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Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 25-Feb-2023 | Report No: PIDA32362

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Project Name	Parent Project ID (if any)
Kenya	P170941	Kenya Digital Economy Acceleration Project	
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
EASTERN AND SOUTHERN AFRICA	03-Mar-2023	27-Apr-2023	Digital Development
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Kenya	Information Communications Technology Authority (ICTA), Ministry of Information, Communications and Digital Economy (MICDE)	

Proposed 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

1. Digital Infrastructure and Access
2. Digital Government and Services
3. Digital Skills and Markets
4. Project Management
5. Contingent Emergency Response Component

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

Environmental and Social Risk Classification

Moderate

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

Introduction and Context

Country Context

1. **Kenya is a young and urbanizing country with a mean age of 20.1 years and a growing population that reached 53.0 million in 2021 having increased rapidly over the previous 30 years.** 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. A growing number of better-educated and healthier Kenyans are entering the labor force and contributing more than any other factor to the country's rising GDP which stood at 6.0 percent in the first half of 2022. This number is projected to grow by 5.2 percent through 2024. 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. Kenya's economy showed considerable resilience during the COVID-19 pandemic. The economy rebounded at the slowdown of the pandemic with a 7.5 growth in GDP in 2021. This growth was sustained through 2022 with a major contribution from Services and Industry.

3. **However, Kenya continues to be affected by a series of overlapping crises**. Global crises include the COVID-19 pandemic and the fallout from the Russian 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/Kalobeyei 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.

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). 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.

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 2015–19). This presumes the Government's continued implementation of critical reforms and the necessary fiscal consolidation (supported by prospective Development Policy Financing [DPF] 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 line 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 among the non-poor.** 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 just up to 20 percent above this threshold—and at risk of falling back into poverty following an adverse shock—increased as well to 14 percent in 2019. 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. The COVID-19 pandemic is estimated to have increased Kenya's poverty rate by around 4 percentage points. Of concern is that the poverty elasticity of growth, already lower than other African LMICs, has slowed in recent years from 0.43 during 2005–15 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. 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*' recognizes that information technology enabled services (ITES) 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.** 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 higher. Nationally, broadband penetration stood at 60.0 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. The country had a 70.6 percent mobile money penetration in September 2022 (the highest in the world), and a thriving tech ecosystem. Kenya is ranked third in the continent in the 'Networked Readiness Index' 2022 rankings. 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 (RECs), 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. 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 economy and society.** A World Bank Digital Economy Diagnostic study, published in 2020, 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 tech startups and IT firms to grow and achieve its vision to be one of the premier digital investment and innovation hubs on 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, 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. 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.

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.

- 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, including KENET, ICTA (with support from Huawei), the CA (using funds from the Universal Service Fund [USF]), and the UN Giga 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 six 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, 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 (KPC) and the recently renationalized Telkom Kenya—and private operators, including Liquid, Safaricom, and 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.

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 14 to provide for redundancy and resilience, which would complement infrastructure investments in South Sudan and Somalia financed by the upcoming World Bank (WB) financed Eastern Africa Regional Digital Integration Project (EARDIP, P176181). 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* initiative that centralizes shared software license regimes, central hosting of emails by ICTA, and a unified communications system (UCS)

that was rolled 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 WB-funded project Kenya Transparency and Communications Infrastructure Project, 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. 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. Kenya is ranked in the second category of countries (B) in the 2022 GovTech Maturity Index of the World Bank. 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 2020–21 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 Privacy Shield, 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 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. 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) and the flagship Digital Literacy Program (DLP), 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 training and content to support digital delivery of the new curriculum. Further, there is no equivalent DLP for junior high or 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 Program or the Kenya Youth Employment and Opportunities Project (KYEOP, P151831), 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. Kenya elected a 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.

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. Of 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). 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 them to 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. 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 (SEM) as women conform to social norms of not pursuing technical careers. Data suggests that only 17 percent of Kenyan students pursuing degrees in science, technology, engineering, and mathematics (STEM) subjects are women.

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 for 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. Initiatives like the recent African Continental Free Trade Area (AfCFTA) and the implementation of EAC's E-Commerce Strategy have the potential to remove bottlenecks to intra-regional digital trade and e-commerce. 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.

