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Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 21-Apr-2023 | Report No: PIDC35832

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Eastern and Southern Africa	P180931		Eastern Africa Regional Digital Integration Project SOP-II (P180931)
Region	Estimated Appraisal Date	Estimated Board Date	Practice Area (Lead)
EASTERN AND SOUTHERN AFRICA	Sep 18, 2023	Nov 15, 2023	Digital Development
Financing Instrument	Borrower(s)	Implementing Agency	
Investment Project Financing	Ministry of Finance, Ministre de l'Economie et des Finances, Chargé de l'Industrie	Ministry of Innovation and Technology, Ministry of Communications, Posts and Telecommunications (MCPT)	

Proposed Development Objective(s)

The Series of Projects (SOP) development objective is to promote the expansion of an integrated digital market across Eastern Africa by increasing cross-border broadband connectivity, data flows and digital trade in the region.

Phase II development objective of the SOP is to advance digital market integration in the Eastern Africa region by increasing affordable access to regional broadband connectivity and strengthening the enabling environment for cross-border digital services.

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	130.00
Total Financing	130.00
of which IBRD/IDA	100.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	100.00

IDA Credit	100.00
Non-World Bank Group Financing	
Commercial Financing	30.00
Unguaranteed Commercial Financing	30.00

Environmental and Social Risk Classification	Concept Review Decision
Substantial	Track II-The review did authorize the preparation to continue

B. Introduction and Context

Country Context

1.   **The Eastern Africa[1] region, spanning from Sudan to Tanzania, is home to some 384 million people, of which the majority reside in rural areas and over one third live below the poverty line.** The region's population is growing rapidly at 2.4 percent annually,[2] and is expected to increase by 30 percent by 2030 and double by 2050.[3] Roughly 33 percent of the population is under the age of 24 and this youth bulge creates challenges in relation to meeting future education and employment needs. Some 72 percent of the population in the region resides in rural areas,[4] where poverty rates are three times higher (at 40 percent) than in urban areas (at 15 percent). In total, an estimated 144 million people in the region live below the international poverty line of US$1.9 a day[5] across Eastern Africa.

2.   **The region is also highly vulnerable to the effects of climate change**. The 2019 Notre Dame Global Adaptation Index indicates that most countries in the region have high vulnerability and low readiness to combat the effects of climate change (e.g., Ethiopia is ranked as the 163/182 most vulnerable country to climate change and 151/192 least ready to support needed adaptation). The region's topography, high elevation along the rift valley and its long coastline, contributes to high climate variability and vulnerability. Rising temperatures and

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[1] Eastern Africa is taken to represent the countries included in both "East Africa" and the "Horn of Africa." Countries in East Africa include Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda which are members of the East African Community (EAC); and the countries in the Horn of Africa are Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda which are members of the Intergovernmental Authority on Development (IGAD). Kenya, South Sudan and Uganda are members of both EAC and IGAD.

[2] Population growth estimates are based on 2019 World Bank staff calculations, World Bank Indicators.

[3] UN World Population Prospects.

[4] Population, young and rural disaggregation estimates are based on 2019 World Bank staff calculations, World Bank Indicators.

[5] Poverty estimates are based on World Bank staff calculations and the latest available survey data: 2013 for Burundi; 2014 for Sudan; 2015 for Ethiopia and Kenya; 2016 for Rwanda, South Sudan, and Uganda; and 2017 for Djibouti and Tanzania. Data are unavailable for Eritrea. World Economic Indicators, Horn of Africa Regional Economic Memorandum (REM) 2021.

unpredictable rain patterns[6] have resulted in both severe flooding[7] and extreme droughts.[8] Countries in the region are thus on the frontline of the climate crisis – for example, Ethiopia faces severe food insecurity due a desert locust infestation combined with drought, wildfire and increased intensive rainfall events. Similarly, Djibouti is susceptible to the El Niño Southern Oscillation. Some border areas are exposed to high risk of coastal floods, and increased frequency of intense precipitation events have led to catastrophic floods. Lack of climate resilient infrastructure, including digital infrastructure, limits digitally enabled responses to climate events in affected areas, exacerbating existing vulnerability and limiting adaptation capacity.

3.   **The region includes countries with a history of conflict, fragility, and is characterized by widespread disparities in relation to key socio-economic indicators.** Approximately half the countries in the region are categorized as countries afflicted by fragility, conflict and violence (FCV), particularly those in the Horn of Africa (HoA) sub-region, on account of protracted periods of civil war, the presence of powerful non-state actors and characterized by weak political and governance capacity. Local conflicts, notably in the Tigray region of Ethiopia[9], and border disputes, for instance between Ethiopia and Sudan, have created a highly risky operating environment in the Horn of Africa. Resulting insecurity continues to deter private investment in infrastructure. This, coupled with low average revenue per user base and severe foreign exchange shortages have created an unfavorable environment for further private sector investment. Successive shocks and insecurity[10] have led to a record number of internally displaced people (IDPs) and refugees, particularly in borderland areas[11]. Widespread economic disparities are seen in the region, with GDP per capita ranging from US$835 in Ethiopia to US$1,705 in Kenya.[12] Countries also diverge widely in terms of their human and social development, with Human Development Index (HDI) rankings ranging from 173/187 for Ethiopia, 171/187 for Djibouti to 143/187 for Kenya.[13]

4.   **Despite its shared culture and common history, the Eastern African region remains poorly integrated and there is scope to expand both intra- and inter-regional trade, on the back of further market integration.** For example, Kenya and Ethiopia, two of the biggest economies in Eastern Africa which also share a border,

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[6] East Africa experiences some of the largest interannual rainfall variations in the world and there are many different drivers of this variability, such as the El Nino or Indian Ocean Dipole climate patterns (Camberlin, 2018).

[7] About 30,000 people are annually affected by adverse effects of floods with the peak realized in 2019 when 250,000 people were affected. Source Relief Web.

[8] In the past 10 years alone, the Horn of Africa has endured three severe droughts (2010-11, 2016-17, and 2020-22) and 19.4 million people have been impacted by food insecurity, malnourishment, and loss of livelihood on account of successive droughts. Source: Relief Web, 2002. "Horn of Africa Drought: Regional Humanitarian Overview & Call To Action".

