses on closing the gaps in Kenya's digital infrastructure, skills, and institutions, with an emphasis on resilience and inclusion following the economic and social challenges stemming from the COVID-19 pandemic and Russia's invasion of Ukraine, to ensure that no one is left behind in the digital revolution. It also aims to strengthen Kenya's role in promoting regional digital integration by enhancing its role as a key transit point for neighboring countries and by aligning its digital enabling environment with regional integration initiatives, which are being undertaken in parallel through EARDIP. Phase 2 aims to build on these foundations, supporting a data-driven digital transformation of public services and spurring innovation, e-commerce and job creation within strategic sectors with a view to further cement Kenya's role as a digital leader in the East Africa region. Phase 2 would be prepared during implementation of Phase 1, with the aim of learning lessons and launching as soon as the foundational digital infrastructure, services and skills are in place to enable scale-up of integrated digital public services. Thus, the start of Phase 2 is planned to overlap with the latter part of Phase 1.

Figure 3. MPA Phased Approach



38. Phase 1: 2023–2028 - Kenya Digital Economy Acceleration Project (KDEAP), US\$490 million, of which US\$20 million national IDA, US\$40 million regional IDA (see Box 1) , US\$330m from IDA SUW and US\$100m expected



in unguaranteed commercial financing. Phase 1 aims to *“to expand access to high-speed internet, improve the efficiency and quality of education and selected government services, and build skills for the regional digital economy.”* It comprises three interlinked components that harness opportunities to develop a vibrant, safe, and inclusive digital economy in Kenya as a driver of growth and job creation and leverage digital technologies to improve service delivery and resilience in the region. It also supports efforts to promote digital inclusion and mitigate growing digital era risks to data protection to ensure that every individual and business have the opportunity to engage in the digital economy confidently, safely, and securely. It is complemented by a range of parallel investment and technical assistance support programs across the World Bank portfolio that promote private sector investment, innovation and entrepreneurship, education system strengthening, and deeper integration of digital markets across the region.

39. Phase 2: 2026–2030 - Kenya Digital Economy Acceleration Project, US\$150 million national IDA plus US\$30 million regional IDA. Phase 2 aims *“to build a data driven and secure environment for enhanced digital service delivery and innovation for the regional digital economy.”* The activities will build on the digital infrastructure, digitized government services, strengthened data governance and enhancement of digital skills financed under Phase 1. The three components initially proposed for inclusion in Phase 2 are (a) Component 1: Data Driven Public Service Delivery: including an integrated digital public services platform; customer-centric redesign and digitization of key public services/transactions; (b) Component 2: Digitization of Strategic Sectors: including supporting data-driven analytics and services and innovation, with an extension of connectivity also in the health care sector (both public and private) and the judiciary; and (c) Component 3: Digital Jobs and e-Commerce/Creative Economy Enablers to strengthen Kenya’s role in the regional digital economy: focusing on initiatives facilitating digital entrepreneurship and measures to strengthen the online trust environment, including the national digital addressing system and additional activities to create a robust enabling environment for e-commerce for domestic and regional markets. These components will be revised on the basis of experience gained and lessons learned in implementing Phase 1.

Box 1: The regional dimensions of KDEAP

KDEAP is designed as a vertical MPA in Kenya, with strong complementarities and contributions towards integrating digital markets in the Eastern Africa region. The proposed design will directly complement, and contribute to the regional digital infrastructure and market integration agenda supported under the East Africa Regional Digital Integration Program (EARDIP, P176181) which will invest in additional regional activities, including strengthening the capacity and coordination of EAC and IGAD and their member states towards regional policy and regulatory harmonization, and enhancing digital infrastructure for South Sudan and Somalia in its first Phase.

While KDEAP is a single-country operation, it meets all the criteria under the IDA20 Regional Window* financing under the Single Country exception, including (i) forming part of a Regional strategy for digital market integration, directly complementing EARDIP, which is reflected in its Program and Project Development Objectives and measured through applicable results indicators; (ii) having an expected transformational impact on regional integration with the potential to create key public goods and positive spillovers to other countries; (iii) clear evidence of country and regional ownership; (iv) requiring financing only for a single country with complementary investments for South Sudan and Somalia proposed to be funded through EARDIP; and (v) the proposed Regional IDA allocation would be financing subcomponents that focus on the implementation of regional activities in Kenya for which no other financing sources are available.

*Source: Addition to IDA Resource: Twentieth replenishment – Building Back Better from Crisis: Toward a Green, Resilient and Inclusive Future, February 17, 2022).

40. Private capital mobilization. Public financing towards enhancing and extending the middle and last mile connectivity as well as increasing the number of fiber crossing points under Component 1 are expected to catalyze direct private sector investment in broadband infrastructure of approximately US\$100 million from network operators and ISPs. This would start to be mobilized roughly one year after effectiveness, then the pilot programs are launched, and the bulk



would start to arrive around a year later. While comparative schemes in Tanzania and elsewhere have leveraged a higher ratio of private to public capital, the more conservative estimates expected here are explained by (a) the low average revenue per user; (b) the impact of foreign exchange rates on investment costs including equipment; and c) the focus on rural areas. Please see further information under the Project Description for Component 1 and Box 2.

41. **The project is also designed to catalyze commercial financing in alignment with principles of Mobilizing Finance for Development (MFD).** Consultation with private operators suggests that they are ready to participate in any commercial opportunities created by the project. The project will seek to promote private sector investment through (a) policy, legal, and regulatory assistance that will enhance the enabling environment for the digital sector and broader regional digital integration (for example through technical assistance and capacity building on data governance and cybersecurity, new regulatory models for telecoms and emerging technology, export promotion strategy for digital services etc.); (b) investment in shared infrastructure and platforms that serve as ‘digital public goods’ across both the public and private sectors and can help reduce transactions costs and increase market efficiency and innovation (for example by enhancing electronic services); and (c) digital access initiatives that help stimulate demand and create a growing user base that can increase and sustain commercial investments incentives (for example, by supporting digital literacy and access to smart devices).



Table 2. Planned Use of Funds under the MPA

Phase	Project ID	Sequential or Simultaneous	Phase's Proposed PDO ^a	IPF or P4R	Estimated IBRD Amount (US\$, millions)	Estimated IDA Amount (US\$, millions)	Estimated Other Amount (US\$, millions)	Estimated Approval Date	Estimated Environmental and Social Risk Rating
1	P170941	Overlapping	<i>To expand access to high-speed internet, improve the quality and delivery of education and selected government services, and build skills for the regional digital economy</i>	IPF	0	330 (Scale-Up Window) 20 (national) 40 (regional)	100 In unguaranteed commercial financing	March 31, 2023	Moderate
2	TBC	Overlapping	<i>To build a data driven and secure environment for enhanced digital service delivery and innovation for the regional digital economy</i>	TBC	0	150 (national) 30 (regional)	TBC	FY26	Moderate
Total Amount (US\$, million)					0	570	100		
Proposed Financing Envelope (US\$ millions)				330 (IDA SUW); 170 (national) 70 (regional); 100 (PCM)					

Note: * Beneficiary countries in the East Africa Regional Development Integration Program (EARDIP), are Somalia and South Sudan (Phase 1) and Djibouti and Ethiopia (proposed, Phase 2).

If there are changes in the MPA Program framework, the subsequent phase's Project Appraisal Document (PAD) would include the original program framework as well as the revised one.



Learning Agenda

42. **The MPA builds on an extensive series of WBG analytical work and investments supporting digital development in Kenya for over two decades, which has helped position Kenya as a digital leader on the continent.** These include technical assistance to liberalize the sector, IFC support for the first submarine cable on the East African coast, IDA investments in university and government connectivity, digitization of government services, and capacity building of digital institutions. The MPA responds to the forward-looking recommendations of the World Bank Digital Economy Diagnostic study (FY21) and supports implementation of Kenya's Digital Economy Strategy, which has been informed by the study findings.

43. **The MPA has the unique advantage of allowing for built-in phase-to-phase learning by doing.** The learning agenda for this MPA has three broad objectives: (a) continuous improvement in implementation quality through periodic M&E assessments feeding back into design of activities; (b) building of institutional capacity and readiness for implementation of Phase 2; (c) structured approach to enhance design of the future phases. For example, Phase 1 would involve piloting possible procurement mechanisms for key digital infrastructure (such as the expanded fiber backbone, and the last-mile connectivity for education) and regulatory frameworks (such as for data governance) and will also pilot digitization of e-Government services using the shared system architecture. Phase 1 will also study options for enhancing device affordability. Based on these pilots, Phase 2 will scale up integration of digital infrastructure and frameworks for digital service delivery across sectors. As the fiber backbone extends in Phase 1, the costs of providing last mile access from the nearest fiber node will shrink for Phase 2. The success of the learning agenda can be assessed in quantitative terms based on the pace of program implementation and development of a pipeline of priority activities for future phases (for example, priority strategic sectors to scale up using data-driven services in Phase 2) and in qualitative terms through improved and informed design of future phases and continuous learning.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement (Phase 1)

44. To expand access to high-speed internet, improve the quality and delivery of education and selected government services, and build skills for the regional digital economy

PDO Level Indicators

45. The Phase 1 Project Development Objective (PDO) indicators are listed below and are reflected, together with the intermediate indicators, in the results framework.

- Estimated percentage of the population who are users of high-speed internet (of which, % female);
- Optical fiber border crossings with neighboring countries (number);
- Public institutions provided with new or enhanced access to high-speed internet under the project (number);
- Transactional government services that are digitized under the project (number);
- Students, provided with new or enhanced access to high-speed internet under the project (number, of which female);
- People provided with enhanced digital skills training under the project (number, of which female).



B. Project Components

46. The project aims to accelerate digital transformation at the regional level focusing on critical digital enablers that ‘future-proof’ economic growth and leveraging Kenya’s leadership role in the region to facilitate the adoption and implementation of regionally harmonized frameworks for digital integration. The three components within Phase 1 are (a) Component 1: Digital Infrastructure and Access; including expanding the national fiber backbone and enabling last mile connectivity to schools, TVETs, universities and MCDAs, through incentivizing greater private investment, strengthening Kenya’s role as a regional digital transit point and enhancing the enabling environment for Kenya’s digital economy; (b) Component 2: Digital Government and Services: including establishing a Shared Services Architecture, digitizing selected public services, and enhancing data governance to create a trusted environment for online transactions within Kenya and the region; and (c) Component 3: Digital Skills and Markets: supporting the Digital Literacy Program (digital labs, teacher training, digital educational content for all secondary schools); strengthening specialized digital skills trainings to increase the pipeline of digital professionals in Kenya and the Eastern Africa region, facilitating access to affordable internet-enabled devices, and positioning Kenya as a regional digital hub for e-Commerce.

47. The project is designed around five integrated and mutually reinforcing components.

Table 3. Project structure, with funding and estimated PCM

Component	Subcomponent	Budget (US\$, million)	National Allocation (US\$ million)	Regional Allocation (US\$ million)	Potential PCM ⁵⁴ (US\$, million)
1. Digital Infrastructure and Access US\$220 million + US\$100 million estimated PCM <i>Expanding broadband coverage and access and enhancing the enabling environment for the digital economy</i>	1.1: Extending the Reach of the Backbone Network (middle mile)	120	60	0	60
	1.2: Increasing Last Mile Connectivity for Education	120	90	0	30
	1.3: Enhancing Government Connectivity	35	35	0	0
	1.4: Strengthening the Digital Enabling Environment	5	5	0	0
	R1.5 Enhancing Regional Digital Infrastructure ⁵⁵	40	10	20	10
2. Digital Government and Services US\$104 million	2.1: Digitizing Selected Government Services	44	44	0	0
	2.2: Developing the Critical Enablers for Digital	45	45	0	0

⁵⁴ The figures for PCM are intended to be indicative rather than an up-front commitment (i.e., commercial, unguaranteed financing). Actual PCM will be monitored through a project indicator.

⁵⁵ Regional activities, benefitting from regional IDA funding, are marked with “R”.



Component	Subcomponent	Budget (US\$, million)	National Allocation (US\$ million)	Regional Allocation (US\$ million)	Potential PCM ⁵⁴ (US\$, million)
<i>Increasing efficiency and security in government operations</i>	Government				
	R2.3: Enhancing Regional Data Governance	15	5	10	0
3. Digital Skills and Markets US\$51 million <i>Enhancing digital skills, device affordability and eCommerce to support the digital economy</i>	3.1: Supporting Digital Literacy	25	25	0	0
	3.2: Enhancing Employment-ready Digital Skills	15	15	0	0
	3.3: Promoting Device Affordability	1 ⁵⁶	1	0	0
	R3.4: Positioning Kenya as a Regional Digital Hub	10	5	5	0
4. Project Management US\$15 million	4.1: Project Implementation Support	10	10	0	0
	R4.2: Management of Regional Activities	5	0	5	0
5. CERC US\$0	Responding to Future Crises	0	0	0	0
TOTAL		490	350	40	100

Component 1: Digital Infrastructure and Access (US\$320 million, including US\$190 million equivalent from IDA SUW; US\$10 million equivalent from national IDA, US\$20 million equivalent from Regional IDA, and US\$100 million expected in unguaranteed commercial financing)

48. The aim of this component is to increase access to high-speed internet for individuals, industry, and government—the ‘foundation of the foundations’ of a digital economy and strengthen Kenya’s role as regional digital leader—while leveraging matching investments from the private sector. Public funds will be used to unlock commercial infrastructure investments in the backbone (1.1), the last mile for education (1.2) and regional infrastructure (R1.5) to better serve rural areas, borderlands and roll out next generation connectivity services and technologies. The investment will be carried out by network operators, using the mechanism of matching investments (also known as “gap financing”) from project funds and the USF to stimulate commercial investment in a ratio of roughly 2:3 (i.e., US\$2 of commercial investment for every US\$3 of public funds).⁵⁷ The project design uses public infrastructure

⁵⁶ Implementation of the device affordability scheme, estimated at US\$14 million, is deferred to Phase 2.

⁵⁷ The PCM ratio is expected to be higher for backbone investments and cross-border networks (around 1:1) and lower for last mile connectivity (1:0.33) but would average out at around 1:0.67 for the program as a whole. A series of stakeholder workshops for market sounding with the



investments (from project funds and the USF) to fill gaps in the public network and connect critical public institutions and service locations. These cover universities, TVETs, and schools in subcomponent 1.2, government MCDAs in subcomponent 1.3, and borderland areas in R1.5, in addition to healthcare centers and law courts in Phase 2. As well as targeting supply side interventions, this component will directly aid in increasing demand-side participation and inclusion in the digital economy—among the poor, rural communities, women, PWDs and refugee camps and their host communities—by enhancing accessibility and thereby supporting their productive participation in the digital economy. This component will support the WBG GCRF pillars 3 and 4 by developing resilient and climate-smart infrastructure, strengthening public service institutions to be better prepared to continue operations in times of climate-related, pandemic related, or any other disasters through increased connectivity to the Internet, and increasing Internet access for vulnerable populations. Wider access to digital services and more resilient infrastructure will help grow the digital economy including accessing income-generating opportunities and enabling Kenyans to undertake remote work.