Proposed Development Objective(s)

Development Objective(s) (From PAD)

25. *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*

Key Results

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

- Increase in number of people accessing the internet (of which, number 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);
- People, including 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

27. **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.

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

Table 1. Project structure, with funding and estimated PCM

Component	Subcomponent	Budget (US$, million)	National Allocation (US$ million)	Regional Allocation (US$ million)	Potential PCM (US$, million)
1. Digital Infrastructure and Access US$215 million + US$100 million estimated PCM *Expanding broadband coverage and access and enhancing the enabling environment for the digital economy*	1.1: Extending the Reach of the Backbone Network (middle mile)	60	60	0	60
	1.2: Increasing Last Mile Connectivity for Education	90	90	0	30
	1.3: Enhancing Government Connectivity	30	30	0	0
	1.4: Strengthening the Digital Enabling Environment	5	5	0	0
	R1.5 Enhancing Regional Digital Infrastructure	30	10	20	10
2. Digital Government and Services US$95 million *Increasing efficiency and security in government operations*	2.1: Digitizing Selected Government Services	35	35	0	0
	2.2: Developing the Critical Enablers for Digital Government	45	45	0	0
	R2.3: Enhancing Regional Data Governance	15	5	10	0
3. Digital Skills and Markets US$65 million	3.1: Supporting Digital Literacy	25	25	0	0

Component	Subcomponent	Budget (US$, million)	National Allocation (US$ million)	Regional Allocation (US$ million)	Potential PCM (US$, million)
Enhancing digital skills, device affordability and eCommerce to support the digital economy	3.2: Enhancing Employment-ready Digital Skills	15	15	0	0
	3.3: Promoting Device Affordability	15	15	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		390	350	40	100

Component 1: Digital Infrastructure and Access (US$215 million, including US$185 million from IDA SUW; US$10m from national IDA and US$20 million from Regional IDA, with an additional US$100 million expected in unguaranteed commercial financing)

29. **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). The project design uses public infrastructure 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.

Subcomponent 1.1: Extending the Reach of the Backbone Networks (middle mile) *(*US$60 million from IDA SUW with an additional US$60 million expected in unguaranteed commercial financing)

30. **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

USF 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 2022–2032. 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.

31. **Among the many possible models for combining public and private funds for network roll-out, 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**. 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, KETRACO, KPLC, KPL etc.,) and the private sector (e.g., Safaricom, Liquid Telecom, FON etc.). A feasibility study has been undertaken, with support from the Korea-World Bank Partnership Facility (KWPF), to assess the current 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 Government.

32. **Significant gains for climate change mitigation and adaptation will be achieved** as this additional cable infrastructure will facilitate a reduction in energy consumption, a reduction in requirements for physical travel (for instance, because online meetings and transactions can substitute for in-person ones), a reduction in e-waste, other cost savings, and the creation of a more resilient and climate-proof infrastructure. 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. 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 into the commercialization of the existing NOFBI infrastructure** 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$90 million from IDA SUW with an additional US$30 million expected in unguaranteed commercial financing)*

33. **This subcomponent will support the expansion of last mile internet connectivity for priority locations in the education sector, 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, 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. 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 WB 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 KENET, the national Research and Education Network (REN).

34. **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, and also by facilitating service delivery in times of emergencies, requiring remote operations. 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.

35. 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.
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, 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, 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.

Subcomponent 1.3: Enhancing Government Connectivity *(US$30 million from IDA SUW)*

36. **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 services). 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).

e) Prepurchase of internet capacity also for selected **public WiFi hotspots**, typically in marketplaces, schools 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 from IDA SUW)*

37. **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 areas 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$30 million IDA, of which US$20 million from r IDA, US$10 million from national IDA with an additional US$10 million expected in unguaranteed commercial financing)*

58. **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 East Africa Regional Digital Integration Program (EARDIP; P176181), a US$172m 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. 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 14, 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 peering. 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 CA 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 building on 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$95 million IDA, of which US$80 million from IDA SUW, US$5 million from national IDA and US$10 million from Regional IDA)

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

Subcomponent 2.1: Digitizing Selected Government Services *(US$35 million from IDA SUW)*

39. **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 accessibility would be applied to facilitate access for PWDs. 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-shop" for government information and services; (ii) **the selection of key government services to be reengineered and automated.** In line with the areas of KDEAP focus**,** this may include the National Education Management Information System (NEMIS) and the e-Assessment system of the Kenya National Examinations Council (KNEC)**;** (iii) **reengineering and onboarding these services** to the existing improved e-service delivery platforms**;** and (iv) **assisting the Huduma Kenya Secretariat** to expand its multichannel service model, with improved access for PwDs;

Subcomponent 2.2: Developing the Critical Enablers for e-Government *(US$45 million from IDA SUW)*

40. **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.