[9] The conflict in Ethiopia during the past two years has been of an unprecedented scale. Fighting initially broke out in Tigray in November 2020 and by June 2021 had expanded to the neighboring Amhara and Afar regions. Although fighting has been concentrated in the north, pockets of older conflicts also re-emerged in Benishangul Gumuz, Oromia and in Konso in the Southern Nations Nationalities and Peoples' regions (SNNPR). As a consequence, around 2.2 million people have been displaced and over 20 million people are reliant on humanitarian assistance. Although the conflict is ongoing in some areas, particularly in the Oromia region, the signing ofa historic Peace Agreement between the central Government of the Federal Democratic Republic of Ethiopia and the Tigray People's Liberation Front (TPLF) on November 2, 2022 paves the way for an equitable and inclusive recovery.

[10] Including recent conflict in the Tigray region in Ethiopia (2020-22), military takeover in Sudan (October 2021), ongoing localized conflicts in territories within Somalia and South Sudan, and onset of natural calamities such as droughts and floods prevalent in the HoA region.

[11] The region reported 5 million refugees and asylum seekers, 13 million IDPs with estimated 23,000 refugees and 11,000 asylum seekers in Djibouti, and a dramatic increase in IDPs in Ethiopia following the outbreak of conflict in the northern part of the country around the Tigrayan region with people displaced or seeking refuge on account of political conflict, natural disasters, and internal conflict. Operational Update UNHCR.

[12] GDP per capita (Constant 2015 US$) estimates are based on 2020 World Bank staff calculations and the latest available survey data.

[13] HDI ranking data are based on UNDP 2019 estimates (Human Development Index).

barely traded with one another though the 2021 market entry into Ethiopia of Kenyan-owned Safaricom is the country's most significant foreign direct investment to date, and may pave the way for growing bilateral trade[14]. Djibouti's ongoing infrastructure projects, such as the construction of a ship repair yard, a new oil jetty at the Port of Damerdjog and new hospitality infrastructure, are expected to give the country's main port a competitive advantage over neighboring ports thereby cementing the country's position as a regional trade and logistics hub. Considering the opening of Somaliland's port of Berbera, Djibouti's infrastructure investments are integral for ensuring countries such as Ethiopia maintain long held trading partnerships[15].

5.   **The Eastern Africa region is looking to leverage the emerging digital economy to accelerate economic integration and trade facilitation, and regional economic communities (RECs) are stepping up their role as facilitators to advance integration of the digital markets.** Countries in the region stand to gain from economies-of-scale, network effects and spillovers, as a means to boost growth and job creation[16]. On this basis, the African Union (AU) and RECs such as the EAC, and the Intergovernmental Authority on Development (IGAD), to which both Ethiopia and Djibouti serve as member states at the sub-regional level, have taken steps to support the incremental integration of regional markets. The recently initiated African Continental Free Trade Area (AfCFTA) has the potential to remove many of the bottlenecks to intra-regional trade observed. It is expected to result in welfare gains amounting to US$1.8 billion, generating 2 million new jobs and lifting some 4.8 million people out of poverty[17]. However, talks on digital trade are yet to be launched, and their agreement and implementation may take several years. While Djibouti and Ethiopia have both ratified the agreement, other countries, such as South Sudan, are yet to do so.

B. Sectoral and Institutional Context

Regional connectivity market: Lack of affordable and accessible broadband connectivity

6.   **The Eastern Africa region currently has pronounced infrastructure disparities, notably in terms of broadband deployment, which constitute a fundamental barrier to developing a more digital regional market integration.** With Djibouti being located by the Red Sea, which is a thoroughfare for many major international submarine fiber optic cables, and already connected with nine submarine cables and expected to increase to eleven in the coming years, the region is set to benefit from growing access to international capacity in the years ahead (first mile).[18] However, there are areas in the region that have significant infrastructure deficits such as Somalia and South Sudan and even in countries such as Kenya and Uganda where rural coverage is still limited. While Ethiopia has an existing country-wide network, much of it is thought to be poorly maintained or obsolete and hence requiring upgrades or replacement. Ethiopia not only needs additional routes to new submarine cables in order to meet the growing demand for data and internet services of its 120 million population, but it

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[14] https://www.reuters.com/world/africa/ethiopias-ethio-telecom-launch-mobile-money-service-2021-05-07/.

[15] Financial Times. 2021. "Somaliland gears up for 'healthy' battle of ports: self-declared state due to compete head-to-head with Djibouti for Ethiopia's trade." https://www.ft.com/content/f928ecda-2c96-4957-ae3c-94be56385fcf

[16] World Bank. 2018." Single *Digital Market for East Africa"* estimated that further digital market integration within the East African Community (EAC) has the potential to boost the region's GDP by up to US$2.6 billion and create up to 4.5 million new jobs.

[17] UNECA (United Nations Economic Commission for Africa). 2020. *Creating a Unified Regional Market: Towards the Implementation of the African Continental Free Trade Area in East Africa*.

[18] A new generation of submarine fiber optic cables will be deployed along the east coast of the continent in the next few years, significantly increasing available international internet bandwidth. These cables will provide the African market access to well over 500 Tbit/s of potential additional capacity, far more than the estimated demand of 7.5 Tbit/s by 2030.

also requires significant upgrades, replacement and rehabilitation of existing terrestrial links, including those damaged by the recent conflict, within its country borders (map 1). Terrestrial fiber backbone infrastructure is essential to transport internet bandwidth capacity from the coast to rural areas and landlocked countries like Ethiopia and South Sudan. Landlocked countries generally pay[19][OBJ] in coastal versus landlocked countries thus range from US$4.64 in Kenya to US$21.06 in South Sudan. There is a need to ensure broadband network resiliency at the regional level which will in turn ensure adequate provision of services at the country level (map 1).