Subcomponent 1.1: Extending the Reach of the Backbone Networks (middle mile) (US\$120 million including US\$60 million equivalent from IDA SUW and US\$60 million expected in unguaranteed commercial financing)

49. **This subcomponent aims to deepen the coverage of national broadband backbone networks by extending coverage to the ward level and by providing redundancy on key routes** (including cross-border ones under subcomponent R1.5). Project funds will be used, potentially complemented with funding from the country's USF⁵⁸ and other donor partners, to supplement investments from network operators. The aim is to increase the length of fiber networks from the current 8,900 km to a national target of 100,000 km (see table 1), as set out in the ICT Master Plan 2022–2032⁵⁹. This new 'digital superhighway' is intended to extend coverage from the current sub-county level to ward level, thereby ensuring coverage of rural and underserved areas, and reducing the costs of last-mile connectivity.

50. **Among the many possible models for combining public and private funds for network roll-out⁶⁰, one of the models, for both the extension of the backbone and last mile connectivity, would involve matching investments from network operators in return for project contracts awarded through a reverse auction model** (see Box 2). The proposed approach seeks to leverage funding from network operators that may be available for this segment, while using project funds to provide a financial incentive to the network operators, given the low incentive for them to deploy fiber in outlying areas. It will be conducted in conformance with Kenyan procurement regulations relating to PPPs and would leverage the wholesale open access backbone approach, in line with the country's national ICT guidelines. Finally, it would seek to maximize sustainability by allocating operations and maintenance risk to the network operators. The project will provide TA to consider key models most adapted to the local market and regulatory environment and to conduct initial pilots, as needed, to find the options that are preferred by the Government and network operators. The deployment and operational maintenance of this additional network capacity would be led by network operators, including both public actors (such as Telkom Kenya, Kenya Electricity Transmission Company, Kenya Power and Lighting

private sector held on November 22, December 13, 2022, and January 17, 2023, have confirmed private sector appetite to investment alongside the project.

⁵⁸ The manifesto (2022) of the new government party, the United Democratic Alliance, includes a commitment for universal broadband availability within five years and to contribute KES 40 billion (~US\$325 million) to this end from the USF toward a 'digital superhighway' (see <https://uda.ke/downloads/manifesto.pdf>).

⁵⁹ The target for this project is around 50,000 km of fiber that will benefit from public funds, and the government assumes that a further 50,000 km that would be funded entirely by the private sector, without a need for subsidy, and is therefore not included in the results framework.

⁶⁰ Possible models include public private partnerships (PPPs), Build-Operate-Transfer models (BOT), guaranteed public sector anchor tenants and variants, as well as revenue sharing and franchise operations. Some 70 different case study models are described in World Bank. 2018. *Innovative Business Models for Expanding Fiber Optic Networks and Closing the Access Gaps*, at:

<https://openknowledge.worldbank.org/handle/10986/31072>. The MPA allows for experimentation and learning between the pilot and main phase and between the successive rounds of bidding.



Box 2: Using “matching investments” to leverage private sector investment

In component 1 of the project we are proposing to explore models that use public funds, from the project, to leverage matching investments from the private sector, to achieve planned deployment of additional fiber in the backbone, last-mile and regional networks, and achieve sustainability for operations and maintenance of the network. These various models are generically termed “gap financing” in that they aim to close the gap between the needs of rural areas and the commitment that network operators are willing to make for financing what might otherwise be an uncommercial investment and would also aim to allocate operation and maintenance responsibility and risk to the network operators. A range of possible approaches may be piloted to suit local market and regulatory circumstances. Without funds from the project, and the associated guarantee of anchor public sector customers (schools, hospitals etc.) it is unlikely the network operators would take the risk to invest alone, but private sector capital should be leveraged as much as possible to minimize the amount of public funding needed.

- The process would start with an assessment study to designate routes in underserved areas that are deemed to be non-commercial (i.e., in need of subsidy to be viable). Preliminary studies have already been carried out in the preparatory phase of this project by ICTA (for NOFBI refurbishment and extension) and by the World Bank (for the overall backbone), and digital maps developed. But these studies will need to be supplemented by more detailed local studies.
- A set of models will be identified and, as needed, piloted in the first year of project implementation to determine which funds allocation methodologies, and operational and ownership models, work best, both for the Government and the network operators. While details will be worked out and may vary based on final approach, the proposed methodology would be to launch competitive tendering process in which operators bid for the lowest level of public investment they would require, and the matching investment they are willing to make, for a particular route (each route would be one lot in the pilots and subsequent procurement). The lowest bid for each lot wins (i.e., a reverse auction model) and the auction would be run in a series of rounds, with price transparency, ideally on an electronic auction platform to optimize the benefits of competitive bidding*. The process will be phased in a series of rounds. Some bids may request no subsidy in which case they would be fully owned by the operator.
- Details of the preferred bidding process, including variations to be tested and the potential benefits to network operators, will be described in more detail in the CTM. Adoption of the CTM would then release funds for the main bulk of the financing for Component 1 (and for Phase 2).
- It is proposed that the model be developed and used beyond the project funds: Some of the routes would be allocated to the USF (for instance, last mile connectivity to healthcare centers and judiciary) and others to project funds, and still others to development partners (the European Union, for instance, is planning to cover last-mile connectivity for TVETs).
- Those routes that benefit from a contribution from project funds would follow World Bank procurement guidelines in the bidding process and those that benefit from a subsidy from project funds would be subject to certain conditions. These would include (i) the use of open access principles (to allow other operators to use the fiber at a reasonable rate); (ii) adherence to climate-resilient standards; (iii) the application of environment and social standards during construction; and (iv) the allocation of a certain number of fiber strands on the cable for the exclusive use of the Government, and the rest to one or more network operators, for the lifetime of the fiber (i.e. dark fiber). The percentage to be allocated to each party would be proportionate to the relative levels of investment by the Government and the network operator. The use of dark fiber by the Government will assist with the provision of pre-paid internet capacity under sub-components 1.2 and 1.3. The use of the remaining capacity by the network operators will allow them to serve all other potential customers in the area (i.e. build once, use by many principle).
- The bidding process would be technologically-neutral allowing for bidders to propose alternative technologies to fiber in the last mile that meet a minimum required level of functionality (e.g., fixed wireless access, 5G cellular or LEO satellites).
- Service level agreements (SLAs) would be signed between the Government and the winning bidders.

Note: * The model is described in more detail in World Bank/CEPA. 2023. *Allocating Universal Service Subsidies Using Multi-Round Auctions*.

Company) and the private sector (e.g., Safaricom, Liquid Telecom, Frontier Optical Networks etc.). A feasibility study⁶¹ has been undertaken, with support from the Korea-World Bank Partnership Facility (KWPF), to assess the current

⁶¹ Saliency, for World Bank. 2022. *Kenya Public Digital Infrastructure Options Assessment*. Digitized maps are available at: https://qgiscloud.com/evgenijqgis/Kenya_Published_Maps/.



connectivity gaps for key public institutions and to explore various business models for management and operation of that part of the national backbone networks, one part of which (NOFB) is currently under the Government⁶².

51. **Gains for climate change mitigation and adaptation will be achieved** by ensuring infrastructure is climate-proofed and follows good practices for dimensioning and energy efficiency and reaches areas with climate vulnerable populations. Expansion of optic fiber cable is also expected to result in benefits from a more resilient infrastructure in that more self-healing fiber loops will be created. Key activities will include the following:

- a) Providing **technical assistance (TA) to design an operational and commercial plan for building and upgrading the digital superhighway**, including exploring options for incentivizing matching commercial investments (see Box 2). The TA will also provide cost estimates (CAPEX + OPEX) and would inform on the use of best practice models for open access networks.
- b) **The shortlisted procurement mechanisms would be piloted** in a series of small-scale deployments on certain designated routes. Based on an evaluation of these pilots, the preferred funding mechanisms would be described in a Commercial Transaction Manual (CTM) which will guide the award of subsequent project funds and matching investments from the network operators, and the long-term use of the infrastructure created, including dispute resolution procedures.
- c) **Rollout of backbone expansion**, including backbone densification and fiberization of cell towers, will then follow, allocating the main bulk of funds available under sub-component 1.0. This will be conducted through competitive tendering mechanisms as described in the CTM, and followed up with further evaluations to inform Phase 2 deployments.
- d) Conducting a **feasibility study, or complementing an existing one, into the commercialization of the existing NOFBI infrastructure**, including the potential role of small ISPs, and hiring a transaction adviser to assist with the agreed process and developing service level obligations to be undertaken.

Subcomponent 1.2: Increasing Last Mile Connectivity for Education (US\$120 million including US\$90 million equivalent from IDA SUW and US\$30 million expected in unguaranteed commercial financing)

52. **This subcomponent will support the expansion of last mile internet connectivity for priority locations in the education sector⁶³, particularly in underserved rural areas.** The aim is to ensure that students, at all levels and across the country, have access to good quality internet resources to help them build digital skills. By contracting with network operators and internet service providers (ISPs), through competitive tendering, this activity aims to leverage additional investment from network operators and spur service competition in rural areas, so that all consumers in the area will benefit from downstream services. Key public institutions to be connected include universities, TVETs, teacher training colleges and schools under Phase 1, as well as healthcare centers and law courts in Phase 2 (and by the USF in phase 1). The feasibility study conducted to explore connectivity costs has already evaluated the costs of connecting schools from the nearest existing fiber node. Almost 20,000 of Kenya's schools that were mapped (50 percent) are within 1 km of the nearest fiber node, and these can be served relatively profitably. A further 11,000 are within 1-5 km (28 percent) and would require some level of subsidy for service to be profitable. Serving those schools within 5 km of the nearest fiber node would require around 32,000 km of fiber. But for the remaining 9,000 (22 percent) that are beyond 5 km,

⁶² The backbone network is named National Fiber Optic Backbone Infrastructure (NOFBI) and comprises fiber owned by the Government and operated by the ICTA, alongside fiber owned and operated by six other entities, including electricity utilities and private operators (see Figure 1). Although the new fiber infrastructure to be created would be owned and operated by the private sector, any fiber which benefits from matching investments from project funds would be obliged to offer a number of fiber strands (both for national and county governments) for the exclusive use of government for the lifetime of the cable (i.e., dark fiber).

⁶³ Although the focus of Phase 1 is on the education sector, in practice, if there are other public institutions in the near vicinity (such as hospitals, community institutions etc., they can be connected at the same time, to ensure efficient in network deployment.



which are clustered mainly in Northern and Eastern Kenya, a further 94,000 km of fiber (i.e., 75 percent of the total) would be required with today's backbone. The required level of subsidy would therefore be much higher. Other, non-fiber technologies (such as fixed wireless access, 5G cellular, or LEO satellites) may be more cost-efficient in these areas.⁶⁴ Schools to be connected in the first round would need to be "ready" in terms of meeting a minimum set of conditions, such as being willing to have teachers trained, and having a safe space to store computer equipment. Many schools in rural areas will also require a package that also includes provision of renewable energy alongside internet connectivity, and devices and skills development (see component 3). This project will be coordinated with other projects in the World Bank portfolio aimed at extending renewable energy solutions in rural areas. Depending on commitments from the network operators, other donor partners, and the USF, it should be possible to provide enhanced connectivity to a minimum of 2,000 schools, TVETs and universities, including the planned Open University of Kenya, in the first phase. The PIU in ICTA will work with the MoE and the Kenya Institute of Curriculum Development (KICD) as implementing partners for this sub-component, and also with other institutions in the education sector including KENET, in its role as the national Research and Education Network (REN)⁶⁵.

53. **Expanded access to connectivity locally will reduce the need for travel to access information and service**, by facilitating digital communication, thereby minimizing the emission footprint,⁶⁶ and also by facilitating service delivery in times of emergencies, requiring remote operations⁶⁷. The network deployment strategy proposed follows a climate-efficient "build once, use by all" model. The new Government, following the 2022 elections, has committed to offering a special tariff for internet connectivity in education, and this could be funded through the use of pre-purchase of internet capacity in bulk for the education sector. The mechanism for doing this is explained in Box 3. The feasibility study conducted for this project has indicated that, by the year 2030 when Phase 2 is due to close, the total bandwidth demand for Kenya's education sector is likely to be around 3,890 Gbit/s compared with an estimate of just 518 Gbit/s in 2022.⁶⁸

54. Key activities will include the following:

- a) **Providing technical assistance for identification of service level needs in education** for each location (universities, TVETs, and schools) and development of an assessment methodology/typology to classify sites by least cost connection modality and potential spillover impact on market development and access rates in surrounding communities. In general, fiber will be used to connect all those locations within 5 km of the nearest fiber node with other technologies being considered beyond 5 km.
- b) Conducting a series of **pilots for last mile connectivity in education**, based on shortlisted funding mechanisms.

⁶⁴ A study completed in April 2022 by the A4AI and funded by United States Agency for International Development (USAID), analyzed in detail the costs of connecting schools in three counties—Garissa, Mandera, and Wajir—and concluded that a mixed technology solution is most cost-effective. Furthermore, costs could be further reduced by up to 60 percent once services provided by LEO satellites become available in Kenya, e.g., Starlink or OneWeb. See USAID and A4AI. 2022. *Policy Roadmap: Last-Mile Connectivity for Community Anchor Institutions in Kenya*.

⁶⁵ KENET worked successfully in implementing the KTCIP project and has subsequently gained a lot of experience with providing connectivity, not only for universities and TVETs but also for schools. KENET is a membership-based organization with a Board of Governors comprising many of the leading Universities in the country. KENET has recently received funding from the Internet Society to develop a model of serving schools with connectivity from a local university under a hub/satellite model.

⁶⁶ The World Economic Forum highlights that digitized government services have the potential to reduce the use of energy and materials across the economy and directly enable one-third of the emissions reductions needed by 2030.

⁶⁷ Schools in Kenya started using homeschooling during the first year of the COVID-19 pandemic. This proved impossible to implement in some parts of the country. A remote teaching pilot is underway, supported by the World Bank's SEQUIP project (P160083), using live streaming of lessons between two top performing secondary schools in Nairobi and twelve schools in remote locations. The pilot is intended to address the shortage of teachers for STEM topics in these rural areas.

⁶⁸ The bandwidth forecasts are based on moving targets that allow for a steady increase in both the number of educational institutions and their bandwidth demands, with an assumption of 100 Mbit/s per primary school, 500 Mbit/s per secondary school and 10 Gbit/s for universities by 2030.



- c) Once the evaluation of the pilots is completed, and following approval of the CTM, deployment of contracts to network operators, awarded through competitive tendering and based on matching investments (see Box 2), to enable **last mile connectivity to educational institutions**, with a focus on those in rural areas where economic viability is marginal and using the most cost-efficient technology. Solar power will be used for those schools in need of an off-grid power source.
- d) Provision of **bulk internet purchase for the educational sector** through pre-purchase of capacity on long-term supply agreements on demand (see Box 3), to reduce the costs of providing a basic level of internet in schools and universities so that it is close to zero for the end-user.
- e) Provision of **Campus WiFi Networks**, to provide good connectivity around the campus of schools, universities and TVETs, including for halls of residence.
- f) **Providing technical capacity-building and strengthening of implementing partners** to allow them to play a role in managing the country's educational networks, including managing cybersecurity, data protection and content filtering for child online protection.

