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Report No: PAD2338

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 17.2 MILLION

(US$25 MILLION EQUIVALENT)

AND A PROPOSED GRANT

IN THE AMOUNT OF SDR 17.2 MILLION

(US$25 MILLION EQUIVALENT)

TO THE

KYRGYZ REPUBLIC

FOR A

DIGITAL CASA - KYRGYZ REPUBLIC

PROJECT

February 27, 2018

Transport and Digital Development Global Practice
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2018)

Currency Unit =	SDR
SDR 0. 686 =	US$1
US$ 1.457 =	SDR 1

FISCAL YEAR
January 1 - December 31

ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
ARTF	Afghanistan Reconstruction Trust Fund
BD	Bidding Document
CARCIP	Caribbean Regional Communications Infrastructure Program
CAREC	Central Asia Regional Economic Cooperation
CAREN	Central Asia Research and Education Network
CASA	Central Asia and South Asia
CPF	Country Partnership Framework
DA	Designated Account
DFID	U.K. Department for International Development
DP	Development Partner
DPO	Development Policy Operation
EAEU	Eurasian Economic Union
EC	European Commission
ECA	Europe and Central Asia
ECAPDEV	Europe and Central Asia: Capacity Development Trust Fund
EASSy	East African Submarine Cable System
ESMF	Environmental and Social Management Framework
ESMP	Environment and Social Management Plan
EU	European Union
FAD	Finance and Accounting Department
FM	Financial Management
FMC	Financial Management Consultant
G-Cloud	Government Cloud
GDP	Gross Domestic Product
GNI	Gross National Income
GoKR	Government of the Kyrgyz Republic
G-Net	Government Network
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service

GSMA	Global System for Mobile Communications Association
G-Cloud	Government Cloud
ICB	International Competitive Bidding
ICT	Information and Communication Technologies
IFC	International Finance Corporation
IFR	Interim Unaudited Financial Report
IoT	Internet of Things
IPSAS	International Public Sector Accounting Standards
IRU	Indefeasible Right of Use
ISP	Internet Service Provider
IT	Information Technology
ITU	International Telecommunication Union
IXP	Internet Exchange Point
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
M&E	Monitoring and Evaluation
MFD	Maximizing Finance for Development
NGO	Nongovernmental Organization
NPV	Net Present Value
NSC	National Statistics Committee
NSDS	National Sustainable Development Strategy
OAP	Open Access Policy
PCN	Project Concept Note
PDO	Project Development Objective
PFM	Public Financial Management
PIU	Project Implementation Unit
POM	Project Operational Manual
PPL	Public Procurement Law
PPP	Public-private Partnership
PPSD	Project Procurement Strategy for Development
QCBS	Quality- and Cost-based Selection
QER	Quality-Enhancement Review
RAP	Resettlement Action Plan
RCC	Regional Commonwealth in the Field of Communications
RCIP	Regional Communications Infrastructure Program
RFB	Request for Bids
RFP	Request for Proposals
RPF	Resettlement Policy Framework
SAI	Supreme Audit Institution
SAR	South Asia Region
SCA	State Communications Agency
SCD	Systematic Country Diagnostic
SCITC	State Committee of Information Technologies and Communications
SMEs	Small and Medium Enterprises
SOE	State-Owned Enterprise
SOP	Series of Projects

SRS	State Registration Service
STEP	Systematic Tracking of Exchanges in Procurement
TA	Technical Assistance
TF	Trust Fund
TFSCB	Trust Fund for Statistical Capacity Building
TOR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WARCIP	West Africa Regional Communications Infrastructure Program
WDR	World Development Report
WTO	World Trade Organization

Regional Vice President:	Cyril E Muller
Country Director:	Lilia Burunciuc
Senior Global Practice Director:	Jose Luis Irigoyen
Practice Manager:	Jane Lesley Treadwell
Task Team Leader(s):	Juan Navas-Sabater, Oleg Petrov, Emil Abdykalykov

BASIC INFORMATION

Is this a regionally tagged project?	Country(ies)	Financing Instrument
Yes	Kyrgyz Republic	Investment Project Financing

[ ] Situations of Urgent Need of Assistance or Capacity Constraints

[ ] Financial Intermediaries

[✓] Series of Projects

Approval Date	Closing Date	Environmental Assessment Category
20-Mar-2018	31-May-2023	B - Partial Assessment

Bank/IFC Collaboration	Joint Level
Yes	Complementary or Interdependent project requiring active coordination

Proposed Development Objective(s)

Digital CASA - Regional Program PDO: The proposed regional program PDO is to increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve participating governments' capacity to deliver digital government services in Central Asia and parts of South Asia, through the development of a regionally integrated digital infrastructure and enabling environment.

Digital CASA - Kyrgyz Rep. PDO: The proposed country-specific PDO for the Kyrgyz Republic is to increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve the government's capacity to deliver digital government services in the Kyrgyz Republic, by contributing to the development of a regionally integrated digital infrastructure and enabling environment.