7.   **High prices and low adoption of broadband internet services, whether fixed or mobile, stem from lack of competition in the telecommunications markets.** While low retail prices for mobile communication services have led to widespread adoption of basic voice services (2G and 3G), higher wholesale and retail prices for broadband internet (using fixed fiber and 4G+ mobile network technology) continues to hinder access. The Eastern Africa region is home to countries with varying levels of connectivity infrastructure, which explains current price, performance, and broadband penetration differentials – with the latter ranging from 22 percent in Ethiopia, 37 percent in Djibouti to 48 percent in Kenya.[20] In Djibouti, prices are higher (approximately 6 percent of GNI) in large part due to a pricing and product environment that has been shaped by monopolistic practices under the state-owned operator, Djibouti Telecom[21]. In Ethiopia, despite the entry of a new full-service telecom operators, Safaricom, there have been setbacks to the market liberalization process, due in part to resistance to interconnection and infrastructure competition on the part of the incumbent. There is now a renewed push to attract a third operator and a relaunch of the incumbent's privatization process by offering a higher stake (45 percent from the original proposed 40 percent). Plans to introduce third-party infrastructure providers, such as cell tower companies and wholesale fiber network companies are unclear, though this would further assist in the development of facilities-based market competition in telecoms. In both countries, continued efforts to open-up the market to private participation has lacked momentum, keeping the status quo on the dominance of Djibouti Telecom and Ethio Telecom.

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[19] ITU (International Telecommunication Union). 2021. *Measuring Digital Development: ICT Price Trends* Geneva: ITU.
[20] Penetration rates are defined as active broadband subscriptions (mobile + fixed) per 100 inhabitants (ITU 2020).

Map 1: Optimizing the regional networks of the Horn of Africa
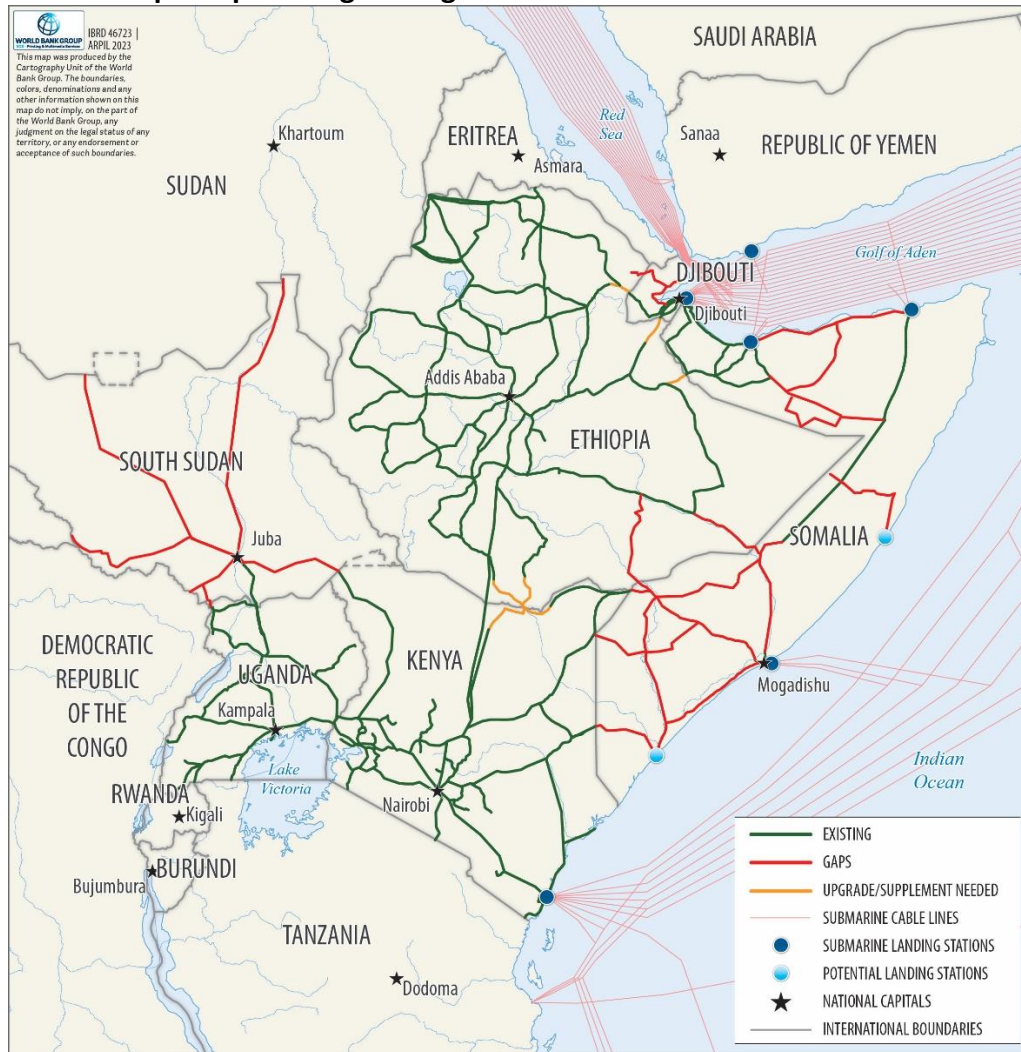
8.   **Nascent telecommunications regulatory regimes in the region are gradually putting in place a regulatory framework conducive to competition; however, this is not happening fast enough to aid the development of the digital economy.** For example, Somalia, Ethiopia, and Djibouti have only recently established their industry regulators for the ICT sector, in 2018, 2019 and 2021[21], respectively. By contrast, Kenya benefits from an advanced modern authority, in operation since the 1990s. This leaves the region with a fragmented and contrasting telecoms sector regulatory and market landscape, which includes both the last remaining telecom monopoly (Eritrea) and two of the most competitive markets in Africa (Kenya and Somalia). Between these extremes is Ethiopia, which in 2019 passed a historic new law liberalizing its telecoms market and Djibouti with the decision to open Djibouti Telecom's capital in July 2021. Given these contrasts and capacity gaps, there is a need to both strengthen and harmonize the existing policy, legal and regulatory environment conducive to wider connectivity infrastructure investment and a more integrated connectivity market. At a wholesale level, this would for example mean interoperability nationally and between backbone networks

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[21] In the case of Djibouti, a multi-sector regulator, ARMD, was created covering both ICT and energy, but it is not yet fully operational.

across adjacent countries, whereas at a retail level this could mean extending existing regional roaming initiatives, building on existing initiatives such as the EAC's One Network Area (ONA).[22]