Box 3: How “Pre-Purchase of Internet Capacity” would work in this project

In subcomponents 1.2 and 1.3, we propose to use project funds for the pre-purchase of internet capacity, on demand, for key sectors of the economy (Government and the Education Sector in Phase 1 and the Healthcare sector and Judiciary in Phase 2). The aim is to subsidize (or even eliminate) the monthly charges for using the internet for end users in the selected target groups. The philosophy here is that internet use becomes transformational only once the user no longer needs to worry about meeting the costs of monthly payments.

- As with matching investments for middle mile connectivity (Box 2) the process would start with an assessment study of the current and projected future bandwidth needs of the selected target groups, and the locations to be served. This has already been done for the education, healthcare and judiciary sectors in the feasibility study, but more detailed studies may be required to assess the needs for County and Government MCDA.
- Once the bandwidth needs are assessed, a competitive tender would be opened to invite bidders (primarily ISPs) to supply a certain minimum level of bandwidth to a set of defined locations (e.g., schools within a county) over a minimum period (say 5-10 years) under an indefeasible rights of use (IRU) contract. On fiber links where there are already fiber strands dedicated for Government use (see Box 2) these would be used to maximum advantage. Experience from elsewhere (e.g., Digital Tanzania Project; P160766) has suggested the best approach may be to fix the price of the contract in advance, according to the available budget, and let bidders compete on speed, duration of contract and service delivery technology so that the price per Mbit/s per month delivered can be minimized.
- As the length of the supply contract may exceed the duration of the project, bidders are invited to include all annual operations and maintenance fees into the upfront bid amount, which may be paid in two tranches – on service activation and after the first year of service. This would be specified in SLAs with the winning bidders.

The main advantage of this approach is that it offers long-term sustainability. By aggregating demand, for instance for all schools in a particular county, and by using a competitive tendering mechanism, the Government is able to get best value for money. As with matching investments, the tender process can be technology neutral because it is the service that is being purchased (bandwidth) not the delivery mechanism. For some rural districts, the tendering process may combine both mechanisms (matching investments and internet pre-purchase) in one tender which would also include any required support also for energy provision, using solar power. In the case of combined tenders, the models defined in the CTM would be followed.

Subcomponent 1.3: Enhancing Government Connectivity (US\$35 million from IDA SUW)

55. This subcomponent aims to boost the level of internet connectivity provided to Government MCDAs in rural areas by extending last-mile connectivity and supplying them with pre-paid bandwidth under long-term supply agreements. The methodology to be used will be a mix of matching investments to extend fiber deployment to rural MCDAs (as described in Box 2) and pre-purchase of internet capacity, as required (Box 3). The MCDAs initially targeted would be the main beneficiaries of initiatives under KDEAP (i.e., MICDE, Education, Healthcare and the Judiciary, as



well as *Huduma* centers, which are county-based one-stop shops for accessing government services⁶⁹). In addition, this subcomponent will support the provision of internet capacity to around 300 of the 25,000 public WiFi hotspots the Government is aiming to provide, again focusing on those where there is overlap with those rural MCDAs already served with internet under the project. As with subcomponent 1.1, all matching investments awards will be guided by a commercial transaction manual (CTM). Key activities will include the following:

- a) **Technical assistance on identification of service level needs** for each location for last mile connectivity (selected rural MCDAs in Phase 1, and healthcare facilities and law courts by USF and in Phase 2) and development of an assessment methodology/typology to classify sites by least cost connection modality and potential spillover impact on market development and access rates in surrounding communities.
- b) **Running a series of pilot programs for connectivity to MCDAs in rural areas**, in line with pilots planned in sub-components 1.1. and 1.2.
- c) Following evaluation of the pilots, and completion of the CTM, full **deployment of last-mile fiber in key priority public service delivery locations**, in rural areas.
- d) **Prepurchase of internet capacity** for selected MCDAs hosting key services and platforms, as required, using long-term IRU arrangements, to support service digitization (using the same mechanisms as for sub-component 1.2, described in Box 3).
- e) Prepurchase of internet capacity also for selected **public WiFi hotspots**, typically in marketplaces, schools, *Huduma* centers and post offices, through IRUs, with a focus on cybersecurity. This will require also some equipment installation and operations and maintenance agreements awarded on a commercial basis to network operators.

Subcomponent 1.4: Strengthening the Digital Enabling Environment (US\$5 million equivalent from IDA SUW)

56. **This subcomponent will finance TA and capacity building to enhance the policy and regulatory environment for the digital sector in line with the evolving needs of a thriving digital economy**, including strengthening the CA and the USF (support for data protection and cybersecurity is covered under subcomponent R2.3). The support to the CA, Kenya's digital economy regulator, will include the implementation of Kenya's eCommerce Strategy and providing some targeted TA and capacity building for the CA, to enhance the regulatory framework for the future growth of Kenya's digital economy and support regional digital market integration. For the USF, the TA to be provided will seek to enable it to conduct its own reverse auctions. Most of its work to date has been for extension of the cellular network, but it may now need to focus also on working to achieve the Government's goal of creating a digital superhighway. This TA will complement the regional initiatives to be undertaken in subcomponents R2.3 and R3.4. Key activities include the following:

- a) Providing **TA and capacity building to the CA** on enhancing the regulatory framework to increase broadband access and usage across the country and adapt the regulatory framework to support the needs of regional connectivity infrastructure and services, covering areas such as over-the-top services, data pricing, greening digital infrastructure, and increasing private sector participation. This TA and capacity building will leverage corresponding regulatory and policy harmonization support at the EAC, financed through EARDIP.
- b) Providing **TA and capacity building to the USF**, which sits within the CA, to enable it to play its role in the deployment of the digital superhighway through different mechanisms, including the allocation of matching investment contracts, and to support connectivity for schools, healthcare centers and the judiciary.

Regional Subcomponent R1.5: Enhancing Regional Digital Integration (US\$40 million including US\$20 million equivalent from regional IDA, US\$10 million equivalent from national IDA and US\$10 million expected in

⁶⁹ Currently, only 19 of the 52 *Huduma* centers have a fiber-based internet connection.



unguaranteed commercial financing).

54. **This subcomponent will extend the efforts to enhance Kenya's backbone network (subcomponent 1.1) by strengthening its broadband connections with neighboring countries and increasing the number of fiber border crossings.** The project has secured additional funds from regional IDA to match the contribution from Kenyan national IDA, and to that end the activities of a regional nature are separately identified in the PAD (R1.5, R2.3, R3.4 and R4.2). KDEAP's project design and approval process is being run in parallel with the EARDIP, a US\$172 million IDA regional lending program, which will go to Board also in FY23. Somalia and South Sudan are included in the first phase, along with grants to IGAD and the EAC, while Djibouti and Ethiopia should feature in Phase 2 of the program. These countries will benefit from peer-to-peer learning from Kenya's experience, especially with competitive tendering for network expansion. Feasibility studies have been carried out in preparation for EARDIP, including one focused on cross-border connectivity in the region, including Kenya, which identified considerable commercial interest from network operators and ISPs to contribute matching investments. These point to the central role that Kenya plays in regional connectivity, especially now that the Kenyan-based Safaricom consortium has been awarded a license to cooperate also in Ethiopia. Key activities will include the following:

- a) **Increasing the number of fiber crossing points** with Kenya's neighbors from the current 8 to a planned 18, to improve regional connectivity and boost cross-border digital trade. This will require deployment of additional fiber on routes to the different borders, as well as work with neighboring countries to develop MoUs and protocols for physical crossing of the border and for capacity exchange and peering⁷⁰. This will require cooperation also at the EAC level.
- b) In line with the EARDIP project connectivity, regional-level investments will also seek to fortify **connectivity for borderland areas** as well as refugee camps and their host communities. This may also include operationalization of *Huduma* Centers in borderland areas to ensure inclusivity.
- c) Providing TA to the CA⁷¹ in **promoting the use of an open fiber data standard** for mapping and describing existing and planned fiber networks, and participation in regional workshops to encourage the adoption of the standard by fiber network providers across East Africa.
- d) **Strengthening cybersecurity capacity**, including through design, set-up and operationalization of a security operations center for Government (GovSOC) to provide visibility, response, remediation and cyber resilience to cyber-attacks and protection of key government applications across the region.
- e) Providing **TA to develop climate-informed policy and regulation in the ICT sector and leveraging digital technologies for climate change adaptation and mitigation**, including: (i) a strategy to minimize the environmental impact of ICT infrastructure, devices and services (including e-Waste management), leverage digital solutions to 'green' the economy, and to enhance resilience to climate related shocks including linkages to guidelines and frameworks developed by the EAC; and (ii) review of network and data infrastructure construction guidelines and services regulations and support for planning and preparedness to ensure the resilience and recovery of essential digital infrastructure and services in the event of climate-related shocks.

Component 2: Digital Government and Services (US\$104 million IDA equivalent, of which US\$89 million from IDA SUW, US\$5 million from national IDA and US\$10 million from Regional IDA)

55. **This component will invest in automating and digitizing selected government services while strengthening**

⁷⁰In the case of the border between Kenya and South Sudan, fiber would need to be deployed in the 'common border area' with the two countries, covering the 11km stretch between Nakodok and Nadapal. This would require an agreement between the two countries, planned to be formalized in an MoU to ensure smooth implementation. An existing MoU between the two governments was signed in 2015 and is due to expire in December 2024, but it is planned that the new MoU will be signed before then.

⁷¹ Support to EAC is provided under EARDIP.



the legal and policy frameworks and the technical architecture needed to enable a whole-of-government transition to paperless Government. Many MCDAs have adopted individual data hosting and digital solutions which hamper the cohesiveness of digital platforms across Government. Some e-Services introduced have not been user-friendly, pointing to gaps in business process reengineering and the application of user-centric design. Lack of a secure and robust foundational integrated digital infrastructure enabling workflow and exchange of information across the public sector limits the scope of services that can be provided electronically to citizens and businesses. This component will invest in: (i) strengthening the existing e-Service delivery mechanisms of the Government to enable the introduction of additional critical e-Services in the short term, while in parallel (ii) designing and introducing foundational integrated digital infrastructure (i.e., “critical enablers,” which include interoperability; unified communication; digital identity management; customer relationship management; electronic payments; recognition and validation of electronic records; security and privacy of data; and organized, systematic, and secure access to non-confidential data) to enable full transition to e-Government over the medium term. This two-pronged approach will leverage the strengths of the existing e-Service delivery channels to serve the Government’s ambition to digitize more services in the short term, while ensuring that adequate legal and policy frameworks and technological infrastructure are in place to enable the transition to a secure, efficient, and modern e-government over the medium term. The program of work incorporates citizen-facing activities under subcomponent 2.1 and the development of the “critical enablers” under subcomponent 2.2, while subcomponent 2.3 will leverage regional funds to strengthen data governance, cybersecurity, and data protection. These investments in Phase 1 will pave the way for a more ambitious program of government services digitization in Phase 2. This component will support the WBG GCRF pillars 3 and 4 by promoting the digitization of government services and thereby increasing the Government’s ability to respond to emergencies. It will also ensure continuity of public services in times of emergencies, developing and strengthening e-government systems for increased efficiency and enhanced accountability, and enhancing Government capacity, policies and regulation around data protection, thereby building trust in online transactions and ensuring personal data are held securely.

Subcomponent 2.1: Digitizing Selected Government Services (US\$44 million from IDA SUW)

56. **This subcomponent will provide end-to-end digitization for selected key government services.** Despite good progress in recent years regarding digitizing some government services, many of these services still require some level of offline processing, the reliability of the existing e-Service delivery channels and portals has been less than optimal, and the interfaces are now showing their age. Under this subcomponent, further assessments will be carried out to understand the adequacy of the existing e-Service delivery platforms to onboard a select number of additional critical government services in the short term (i.e., within the first three years of project implementation). Selection of these services will be informed by a whole-of-government approach and a clear set of criteria that includes implementation readiness, impact, accessibility, as well as the overall budget envelope allocated to this subcomponent. Principles of universal accessibility⁷² would be applied to facilitate access for PWDs.⁷³ Key activities include the following:

- a) **An assessment of the existing e-service delivery platforms** regarding their efficiency, effectiveness, security, and adequacy of the infrastructure to accommodate end-to-end digitization of more services.
- b) **Detailed delivery chain assessments of selected government services** to identify opportunities for business process reengineering and subsequent digitization, and use of cloud solutions.
- c) Based on these assessments, (i) **reengineering of the existing e-service delivery platforms** to enable secure and efficient onboarding of more services, including an e-Government portal that serves as a “one-stop-

⁷² Every effort should be made to ensure the services are re-engineered and simplified before digitization. The services should be designed to be user-centric (meet requirements of user acceptance testing) and meet accessibility standards to meet the IDA 20 commitments.

⁷³ Conducting paperless, cashless, and presence-less transactions online not only enhances convenience and reduces transaction costs and risk of disease transmission but also minimizes the climate footprint that would normally be incurred by paper-based transactions and travel to seek in-person services.



shop” for government information and services, and to provide for appropriate cybersecurity protection; (ii) **the selection of key government services to be reengineered and automated**. In line with the areas of KDEAP focus; (iii) **reengineering and onboarding these services** to the existing improved e-service delivery platforms.

- d) **Assisting the Huduma Kenya Secretariat (HKS)** to expand its multichannel service model, with improved access for PwDs and enhanced customer relationship management.

Subcomponent 2.2: Developing the Critical Enablers for Digital Government (US\$45 million equivalent from IDA SUW)

57. **This subcomponent will strengthen the technical, institutional, legal, and regulatory foundations that provide the enabling environment for internal efficiencies and collaboration across the government.** It will support: (i) the design and implementation of a government-wide Enterprise Architecture and Interoperability Framework for deploying the cross-cutting and multi-channel platforms (i.e., “government shared services”) that are fundamental for information exchange, workflows, and business continuity; and (ii) the design of four cross-cutting platforms (“critical enablers”) that constitute the foundation for an e-Government that can facilitate the digitization of most government services.

58. **The Enterprise Architecture will constitute a holistic framework** to address the business challenges of the government. It will focus on the technical, process, and human resource dimensions of digital transformation in an iterative, agile, and dynamic manner, and will guide MCDAs through the following:

- a) Elaboration and implementation of the **interoperability framework and standards** to support secure exchange of data among MCDAs.
- b) Stocktaking of **existing manual Government records**, based on a detailed inventory of what currently exists and a roadmap regarding the prioritization of what needs to be digitized.
- c) Assessing the existing **legal and regulatory framework**, including those governing the delivery of services, to identify gaps and advise the government in preparing new or amending existing legislation as required to support the transition to e-government.
- d) Based on the roadmap, **conduct the digitization of the identified manual records**.
- e) Analysis and development of the **governance, organizational, institutional arrangements** for managing digital government transformation; including the definition of Key Performance Indicators (KPIs) to monitor the end-to-end automation process.
- f) Development of a **change management and capacity building roadmap** to enhance the ability of public servants to integrate into the development and support of the automated systems.
- g) Financing support for **e-Waste** recycling or safe disposal as per recommendations of the Africa Environmental Health and Pollution Management Program (EHPMP).