Components

Component Name	Cost (US$, millions)
Regional Digital Connectivity Infrastructure	21.00
Regional Datacenters, Digital Platforms, and Smart Solutions	18.00

Enabling Environment for Digital Economy	8.50
Project Management	2.50

Organizations

Borrower : Ministry of Finance

Implementing Agency : State Committee of Information Technologies and Communications (SCITC)

PROJECT FINANCING DATA (US$, Millions)

[ ] Counterpart Funding	[ ] IBRD	[✓] IDA Credit	[✓] IDA Grant	[ ] Trust Funds	[ ] Parallel Financing

Total Project Cost:	Total Financing:	Financing Gap:
50.00	50.00	0.00
	Of Which Bank Financing (IBRD/IDA): 50.00	

Financing (in US$, millions)

Financing Source	Amount
IDA-62000	25.00
IDA-D2790	25.00
Total	**50.00**

Expected Disbursements (in US$, millions)

Fiscal Year	2018	2019	2020	2021	2022	2023

Annual	0.00	3.00	6.00	11.00	14.00	16.00
Cumulative	0.00	3.00	9.00	20.00	34.00	50.00

INSTITUTIONAL DATA

Practice Area (Lead)

Transport & Digital Development

Contributing Practice Areas

Climate Change and Disaster Screening

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

Gender Tag

Does the project plan to undertake any of the following?

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

Yes

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

Yes

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

Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	High
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Substantial

4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Moderate
9. Other	Moderate
10. Overall	Substantial

COMPLIANCE

Policy

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

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

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

Legal Covenants

Sections and Description

Contingent financing and disbursement conditions: financing for the regional backbone under subcomponent 1.1 has been structured as Category 2, and for the Eurasia Cloud under subcomponent 1.2 as Category 3. These Categories are subject to disbursement conditions contained in Schedule 2, Section III.B.2 of the FA.

Furthermore, these two categories are subject to additional contingent financing conditions contained in Schedule 2, Section IV, paragraphs 1 and 2, as follows:

1. If the conditions set forth in Section III, Part B, paragraph 2 have not been met within one (1) year after the Effective Date, or at a later date as agreed by the Association, the Recipient may, pursuant to Section 2.06 of the General Conditions, request the Association to reallocate the Financing proceeds allocated under Categories (2) and/or (3) to address an estimated shortfall under Category (1), provided that the Association determines that such amount is needed to meet an estimated shortfall to finance Eligible Expenditures under Category (1).

2. In the event that the reallocation mentioned in paragraph 1 (above) is not requested immediately after the deadline referred to in said paragraph, or if requested, the criteria mentioned therein is not met as determined by the Association, the Recipient shall be deemed, pursuant to this provision of the Financing Agreement, to have effected by notice to the Association a request to immediately cancel the amount of the Financing allocated to Categories (2) and/or (3) pursuant to Section 8.01 of the General Conditions.

Sections and Description

Dated covenant contained in Schedule 2, Section IV, paragraph 3, as follows:

The Recipient shall, by not later than 12 months following the Effective Date, have adopted a Digital Transformation Strategy consistent with the objectives of the Project and thereafter the Recipient shall implement said strategy in a manner that would enable the Recipient to perform any of its obligations under this Agreement.

Conditions

Type	Description
Disbursement	Withdrawals under Category (2) shall be made subject to submission to the Association of evidences satisfactory to the Association that: (i) the feasibility study described under Part 1.1 (a) has been carried out; and (ii) the results/outcome of the said feasibility study, including the parameters and expenditures for the purchase of communications services under Part 1.1 (b) (ii), are satisfactory to the Association.
Type	Description
Disbursement	Withdrawals under Category (3) shall be made subject to submission to the

	Association of evidences satisfactory to the Association that: (i) the feasibility study described under Part 2.1 (a) has been carried out; and (ii) the results/outcome of the said feasibility study, including the parameters and expenditures for the purchase of hosting capacity and cloud services under Part 2.1 (b) (ii), are satisfactory to the Association.
Type Effectiveness	Description The Additional Condition of Effectiveness consists of the following, namely that the Project Operational Manual has been adopted by SCITC, in a form and substance acceptable to the Association.

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Juan Navas-Sabater	Team Leader(ADM Responsible)	Connectivity	GTD09
Emil Abdykalykov	Team Leader	Private Sector	GFCE1
Oleg V. Petrov	Team Leader	Digital Platforms	GTD09
Irina Goncharova	Procurement Specialist(ADM Responsible)	Procurement	GGOPC
Aliya Kim	Financial Management Specialist	Financial Management	GGOEE
Aidai Bayalieva	Team Member	Transport smart solutions	GTD10
Aynura Turgunbaevna Dzhoroeva	Team Member	Digital Economy	GTD09
Baker K. Kiggundu	Peer Reviewer	Private Sector	CTTTT
Christopher David Miller	Peer Reviewer	Private Sector	ECCRU
Chynara Suiumbaeva	Team Member	Digital Platforms and Enabling Environment	GTD09
Daria Goldstein	Counsel	Lead Counsel	LEGLE
David Satola	Peer Reviewer	Legal Framework	ICOIO
Dinara Akmatbekova	Team Member	Communication Specialist	ECAEC
German Stanislavovich Kust	Environmental Safeguards Specialist	Environmental specialist	GEN03