9.   **The practice of deploying and leveraging fiber alongside other linear infrastructure, such as power grids and roads, needs to be encouraged to cost-effectively bridge existing network gaps.** In Ethiopia, Ethio Telecom has approximately 22,000km of fiber, of which around 5,000km is leased from the Ethiopia Electric Power (EEP) company. Power transmission lines carry optical ground wire (OPGW), which provides a communications path for internal as well as third party communications. The region is expected to see more high transmission lines deployed in the next several years – such as the two lines from Mogadishu[23] – which could serve as key sections of the regional backbone network. Many countries have also put in place the "dig once policy", which requires roads and telecom service providers to install their infrastructure at the same time, in the same right of way and in many cases share the reduced cost of installing the infrastructure.[24]

10.   **Supporting universal digital inclusion in the region will also require a push to expand last mile service provision to underserved or unserved rural and borderland areas.** Telecom operators are still focusing on improving their infrastructure and gaining market share in urban centers, where there is latent demand for broadband services. Weak backbone network development in countries such as Ethiopia, Somalia, Djibouti and South Sudan, have also limited prospects for deployment of access networks beyond urban centers. This has left many rural and borderland areas off the digital grid, where the investments incentive is not strong enough to propel deployment of new and/or upgraded networks to expand access. In recent years, borderland areas in southwestern Ethiopia and northern South Sudan have also seen the number of camps for internally-displaced persons (IDPs) and refugees, and their communities, increase significantly. Many of these areas remain underserved with digital infrastructure. As borderlands can also be hotspots for cross-border trade, weak access to broadband in these areas hamper prospects for digitally enabled commerce.

Regional data market: Absence of effective, trusted, and secure data transmission, storage, and governance

11.   **Data, as the means of transporting digital content, information, and enabling digital transactions, lies at the heart of creating a digital market.** A thriving regional digital market thus requires enabling frameworks that ensure data can be securely, seamlessly and cost-effectively exchanged. In turn, this enables trade in digitally enabled services such as digital financial services (DFS) and eCommerce.[25] 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 (APEC) Cross-Border Data Rules. Adequate protection of personal and sensitive data is also critical to instill trust in digital systems and services if it is to be adopted widely across the region. In terms of data governance, Ethiopia and South Sudan score significantly lower than Kenya or Rwanda in terms of enablers in the Global Data Regulation Diagnostic Survey of 2020-2021, and Kenya, Rwanda and Tanzania score lower than other African

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[22] In 2014, the EAC made a joint commitment toward the One Network Area, which initially eliminated voice roaming charges in Kenya, Rwanda, Uganda, and South Sudan and in 2015 expanded its efforts to encompass SMS, data, and mobile money transactions.
[23] To be financed through the pipeline Horn of Africa Regional Power System Transformation Project (HoA RPSTP) (P179036).
[24] A recent example includes the Eldoret to Nakadok/Nadapal highway in Kenya for which fiber optic cables were co-built along a 600km section of the highway. The project is nearing completion and most of the fiber network is active.
[25] World Bank, World Development Report 2021: Data for Better Lives (Washington, DC: World Bank, 2021).

peers in terms of their data safeguards[26]. 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. Many countries in the HoA, including Ethiopia and Djibouti currently lack Data Protection Acts and related enforcement agencies.

12.   **The readiness of Eastern African countries to manage growing and evolving cybersecurity risks is mixed, which undermines trust in the regional digital environment.** While some countries in Eastern Africa, like Tanzania, Kenya, and Rwanda, appear above the global average in terms of cybersecurity preparedness, most countries in the region remain below the average. Notably, Burundi, Djibouti, Eritrea, and South Sudan rank among the bottom 15 countries in global cybersecurity capacity rankings.[27] Many of these countries still need to develop cybersecurity and cybercrime policies, laws, and strategies based on international best practice, but also the institutions that have the technical and operational capabilities to effectively identify, respond and mitigate cyber-incidents and protect critical information infrastructure. As digitization accelerates and risks evolve, regional frontrunners are also struggling to keep pace. Reportedly, in 2018, the cost of cybercrime was estimated to be $277 million in Ethiopia[28], while Kenya lost US$295 million[29], or 0.4 percent of its GDP, to malicious cyber-activities.

13.   **Most countries in the region also still lack the necessary data infrastructure to harness the socioeconomic gains associated with a dynamic data-driven market, and to enable data exchange both within and beyond the region**. Many countries in the region, particularly those in the HoA, still lack the requisite data infrastructure allowing data to be exchanged locally (e.g., via data centers and internet exchange points (IXP). Instead, they depend on overseas facilities requiring them to transfer and store large amounts of data internationally, adding transit costs and causing latency issues. Introduction of green data infrastructure and cloud capabilities in parallel to introduction of robust data governance and data protection frameworks is needed ensure safe and efficient storage, as well as management and public disclosure of data. Djibouti is an exception here because it acts as a natural regional transit hub for traffic because of its excellent connectivity from undersea cables, and it is in a position to exploit that position through improved data centers, primarily driven by private players, and content hosting facilities for the region.

Regional online market: Limited cross-border digital trade, payments, and e-services enablers such as digital skills

14.   **Intra-regional trade within Eastern Africa remains low, and cross-border e-commerce is negligible.** For example, Kenya's 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 relates to transport and travel services[30], suggesting that cross-border digital services are extremely low in the region, despite Kenya's leadership in the region in financial and telecom services. There is significant disparity in the national regulatory frameworks for conducting

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[26] World Bank, "Global Data Regulation Diagnostic Survey, 2020-2021," for World Development Report 2021: Data for Better Lives (Washington, DC: World Bank, 2021).

[27] ITU, Global Cybersecurity Index 2020 (Geneva: ITU, 2021).

[28] Cybercrime and Cryptocurrency: An Analysis of Cybercrime and Cryptocurrency Use in Ethiopia. Retrieved from https://www.unodc.org/documents/data-and-analysis/Studies/TOC_cybercrime_and_cryptocurrency_ethiopia.pdf

[29] Kenya Cybersecurity Report, Serianu, 2018.