59. In addition to the Enterprise Architecture, **this subcomponent will facilitate strengthening of the analog foundations of digital government and the design and development of the following four cross-cutting digital platforms** that constitute the building blocks for e-Government:

- a) *Digital Payment Architecture*. This activity will leverage the existing Government Digital Payment portal to design the next generation electronic payment architecture that allows the government, citizens, and businesses to transact an increased volume of payments in a seamless, secure, and accountable way. This activity will contribute to the government’s vision to move towards a “cashless” payment ecosystem.
- b) *Unique Digital Identifier Database*. This activity will address the fragmentation and inefficiencies in the identification of persons in the service delivery ecosystem, which currently involves multiple registries that do



not interface. This activity will finance the integration of disparate databases into a digital national master database, which will facilitate interoperability across e-services.

- c) *Document Management System*. This activity will finance assessing the status of and enhancing the Electronic Records and Document Management System of the government that is currently under development. This activity will intensify the ongoing efforts to digitize critical public records, including the development and implementation of a roadmap for the identification and digitization of paper documents for digital storage and integrating the backend workflow processes.
- d) *Unified Communications System*. This activity will finance the design and rollout of a secure, digital unified communications system (UCS) across government. The UCS will facilitate seamless communications across the government, as well as the continuity of critical communications networks and improved response capabilities in the event of climate-related or health emergencies such as COVID-19. The financing under this activity may support: (i) TA activities to identify the challenges faced and opportunities for upgrade and improvement in the existing communications systems; comparative analysis of software and systems needed and mechanisms for sourcing the latest technologies; methods of phasing out the old communications systems and implementing the new one; (ii) systems, software and hardware associated with the UCS, including for supporting online meetings and cybersecurity; and (iii) capacity building for system administrators and users.

60. **This subcomponent will streamline the Open Data framework and ensure that cybersecurity principles underpin all project interventions.** Open Data contributes to improvements and efficiency in public services through fostering greater citizen and business engagement, facilitating the creation of innovative applications using government data and promoting collaboration across government agencies.

Regional Subcomponent R2.3: Enhancing Regional Data Governance (US\$15 million equivalent, of which US\$10 million from Regional IDA and US\$5 million from National IDA)

61. **This regional subcomponent will seek to establish Kenya as a regional leading services provider through strengthening its data governance regime and capabilities in line with international and regional standards.** A thriving digital economy requires a foundation of trust in online transactions and personal data being secure. The ODPC was created following the adoption of the Data Protection Act, which came into force on November 25, 2019. The project activities will focus on increasing capacity for developing and implementing a comprehensive framework for data protection and cybersecurity. This can be achieved through strengthened data regulation, institutional frameworks, and technical and operational capabilities for data protection. The EARDIP regional program is supporting a number of regional initiatives, initially through EAC and IGAD, to develop cybersecurity frameworks, infrastructure and capacity, and to support data exchange, governance and protection. This subcomponent will allow Kenya also to participate in such regional initiatives in the Horn of Africa and Eastern Africa regions, with a focus on developing regionally harmonized approaches. Kenya's advanced digital sector can support other countries in the region, who may benefit from its expertise, technology and skills. Key activities include the following:

- a) **Providing TA and capacity building for the ODPC⁷⁴** for (a) developing a plan for regional coordination efforts on data protection; (b) preparing government datasets for usage, anonymizing as needed, maintaining a data catalogue of existing datasets, conducting a data inventory, and identifying key data sources (for example, geospatial); (c) developing a business model for the ODPC, to assure cost recovery; (d) assessing data processors' data protection practices and certifying compliance with regional and international regulations; (e)

⁷⁴ KDEAP will collaborate closely with other development partners supporting the ODPC, notably the EU through the "GovStack" program, to avoid duplication.



increasing capacity for investigations and audits. This TA and capacity building will include considerations for sustainability such as phased transfers of operational costs emanating from World Bank-supported ODPC activities to cost recovery from registered data collectors.

- b) Supporting **international cooperation and partnerships** on data protection and cybersecurity, including participation in communities of practice created under EARDIP with other data protection commissions and cybersecurity officials, as well as organization of study tours and regional conferences.
- c) Competitively tendered awards of contracts for non-consulting services to one or more institutions (centers of excellence) offering training and technical assistance in the fields of **cybersecurity and data protection at the regional level**.
- d) Undertaking a regional **ICT Security Risk and Vulnerability Assessment** review, in collaboration with existing regional initiatives, including for the education sector covered in component 1, and implementing the recommendations, including capacity building and security tools for the ICTA Information Security team. As part of this initiative, it is proposed to establish a monitoring system to track online harassment, including for children and female internet users.
- e) TA to develop **legal and regulatory framework, and implementation of a regional mechanism for cross-border data flows** within the region and with the rest of the world, including through a bilateral mechanism with key digital trade partners.

Component 3: Digital Skills and Markets (US\$51 million equivalent, of which US\$36 million from IDA SUW, and US\$10 million from regional IDA and US\$5 million from national IDA)

62. This component aims to equip young Kenyans with digital skills and strengthen their abilities to access and compete in domestic and regional markets through supporting skills development, to study mechanisms to improve access to affordable devices and through enhancing the enabling environment for e-commerce to support Kenya's role as a regional digital hub. This component will complement interventions to connect educational institutions under component 1 by supporting wider access to digital skills development, including strengthening basic digital literacy through the formal education system, entry-level digital skills through the tertiary education system as well as advanced digital skills certification programs for professionals. The activities to develop digital skills will be paired with an assessment study and financing towards a proposed scheme to make digital devices more affordable for targeted groups. The component will also finance complementary TA, legal advisory and capacity building to enhance the enabling environment for e-commerce and cross-border digital services so that Kenyan entrepreneurs can more easily access regional and global markets. Given that women in low-and-middle-income countries are less likely than men to have access to a mobile device and are especially limited when living in a rural area or with a disability,⁷⁵ all activities will be geared toward increasing the supply of employment-ready technology talent in the local market and would include support targets for gender and PWDs. By facilitating digital adoption through investing in digital skills, the project will support the vulnerable who might otherwise have been excluded from accessing digital services and operations. It will also create a resilient and digitally skilled citizenry who would be better prepared for the uptake of digital services. Related investments are expected to yield spillover benefits on private sector innovation. This component will support the WBG GCRF pillars 2, 3 and 4 by equipping underserved public schools with digital devices, ICT equipment, and digital content, strengthening competitive digital skills and Kenyans' ability to access domestic and cross-border market opportunities for jobs and income generation, and building capacity for the Government to enhance the enabling environment for digital transactions.

⁷⁵ GSMA. 2022. *The Mobile Gender Gap Report* at: https://www.gsma.com/r/wp-content/uploads/2022/06/The-Mobile-Gender-Gap-Report-2022.pdf?utm_source=website&utm_medium=download-button&utm_campaign=gender-gap-2022



Subcomponent 3.1: Supporting Digital Literacy (US\$25 million equivalent from IDA SUW)

63. This subcomponent, with MoE as an implementing partner, will strengthen digital literacy and digital skills programs including through the rollout of Phase 3⁷⁶ of the national DLP to junior secondary schools and TVETs, and capacity building and content development for teachers in teacher training colleges to leverage digital technologies. Strengthening digital skills and fostering a culture of innovation and collaboration will be critical to preparing young Kenyans for the workforce of the future. The project will support the advancement of basic, intermediate, and advanced digital skills, as well as provide relevant e-business skills. This will therefore involve equipping the targeted educational institutions with access to digital devices, ICT equipment, and digital content. ICT equipment procured would be selected through competitive tendering processes. Measures to ensure targeted support for girls in schools, gender balance among teachers receiving training, and inclusion of gender-sensitive content on online harassment in the curriculum will be targeted. This will be supplemented with counseling programs to promote girls' transition into STEM subjects/digital careers by engaging parents, teachers, community leaders, as well as girls themselves. The procurement of ICT equipment and devices will ensure that these are access friendly to support use by PWDs. Key activities include the following:

- a) Financing of **scale-up of the DLP** to junior secondary schools, TVETs and teacher training colleges including through the provision of ICT equipment and tools in schools (for example, laptops, tablets, other digital devices).
- b) **Adaptation of a competency-based curriculum on coding skills and other digital skills and capacity building for teachers** on digital content and training methodologies, including initiatives to encourage more girls to enter STEM career paths. This will involve targeted support for women and girls via training of female teachers and counselors and inclusion of modules on online harassment.

Subcomponent 3.2: Enhancing Employment-ready Digital Skills (US\$15 million from IDA SUW)

64. This subcomponent will seek to provide Kenyans with advanced digital skills in line with emerging opportunities in creative industry and the digital economy. The ICT Masterplan aims to train some 10,000 local high-end ICT professionals by 2030⁷⁷. Under this subcomponent there will be a concerted effort to encourage private sector co-investment in digital skills development, for instance, by working with private sector providers and digital ecosystem intermediaries, such as coding bootcamps, to extend digital skills courses beyond Nairobi and offer vouchers towards the cost of tuition for such courses. This should help to mobilize additional funds for implementation of this component during Phase 1 project implementation. The subcomponent will also finance programs to enhance Kenyan youth's awareness and access to online job opportunities through the gig economy. The activity will seek to bring more women into advanced digital skills training programs. Key activities include the following:

- a) Financing of partnerships with private sector players to create **digital content for online learning** programs, including adaptation for PWDs, and purchasing training subscriptions, licenses and curriculum content to be delivered to students and teachers through KICD, TVETs and the planned Open University of Kenya. These would be mainstreamed into the national educational curriculum.

⁷⁶ In 2015 the GoK launched the DLP. The first phase of this program equipped 22,000 primary schools with tablets, teacher laptops, and wireless access points to enable teachers and learners in the earliest years of primary school (grades 1 to 3) to integrate ICT into their teaching and learning activities. The slogan for DLP Phase 1 was 'Learn to Use' and the focus was on familiarizing young children with the device and its operation. In 2019, the program entered the second phase which addressed years 4 to 6 of primary school. The slogan for DLP Phase 2 was 'Use to Learn' and the focus was on using the devices to access content and enrich learning in all subjects. The third phase of the DLP program will address secondary schools (years 7 to 12 of learning). The slogan for Phase 3 is 'Use to Produce' and the emphasis is on equipping older children to use the devices to exploit their natural talents.

⁷⁷ This corresponds to Pillars 3 and 4 in the MICDE's National Digital Skills Program.



- b) **Delivery of training programs** for advanced digital skills and digital entrepreneurship for youth through TVETs, and other training providers, including training of trainers. There would be a focus on internationally certified training courses, such as the International Computer Driver's License.

Subcomponent 3.3: Promoting Device Affordability (US\$1 million equivalent from IDA SUW)

65. This subcomponent will complement the work on digital skills development by studying the mechanisms for putting advanced digital devices in the hands of those that need them most. Despite a consistent reduction in the price of internet-enabled devices, high-level devices, such as laptops or tablets, remain unaffordable to the majority of students and young people in Kenya, and even smartphones remain out of reach for low-income Kenyans. The new Government has committed to turning 'hustlers' into entrepreneurs and turning students into active participants in the creative economy. The shortest route to do this is to equip them with the digital devices they need to bring about a transformation in their lives. This subcomponent will provide financing support to facilitate wider device access, including a feasibility study and capacity building for the establishment of an access scheme for smart devices. The scheme will target potential users currently facing barriers to smart device access and ownership such as securing credit for device purchase.⁷⁸ Devices to be distributed in Phase 2 would be selected through a competitive selection process. Three priority categories of eligible recipients are proposed, and awards will be made through a points-based system for:

- a) female students, especially those following STEM subjects.
- b) digital entrepreneurs that have a demonstrated business model and an ability to start repaying any loan quickly, including informal business owners.
- c) persons with disabilities.

66. Activities to be financed would be:

- a) An initial **assessment study** to examine what device financing and loan guarantee schemes currently exist in the market, to better understand the financing models (such as pay-as-you-go), assess the likely interest from private sector equipment vendors and potential financial sector intermediaries and develop the design for the affordable device financing scheme. The study will seek to determine the modalities of the financing scheme, following World Bank rules and guidelines.
- b) Once the study is complete, and any necessary assessments of financial intermediaries have been carried out, funds will be provided during Phase 2 of this Program, estimated at US\$14 million, towards the **establishment of a financing scheme** to facilitate equipment purchase by targeted groups. All financial instruments leveraged under the scheme in Phase 2 will adhere to the World Bank's policies and guidelines for financial intermediaries, be subject to a legal covenant, and a compliance review will be conducted. An e-Waste management plan would also be developed for end-of-life devices distributed under this activity.

⁷⁸ A scheme was successfully piloted under KTCIP to provide laptops for university professors, which will be leveraged to design the scheme to extend this to a wider range of beneficiaries and devices. The existing *Student Laptop Purchase Program*, operated by KENET in conjunction with private sector partners, Microsoft and Intel, offers other possible models for consideration. KDEAP could provide a grant to a revolving device affordability fund (or a financial guarantee against losses for private sector participants in the fund), which could enlarge the range of interest from equipment vendors and encourage mobilization of private capital. Vouchers may also be used as a distribution mechanism. Opportunities for asset-bundling (for instance with solar recharging equipment) will be explored, in addition to crowding in the private sector (e.g., telcos, banks, microfinance institutions, etc.) and other strategic partners.



Regional Subcomponent R3.4: Positioning Kenya as a Regional Digital Hub (US\$10 million equivalent of which US\$5 million from Regional IDA and US\$5 million from National IDA)

67. This regional subcomponent will seek to position Kenya as a regional hub for software development and promotion of digital content. The ICT Master Plan seeks to position Kenya as a regional center of excellence for digital innovation, noting that the country already has over 60 tech hubs as well as establishing some 187 constituency innovation hubs across the country. In 2022, the country ranked fourth in Sub-Saharan Africa and 88th worldwide in the Global Innovation Index.⁷⁹ This sub-component will also seek to develop a software export promotion strategy and enhance regulatory and fiscal frameworks to facilitate regional eCommerce, covering areas such as intermediary liability, consumer protection, over-the-top services, data pricing and e-signatures, directly linking to and leveraging work undertaken at the EAC and IGAD, financed by EARDIP. Activities to be financed include the following:

- a) Competitively-tendered contracts for non-consulting services to one or more institutions providing **training and mentoring in software development and digital content promotion**, at the regional level
- b) The development of a **software and digital services export strategy**.
- c) Legal advisory, technical assistance and capacity building to **harmonize rules for cross-border digital goods and services**, including updating the legal and regulatory framework for digital signatures and capacity building for the implementation of a license or certification regime, review of the taxation regime for digital services and goods, development of a regulatory regime for e-commerce platforms.