Janelle Plummer	Team Member	Citizen Engagement	GSU03
Jasna Mestnik	Team Member	Finance officer	WFACS
Jyldyz Beknazarova	Team Member	Operations	ECCKG
Kimberly D. Johns	Peer Reviewer	Public Sector Transformation	GGOEW
Kristine Schwebach	Social Safeguards Specialist	Social Development	GSU03
Luda Bujoreanu	Team Member	e-Government	GTD12
Maja Murisic	Team Member	Climate Co-benefits	GCCMI
Marisol Ruelas	Team Member	Program Assistant	GTD09
Natalija Gelvanovska-Garcia	Peer Reviewer	Telecom	GTD11
Nato Kurshitashvili	Team Member	Gender	GTD03
Rajendra Singh	Team Member	Regional Program Lead	GTD11
Reyn Christine Anderson	Team Member	Program Management	GTD09
Rustam Arstanov	Environmental Safeguards Specialist	Environmental specialist	GEN03
Ruxandra Costache	Counsel	Senior Counsel	LEGLE
Sandra Kdolsky	Team Member	Citizen Engagement	GSU03
Siddhartha Raja	Peer Reviewer	Connectivity and Digital Skills	GTD09
Stela Mocan	Peer Reviewer	Digital Government	ITSTI
Uran Esengeldiev	Team Member	Telecom and Datacenters	GTD09
Zamira Dzhusupova	Team Member	Digital Government and Skills	GTD09
Zhanetta Baidolotova	Team Member	Program Assistant	ECCKG
Zhanybek Ybraiym Uulu	Team Member	Public Sector Governance	GGOEE

Extended Team

Name	Title	Organization	Location

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I. STRATEGIC CONTEXT

A. Country Context[1]

1. **The Kyrgyz Republic is a landlocked, mountainous country with a multiethnic population of 6.1 million.** Its dependence on gold, worker's remittances, and foreign aid makes the economy vulnerable to external shocks. Despite the recent economic shocks impacting the Europe and Central Asia (ECA) region, the Kyrgyz economy has remained resilient since 2015**.** Real gross domestic product (GDP) growth is estimated to have reached 3.8 percent in 2016, driven mainly by a recovery of gold production and consumption.[2] In spite of recent development achievements, the economy is largely informal with very low levels of productivity.

2. **The Kyrgyz Republic has achieved significant reductions in poverty, but many rural areas remain poor and the country is highly vulnerable to climate change risk.** In 2016, an estimated 29.4 percent of people living in rural areas were below the poverty line compared to 18.7 percent in urban areas.[3] The labor market was the most important factor driving down poverty in the Kyrgyz Republic in 2013–2015. Wages remain the most important driver of improved living standards, along with pensions. Earnings from agricultural products also played an important role in poverty reduction. Although growth helped reduce the share of the population living below US$2.50/day, there was considerably less progress in terms of the share of those under US$5/day, where over 80 percent of the population still finds itself. While income gains were broadly shared, true prosperity remains far out of reach for most Kyrgyz people, only 1.6 percent of whom live with more than US$10/day.[4] The Kyrgyz Republic is particularly vulnerable to climate change due to its high exposure to climate change impacts and low adaptive capacity.

3. **Improved governance, reduced corruption, and job creation, particularly for youth and women, are among key national priorities**. The National Sustainable Development Strategy (NSDS) for the Kyrgyz Republic for the period 2018–2040 identifies public administration reform as one of the top priorities for the country.[5] It states that previous reforms of the public sector did not produce desired results, they were 'cosmetic' rather than real changes of socioeconomic development governance processes. The anticorruption agenda is seen as a priority for all branches of the Government of the Kyrgyz Republic (GoKR). Higher standards in public accountability, better enforcement of control over the budget, and stronger management of public assets continue to be important goals of the governance reform program.

4. **The country has the potential to become an attractive, central digital destination in Central Asia.** The GoKR is eager to transform the country by leveraging the promise of the digital revolution and position the country as the digital hub of Central Asia. The Kyrgyz Republic actively promotes its competitive advantages such as a young labor force, hydropower resources, pristine natural beauty of mountains and Lake Issyk-Kul, and relative proximity to Russian and Chinese markets through a number of regional integration organizations. It's a member of the Eurasian Economic Union (EAEU), the Shanghai

[1] See annex 1 for a description of the regional economic context.
[2] http://documents.worldbank.org/curated/en/710331496766602711/pdf/115684-WP-PUBLIC-add-series-SpringKGZBEUFinal.pdf
[3] National Statistics Committee, 2016.
[4] Kyrgyz Republic: Systematic Country Diagnostic, 2017. World Bank.
[5] http://donors.kg/images/NSSD-final-version-eng-Feb4.doc

Cooperation Organization, the Economic Cooperation Organization, the Organization of Islamic Cooperation, the World Trade Organization (WTO), and others, boasting one of the most open economies in the region, as illustrated by its very liberal visa regime.

5. **The current leadership of the Kyrgyz Republic is making important efforts to leverage Information and Communication Technologies (ICT) to reduce corruption, improve transparency, and ensure easier access of citizens to public services**, as highlighted in the Digital Transformation Program ("Taza Koom"), contained in the Government's 5-Year Development Plan "*Jany Doorgo Kyrk Kadam*" (40 Steps to a New Era), which the project will support. Early results will be vital to sustaining the high level of political support for the project from the country leadership.