[30] OECD-WTO Balanced Trade in Services dataset (BaTIS). Data for 2019.

cross-border transactions. For example, there is no framework currently in place to provide for the mutual recognition of digital signatures, requiring travel to sign international contracts in person. Other important regulations, such as on intermediary liability, are mostly absent in the region, creating uncertainty about the rights and obligations of cross-border services providers. Expanding trade, particularly e-commerce, and digital services delivery will require investments in key online service enablers such as DFS and harmonization of e-transaction frameworks.

15.   **Finally, many of the region's educational institutions, including universities, TVETs and schools, are not equipped to produce the requisite skills base to expand use of online services and fuel the development of the online market**. Foundational digital literacy is required to access online services, creating a growing userbase of digital savvy users, whereas more advanced digital skills are key to digital business development and service innovation. A 2019 study[31] found that access to high-speed broadband increases the probability of gaining skilled employment, shifting employment towards higher-productivity occupations. However, presently, both the availability and quality of digital literacy and skills training in the regional is limited, and universities across the region are ill-equipped with the requisite infrastructure, curricula and trainers to delivery effective training, as well as leverage online platforms to enhance training delivery. National Research and Education Networks (NRENs) in Ethiopia (EthERNet) and Kenya (KENET) provide key platforms for expanding access to broadband internet connectivity, exchange of online educational resources and collaboration on training to universities and TVETs, regionally. Through collaboration regionally, these networks can have an even larger impact.[32] In the HoA, South Sudan and Djibouti are yet to set-up NRENs.

Regional Digital Market: Need for enhanced regional digital cooperation and integration

16.   **Regional integration efforts are gaining momentum at the continental level and sub-regional levels and include initiatives to support digital market development and integration.** The AU is spearheading several regional initiatives[33] that will guide the continent's development path, which recognized the importance of digital development. The most comprehensive of these efforts is the signing of the AfCFTA in 2018[34] by 54 African countries, which envisages, *inter alia*, the adoption of continent-wide rules on e-commerce. RECs also have a prominent role in the harmonization of rules for digital businesses and the implementation of digital frameworks at the sub-regional level, often enabling initiatives that can be later expanded to a greater membership. Such RECs, including IGAD, are supported through the first phase of the Eastern Africa Regional Digital Integration Project towards these efforts. Recognizing the value of economic integration, actors within the international community are increasingly bullish in their efforts to support a regional harmonization agenda, as stakeholders such as the European Union and GIZ pursue *ad hoc* interventions on connected infrastructure and digital financial services.

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[31] Hjort J. and J. Poulsen. 2019. "The Arrival of Fast Internet and Employment in Africa,"

[32] In Eastern Africa, six countries—Kenya, Burundi, Ethiopia, Uganda, Rwanda, and Tanzania—have existing NRENs. These are a part of the regional alliance of NRENs known as UbuntuNet-East, which has helped reduce the costs of connectivity to the higher education sector through regional cooperation. World Bank, "The Role and Status of NRENs in Africa", World Bank, Washington, DC (2016).

[33] Such as the African Union's *Convention on Cybersecurity and Personal Data Protection* and *Dotafrica* initiatives, which highlight the continent's focus on ICT for development.

[34] As of March 2023, 46 of the 54 signatories have deposited their instruments of AfCFTA ratification.

C. Proposed Development Objective(s)

The Series of Projects (SOP) development objective is to promote the expansion of an integrated digital market across Eastern Africa by increasing cross-border broadband connectivity, data flows and digital trade in the region.

The phase II development objective of the SOP is to advance digital market integration in the Eastern Africa region by increasing affordable access to regional broadband connectivity and strengthening the enabling environment for cross-border digital services.

Key Results (From PCN)

B. Key Results

17.   **The achievement of the PDO will be measured by the following results indicators:**
   a) **Increasing affordable access to regional broadband connectivity**
      • Volume of international data traffic (Used international bandwidth in Gbit/s/per capita) (number)
      • Broadband penetration rate (active broadband subscriptions per 100 inhabitants) (mobile and fixed) (number)
      • Monthly price for 1 GB of Mobile broadband data (US$).
   b) **Strengthening the enabling environment for cross-border digital services**
      • Number of beneficiaries with new or improved income opportunities because of digital skills training, of which, female.

D. Concept Description

18.   **The first phase of the Eastern Africa Regional Development Integration Project series of project (EARDIP SOP-1; P176181; Board May 11, 2023)** provides financing for Somalia and South Sudan and grants to two RECs, the, East Africa Community (EAC) and Intergovernmental Authority on Development (IGAD). In addition, the Kenya Digital Economy Acceleration Program (KDEAP), approved by the Board on March 31, 2023 provides US$70m in additional regional funds for supporting Kenya's participation in these activities in parallel with EARDIP. This project concept note sets out plans for the second in the EARDIP series of projects (SOP-II) under which two more countries will be added – the Republic of Djibouti and the Federal Democratic Republic of Ethiopia. As all are within the Horn of Africa sub-region, both the two initial phases of EARDIP are considered a part of the broader Horn of Africa initiative. Other countries may be added to subsequent phases of the project, and a preparatory study is currently underway to assess missing broadband links across Eastern and Southern Africa.

19.   **By extending the pool of countries covered, SOP-II builds on, and will run parallel to, investments in SOP-I, further extending cross-border and backbone connectivity, data markets and online market environment in additional countries.** South Sudan and Somalia were chosen for Phase I as they had not yet benefited from any substantial IDA funding for their digital sectors. With the addition of Djibouti and Ethiopia, there is now a stronger case for regional integration. For example, Ethiopia's current routes to undersea cables,

via Djibouti and Sudan, could be expanded by passing also through Somalia and Kenya. Similarly, Djibouti has ambitions to become a regional data hub, building on its abundance of undersea cable capacity. The inclusion of Ethiopia and Djibouti also brings benefits to the existing partners. For instance, Somalia can benefit from Ethiopia as a conduit for data provided via electricity interconnectors, while South Sudan may have the option of a further fiber border crossing int Ethiopia.