Component 4: Project Management (US\$15 million equivalent of which US\$5m from IDA SUW, and US\$5 million from Regional IDA)

68. This component will support project implementation, coordination, and capacity building for the Project Implementation Unit (PIU). The PIU will be situated in the ICTA, which is a specialized agency of MICDE, and which will draw upon expertise and staff from MICDE, MOE and other MCDAs. At a minimum this will initially include support for a dedicated project manager, procurement and financial management specialists, and environmental and social specialists. Other positions, for instance technical specialists, M&E, gender, communications, etc. may be added later. It will also provide support for office equipment, incremental operating costs, and audits. Consultants will be used when Government capacity is insufficient. This component will also fund additional TA for M&E, such as a survey of ICT usage by households and individuals, to supplement the work of the CA and KNBS. Relevant MCDAs will also receive training on measures to be taken during emergencies such as on emergency response procedures at times of health or climate emergencies, to ensure continuity of operations and minimize disruptions. The PIU will also manage the regional activities under the project, as covered in sub-components R1.5, R2.3 and R3.4. Implementation arrangements are discussed in more detail below. This component will support the WBG GCRF pillar 4 by supporting institutional capacity-building and by leveraging PCM for network investment.

Component 5: Contingent Emergency Response Component (US\$0)

69. A Contingent Emergency Response Component (CERC), with an initial zero value, may be financed during the project to allow for an agile response to an eligible crisis or emergency. Adding the component from the beginning, albeit with zero funding, provides for flexibility to respond to crises as they arise, and the Project Implementation Manual will be adapted to guide the utilization of this component including risk mitigation strategies. These could include, for instance, humanitarian crises which require the provision of emergency communications services to replace facilities that have been damaged or to facilitate emergency humanitarian payments using mobile money.

⁷⁹ WIPO. 2022. *Global Innovation Index*, see: https://www.wipo.int/global_innovation_index/en/2022/.



C. Project Beneficiaries

70. **The project will benefit a wide range of beneficiaries, including citizens, the private sector, public sector agencies, students and civil servants.** Individuals across the nation will benefit from wider opportunities to participate in the digital economy through increased access to broadband including via public Wi-Fi hotspots and community access schemes, access to uninterrupted priority public services (education, healthcare, judicial services), and access to digital skills via digital training programs, and enhanced data protection. The private sector will benefit from a growing digital-savvy consumer base, from opportunities for public support in the provision of infrastructure, strengthened digital talent, and a secure data environment for online operations and transactions. The public sector would enjoy cost savings stemming from digitization and automation of core administrative functions and services to relieve strain on public finances and improve service delivery, helping build greater trust in state-run functions.

- **Direct beneficiaries.** These include (a) public institutions: 1,450 national ward-level public offices, 105 MCDAs in Nairobi; (b) at least 2,000 schools, as well as universities and TVETs, and later health care centers, and judicial bodies connected to the internet; (b) network operators, including private sector players, will benefit from contracts for last mile delivery of connectivity, businesses supplying communications for the Government, and digital devices/digital content for schools; and (c) individuals: at least four million new internet users, and students trained in digital skills in schools, individuals trained in advanced digital skills for securing jobs, and civil servants trained in digital skills.
- **Indirect beneficiaries.** Given the project's nationwide coverage, citizens across the nation, central and local government institutions, public service delivery centers (schools, health centers, judicial bodies), and private sector businesses providing last mile connectivity and digital service offerings are likely to benefit.
- **Regional beneficiaries.** Kenya's neighbors will benefit from enhanced connectivity, support and collaboration for cybersecurity and data protection, and development of harmonized rules for increased digital trade.

71. **The project places a strong emphasis on 'digital inclusion', bridging the digital divide, by empowering women and girls, PWDs, and vulnerable communities in rural and underserved areas.** Digital access initiatives will be geared toward encouraging adoption in rural and underserved areas, where uptake of broadband and access to digital services is lagging. Moreover, all community connectivity access schemes, including public Wi-Fi hotspots, connected schools, universities and TVETs, as well as ICT equipment and software funded through the project, will be designed to ensure access for women and PWDs (for example, through ramps to public offices, women-friendly opening hours, gender-appropriate locations, accessible websites etc.). Gender- and PWD-sensitive approaches to all digital skills programs will be adopted (for example, leveraging female trainers and access-enabled devices). Data on connectivity disaggregated by gender, age, and location, will also be recorded to monitor and track progress on key parameters of digital inclusion.

D. Rationale for Bank Involvement and Role of Partners

72. **Public sector financing is appropriate as it will be used to (a) address market failures and (b) stimulate and/or crowd in the private sector in line with private capital mobilization principles.** Research across deployment of broadband infrastructure⁸⁰ has shown how these markets are characterized by market failure: abuse of dominance, and "missing markets" because of scarcity of capital, excessive uncertainty, and/or undervaluation of benefits. The latter is particularly the case in Kenya where there is scarcity of capital required to invest in expanding and upgrading broadband infrastructure. In this case, public sector support for investment is required and can be strategically

⁸⁰ World Bank Group. 2018. *Innovative Business Models for Expanding Fiber-Optic Networks and Closing the Access Gaps*.



targeted to encourage long-term sustainability. The project will finance areas where market failures prevent private sector solutions, in the absence of public sector funding or de-risking. This includes areas such as middle and last mile infrastructure where the private sector investment incentive is insufficient to prompt further infrastructure expansion in rural areas.⁸¹ The proposed approach also aims to lower the risk for government – financial, operational -- while improving sustainability. Through public support for the provision of the middle mile infrastructure, the project aims to crowd-in more private sector investment in last mile delivery by direct contracting of network operators and indirectly by creating a new digital market of consumers potentially demanding new goods and services (through service competition). In addition, the project will actively stimulate private sector development and enable private capital through technical assistance for data market policy and regulatory reform. This can help build trust in the online environment, thereby encouraging digital businesses to offer greater goods and services.

73. **Private capital mobilization.** The project will promote the private capital mobilization (PCM) approach through designing interventions that crowd-in private sector funding and stimulate private sector development.⁸² Indicative targets for PCM have been included in the results framework. It is estimated that the project will mobilize some US\$100 million in additional investment, with an average ratio of 1:0.67 for public and private sector financing, in particular by unlocking private investment into middle-mile and last-mile connectivity and through commercializing NOFBI. PCM is mainly relevant for component 1 with a small element of MFD also in component 3. One of the identified challenges in Kenya is insufficient ICT infrastructure, especially in remote and rural areas and borderlands. Here low purchasing power and expensive rollout of building infrastructure prevent a private sector solution to the issue in the absence of public support. The project would therefore be financing rollout of infrastructure (primarily middle mile and last mile fiber connectivity where gaps exist, but also passive infrastructure such as ducts and rights of way) to strategic institutions. The aim is to create a *'build once, use by all'* model wherein private sector providers (for example, ISPs) can use this public good infrastructure to further provide last mile connectivity services. This approach would enable expanding markets and services where none previously existed.⁸³

74. **The World Bank is well positioned to support the digital sector, given its technical knowledge as well as prior track record of advising the client and investing in the main areas covered by the project.** Recent analytical and advisory services have given the World Bank an in-depth understanding of key technical and sectoral challenges⁸⁴, faced by the borrower in relation to the digital ecosystem, which has allowed the World Bank to establish an effective working relationship with the client and other *stakeholders* and informed project design. Moreover, the World Bank has a track record of supporting digital development in Kenya, as a trusted partner, including through prior investments such as the Kenya Transparency and Communications Infrastructure Project (KTCIP; P094103), Kenya Youth Employment and Opportunities (P151831), among others, as well as similar operations in the region, for instance, the Eastern Africa Regional Transport, Trade and Development Facilitation Project (P148853) and the Horn of Africa Gateway Development Project (P161305). The World Bank is thus able to leverage global expertise in areas spanning broadband market development, e-government, and digital skills. The additional connectivity for Government and the education sector provided under KDEAP will bring benefits across the World Bank's lending portfolio across the country.

75. **The project identifies, leverages, and complements work done by other partners that support digital development in Kenya, thereby capitalizing on synergies and lessons learned.** Several multilateral development

⁸¹ Where communities are more geographically dispersed and have lower purchasing power, public sector institutions – such as schools -- can act as an anchor tenant, creating an incentive for necessary investment.

⁸² Depending on timing, this may be complemented by a private capital enabling approach.

⁸³ World Bank. 2019. 'Creating Markets' to Leverage the Private Sector for Sustainable Development and Growth, IEG.

⁸⁴ See, for instance, World Bank and UN Broadband Commission. 2019. *Connecting Africa through Broadband*, at: https://broadbandcommission.org/wp-content/uploads/2021/09/WGDigitalMoonshotforAfrica_Report2020-1.pdf



banks such as the World Bank, the African Development Bank and the European Investment Bank, as well as bilaterals, such as the Japanese Investment Bank and the Government of the Republic of Korea, have supported the ICT landscape in Kenya over the years and the World Bank has been coordinating with many of these players. For example, the team has worked closely with United Nations Children's Fund (UNICEF) and International Telecommunication Union (ITU) on school connectivity, under the Giga⁸⁵ initiative, including undertaking a connectivity mapping initiative. The team is also currently benefitting from support from the Korean-World Bank Partnership Facility (KWPF) on a number of feasibility studies identifying best practices for connectivity and on addressing regulatory bottlenecks⁸⁶.

E. Lessons Learned and Progress on Learning Agenda

76. Deployment of high-speed broadband network incorporates best practices⁸⁷ for engaging the private sector and reusing and rebuilding from existing infrastructure. In the developing world there are many regions that do not generate the volumes of traffic, even if aggregated, to convince private actors to invest. Therefore, government intervention in infrastructure deployment is essential to incentivize the private sector to make matching investments. The advantages of private sector participation include sharing costs and risks, building expertise, and adding critical financial insight and caution that might not exist without it. The project's design embeds contracting to last mile delivery ISPs (subcomponents 1.2 and 1.3). Further, the key principles of reusing public utility facilities -- such as ducts and poles, buildings, land rights, and even fiber networks for deployment of new broadband infrastructure -- are incorporated into project design. This will ensure that long-lived assets can be repurposed, commercialized, or otherwise brought back into productive use and facilitate new entry for the benefit of all.

77. The project's design will support use of renewable energy sources and energy-efficient technology best suited for broadband expansion. For instance, renewable energy sources will be used to power schools, TVETs and universities, under sub-components 1.2 and 3.1, either as a main or back up power source. Similarly, for those activities which involve equipment purchase, such as sub-components 2.2 and 3.3, energy-efficiency specifications will be a procurement requirement. An integrated infrastructure development approach will be used, wherever feasible, for instance by running backbone fiber along other linear infrastructures, such as roads, electricity distribution networks or pipelines. This approach has been adopted in similar projects, for instance, the ongoing EA-RTTDFP (P148853) and Horn of Africa Gateway Development Project (P161305), both of which are implemented by ICTA.

78. The project pairs interventions that support government digitization with investments that mitigate possible risks associated with increasing digital adoption. Top e-Government performers illustrate the importance of moving toward a more integrated approach to digital service delivery, based on shared infrastructure, services, and standards. As digital adoption grows, there is also a need to instill greater user confidence in related services through enhanced data protection measures, designed to enable more sophisticated digital transactions and greater resilience. Operationalization of the ODPC is being modelled on learnings from similar efforts conducted in the region, for instance, in Ghana and Nigeria. To support digital adoption, access to digital devices is key, and the project will leverage lessons from the Rwanda Digital Acceleration Project (P173373) for the development of the device affordability scheme. Interventions under the project to support digital skills and jobs will leverage learnings from the Kenya Industry and Entrepreneurship Project (P161317), Technology Rapid Skills Training for Youth Employment

⁸⁵ Giga Initiative. <https://www.unicef.org/innovation/giga>.

⁸⁶ On November 2022, the KWPF sponsored a stakeholder consultation in Nairobi on a standard for open fiber data, organized by World Bank, ITU, Mozilla Foundation, Internet Society, Liquid Intelligent Technologies, CSquared and Digital Council Africa.

⁸⁷ World Bank Group. 2018. *Innovative Business Models for Expanding Fiber-Optic Networks and Closing the Access Gaps*.



(P156294), the Kenya Youth Employment and Opportunities Project (P151831), and the Jamaica Youth Employment in Digital and Animation Industries (P148013), amongst others.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

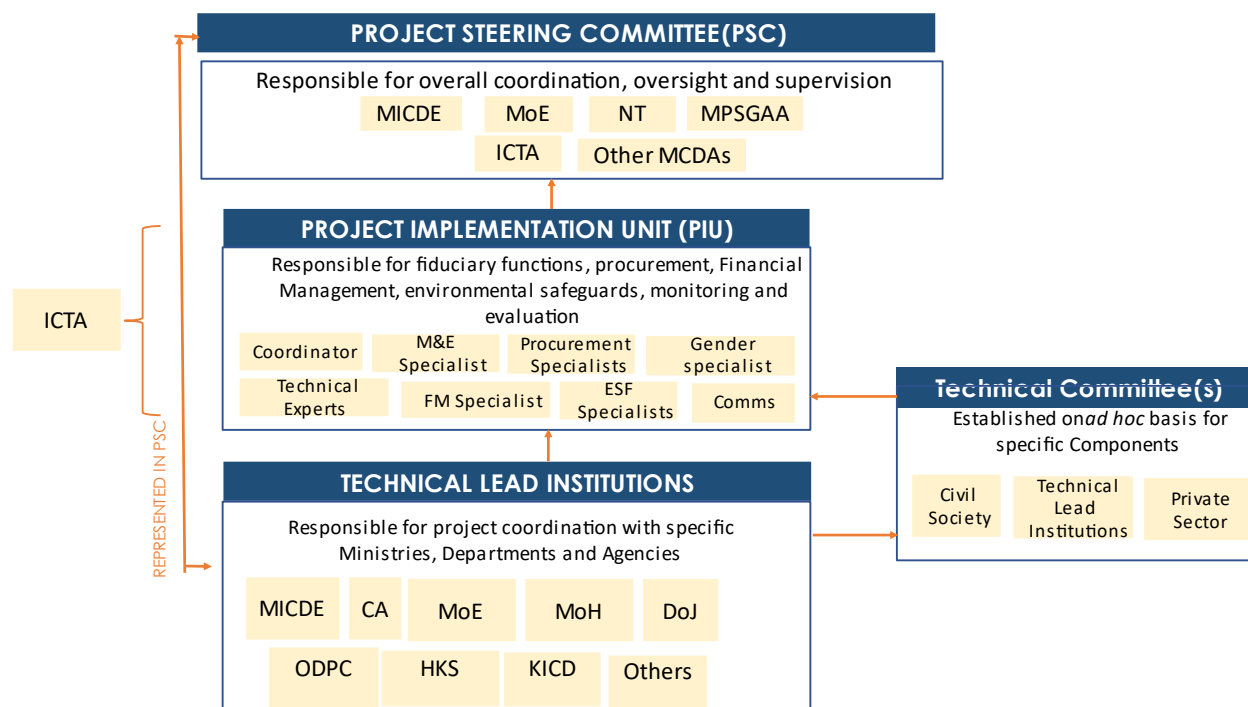
79. **Implementation of the KDEAP will be led by the MICDE, through a PIU that will be set up and operationalized within the ICTA, which is a specialized agency of the MICDE.** PIU staff will draw upon experts from MICDE, MoE and other MCDAs. ICTA has hosted a PIU to implement World Bank-financed projects for almost two decades, dating back to the KTCIP (P094103). The existing PIU in ICTA, which will be expanded to take on the implementation responsibility of KDEAP, supports a number of World Bank-financed projects including the Horn of Africa Gateway Development Project (P161305), currently rated *Moderately Satisfactory*. In order to implement the KDEAP, that PIU's staffing would be expanded through redeployment of Government staff, project-financed recruitment of specialists where capacity is missing, and cost sharing of existing positions. The PIU will be in charge of all project-related fiduciary functions, including managing financial management (FM) and procurement, as well as implementation of project-related environmental and social standards commitments. It will be responsible for orchestrating project planning, delivery, and M&E, leveraging key project management tools such as annual work plans and budgets (AWPBs). The PIU will be initially staffed (by project effectiveness), at a minimum, with a project coordinator, procurement, FM, environmental and social standards positions will be added later. The Project Implementation Manual (PIM), which is in an advanced stage of preparation, details the operating arrangements for the PIU and will be approved before effectiveness.