B. Sectoral and Institutional Context[6]

Telecommunications Services

6. **The telecommunications sector in the Kyrgyz Republic suffers from limited and costly high-speed Internet, similar to other landlocked countries of Central Asia and South Asia (CASA).** For example, while Internet user penetration, including mobile broadband, is 34.5 percent, fixed broadband penetration remains a mere 4.1 percent, and wholesale international bandwidth costs remain expensive, at US$22 per Mbps per month (see annex 1 for a regional comparison). This is one of the key issues that the proposed Digital CASA Regional Program is designed to address, thus helping the participating countries integrate their economies into the global and regional digital economy (see section III.D and annex 1 for a description of the regional program).

7. **The Kyrgyz Republic's telecommunications sector has developed significantly since the country's telecommunications legislation[7] was adopted in 1998**. The Kyrgyz telecommunications and Internet market was valued at an estimated US$400 million as of 2015. The consumer marketplace is somewhat competitive, with three major mobile operators and at least eight major ISPs. However, the Government retains control of the country's incumbent fixed line operator, Kyrgyztelecom, as well as its largest mobile operator, Alfa Telecom (owner of the MegaCom brand). The country's fixed line market has weakened in recent years due to substitution by mobile services, but existing backbone infrastructure has formed the foundation for a growing fixed broadband market.

8. **The Kyrgyz mobile market remains one of the strongest in the region, with mobile penetration at well over 100 percent.** Although the Kyrgyz Republic's per capita Internet bandwidth was historically among the lowest in Asia in late 2015 and early 2016, sources reported significant increases in the levels of activated international capacity, with accompanying reductions in wholesale prices.[8] Kyrgyz Internet usage is higher than usage rates among many of its peers. The State Communications Agency (SCA) reported 4.761 million Internet users as of early 2016, representing a penetration rate of almost 80 percent, although some market observers cautioned that the statistics might reflect overreporting.

[6] See annex 1 for a discussion of the regional sectoral context.
[7] Law of the Kyrgyz Republic on the Electronic and Postal Communications.
[8] Strategic Evaluation of the Kyrgyz Republic Broadband Market, July 2017, Terabit Consulting Inc.

9. **The Kyrgyz Republic's telecommunication/ICT sector authorities.** The State Committee of Information Technologies and Communications (SCITC) of the Kyrgyz Republic is responsible for the implementation of the national policies and programs in the areas of connectivity improvement and e-governance. The SCITC was established in June 2016. The head of the SCITC has two deputies who are responsible for telecom and ICT infrastructure, and for e-government, cybersecurity, and projects implementation, respectively.

10. **The telecommunications licensing rules in the Kyrgyz Republic appear to be transparent and nondiscriminatory.** The SCA is officially a separate legal entity with a director who is appointed by the Prime Minister. Although the SCA performs telecommunications licensing, monitoring, and analytics functions to guide and support national Internet development efforts, the level of autonomy is insufficient to be fully qualified as a strong independent telecommunications sector regulator. According to the regulator, the same procedures and licensing fees apply to both domestic and foreign companies. The SCA also gathers Internet traffic data. In addition, other state agencies play a role in overseeing different components of the domestic Internet environment. The Antimonopoly Committee controls prices for the Open Joint Stock Company 'Kyrgyztelekom'; the State Agency for Architecture and Construction handles permits for laying fiber and setting up ducts, masts, and mobile towers; and the Border Control Agency oversees border area construction including fiber crossing over international borders.

11. **The wireless market is fully competitive and currently consists of three major mobile operators.** Mobile operators include MegaCom, Beeline, and NurTelecom, which have developed mature 2G, 3G, and now 4G[9] mobile infrastructure and services in the Kyrgyz Republic. As a result, the coverage has reached close to 98 percent population and mobile penetration leapfrogged from 10 percent to 133 percent between 2006 and 2016. Further, the introduction of 3G mobile broadband services in 2011 and 4G services in 2016 contributed to a significant boost in broadband Internet penetration.

12. **The Kyrgyz Republic's primary international connectivity consists of four links to Kazakhstan (including connectivity constructed in a tunnel under the Chu River) and two to China.** Connections to Tajikistan and Uzbekistan also exist but are not widely used to accommodate demand for bandwidth, in part because of the high cost of bandwidth in those countries compared to transit purchased via Kazakhstan. Sources indicated that now, the Kyrgyztelecom link to China is intended primarily for providing transit capacity to Tajikistan.

13. **Despite the sector's rapid development in recent years, high-speed Internet remains costly for individuals and small businesses, and hence public sector policies and catalytic investments are required to accelerate private investment.** The Kyrgyz Republic's per capita Internet bandwidth was historically among the lowest in Asia. While in late 2015 and early 2016, sources reported significant increases in the levels of activated international capacity, with accompanying reductions in wholesale prices,[10] there is still room for improvement, especially in expanding access in underserved areas. For a landlocked country like the Kyrgyz Republic, international connectivity takes on additional significance because the country has no direct connection to submarine cables. In this context, the GoKR is undertaking frequent consultations

[9] 2G refers to 'second generation technology', 3G refers to 'third generation technology', and 4G refers to 'fourth generation technology'.
[10] Strategic Evaluation of the Kyrgyz Republic Broadband Market, July 2017, Terabit Consulting Inc.

with the industry to ensure that the sector policies and the project crowd-in rather than replace private investment.