41. **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) Development of a comprehensive **Directory of Government services**, 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, **reengineering of key business processes** to improve efficiency and adaptation to new technologies and systems, including detailed mapping of the "As Is" and "To Be" states. This will include a focus on customer relationship management and addressing customer feedback including personalized support and timely resolution of customer complaints;
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).

42. In addition to the Enterprise Architecture, **this subcomponent will facilitate strengthening 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.

43. **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. As part of this initiative, it is proposed to establish a monitoring system to track online harassment, particularly for female internet users.

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

44. **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 ODPC** 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) 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, including for the education sector covered in Component 1, and capacity building for the ICTA Information Security team.
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$65 million, of which US$50 million from IDA SUW, and US$10 million from regional IDA and US$5 million from national IDA)

45. **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, 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, 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.

Subcomponent 3.1: Supporting Digital Literacy *(U$25 million from IDA SUW)*

46. **This subcomponent, with MoE as an implementing partner, will strengthen digital literacy and digital skills programs including through the rollout of Phase 3 of the national DLP to secondary schools, junior high 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 secondary schools, junior high schools, TVETs and teacher training colleges including through the provision of ICT equipment and tools in schools (for example, laptops, tablets, other digital devices).
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)*

47. **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 2030. 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. 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 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.
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 3.3a: Promoting Device Affordability *(*US$1 million from IDA SUW)

48. **This subcomponent will complement the work on digital skills development by 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. Devices to be distributed 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; and
c) persons with disabilities.

49. Activities to be financed include the following:

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, such as HELB and SLPP, and develop the design for the affordable device financing scheme. The study will seek to determine the modalities of the financing scheme, following WB rules and guidelines.
b) Once the study is complete, and any necessary assessments of financial intermediaries have been carried out, funds will be provided, estimated at US$14 million, towards the **establishment of a financing scheme** to facilitate equipment purchase by targeted groups. The financing scheme will leverage private sector initiatives and will work with established financial intermediaries and mobile network operators. All financial instruments leveraged under the scheme will adhere to the WB'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 subcomponent.

Subcomponent 3.3b: Unallocated subcomponent *(*US$14 million from IDA SUW)

50. This funding would be allocated to the device affordability activity during Phase 2 of the program, once the financial intermediary compliance review is completed. However, in the event that the compliance review can be completed before Phase 2 starts and the program restructured, or if Phase 2 is delayed for any reason, the funds are retained here as an unallocated subcomponent.

Regional Subcomponent R3.4: Positioning Kenya as a Regional Digital Hub *(US$10 million including US$5 million from Regional IDA and US$5 million from National IDA)*

51. **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. 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 of which US$5m from IDA SUW, and US$5 million from Regional IDA)

52. 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 safeguards 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. 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 Subcomponents R1.5, R2.3 and R3.4. Implementation arrangements are discussed in more detail below.

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

53. A Contingent Emergency Response Component (CERC) is added to the project structure. This will have an initial zero value but 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.