80. **Several other MCDAs, which already work closely with the ICTA, are also expected to play a role in supporting the implementation of project activities.** Examples include key line ministries such as the MoE, Ministry of Public Service, Gender and Affirmative Action (MPSGAA) in Phase 1 and the Ministry of Health (MoH) and Department of Justice (DoJ) in Phase 2, as well as key technical lead institutions such as the CA, the ODPC, the HKS and KICD. The PIU will directly coordinate with technical lead institutions for coordination. In addition, the project will form technical committee(s) (TC) with representatives from relevant MCDAs to inform the technical aspects of the project activities and their implementation are well coordinated across the MCDAs. The terms of reference (TORs) of these TC(s) are detailed in the PIM.

81. **A Project Steering Committee (PSC) will be set up to provide strategic oversight and governance for the project.** The PSC will be chaired by the Principal Secretary, MICDE, and will include representatives of the main MCDAs, detailed above. In addition, the PSC can invite representatives from the Counties, the private sector (represented for instance by Technology Service Providers of Kenya – [TESPOK]), academia and Civil Society (see Figure 4) on an *ad hoc* basis. The mandate, procedures and terms for the PSC are detailed in the PIM.



Figure 4. Project Implementation Arrangements



B. Results Monitoring and Evaluation Arrangements

82. **The PIU will be responsible for monitoring achievement toward the PDO and intermediate indicators, based on the Results Framework detailed in section VII.** It will do so by ensuring that the PIU is staffed with a part-time M&E expert, tasked with coordinating M&E centrally, and by ensuring that an adequate M&E system is established, including systems for correct reporting by other stakeholders that are expected to provide inputs based on the M&E plan detailed in the results framework. The status of project implementation will be documented in progress reports prepared on a semi-annual basis, typically just ahead of an implementation support mission, and submitted to the World Bank for review. These reports will include updates on results, disbursements, FM, procurement, and social and environmental policies and guidelines, as well as an updated work plan. In the results framework, four indicators are used for monitoring gender-related issues, two for citizen engagement, two for climate and two for the regional dimension.

83. **In-built systems for tracking results and satisfaction surveys will be leveraged to support citizen engagement and solicit beneficiary feedback.** Related tools will be embedded directly in project delivery to ensure feedback in real time, using digital tools and systems to register beneficiaries and report their feedback (for example, using tablet based or rapid mobile/short message service survey tools). Beneficiary focus groups may also be leveraged to inform design and track progress over time, with learnings fed into project design for Phase 2.

C. Sustainability

84. **Project activities focus on mobilizing greater private finance in existing markets, creating new markets in underserved areas, and optimizing long-term use of public infrastructure to build sustainability.** Engaging the private sector, as co-financier and network operator, generally brings along an incentive system that weeds out unsustainable



investments and concentrates on those that are financially self-sufficient.⁸⁸ Deploying this principle, activities for de-risking commercial last mile delivery solutions via providing matching investments (see Box 2) have been designed to attract greater private capital. While these mechanisms also aim to create markets where none existed, such as in rural and borderland areas, an enabling environment supporting data protection and cybersecurity will play a significant role in aiding and safeguarding the sustainability of market creation efforts. Project-funded capital investments in new infrastructure and systems are designed to factor in the need for long-term maintenance. For instance, the proposed approach for digitizing government services, which envisages integration of digital government infrastructure and services and use of shared platforms, allows for more sustainable investment than spending on and maintaining several individual siloed information systems. Finally, investing in human capital through digital skill development programs will help build capabilities that will outlive the project's life cycle. Specific sustainability measures introduced, per component, are captured in table 4.

Table 4. Sustainability Mechanisms by Component

Component	Sustainability Mechanisms
Component 1: Broadband Infrastructure and Access	● Initiatives for fiber infrastructure deployment and public Wi-Fi hotspots, with local anchor tenants, will create a wider digital consumer base, attracting the private sector to provide more products and services in future. ● Use of long-term IRU contracts for prepurchase of internet capacity will ensure capacity outlasts the project, while bundling of operations and maintenance costs into up-front payments will avoid unexpected monthly charges. ● Commercialization of NOFBI will release Government from some of its operational maintenance obligations.
Component 2: Digital Government and Services	● Capacity built among the government MCDAs will be retained after the project. ● Linking of government MCDAs through a UCS will reduce leakage and lower administrative costs for government services, including improved cybersecurity. ● The shared infrastructure, platforms, and services approach will allow for significant savings versus each MCDA maintaining independent IT infrastructure, platforms, and applications. ● There will be phased transfers of operational costs emanating from World Bank-supported ODPC activities to cost recovery from registered data collectors.
Component 3: Digital Skills and Markets	● Program design and curriculum development will be carried out in close collaboration with MoE and KICD, and new content will be mainstreamed into the national curriculum. ● Supporting digital skills and creative industries initiatives will allow to build human capital capacity that will outlive the project. ● Ensuring the engagement of the private sector in the digital skills and content development programs will encourage future private sector contribution. ● The feasibility study for the creation of a device affordability fund will aim to identify ways through which any fund can be sustained beyond the life of the project and catalyze further private sector investment.
Component 4: Project Management	● The project will be implemented using the existing structure within ICTA to avoid creating additional burdens on Government. ● Capacity building within the Government through enhanced digital training would allow for sustainable continuation of the activities beyond the project life cycle.

⁸⁸ World Bank. 2019. 'Creating Markets' to Leverage the Private Sector for Sustainable Development and Growth, IEG, at: <http://hdl.handle.net/10986/32078>



IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

85. **KDEAP will deliver increased access to affordable and high-quality internet services for the Government, businesses, and citizens while enhancing digital skills and the development of Kenya's digital economy and enhanced integration with the region**⁸⁹. The project components were designed as an integrated and interlinked program to maximize the development impact of the investments. Infrastructure investment is complemented by TA and regulatory reform to increase access to ICTs and digital services while also equipping citizens, businesses, and the Government with the skills, devices, and incentives to use them to maximum advantage. This approach aligns with lessons learned from other operations and the findings of the *Digital Dividends WDR*,⁹⁰ which highlights the need for both access to technology and complementary 'analog' foundations of the digital economy. The project is expected to result in a US\$943 million Net Present Value (NPV) for the connectivity components alone. Taking into account the investment in digitizing Government services, with an assumption of moving from 5 percent to at least 25 percent services digitized, would add a further US\$367 million NPV, or US\$1,310 billion in total, suggesting a cost-benefit ratio of 3.36.⁹¹

86. The anticipated **economic and financial benefits will come from the direct and indirect impacts** of KDEAP:

- **Direct.** By expanding Kenya's broadband backbone, KDEAP will increase broadband penetration among the previously underserved population and provide last mile connectivity to public institutions. The enhanced connectivity for government institutions, schools, TVETs and universities, and later health centers and law courts will benefit the Government's provision of digital services and its ability to respond to emergencies such as the COVID-19 pandemic, food insecurity and other overlapping crises. The expansion of the broadband backbone will be largely carried out using optical fiber cables that facilitate a reduction in energy consumption, reduction in e-waste, cost savings, and creation of more resilient and climate-proof infrastructure. This is expected to lead to fewer internet cuts and therefore better quality of service, including in areas with security concerns where maintenance periods are generally longer. The rehabilitation and commercialization of the existing NOFBI network will enable a faster transition from narrowband to broadband services (including 4G/5G mobile services through fiberization of cell towers) and thereby allow Kenyans to benefit from higher speed internet services. Finally, using e-Government services online generates additional efficiency gains from lower transaction costs, reduced delays and reduction of corruption.
- **Indirect.** Greater adoption of digital technologies can enable inclusion, as people gain access to new and improved services that were previously out of reach, enabling wider participation in an increasingly digitized economy. It can also help improve efficiency by reducing the transaction and operational costs associated with both delivering and accessing public and commercial services. Digital innovation and adoption of technology among citizens and businesses can support deployment of new business models that increase competition, productivity, and consumer welfare. The GoK will also realize cost savings from the implementation of ICT and related bandwidth.

⁸⁹ A more detailed technical, economic and financial analysis is available as a complementary document.

⁹⁰ World Bank. 2016. *World Development Report: Digital Dividends*.

⁹¹ This estimate is based on evidence from Australia that conducting an online transaction saves around US\$12 compared to the same transaction offline. See Deloitte. 2015. *Digital Government Transformation*. <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-digital-government-transformation-230715.pdf>.



87. These estimates indicate that the modest investment in KDEAP (US\$390 million of IDA financing) would be repaid several times over from potential cost savings and from the boost to economic growth of some US\$1.3 billion using NPV calculations. This is based on a *with/without the project* analysis which indicates an increase of around 6 percentage points in the internet subscription rate by 2030, as well as lower transactional costs. Furthermore, this estimate does not consider the benefits from digital skills and device affordability programs (under subcomponent 3). Overall, KDEAP will certainly provide a boost to the future economic prospects of the country and region.

B. Fiduciary

(i) Financial Management

88. **The country-level fiduciary systems have both strengths and challenges.** The Government has undertaken public financial management (PFM) reforms. These include the enactment and implementation of the 2012 PFM law and Regulations of 2015 and subsequent amendments, roll-out of the IFMIS at national and county level to enhance accountability and transparency, adoption of the Treasury Single Account (TSA) to enhance cash management, adoption of International Public Sector Accounting Standards (IPSAS) across MCDAs, and capacity strengthening of the Office of the Auditor General (OAG). However, the assessment noted that fiduciary risks exist under the ongoing World Bank-funded EA-RTTDFP (P148853), also partially implemented by ICTA. These include in-country budgeting and funds flow challenges, inadequate counterpart funding, value for money concerns, and inaccuracy in documentation of expenditure in Client Connection. There are also management delays in implementing internal audit recommendations and lack of approved entity Internal Audit Manual.

89. **Actions are outlined in the Financial Management Action Plan that ICTA will undertake to mitigate against the above risks** that have also been experienced in other similar World Bank operations partially implemented by ICTA, including the ongoing EA-RTTDFP. The measures include ensuring adequate budget allocation for the project, opening of a segregated project bank account, and designation of project accountant to support the Project. FM capacity building sessions will also be carried out for the fiduciary and other technical project team members on the project financial management arrangements. These measures are assessed as sufficient to address the identified FM risks and have project objectives achieved.

90. The results of the assessment indicate that the overall FM arrangements satisfy the World Bank's minimum requirements under the World Bank Directive: *Financial Management Manual for World Bank Investment Project Financing Operations* issued February 4, 2015, and are therefore adequate to provide, with reasonable assurance, accurate and timely information on the status of the project as required by the World Bank. The FM residual risk for the project is nevertheless **Substantial**.

Financial Management Action Plan

91. **The actions that need to be taken** to enhance and maintain adequate FM arrangements for the Project are outlined in Table 5:

Table 5. Financial Management Action Plan

	Action	Implementation by	Implemented by
1.	Designate a qualified accountant	March 31, 2023	ICTA
2.	Prepare an FM Manual for the Project.	Approved by the	ICTA



	Action	Implementation by	Implemented by
		World Bank on March 9, 2023	
3.	FM training for the fiduciary and other core project team members	By September 30, 2023	ICTA/ WB
4.	Submission of Quarterly IFRs	45 days after end of quarter	ICTA
5.	Internal audit to conduct annual risk-based audit reviews based on TOR acceptable to the World Bank. The report to be submitted to the World Bank within 60 days after the end of the financial year.	By August 31 of every year	ICTA
6.	Submission of audited financial statements including management letter to the World Bank	6 months after end of the FY	ICTA

(ii) Procurement

92. **Procurement Regulations.** Procurement will be carried out in accordance with the ‘*World Bank’s Procurement Regulations for IPF Borrowers*’, dated November 2020, hereafter referred to as ‘*Procurement Regulations*’, and the “*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 other provisions stipulated in the Financing Agreement.

93. **Project Procurement Strategy for Development.** The Project Procurement Strategy for Development (PPSD) has been prepared by the Borrower, and reviewed by the World Bank, to improve the implementation of the project and help in achieving project results and will be approved before effectiveness. The PPCSD covers the identification of specific project needs and provides a summary of proposed procurement contracts, project operational context and implementing agency procurement capacity, market research and analysis, risk management, procurement arrangements, including the use of Matching Investments and the CTM, and contract management. The PPCSD forms the basis for preparation of the Procurement Plan, setting out the appropriate selection methods to be followed by the Borrower during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The Procurement Plan, approved by the World Bank, covers the first 18 months of project implementation and will be updated at least annually, or as required, to reflect the actual project implementation needs and improvements in institutional capacity.

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

95. **Procurement profile.** The envisaged profile of procurement of the project will comprise technical assistance to the PIU (ICTA) and beneficiary agencies, goods and works for fiber expansion, goods of ICT equipment and tools, information systems, and consulting and non-consulting services. The procurement profile mainly comprises TA and information systems.

96. **Procurement risk management.** The World Bank carried out a procurement assessment of ICTA within the MICDE, which revealed key risks and identified potential risk mitigation measures. The key risks identified include inadequate high degree of technical expertise to define specifications, evaluate bids, and monitor implementation of complex contracts (high-tech infrastructure, software, and consultancy services will be procured). Risk mitigation



measures include (a) assistance to the ICTA in preparing the PSD and the project procurement operational manual; (b) organizing of World Bank-financed projects' procurement orientation/training to the Borrower's project team; (c) recruiting and maintaining a procurement consultant within the PIU; and (d) sensitization workshops for potential bidders and wider publication of invitation for bids/requests for proposals in national and regional newspapers. The PSD provides a more detailed identification of procurement risks and mitigation measures. Given that the procurement risk is substantial, ICTA will be required to prepare contract management plans and Key Performance Indicators (KPIs) to monitor implementation of high and complex contracts and share with the World Bank periodically. This approach will enable ICTA to monitor closely procurement and contract management issues and address them proactively.