E-government, New Technologies, and ICT Skills

14. **The Kyrgyz Republic has made substantial progress in e-government since 2002 with the support of international organizations, but further proactive and coordinated actions are required**. Currently, ministries and agencies provide mostly informational services through their websites, while only a few transactional services are delivered online, especially in the area of tax administration. The key databases and information systems of Government agencies are, for the most part, not interconnected, thus leading to fragmentation and duplication of efforts at the whole of Government level. There is a need for the GoKR to significantly reduce the cost and time taken by line ministries to develop and maintain new integrated digital services by leveraging a shared infrastructure and common services and platforms. Initial steps have already taken place through the implementation of a number of shared digital platforms, including in the area of digital identification, interoperability platform ("Tunduk", established with the support from Estonia), and e-services (the State E-services Portal), among others. Further integration and expansion of these and other shared digital platforms would allow the line ministries to focus on the areas of their core competency when developing a new digital service, rather than invest capacity unnecessarily in establishing and maintaining information technology (IT) infrastructure, cybersecurity, and so on.

15. **The recently established SCITC is in charge of ICT policy, including the area of e-government**. The SCITC manages several state-owned ICT enterprises (including Info-System and Transcom), and it is also the executive body (Secretariat) of the Council on Electronic Governance and Development of ICT under the Government of the Kyrgyz Republic ("E-Governance Council") that replaced the National ICT Council. The Council is the supreme body for coordinating digital transformation and the transition to e-government in the Kyrgyz Republic in accordance with the Law of the Kyrgyz Republic "on electronic governance" dated July 19, 2017, No.127. The SCITC is therefore responsible for policy implementation and interagency coordination in informatization, e-governance, e-services, electronic communications, including television and radio broadcasting.

16. **The GoKR lacks sufficient human resources, institutions, policies, and adequate IT infrastructure to deploy high quality digital services in a secure, reliable, and cost-effective manner.** The GoKR's capacity to develop and deliver digital services is limited by institutional, salary and skills constraints, which have resulted in a limited number of digital services developed which are typically expensive to build, maintain, and secure. While these institutional constraints represent a significant challenge, which needs to be addressed, the resulting relative lack of outdated, legacy infrastructure presents an opportunity to leapfrog to the latest technology and to learn from global experience by adopting best practice institutional structures and policies.

17. **Low basic ICT literacy rates and the lack of more advanced ICT skills have been identified as some of the key barriers to the greater use of ICTs by citizens and business**. This is hindering their participation in the digital economy and constraining their ability to access digital services. Advances in robotics, artificial intelligence (AI), Internet of Things (IoT), autonomous/semiautonomous vehicles are a few examples of disruptive technologies that are gaining momentum globally, and countries like the Kyrgyz Republic need to develop a modern labor force to succeed in the digital era.

C. Higher Level Objectives to which the Project Contributes

18. **The ultimate goal of Digital CASA is to integrate the landlocked countries of Central Asia and parts of South Asia into the regional and global digital economies to enable them to start reaping digital dividends.** This will be achieved by enabling inclusive access by citizens and businesses to digital services through the development of a regionally integrated digital infrastructure, catalyzing private sector investment and innovation, and modernizing relevant policies and regulatory frameworks. The Digital CASA Regional Program will be implemented as a series of projects (SOP) and each phase/project will be based primarily on country readiness (see annex 1 for details of the program description). A 'cascade' Maximizing Finance for Development (MFD) approach has been adopted in the way project activities are structured, with a focus on attracting private sector investment through a variety of public-private partnership (PPP) arrangements,[11] including a partnership with International Finance Corporation (IFC). For the most part, in light of the MFD approach as agreed with IFC, Government support to these arrangements is proposed to be structured as a long-term commitment to purchasing services from the service providers in the market. This design will support crowding-in private investment to target specific market gaps, while avoiding duplication of investments in areas where the market is already working.

19. **The Digital CASA Regional Program is fully aligned with the World Bank Group's twin goals of ending extreme poverty and promoting shared prosperity.** Access to affordable and reliable Internet will have significant impact on achieving inclusive economic growth for addressing poverty. The World Development Report 2016 (WDR 2016) 'Digital Dividends' outlines a framework of how ICT promotes inclusion, efficiency, and innovation for people and businesses. There are several ways that digital technologies can help reduce poverty. This includes indirect impacts from businesses in all sectors using ICT to boost productivity, filtering through the economy to increase GDP growth.[12] For example, it is estimated that low- and middle-income countries experienced an increase of roughly 1.38 percentage points in GDP for each 10 percent increase in broadband penetration between 2000 and 2006.[13] There are also direct impacts such as interventions to increase competition to lower costs, thus reducing communication expenditures for consumers. Direct impacts also accrue from digital businesses leveraging ICT and generating employment.[14] In addition, access to the Internet contributes to empowering the poor. Improved ICT connectivity enhances the availability of electronic information allowing workers and businesses to quickly access knowledge relevant to their livelihoods such as prices, weather information, production techniques, and so on. The WDR 2016 also highlights the tremendous opportunities Internet technologies provide to improve service delivery and foster transparency and efficiency in public