Legal Operational Policies

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

Summary of Assessment of Environmental and Social Risks and Impacts

E. Implementation

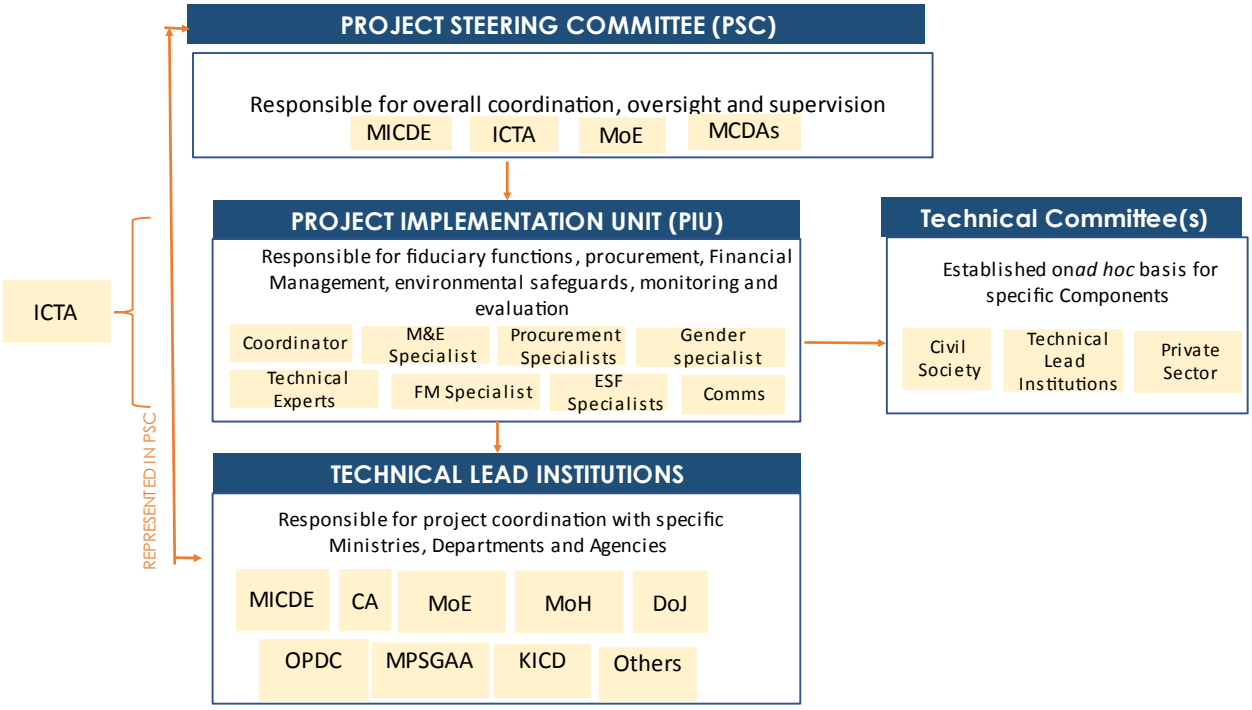
Institutional and Implementation Arrangements

54. **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 WB-financed projects for almost two decades, dating back to the KTCIP (P094103). A current PIU supports a number of 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 transfers of Government staff and project-financed recruitment of specialists, as well as 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 safeguard 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 (within three months of project effectiveness), at a minimum, with a project coordinator, procurement, FM, environmental and social safeguards specialists. Other 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.

55. **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 Infrastructure (MoI) and 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, and KICD. The project will form technical committee(s) (TC) with representatives from relevant MCDAs to ensure implementation across the MCDAs is well coordinated. The terms of reference (TORs) of these TC(s) are detailed in the PIM.

56. **A Project Steering Committee (PSC) will be set up to provide strategic oversight and governance for the project**. The PSC 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) on an *ad hoc* basis, notably by creating Technical Committee(s), as required. The mandate, procedures and terms for the PSC are detailed in the PIM.

Figure. Project Implementation Arrangements



CONTACT POINT

World Bank

Timothy John Charles Kelly
Lead Digital Development Specialist

Cecilia Maria Paradi-Guilford
Senior Digital Development Specialist

Borrower/Client/Recipient

Republic of Kenya

Implementing Agencies

Information Communications Technology Authority (ICTA)
Thomas Odhiambo
Project Coordinator
todhiambo@ict.go.ke

Ministry of Information, Communications and Digital Economy (MICDE)
Daniel Obam
Policy Advisor
info@ncs.go.ke

FOR MORE INFORMATION CONTACT

The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 473-1000
Web: http://www.worldbank.org/projects

APPROVAL

Task Team Leader(s):	Timothy John Charles Kelly Cecilia Maria Paradi-Guilford

Approved By

Practice Manager/Manager:		
Country Director:	Camille Anne Nuamah	26-Feb-2023