97. **Frequency of procurement supervision.** A minimum of two missions for procurement and implementation support of the proposed project are envisaged per year.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

98. **The project is prepared under the Environmental and Social Framework. The overall environment and social risks classification for the project is rated *Moderate*.**

99. **The environmental risk rating is assessed as *moderate*.** The program will involve minor civil works on expanding the national fiber backbone, by network operators, and this will include micro trenching techniques for last mile digital connectivity to primary and secondary schools, health facilities, judicial bodies, and other government offices. The adverse environmental risks and impacts anticipated include (a) soil erosion and sedimentation through vegetation clearance and micro-trenching; (b) noise and excessive vibration near sensitive receptors from machinery and transportation of materials; (c) solid and e-Waste generation; (d) service disruption of utilities during construction activities; (e) safety hazards for workers and local communities at construction site; (f) potential traffic congestion and obstruction in access to residential buildings, businesses, and institutions during trenching and cable laying operations; and (g) security and community conflicts. It is anticipated that the adverse environmental risks and impacts are likely to be low-moderate in magnitude, and localized, temporary, reversible, easily avoided, and manageable or can be easily mitigated by enforcement of Environmental and Social Management Plans (ESMPs) and Occupational Health and Safety Plans.

100. **The project is expected to have *moderate* social risks.** While the project will result in several social benefits of inclusion and enhanced access to digital public services; the social risks are classified as moderate rather than low due to the project's large physical footprint, risks related to exclusion of vulnerable groups in accessing project benefits, and online protection of children from accessing harmful material. These include (a) risks related to unequal access to local communities based on ability to pay, gender, age, disability, and rural and urban areas; (b) data protection and privacy risks that include cyber bullying and addiction and exposure to illicit materials; (c) poor management of labor within the civil works and project units; (d) GBV against women and



girls at construction sites within schools, universities and TVETs; (e) poor stakeholder engagement leading to poor management of expectations by local communities; (f) poor management of grievances; (g) online protection of children; (h) inclusion of minority group, marginalized groups, women and persons with disability from access to project benefits; and (h) physical and economic displacement related to last mile connections. These impacts are expected to be of low to significant magnitude, site specific, predictable, temporary, and reversible. Cybersecurity risks will be addressed through systematic management and reporting of incidents, at a regional level, while the risk of furthering the digital divide would be countered by following an inclusive approach in design. The project will ensure universal access for persons living with disability (under subcomponents 2.1 and 3.3) and schools for the blind and deaf will be targeted to benefit from enhanced internet connectivity (under sub-component 1.2). Civil works will be confined and limited within wayleaves and selected public facilities; fiber optic cables will be buried within public rights of way, typically along electricity distribution networks, and along the right of way of roads and sidewalks; and no compulsory land acquisition is expected but temporary livelihood impacts are expected. These impacts will be limited and easily mitigated in a predictable manner through stakeholders' engagement, project siting, and project design.

101. **Environmental and Social Risk and Impact Management Instruments:** Given that the sub-projects have not been identified at this stage, the project adopted a framework approach and the Borrower is preparing the Environmental Social Management Framework (ESMF) with an annex of guidance on preparation of a waste management plan, an environmental code of practice for e-Waste and the Labor Management Procedures (LMP). It will be approved before effectiveness. It is worth noting that the project, under subcomponent 2.2, will focus on activities involving management of e-Waste. As part of the overall project environmental and social assessment process, the project will utilize the WBG's Environment, Health and Safety Guidelines (EHSGs) for telecommunication and general EHSGs. In addition, the project will prepare a Security Management Plan (SMP), the Gender Based Violence (GBV) Action Plan action, Resettlement Policy Framework (RPF), the Vulnerable Marginalized Group Framework (VMGF) and the Social Assessment. A Resettlement Policy Framework (RPF), alongside Labor Management Procedures (LMP), manages the potential risks related to labor and land acquisition and involuntary resettlement, which are expected to be minimal. The Environmental and Social Commitment Plan (ESCP), Appraisal Environmental and Social Review Summary (A-ESRS) and Stakeholder Engagement Plan (SEP) have been prepared, reviewed and cleared by the World Bank. The SEP was prepared to support the project design, strengthen project ownership, and prevent potential conflicts between beneficiaries. A stakeholder consultation workshop on environment and social issues was held in Nairobi on December 13-15, 2022, followed by regional consultations. A project-specific grievance redress mechanism will be put in place. The SEP and ESCP were disclosed on the client website and on the World Bank external website on February 23, 2023.⁹²

102. **The ESMF and the RPF set out the principles, rules, guidelines and procedures for assessing the environmental and social risks and impacts associated with the project.** They specify measures and plans to reduce, mitigate and/or offset adverse risks and impacts, and outline the budget and costs to support the environmental and social measures, and provides information on the agencies responsible for addressing project environmental and social risks and impacts, including existing capacity at the ICTA to manage environmental and social risks and impacts. During project implementation the Borrower will undertake environmental and social screening and prepare sub-project site specific Environmental and Social Impact Assessments (ESIA)/or Environmental and Social Management Plans (ESMPs), and the Abbreviated Resettlement Action Plans (ARAPs).

103. Since the project area has **vulnerable and marginalized groups** (VMGs), a Social Assessment, Vulnerable and Marginalized Groups Framework (VMGF), and Vulnerable and Marginalized Groups Plan (VMGP) has been

⁹² <https://icta.go.ke/downloads>



prepared and will be disclosed prior to credit effectiveness. Elements of the VMGP have been incorporated into the project design. The Project will be implemented by the ICTA. While ICTA has experience in implementing World Bank-financed projects under the environment and social policies, ICTA does not yet have environmental and social staff in post. Thus, ICTA will recruit qualified and experienced full time environmental specialist and social specialist within three months of credit effectiveness. During project implementation the World Bank will conduct targeted ESF trainings for the ICTA PIU to enhance environmental and social risks management and to meet ESF requirements.

V. GRIEVANCE REDRESS SERVICES

104. **Grievance Redress.** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank'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 Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the Bank's Accountability Mechanism, please visit <https://accountability.worldbank.org>.

105. **Citizen engagement.** The project incorporates themes of citizen-centric design and citizen feedback to inform activity selection and implementation models. For instance, siting of public Wi-Fi hotspots will be based on community feedback from end users to ensure that they are user friendly and accessible to the widest audience possible. Industry surveys, conducted through assessments, will be utilized to identify skills gaps in the market and refine the project's skills development programs with clear pathways to employment opportunities. The project will develop a communication and outreach strategy with tools that will support effective citizen engagement, including processes and procedures for project beneficiaries and any other people affected by the project to provide feedback and complaints regarding project activities, including on e-government services. For monitoring, the Results Framework includes two citizen engagement indicators that allow for tracking individual-level feedback of the project activities, including satisfaction with government digital services and tracking of project grievances that receive a timely and satisfactory response.

VI. KEY RISKS

106. **The overall project risk is rated as 'Substantial'** given that the Macroeconomic risk, Sector strategies and policy risk, Technical design risk, Fiduciary risks and Stakeholder risks are rated Substantial.

107. **Macroeconomic risk is rated as 'Substantial'.** High inherent macroeconomic risk, owing to a mounting government debt, with government finances strained further owing to COVID-19 and Russia's invasion of Ukraine, could have an impact on the achievement of the PDO. In particular, the Government may incur debts, which may impact its ability to support NOFBI expansion and related maintenance costs, especially now that Telkom Kenya is fully renationalized, which could be a deterrent for private sector investment for NOFBI. The proposed



mitigation measure here is to ensure that a viable solution for the commercialization of NOFBI is supported through the project, involving network operators in its management and maintenance, for which options were explored in the feasibility study that was commissioned under the KWPF Trust Fund.

108. **Sectoral strategies and policy risk is rated as ‘Substantial’.** Inherent risks are considered to be high because of growing data protection and cybersecurity risks and the issue of significant market power in the telecom sector. Allocation of additional spectrum has not proved conducive to stimulating adequate uptake of services offered by the mobile network operators. However, targeted mitigation measures are being introduced and those are expected to reduce the risk. Specifically, the GoK has enacted a Bill on Data Protection (January 2022) and also set up the ODPC that is now operational and will be further strengthened through the project financing. Regulatory, institutional, and technical safeguards will be introduced to ensure the integrity of data and prevent misuse. The Government is also working on refining spectrum policy, benefitting from World Bank TA, and further TA may be provided on issues of spectrum, universal service, market dominance and competition as needed through the course of the project.

109. **Technical design risk is rated as ‘Substantial’.** Given the wide range of reforms and investments pursued under the three components of the program, the inherent risk rating is considered to be substantial. The project components touch upon multiple distinct technical areas spanning telecommunications, e-Government, and digital skills. While the GoK and World Bank already have a track record of implementing most of the activities included in the project, some novel large-scale activities introduce higher technical design risk, including (a) the large-scale expansion of the fiber backbone using matching investments; (b) development and financing of novel last mile delivery models through engaging network operators; and (c) previous experience, under KTCIP, with device affordability programs. The three feasibility studies, two of which are complete and the other due for completion in FY23, as well as phased rollout and active World Bank technical quality assurance, will support mitigation.

110. **Fiduciary risks are rated as ‘Substantial’.** Fiduciary risks are noted in other projects under implementation in Kenya and detailed in the Appraisal section above. They include in-country budgeting and funds flow challenges, inadequate counterpart funding; value for money concerns; inaccuracy in documentation of expenditure in Client Connection; and inadequate high degree of technical expertise to define specifications, evaluate bids, and monitor implementation of complex contracts. There are also management delays in implementing internal audit recommendations and lack of approved entity for the Internal Audit Manual. Mitigation measures include a financial management action plan, which has been developed and paired with specialized training; opening of a segregated project bank account and designation of project accountant to support the Project; FM and procurement capacity building; wider advertising of bids and recruitment of additional procurement specialists, including for contract management, as specified in the PPSP.

111. **Stakeholders risks are rated as ‘Substantial’.** Given the cross-cutting nature of the project, a number of stakeholders will be critical to ensuring successful project delivery, which introduces considerable stakeholder risks that will need to be carefully managed through effective implementation and coordination arrangements throughout the project cycle. While the MICDE is considered to be a relatively strong lead agency and a well-represented steering committee and strong PIU can help mitigate this risk to some degree, coordination challenges are still likely to be considerable given the wide range of reforms and investments supported. The willingness of network operators to make matching investments in fiber deployment is a critical assumption for project success. Several market sounding events have been carried out with network operators, and further consultations will be held once procurement is ready to begin on fiber deployment.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Kenya

Kenya Digital Economy Acceleration Project

Project Development Objective(s)

To expand access to high-speed internet, improve the quality and delivery of education and selected government services, and build skills for the regional digital economy

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets		End Target
			1	2	
Expand access to high-speed internet					
Estimated percentage of the population who are users of high-speed internet (Percentage)		22.57	25.00	28.00	30.00
Percentage of high-speed internet users who are female (Percentage)		44.50	45.00	45.50	46.00
Number of optical fiber border crossings with neighboring countries (Number)		8.00	9.00	10.00	12.00
Improve the quality and delivery of education and selected government services					
Public institutions provided with new or enhanced access to high-speed internet under the project (Number)		0.00	100.00	200.00	500.00
Transactional government services		0.00	5.00	10.00	20.00



Indicator Name	PBC	Baseline	Intermediate Targets		End Target
			1	2	
digitized under the project (Number)					
Students, provided with new or enhanced access to high-speed internet under the project (Number)		0.00	100,000.00	500,000.00	1,000,000.00
Students, provided with new or enhanced access to high-speed internet under the project, of which female (Number)		0.00	50,000.00	250,000.00	500,000.00
Build skills for the regional digital economy					
People provided with enhanced digital skills training under the project (Number)		0.00	3,000.00	6,000.00	10,000.00
People provided with enhanced digital skills training under the project, of which female (Number)		0.00	1,000.00	3,000.00	5,000.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets		End Target
			1	2	
1. Digital Infrastructure and Access					
Average download speed on fixed broadband networks, in Mbit/s (Number)		8.92	12.00	18.00	24.00
Used international internet bandwidth. in Gbit/s (Number)		3,298.00	7,000.00	15,000.00	30,000.00
Increase in the kilometers of climate-resilient fiber in the national backbone and cross-border network (Kilometers)		8,900.00	10,000.00	25,000.00	50,000.00



Indicator Name	PBC	Baseline	Intermediate Targets		End Target
			1	2	
2. Digital Government and Services					
Number of MCDAs benefitting from new or enhanced access to high-speed internet under the project (Number)		0.00	20.00	50.00	105.00
Number of Government staff benefitting from Unified Communication Service (Number)		0.00	3,000.00	8,000.00	10,000.00
3. Digital Skills and Markets					
Number of people receiving training in advanced digital skills under the project (Number)		0.00	1,200.00	2,500.00	5,000.00
Number of women and girls receiving training in digital skills and digital literacy, under the project (Number)		0.00	500.00	1,200.00	2,500.00
Number of energy-efficient computers, laptops and tablets distributed to schools, TVETs and universities under the project (Number)		0.00	500.00	1,500.00	2,000.00
4. Project management					
Percentage of grievances registered with PIU that received a satisfactory response within statutory time (Percentage)		0.00	50.00	60.00	80.00
Estimated volume of Private Capital Mobilized by Project Investments (Amount(USD))		0.00	10,000,000.00	50,000,000.00	100,000,000.00



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Estimated percentage of the population who are users of high-speed internet	This indicator measures the percentage of inhabitants that have used broadband internet (typically within the last month). the data is typically sourced from the International Telecommunication Union (ITU).	Annual	ITU is primary source, which harmonizes data provided from CA/KNBS collected in ICT usage survey	Household surveys based on a representative sample of the population aged 15 and over. (Kenya uses age 3 and over).. Users who have used the internet at least once in previous month are counted as internet users.	PIU, drawing upon data from ITU, sourced from survey conducted by CA and KNBS
Percentage of high-speed internet users who are female	Derived from the parent indicator, this sub-indicator shows the percentage of internet users in a country who are female, hence indicating the gender gap (ie the actual percentage subtracted from 50 percent)	Annual	ITU / KNBS / Household surveys	Actual data for end 2019 (as reporter by ITU); -- Total internet usage = 22.6% of the population -- Male internet usage = 25.1 percent -- Female internet usage = 20.1 percent The percentage of female internet users can thus be derived from (21.1/22.6) or 88.9 percent, divided by 2 = 44.5 percent	PIU, using data sourced from ITU/KNBS and commissioned data surveys
Number of optical fiber border crossings with neighboring countries	This indicator measures the number of digital border	Annual	ICTA	Measurement of number fiber border	ICTA / PIU.