[11] Note that for the most part, the term 'PPP' is used in this document to refer to a broad range of mechanisms where the Government plays a role in encouraging private sector investment in infrastructure, including by acting as a bulk purchaser of services, and is not necessarily limited by the definition of PPP in the local legislation.
[12] http://pubdocs.worldbank.org/en/391452529895999/WDR16-BP-Exploring-the-Relationship-between-Broadband-and-Economic-Growth-Minges.pdf
[13] Building Broadband: Strategies and Policies for the Developing World, World Bank. http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1208273252769/Building_broadband.pdf
[14] A study in the United States found employment gains among young technology firms outweigh job losses from early-stage firm failures with an 'up-or-out' dynamic—they either fail or grow rapidly. Young high-technology firms also create jobs at a higher rate than firms in other industries. Hathaway, Ian. 2013. "Tech Starts: High-Technology Business Formation and Job Creation in the United States." Ewing Marion Kauffman Foundation Research Paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2310617

administration. While some improvements have been achieved in governance indicators over the past several years, more remains to be done (Kyrgyz Republic is ranked 136th of 176 countries on Transparency International's Corruption Perception Index). Digital CASA will help increase transparency through the implementation of shared digital platforms and services, thereby helping to reduce corruption and leading to better governance and institutions. The program will also enable digital inclusion with important knock-on effects for social cohesion. Similarly, improved access to the Internet will help promote the inclusion of firms in the digital economy by expanding trade, raising productivity, and intensifying competition in the marketplace. Finally, the WDR highlights the importance of developing the 'analog complements' (regulations, institutions, skills) in parallel with building the digital foundations. Digital CASA will focus on the most critical of these analog foundations through a dedicated enabling environment component.

20. **The Digital CASA Regional Program, through the promotion of growth enabled by infrastructure development, competitiveness, jobs, and social inclusion, is also aligned with the World Bank's regional strategies for ECA and the South Asia Region (SAR).** The ECA region's strategy focuses on two main pillars: (a) competitiveness and shared prosperity through jobs; and (b) environmental, social, and fiscal sustainability, including through climate action. The SAR's strategy (updated March 2015) is based on three strategic pillars: (a) accelerating economic growth including investments in infrastructure, energy, urbanization, agriculture while expanding access to finance and promoting regional and global integration; (b) enhancing social inclusion by addressing the severest exclusions while improving the quality/access to health, education, and other public services and finance, social protection, and increase labor force participation; and (c) climate and environment management to help countries prevent disasters and improve their readiness. The Digital CASA Regional Program will contribute to building digital platforms and services to enhance effectiveness of the World Bank's support, particularly for addressing the issues of regional integration, improving public service delivery and enhancing job opportunities. Affordable and reliable ICT services (for example, mobile, broadband Internet) are also essential foundations that enable the implementation of practical and effective climate change adaptation measures, such as early warning systems in the context of floods and landslides, and can also be useful in the case of earthquakes, as further explained below.

21. **World Bank support in the ICT sector is consistent with findings and recommendations of the World Bank's Systematic Country Diagnostic (SCD) and upcoming Country Partnership Framework (CPF) for the Kyrgyz Republic**. The SCD and CPF recognize the significant role that digital transformation plays in achieving certain national priorities, including GDP growth, creation of productive employment opportunities at home, and improved service delivery in priority areas such as education and health. The Digital CASA Regional Program will help to develop a digital foundation for facilitating regional trade and integration, which currently remains an underutilized source of growth. Participation in the Digital CASA Regional Program is also expected to increase external competitiveness, which is currently very low, and improve the quality of existing infrastructure. The project will be coordinated with other projects in the CPF, including CARs III, which will include optic fiber ducts along the road from Issyk-Kul to Kazakhstan.

22. **The World Bank Group's support in the ICT sector is consistent with the NSDS for the Kyrgyz Republic 2018–2023**. The strategy recognizes the pivotal role ICT and e-government play in achieving national priorities and sustainable development goals. The Digital CASA Program intends to support the development of a digital foundation for transparent and accountable public governance and services, stimulate equitable and inclusive growth, and facilitate regional trade and integration.

23. **The Government's 'Forty Steps to a New Era' Plan for 2018–2023 underlines the key role of digital technologies and their crosscutting nature in addressing four key challenges: the digital divide, economic resilience, social security, and national security**. The Plan claims that addressing these challenges should decrease the poverty rate to 15 percent and double GDP and personal income in a five-year period. The Digital CASA Regional Program will be instrumental in developing a national ICT infrastructure, unlocking the country's export potential, and creating new investment opportunities for regional and local businesses, job creation, and public sector reforms.

24. **The Digital CASA - Kyrgyz Republic Project is also aligned with 'Taza Koom', one of the recent GoKR initiatives of highest priority for the country.** Taza Koom, which literally means 'Clean Society' is the GoKR's Digital Transformation Program, envisioned to build a transparent and efficient public administration system that provides improved public services, based on digitalization and streamlining of administrative processes. The Program is among the top priorities of the GoKR, as it constitutes "step 1" within the Government's 5-Year Development Plan (40 Steps to a New Era), highlighting the political drive and commitment to public sector modernization and reforms. A detailed Program Concept and Action Plan ("Digital Transformation Strategy") is under development, with specific actions and indicators that will be monitored and reported on a regular basis. Digital CASA - Kyrgyz Republic is seen as building the foundations for the implementation of the Digital Transformation Strategy.

Gender

25. **Women significantly lag behind men in the labor market in the Kyrgyz Republic**: only about 48% of women as compared to 76% of men are economically active in the country, according to the National Statistics Committee (NSC). The labor market exhibits both horizontal and vertical gender segregation. Women's employment is concentrated in relatively low-paid sectors, such as, education and health and less in sectors, such as, transport or mining. As for the employment in ICT, men dominate this sector: the share of females employed in the ICT sector stands at 28.1% as compared to 71.9% for men although interestingly, 45.5% of all graduates from tertiary courses in computer science, which often tends to be a male-dominated field of study, are females (SNC 2016). It is also of note that women earn 25.6% less than what men earn when their average monthly earnings are compared.