20.   **While support to the EAC and IGAD will be provided under SOP-I, all countries in future phases -- and that are member states of the RECs – will benefit from the regional activities financed under SOP-I.** Such activities implemented by IGAD include support towards the creation of an ICT regulatory association for the Horn of Africa, the development of a roaming strategy and regulatory and policy guidelines to enhance digital infrastructure; capacity building, legal advisory and collaboration platform for cybersecurity; technical assistance and capacity building to enhance and harmonize regional data governance frameworks and enable data interoperability; the development a regional e-Commerce Strategy for IGAD, and guidelines and frameworks towards payments interoperability. These activities will leverage similar ones implemented by the EAC and help strengthen the incentives for investments in key digital enablers such as digital connectivity and a trusted digital environment and expand cross-border e-commerce and digital services.

21.   **As with SOP-I, SOP-II project is designed around three integrated and mutually reinforcing components, which reflect the distinct but interconnected layers of an integrated regional digital market.** Components 1, 2 and 3 will support respectively Connectivity Market Development and Integration; Data Market Development and Integration; and Online Market Development and Integration. Further, Component 4 will support Project Management and Implementation Support (at regional and national level), while Component 5 will provide a Contingent Emergency Response Component (CERC). These components include a menu of activities from which the Borrowers (Djibouti and Ethiopia), will select activities to be implemented under SOP-II, based on their most pressing needs and their regional interaction. The anticipated allocation of funds for Phase 2 (with a reminder also of the allocation in Phase 1) in indicated in Table 1.

Table 1: Project Costs and Financing Sources (US$ million equivalent)

Component	SOP-I					SOP-II				SOP
	RECs (EAC, IGAD)	South Sudan	Somalia	UCF	Total	Djibouti	Ethiopia	UCF	Total	Total
Component 1. Connectivity Market Development and Integration	**5.6**	**48.0**	**50.0**	**30.0**	**133.6**	**17.2**	**60.0**	**30.0**	**107.2**	**240.8**
1.1. Cross-border and national backbone network connectivity	0.0	36.2	30.6	30.0	96.8	8.8	32.0	20.0	60.8	157.6
1.2. Last mile connectivity, including in borderland areas	0.0	9.0	15.4	0.0	24.4	7.7	24.0	10.0	41.7	66.1
1.3. Enabling legal, regulatory, and institutional ICT environment	5.6	2.7	4.0	0.0	12.3	0.7	4.0	0.0	4.7	17.0
Component 2. Data Market Development and Integration	**8.3**	**4.0**	**6.8**	**0.0**	**19.1**	**0.9**	**6.4**	**0.0**	**7.3**	**26.4**
2.1. Cybersecurity frameworks, infrastructure, and capacity	4.5	1.7	2.2	0.0	8.4	0.3	4.0	0.0	4.3	12.7

2.2. Data exchange, governance, and protection	3.8	2.2	4.6	0.0	10.6	0.6	2.4	0.0	3.0	13.6
Component 3. Online Market Development and Integration	**6.9**	**6.3**	**7.0**	**0.0**	**20.2**	**0.3**	**7.2**	**0.0**	**7.5**	**27.7**
3.1. Digital enablers for cross-border trade and service delivery	6.9	0.9	1.7	0.0	9.5	0.0	2.4	0.0	2.4	11.9
3.2. Research and education networks and training for digital skills	0.0	5.4	5.2	0.0	10.6	0.3	4.8	0.0	5.1	15.7
Component 4. Project Management and Implementation Support	**4.2**	**8.7**	**16.2**	**0.0**	**29.1**	**1.6**	**6.4**	**0.0**	**8.0**	**37.1**
Component 5: Contingent Emergency Response	**0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TOTAL	25.0	67.0	80.0	30.0	202.0	20.0	80.0	30.0	130.0	332.0

Note: UCF refers to Unguaranteed Commercial Financing, financing for RECs and countries in SOP-I, II includes both national and regional IDA allocations

Component 1: Connectivity Market Development and Integration (US$107.2 million, including US$77.2 million IDA equivalent; and US$30 million in unguaranteed commercial financing).

47.   **This component will bridge existing network coverage and access gaps through infrastructure financing and support for an enhanced enabling environment to develop the regional broadband connectivity market.** With the objective of expanding access, the financed activities will ensure that recipient countries also enhance network redundancy and cable route diversity, allowing the region to meet increasing demand for internet bandwidth. Cross-border, national backbone and backhaul, and access network infrastructure will be partially financed where there is a market failure, using various financing mechanisms depending on market need. World Bank-executed studies conducted to inform the design of this project identified private sector interest as well as bottlenecks for their participation including limited commercial viability for some of the priority links, difficulty accessing financing for infrastructure, and the need to de-risk market failure and security concerns. Detailed country-level feasibility studies to be funded under this component will further define the precise arrangements under which the cooperation between the Government and the operators on infrastructure deployment will be further developed (1.1.b).

48.   **In addition to financing, potential downstream investment support in the form of International Finance Corporation (IFC) financing, Multilateral Investment Guarantee Agency (MIGA) guarantees[35], or IDA Private Sector Window[36] support will be explored, thereby integrating an MFD and PCM approach for crowding in private sector investment.** While there is no up-front commitment on the part of IFC, MIGA, and the Private Sector Window, potential support will be considered at the time of tendering for infrastructure deployment. Upstream support for an enabling legal, regulatory, and policy environment for competitive broadband market development will also be provided, with a view to stimulating wider access, based on better quality and more affordable services.

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[35] In tenders of public auctions, information on the terms and conditions of potential IFC financing and MIGA guarantees, with support from the IDA Private Sector Window as needed, would be included in the request for proposals to help attract investors and reduce investment risks in the context of these fragile countries

[36] The IDA Private Sector Window provides strategic use of public resources to catalyze private investments in challenging markets by leveraging IFC's and MIGA's business models.

Sub-component 1.1: Cross-border and national backbone network connectivity (US$60 million, including US$40 million IDA equivalent; and US$20 million in unguaranteed commercial financing).