	crossings between Kenya and its neighbors where a fiber optical cable crosses from Kenya into a different country.			crossings between Kenya and its neighbors and submarine landing stations serving Kenya.. Later, this may be supplemented by a measure of traffic flowing between countries.	
Public institutions provided with new or enhanced access to high-speed internet under the project	This indicator measures the number of institutions provided with new or enhanced internet access under the project. It would be broken down by schools, universities, TVETs under subcomponent 1.2, Government MDAs under 1.3, and by law courts and healthcare facilities under Phase 2.	Twice yearly	PIU, based on results of tenders launched under the project, both for infrastructure and pre-paid internet access, in Components 1 and 2.	Based on results of tenders launched under the project, both for infrastructure and pre-paid internet access, and monitoring of implementation progress.	PIU
Transactional government services digitized under the project	This indicator measures the number of individual transaction government services that are digitized (end-to-end) using project funds.	Twice-yearly	PIU	Count of number of services available on the eCitizen website.	PIU
Students, provided with new or enhanced access to high-speed internet under the project	This indicator measures the number of students that have been provided with	Twice yearly	PIU	Based on analysis of tenders issued under components 1 and 3,	PIU



	new or enhanced broadband access under the project. Students will include those at all levels of the education system (broken down by schools, TVETs and Universities).			and subsequent monitoring of project implementation	
Students, provided with new or enhanced access to high-speed internet under the project, of which female	See parent indicator	See parent indicator	See parent indicator	See parent indicator	See parent indicator
People provided with enhanced digital skills training under the project	This indicator measures the number of beneficiaries that have been provided with digital skills training (through enrollment) under Component 3 of the project.	Annual	PIU	Through tenders under Component 3. To be supplemented with a measure of quality of skills, such as number of students with International Computer Driver's License (ICDL) qualification.	PIU
People provided with enhanced digital skills training under the project, of which female	This indicator measures the number of female beneficiaries that have been provided with digital skills training (through enrollment) under Component 3 of the project.	same as parent indicator	same as parent indicator	same as parent indicator	same as parent indicator



Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Average download speed on fixed broadband networks, in Mbit/s	This indicator is a measure of the performance (speed) of fixed broadband networks in Kenya, measured in Megabits per second (Mbit/s).	Quarterly	Speedtest.net. May be supplemented by data collected by the Communications Authority	Speedtest.net pings users in each country around the world to assess average download speeds.	PIU
Used international internet bandwidth. in Gbit/s	This is a measure of the used (ie lit) international internet bandwidth for the country as a whole, as measured in Gbit/s.	Annual	Telegeography Inc.	Estimation of total used capacity on all international submarine cables landing in Kenya (currently five).	PIU
Increase in the kilometers of climate-resilient fiber in the national backbone and cross-border network	This is a measure of the number of kilometers of fiber in the national broadband backbone and cross-border network. Fiber which is funded under the project will be climate-resilient	Twice-yearly	ICTA	Based on monitoring of the optical fiber backbone infrastructure. Would include also dark fiber.	ICTA / PIU
Number of MCDAs benefitting from new or enhanced access to high-speed internet under the project	This indicator would measure the number of MCDA locations (including campuses and branch offices) that benefit from new or enhanced	Twice yearly	PIU	Monitoring of contract awards and implementation	PIU



	broadband access under the project, specifically under sub-components 1.2 and 1.3.				
Number of Government staff benefitting from Unified Communication Service	This indicator measures the number of government staff benefitting from Unified Communication Services.	Twice yearly	PIU monitoring of contract award and implementation	Could be monitored, for instance, by the number of email addresses issued using common format or by increase in traffic.	PIU
Number of people receiving training in advanced digital skills under the project	Number of people receiving training in advanced digital skills under the project, in particular under component 3.	Twice-yearly	PIU monitoring of contracts awarded under the project	Monitoring of contracts awarded under the project, including percentage female and level of satisfaction among beneficiaries	PIU
Number of women and girls receiving training in digital skills and digital literacy, under the project	See parent indicator	Twice yearly	See parent indicator	See parent indicator	PIU
Number of energy-efficient computers, laptops and tablets distributed to schools, TVETs and universities under the project	This indicator tracks the provision of energy efficient ICT equipment to schools, universities and TVETs, in particular under Sub-component 3.1 of the program, supporting the DLP	Annual	PIU	Monitoring of contracts issued under the project	PIU / MoE
Percentage of grievances registered with PIU that received a satisfactory response within statutory time	This indicator measures the number of grievances registered with the PIU that received a satisfactory	Twice-yearly	PIU	Based on logging of grievances received and responses, including level of satisfaction with	PIU



	response within the statutory period (typically 30 days) divided by the total number of grievances			response	
Estimated volume of Private Capital Mobilized by Project Investments	This indicator is an estimation of the amount of private capital mobilized as a result of project investments. This is expected to accumulate mainly as a result of the matching investments mechanisms used for Component 1. It will also record the number of firms contributing to PCM.	Annual	PIU	Based on evaluation and monitoring of contracts issued by PIU	PIU



ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Kenya

Kenya Digital Economy Acceleration Project

Financial Management

Budgeting

1. The PIU will prepare the AWPB approved by the World Bank which will be aligned with the Ministry budget and processed through the normal government budget cycle and process.
2. A separate budget code will be provided for IDA Project funds in line with existing government budgeting for donor projects. Budget weaknesses experienced under the EA-RTTDFP, that are in-country challenges, include delays in budgeting, lack of budget provisions, budget cuts, delays in amendments to the budget when need arises and underfunding that has delayed project implementation at the Authority. This is a portfolio-level issue that is being addressed through policy reform dialogue between NT and the World Bank.

Accounting

Accounting System

3. The Authority acquired MS Navision, which is in the second year of implementation with some support from the provider. The project will also be managed under the system complemented by an Excel spreadsheet when reporting to the World Bank in cases where the reporting format to the World Bank is not consistent with ICTA Chart of Accounts. This is considered adequate for the project requirements.

Staffing

4. The Finance and Accounting Directorate is headed by the Deputy Director, Finance and Accounts and is supposed to be assisted by Assistant Director Finance and Assistant Director Accounts whose positions are currently vacant, though this will not affect the project implementation. The other staff include the Principal Finance Officer, Principal Accountant, Finance Officer and two Accountants. The project accountant assigned to the ongoing World Bank project is experienced in World Bank FM arrangements and further capacity building will be provided during project implementation. The staffing arrangement with planned capacity building sessions is considered adequate for the project implementation.

Internal Controls

Financial Management Manuals

5. ICTA has an entity *Finance Policy and Procedures Manual* approved by the Board in February 2020 which guides the financial operations and serves as reference and training resource for staff. In addition, the ICTA has developed a comprehensive project-specific *Financial Management Policies and Procedures Manual* for the project that will complement the PIM to specifically guide in the project's FM arrangements.

Bank controls

6. The entity shall maintain an up-to-date cashbook for the project bank account, recording receipts and payments for the Project. The project account shall be opened in a financial institution acceptable to the World Bank. The signatories to the account shall be defined in the FM Procedures and Policies manual as part of the PIM.



Bank Reconciliation

7. The project accountant shall prepare monthly bank reconciliation in line with the FM policies and procedures.

Internal Audit

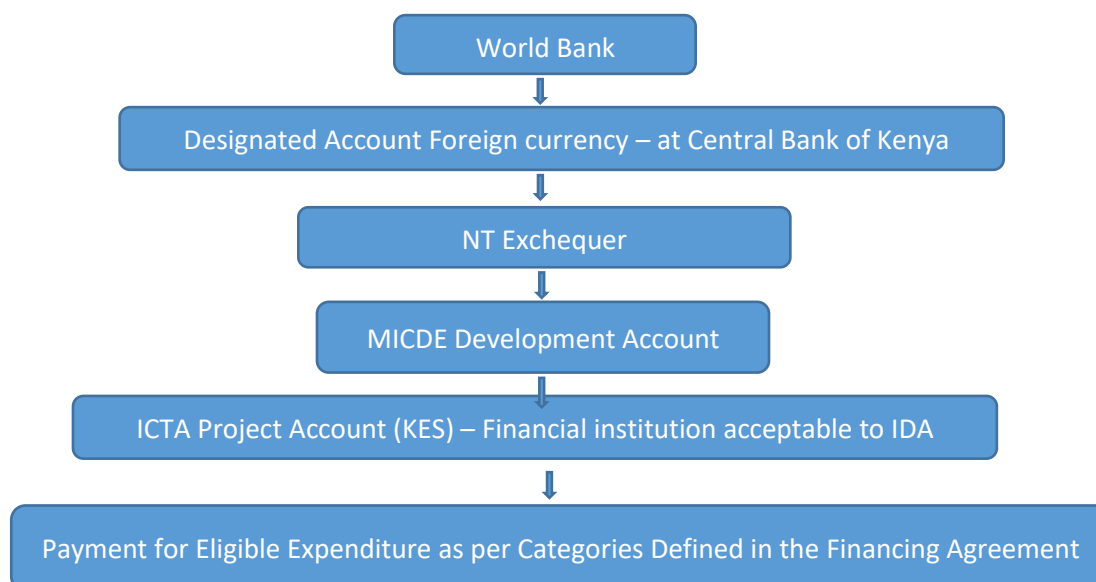
8. The Authority has an internal audit department that is currently headed by the Deputy Director Internal Audit, assisted by the Senior Internal Auditor and two other internal auditors, one of whom is assigned to the projects being implemented by the Authority. The positions of Assistant Director Internal Audit and principal Internal Audit are currently vacant though this will not affect the project. The Internal Audit does not yet have an approved Internal Audit Manual.

9. The Department conducts risk-based audits following the annual internal audit workplan which will also include the Project. In addition, the department shall carry out annual risk-based fiduciary review of the project as shall be defined in the FM Policies and Procedures Manual. The ToRs for the internal audit fiduciary reviews will be prior cleared by the Bank. The assessment noted that there are delays by the management in the implementation of some entity audit recommendations, thus exposing the Authority to the identified risks or noncompliance. Capacity building sessions on scope and reporting will be carried out during project implementation.

Funds Flow arrangements

10. **Banking arrangements:** The Project will be required to open a foreign currency Designated Account (DA) in a financial institution acceptable to the World Bank, such as the Central Bank of Kenya, through which funds from the World Bank shall be deposited. The Authority will open a local currency project account in a financial institution acceptable to the World Bank through which all project payments will be made.

11. **Flow of funds:** The chart below shows how funds will flow:





12. Funds from the IDA Credit account will be disbursed to the foreign currency Designated Account (DA) managed by the National Treasury (NT). The funds will then be transferred to the local currency segregated project account through the Exchequer at the NT from where eligible payments will be made. Signatories to the local currency project bank accounts will be defined in the FM Policies and Procedures Manual cleared by the World Bank as part of the PIM.

13. **Funds flow arrangements:** An initial advance will be given to the project upon effectiveness of the Financing Agreement, based on the DA ceiling indicated in the Disbursement and Financial Information Letter (DFIL), in accordance with the FM procedures manual. Thereafter, the project will be required to replenish their designated account by submitting electronic withdrawal applications to the World Bank based on a Statement of expenditure. The World Bank will process the withdrawal application for replenishment of the Designated Account. Payments regarding project eligible expenses will be made from the local currency project account. Other disbursement methods that will be available to the project are direct payment, reimbursement, and Special Commitments.

Financial reporting arrangements

14. The Authority will prepare and submit calendar quarterly unaudited interim financial reports (IFR) in form and content acceptable to the World Bank. Acceptable IFRs will be submitted to the World Bank as soon as available after the end of the quarter but, in any case, not later than 45 days after the end of the calendar quarter to which it is related. The IFRs will be submitted through Client Connection. The ICTA will also prepare and submit annual audited project financial statements as per the format acceptable to the World Bank. The financial statements will be prepared in accordance with the International Public Sector Accounting Standards (IPSAS). The financial statements shall be submitted to the Office of the Auditor General for audit by September 30th of each year.

External Audit

15. The Authority will be audited by the Office of the Auditor General, based on audit TORs approved by the World Bank. The audit will be conducted in accordance with the International Standards on Auditing. The audited financial statements together with the management letter will be submitted to the World Bank within six months after the end of the financial year.



Procurement

Implementation Support Plan

16. **The proposed strategy and approach for implementation support has been tailored to strengthen the capacity of the PIU and other supporting MCDAs.** There will be strong coordination between the World Bank and ICTA in relation to day-to-day administrative management and implementation of the project. Formal implementation support missions and field visits will be carried out, jointly with the Government, every three to six months. Initially, these missions will focus on strengthening of project management and fiduciary capacity at ICTA, development of operational guidelines, and preparation of the first phase of activities planned. Later, missions will focus on reviewing implementation progress, achievement of results, and sustainability. A midterm review will be carried out within 30 months after credit effectiveness to take stock of progress and make any needed adjustments to project design. Targeted technical, FM, and procurement-related review missions will be undertaken. Ongoing dialogue with the PIU and client, including through videoconferences and email, will ensure continuous support and monitoring. The implementation support plan will be reviewed on an annual basis to ensure that it is adequately aligned with support needs. The estimated level of annual support required by the World Bank team is identified in tables A1 and A2.

17. Implementation support will be organized along three dimensions:

- a) **Sectoral and technical aspects**, including (a) general task team management; (b) support on design and operations of subcomponents; and (c) technical support to ensure program delivery across components. This will involve respective technical lead staff in addition to daily project implementation support from the team.
- b) **Continuous fiduciary and compliance oversight**, including regular implementation support and supervision oversight of procurement, FM, safeguards, and M&E.
- c) **Donor coordination and partnership support.** The WBG will support the PIU in using the project as a platform for effective partnerships and donor coordination. This entails task team leadership in facilitating any interinstitutional dialogue and convening partners to leverage resources under the project in a way that is complementary to other donor initiatives. Consultations will include technical discussions with development finance institutions (DFIs) active in the region, notably the Africa Development Bank (AfDB), Asian Infrastructure Bank (AIIB), European Investment Bank (EIB) and other donor partners. This supports sustainability and helps maximize development finance.

Table A1. Implementation Support and Skills Required

Time	Focus	Skills Needed	Resource Estimate (US\$)
First twelve months	- Technical assistance for strategies, studies, and implementation roadmaps - Technical assistance for development of terms of reference/bidding docs for major activities - Support for establishment of strategic partnerships, donors, civil society, and technical organizations.	- TTL - Technical specialists - digital infrastructure and digital skills; data protection specialist; governance specialist - Fiduciary specialists (FM/procurements) and environmental and social framework (ESF) focal points including gender	450,000



Time	Focus	Skills Needed	Resource Estimate (US\$)
Annually	- Ongoing technical support for Components 1–3 - Fiduciary, safeguards, and project management support - Continued policy dialogue/support for sector reforms, link to WBG policy lending	- TTL - Technical specialists - digital infrastructure and digital skills; data protection specialist; governance specialist - Fiduciary specialists (FM/procurements) and ESF focal points including gender	400,000

Table A2. Skills Mix Required

Skills Needed	Number of Staff Weeks (per year)	Number of Trips (per year)
Co-TTLs	15	3 (one co-TTL local)
Digital infrastructure specialist	12	2
Digital skills specialist	12	2
Data protection/Cybersecurity specialist	8	2
Digital government specialist	8	2
Education specialist	8	2
Governance specialist	6	Local
Procurement specialist	6	Local
FM specialist	5	Local
Environment safeguards specialist	3	Local
Social safeguards specialist	3	Local
Gender specialist	2	Local
Administrative support	3	Local