26. **Within the workplace, women are mainly concentrated in administrative positions.** Whilst 40% and 60% of all government employees are women and men, respectively, only 25% of those employed at political and technical positions are women as compared to 75% for men (NSC 2016). Gender employment gaps in the civil service are even wider in certain regions, such as, Batken, Jalal-Abad and Osh.

27. **ICT usage is rapidly expanding in the Kyrgyz Republic**. According to the National Statistical Committee, women make up a large portion of ICT users: in 2015, the NSC reported that 70 percent of women aged 17–25 were ICT users, compared to 79 percent for the total population. Whilst these figures are not comparable with available data on internet use, and while exact sex-disaggregated data in access to and use of ICT services are not available, some significant gender gaps are expected to exist in ICT usage. First, there is still a digital divide between urban and rural areas, especially in geographically remote parts of Osh, Naryn, Talas, Issyk-Kul, and Batken regions, where more than 60 percent of the population resides. Men from rural areas who often travel to major cities as labor migrants are less affected by this divide; for low-income rural women who cannot travel because of family obligations, the urban-rural

digital divide is a major barrier. Second, more than 90 percent of ICT content in the Kyrgyz Republic is in the Russian and English languages. This language barrier is affecting the women from rural parts of the country that do not speak Russian. As a result, many young women face significant constraints in applying for universities and for employment opportunities advertised online. Third, owing to traditional conservative values in many households in Osh, Batken, and Jalal-Abad provinces, girls and young women may face significant obstacles in accessing ICT services (including Internet cafes) because social norms often discourage women to venture in cyber space.

28. To decrease the gender gap in the use of ICT technologies, the Digital CASA - Kyrgyz Republic Project will include activities under the Regional partnerships for digital economy skills, jobs and innovations subcomponent that will be directly targeted at women and girls. This will include, but not be limited to, the provision of digital skills training, creation of employment opportunities with a focus on women (for example, in the areas such as digitalization of Government records and archives), enabling virtualized job opportunities for girls and mothers who stay at home with their children, and stimulation and creation of digital services, including for women. Amongst other activities, the project's commitment to ensure that 50% of all trainees in digital skill trainings are women would benefit all but particularly those female employees and new recruits whose lack of digital skills may be an obstacle to them progressing in their careers and/or venturing in different 'male-dominated' domains.

Climate Change

29. According to the Country Partnership Framework FY14-17, the Kyrgyz Republic is one of the countries that is most vulnerable to climate change in the ECA region due to its high exposure to climate change impacts and low adaptive capacity. Multi-model forecasts point to higher temperatures, and increased variability of precipitation point towards a deterioration of ecosystems, an expansion in semi-arid and arid areas, significantly reduced glacier cover, lower soil productivity and eroding biodiversity[15]. As such, the country is at high risk of wildfires, landslides, and floods, among others. A significant reduction in the country's glaciers is projected to have severe implications for the country's water resources, thus impacting the biodiversity, broad population and all sectors of economy[16]. However, as designed, this Digital development project is ranked as "moderate" in terms of future climate rating as per parameters included in the World Bank Group's Climate and Disaster Risk Screening tool (using general projects option – detailed report is available in the project files). It is therefore important to strengthen institutional and technical capacity to enhance climate resilience and adaptive capacity.

30. Digital CASA is expected to contribute to climate mitigation and resilience efforts in the Kyrgyz Republic as well as in the region. Investments in international and national connectivity infrastructure will impact the ability of the Kyrgyz Republic and Central Asian project countries to respond to natural disasters and establish emergency communications with their citizens. The improved national and regional connectivity, improved data management and digitally enabled solutions will be leveraged for early warning and monitoring (and timely response) of weather and climate-affected impacts on agricultural production, more effective management of water and soil resources using a variety of GIS

[15] *http://documents.worldbank.org/curated/en/480301468278104652/pdf/785000KG0CAS0C00Box0377356B00OUO090.pdf*
[16] *https://openknowledge.worldbank.org/bitstream/handle/10986/17548/855610WP0Kyrgy0Box382161B00PUBLIC0.pdf?sequence=1&isAllowed=y*

tools, preserve biodiversity (like for example use of drones for tracking of snow leopard poachers) and other areas. Use of ICT in agriculture can improve water and land (including pastures) management in the sector and lead to reduction in soil erosion. ICT technologies can also improve government efforts in forest and glacier protection. Additionally, widespread use of ICTs by citizens can decrease the need to travel long distances to urban centers to receive Government services, which eventually would translate into lower gas consumption, thus minimizing CO_2 emissions. To take advantage of available hydro power energy, Digital CASA plans to support the creation of a regional, green, datacenter in the Kyrgyz Republic providing cloud computing services to Kyrgyzstan and to neighboring countries. The vision is that countries in the region could take advantage of this centrally located green data center, thus reducing the number of separate datacenters to be built in the region, and therefore reducing overall negative impact on the environment while meeting the growing demand for increased hosting capacity in the region. The telecom infrastructure investments outlined in the PAD entail multiple geographic locations with a potential moderate climate impact, for cabling infrastructure, etc. The project's Component 1 on Regional Digital Connectivity Infrastructure and Component 2 on Regional Datacenters, Digital Platforms and Smart Solutions, aim to address climate risks by incorporating resilient measures into the technical designs. Component 3 on Enabling Environment for Digital Economy will also aim to address climate risks through legal and regulatory measures as well as skills development and capacity building activities.