49.   **This subcomponent will support the deployment of key missing cross-border and backbone fiber links to improve the resilience, coverage, and integration of regional connectivity networks.** Support will be provided to deploy upwards of up to 3,000 kms of fiber network in Ethiopia and up to 300 kms in Djibouti, covering strategic cross-border and national backbone network links as well as their extension into borderland areas, with a view to creating an integrated regional backbone network allowing for reduced cost and improved quality of transmission of capacity throughout the region. Financing support will be provided to operators who will be expected to co-finance, design, build, and operate the network infrastructure. Infrastructure deployment will be based on key principles[37] of providing services on an open access basis, while offering reasonable wholesale rates to support affordable service expansion to be detailed in a Commercial Transaction Manual (CTM). The CTM will be developed through in-depth industry consultations to identify sustainable commercial models for each of the priority routes and will include: (i) the guidelines for developing the deployment options including public private partnerships or other models with the operators (in particular for ensuring optimization of the Recipient resources in those partnerships), (ii) the obligations of the operators in return for the contribution from the Recipient (iii) the principles to follow to ensure open and non-discriminatory access to the infrastructure built through the project (iv) the principles which ensure reasonable prices for the end-user, and (v) the necessary amendments to the regulatory environment and (vi) the template form of the agreement.

Subcomponent 1.2: Last mile connectivity, including in borderland areas (US$40 million, including US$30m IDA equivalent and US$10m in unguaranteed commercial financing)

50.   **This subcomponent will connect rural, borderland areas, where the commercial incentive for last-mile network expansion is insufficient to propel further infrastructure investment.** By providing catalytic funding to stimulate demand by key user groups and in low-income market segments (including in refugee/IDP camps, conflict affected areas in Tigray in Ethiopia and locations in rural and borderland areas), this subcomponent will follow an MFD approach to unlock further private sector infrastructure investment in unserved or underserved areas. The financed infrastructure will be deployed using a range of modalities, including reverse auctions, bulk purchase of capacity[38], and/or licensing arrangements that aim to maximize private sector financing. These mechanisms are expected to incentivize private sector investment in the rollout and maintenance of last-mile access networks that connect targeted locations/areas. They will also benefit the wider consumer base in the vicinity of connected sites, with national governments serving as the anchor tenant required for enhanced service provision.

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[37] Key principles on infrastructure deployment could include competitive tender process, non-exclusivity or open access, and maximizing private sector participation, among others

38 Up-front purchase of internet bandwidth from private sector operators, under indefeasible right of use operating expenses contracts, spanning 5–15 years, will serve as the investment guarantee needed to incentivize private sector capital expenses investment in the rollout of last-mile access networks that connect targeted locations. It will also benefit the wider consumer base in the vicinity of connected locations, with the Governments of Ethiopia and Djibouti serving as the anchor tenants required for enhanced service provision. Although any lease of capacity would be expected to extend for a 5–15-year period, any operations and maintenance costs that go beyond the closing date of the project, as well as additional bandwidth purchased after the closing date, would fall under the responsibility of the Government.

Table 2: Estimated conflict damage and rehabilitation costs affecting Digital Communications infrastructure in Ethiopia

Cost Estimation (for rehabilitation of damanged facilities)	Tigray	Amhara	Afar	Oromiya	Benis. Gumuz	SNNP (Konso)	Total (Million)
Digital Infrastructure (487M)							
Cell towers (including base stations, solar panel, batteries, etc)							26.3
Power Sources (solar 25% and DG 75%)	584 sites	598 sites	82 sites	725 sites	50 sites	50 sites	221.4
Wireless resources and transmission (4G with WM 25% and 4G with fiber 15% and 3G with MW 60%)							104.4
Optical Fiber (per km and repeaters, termination equipment)	2071 km	156km	284km	516km	500km	500km	52.4
Transmission (OTN, ATN, and MW)	13	x	x	7	39	x	25.0
Core sites	2 cities	x	x	x	x	x	42.0
Fixed network	258 sites	25 sites	16 sites	198 sites	11 sites	10 sites	15.5
Damaged facilities (shops, access points)	x	31 shops	3 shops	Blanck: no data available			0.7
Education sector (90M)							
High schools (computers, power control, routers, switches, shared screen) *	6M	4,107) 5M	4M	(216) 4M	2M	2M	23.0
3 Universities in Amahara and Afar (Data center-power generator, Connectivity Backbone-fiber, Devices-laptop, smart classrom)	x	67M	x	x	x	x	67.0
Total							**577.7**

Source: Adapted from World Bank. Forthcoming, 2023. *Ethiopia Conflict Impact Assessment and Rehabilitation Project: Volume A – Damage and Needs Assessment*

Note: * High schools: Amhara 4,107 damaged (1025 total damaged & 2,083 partial damaged) and Afar 203 damaged (65 total damaged & 138 partial damage) and Benishangul 216 schools damaged.

Subcomponent 1.3. Enabling legal, regulatory, and institutional ICT environment (US$5 million IDA)

51.   **This subcomponent will provide upstream enabling policy, legal and regulatory support, as well as capacity building to stimulate broadband market development and harmonization at the national and regional level.** Building on the regional harmonization efforts under SOP-I, activities under this sub-component will support the strengthening, modernization, and regional harmonization of the legal, regulatory, and institutional frameworks governing the telecom sector to foster competition and private sector investments and unlock the potential of the ICT sector nationally and across borders. Support will also be provided to increase capacity at the national level to implement these initiatives, working with national ICT regulatory authorities, agencies, and line ministries for ICT at the national level and through the RECs at the regional level.

Component 2. Data Market Development and Integration (US$8 million IDA)

52.   **This component seeks to foster the development of a regional data market by enabling more affordable, secure, and seamless data management and sharing across borders.** It will finance data infrastructure to reduce the latency and costs of data sharing within the region, as well as build on the regional harmonization efforts under SOP-I and enhance and harmonize data governance through improved national and regional frameworks, including in areas such as data protection, to support secure data processing and prevent misuse. Financing will also be provided to strengthen cybersecurity incident response, including through

regional partnerships and frameworks. Support will be provided to enhance data management and hosting infrastructure, with a view to achieving economies of scale and strengthening climate resilient data management. Capacity building workshops and training will be supported for representatives of the public and private sector. All training and workshops conducted will be in formats compliant with accessibility standards (appropriate headers, landmarks, labeling, alternative text, etc.).

Subcomponent 2.1. Cybersecurity frameworks, infrastructure, and capacity (US$5.0 million IDA)

53.   **This subcomponent seeks to strengthen cybersecurity and incident response capabilities in the region.** It will do so both by strengthening basic national frameworks and through coordination at the regional level, with a strong focus on skills development and pooled resources. The financed activities will support the development of best practice frameworks, enhanced technical and operational capabilities, as well as capacity building, grounded in an understanding of the regional and national cyber threat landscape and regional knowledge sharing, to help create a trusted online transaction environment and safeguard digital infrastructure and services.

Subcomponent 2.2. Data exchange, governance, and protection (US$3 million)

54.   **This subcomponent will support investments in enabling data infrastructure and governance frameworks that facilitate cost-effective and secure data exchange in the region.** It will build on the regional harmonization efforts under SOP_I and focus on adopting common frameworks for data protection and data governance, reducing barriers for data sharing within and across borders, and enabling and promoting interoperability. It will also introduce data infrastructure that helps facilitate reducing the costs and climate impact of data storage, processing, and sharing in the region. Similar to the approach taken under 1.1 and 1.2, financing of data infrastructure will go through a competitive tender to encourage private sector participation, unless there is restricted private sector interest or if there is justification of government ownership of that infrastructure.

Component 3. Online Market Development and Integration (US$9.0 million IDA equivalent)

55.   **This component aims to build the regional online market by removing barriers to cross-border trade and payments, as well as investing in key enablers for expanded digital service delivery.** Leveraging the regional harmonization efforts under SOP-I, it will support the development of regional and national legal and governance frameworks on e-commerce, trade, and payment systems to improve and expand national governments' capacity to support growth of cross-border services, payments, and trade. Financing support will be provided to deploy digital public infrastructure and TA to ensure its adoption across ministries, departments, and agencies (MDAs) through targeted digital skills training. By enhancing the digital capabilities of public administrations, the project will expand government capacity to provide e-services and implement regional-level agreements and systems. This component will also develop the regional digital skills base more broadly, through support for NRENs and new digital skills training programs in areas where digital skills gaps are identified.

Subcomponent 3.1. Digital enablers for cross-border trade and service delivery (US$3.0 million IDA equivalent)

56. **This subcomponent aims to enhance readiness to expand digitally enabled cross-border trade and service delivery, by introducing key enablers.** With a view to supporting the E-Commerce Protocol under AfCFTA and leveraging the development of an E-commerce Strategy for IGAD under SOP-I, this subcomponent supports a regional approach to digital trade through the development of key protocols for e-commerce, and capacity building for national trade ministries. This subcomponent will also enable and facilitate cross-border transactions for goods and services by developing the mutual recognition of e-signatures and supporting regional standardization and consensus-building efforts to deepen the integration of regional payment systems, building on national efforts already supported by the World Bank.[39] Support will also be provided at the national level to develop shared digital public infrastructure[40] for scaled digital service delivery and e-commerce.

Subcomponent 3.2. Research and education networks and training for digital skills (US$6.0 million IDA equivalent)

57. **This subcomponent will support the development of the digital skills base through foundational support to the establishment of a National Research and Education Network (NREN) in Djibouti and assistance to the regional activities of EthERNet, the Ethiopian NREN.** It will enable the expansion and strengthening of the regional infrastructure supporting higher education by establishing regional collaboration among NRENs, allowing for economies of scale and knowledge transfer. Support will be provided to enhance the capacity of universities and TVETs, in partnership with NRENs and governments, to deliver digital skills programs for civil servants and university faculty and students. All skills programs will be encouraged to adapt pedagogical tools and techniques with a view to being accessible for people with disabilities.

Component 4. Project Management and Implementation Support (US$8.0 million IDA equivalent)

58. **This component will finance project management and implementation of project-associated activities.** It will cover the additional operating costs of the project implementation units (PIUs) in Djibouti and Ethiopia generated by the project. This component will help strengthen the technical and functional capacity of the PIUs, including through the recruitment of expert consultants in key areas and the facilitation of on-the-job learning and competency transfer. It will support independent audits, monitoring and evaluation (M&E) (including collecting gender-disaggregated data), and quality assurance to ensure compliance with best procurement and financial management (FM) practices. Support will be provided to enable collaboration between regional and national PIUs. This component will also support Environmental and Social Framework (ESF) compliance, with a particular emphasis on addressing the high security- and GBV-related risks associated with the deployment of infrastructure and civil works, including stakeholder consultation, a robust grievance redress mechanism, and development of site-specific assessments and plans. In Djibouti, the project will work with an existing PIU, at the Ministry of Communications, with responsibility for Postal Services and Telecommunications (MCPT), which has been serving the Digital Djibouti project since 2021 while in Ethiopia, the PIU will be at the Ministry of Innovation and Technology (MInT), serving the Digital Ethiopia project since 2021.

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[39] The support provided will build on existing national investment operations that strengthen the national payment system. Examples include the support to establishing a Certification Authority in Ethiopia under the Digital Ethiopia project (P171034) while the Digital Djibouti project (P174461) is funding a feasibility study into the use of electronic payments by the Government.

[40] This refers to solutions and systems that enable the effective provision of essential society-wide functions and services in the public and private sectors. This includes but is not limited to digital forms of ID and verification, civil registration, payment (digital transactions and money transfers), data exchange, and information systems (including sector-specific, that is, health or education). (Definition by the Digital Public Goods Alliance, 2022)

Component 5. Contingent Emergency Response (US$0 National IDA equivalent)

59.	**This component will allow for rapid reallocation of uncommitted national IDA funds in the event of an eligible emergency declared in one of the participating countries.** A Continency Emergency Response Component (CERC) annex to the Project Implementation Manual (PIM) will be prepared to guide the activation and implementation of the CERC. For the CERC to be activated and financing to be provided, the recipient will need to (a) submit a request letter for CERC activation, and the evidence required to determine eligibility of the emergency, as defined in the CERC annex; (b) submit an Emergency Action Plan, including the emergency expenditures to be financed; and (c) meet the environmental and social requirements as agreed in the Emergency Action Plan and Environmental and Social Commitment Plan. By having Emergency Action Plan and allocating related budget, CERC will help strengthen the institutional capacity to respond to emergencies caused by climate and natural disasters, and support reinforcing the country's resilience to climate and natural risks identified above.

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

Summary of Screening of Environmental and Social Risks and Impacts

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