31. More specifically, subcomponent 1.1 (Improving Regional Connectivity) and subcomponent 1.2 (Increasing the Security, Capacity and Reach of the Government Network [G-Net]) will strengthen broadband infrastructure by deploying fiber-optic networks that are built underground and more resilient to natural disasters (for example, wildfires, floods) compared to aerial cables. At the same time, subcomponent 1.2. will ensure that robust backup infrastructure and disaster recovery plan are in place so that the e-government platforms and services are climate resilient. With the establishment of e-government technology foundations – such as national cloud based datacenters and shared services – the project will aim to achieve mitigation of climate-related risks by providing services and access to citizens, including those who live in high risk are as prone to landslides and wildfires. The proposed "Eurasia Cloud" regional datacenter network (or similar arrangement) (Eurasia Cloud) and G-Cloud (subcomponent 2.1) will be set up to take advantage of the hydro-power resources and cooler temperatures in the mountains as a privately-owned 'green' regional datacenter network to ensure the resilience and security of domestic and regional systems of Digital CASA participating countries. Subcomponent 2.2 will also integrate citizen's feedback on climate resilience solutions and mitigation actions to develop responsive and climate vulnerability-sensitive project activities. This will be achieved by incorporating relevant guidance and requirements in tender documents, assessments and recommendations. Where relevant, the World Bank team commits to conducting additional needs assessments/studies to ensure a climate-friendly and climate change vulnerability-sensitive project implementation. Finally, activities under Component 3 through subcomponent 3.1 will support legal and regulatory measures aimed at improving the climate-resilience of the infrastructure, and through subcomponents 3.2 and 3.3 will support capacity building, skills development and communications related to climate mitigation and resilience measures supported by the project.

Citizen Engagement

32. The project meets the corporate requirements of citizen engagement by including a tri-partite framework of activities, aligned with each component, to obtain regular feedback from users and

potential users of digital services, and beneficiaries of capacity building activities under the project. Furthermore, under subcomponent 2.2, the project proposes to build a multilingual, multi-channeled, interactive and responsive citizen engagement and beneficiary feedback platform, that will be designed to be used across all of government, beyond this particular project. The results framework includes a beneficiary feedback indicator which measures the satisfaction with the quality of digital services that are delivered by the project.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

33. The Project Development Objectives (PDOs) are proposed to be established at the regional program and country-specific levels.

34. **Digital CASA - Regional Program PDO.** The proposed regional program's PDO is to increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve participating governments' capacity to deliver digital government services in Central Asia and parts of South Asia, through the development of a regionally integrated digital infrastructure and enabling environment.

35. **Digital CASA - Kyrgyz Republic PDO**. The proposed country-specific PDO for the Kyrgyz Republic is to increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve the government's capacity to deliver digital government services in the Kyrgyz Republic, by contributing to the development of a regionally integrated digital infrastructure and enabling environment.

B. Project Beneficiaries

36. **The Digital CASA - Kyrgyz Republic Project is expected to benefit a wider range of citizens and businesses across the region.** At the macro level, the project and program will support increased economic growth, improved service delivery, and job creation.

37. At the individual level, citizens will benefit from access to lower-cost, higher-quality digital communications services. Citizens are also expected to benefit more broadly from the Government's improved capacity to deliver e-government services, especially in rural areas and from the opportunities for digital skills development and new jobs. The project will focus on underserved populations, including men and women in rural parts of the country.

38. The public sector will also benefit through lower-cost, higher-quality access to the Internet within and across public institutions, ability to store data in a more secure and reliable manner, and ability to launch new digital services more quickly, cheaply and securely than it is possible to do today.

39. Finally, private sector telecoms companies, IT companies and individual digital entrepreneurs will benefit from the establishment of a seamless, open-access cross-border and national fiber optic backbone and an improved enabling environment which is expected to lower their operating costs and capital

requirements to launch coverage in new areas, acquire more customers, and increase bandwidth and network reliability to enable the rollout of new services and digital content.

40. The project will also help position other landlocked countries in the region as part of the Europe-to-Asia regional data transit hub, together with Afghanistan, as described in section I.C of this Project Appraisal Document, and allow them to benefit from improved broadband services, broader ICT sector development, jobs, and improved digital services.

41. **The project will include a strong emphasis on closing the 'digital divide' - empowering rural populations, youth, and women.** Rural connectivity will support improved access and affordability of services and connection to information and markets. Partnerships for ICT skills development, job creation, and innovation activities will be targeted at youth and women, aiming to create jobs and develop a cadre of tomorrow's digitally savvy citizens.

C. PDO-Level Results Indicators

42. **Key results of the Digital CASA - Kyrgyz Republic Project will be measured in terms of the areas identified in the PDO both at program and country levels.** The program-level indicators are intentionally the same as in Afghanistan and in future Digital CASA participating countries, to allow for program-level monitoring and evaluation (M&E). Project results related to citizen engagement will be monitored through an outcome indicator that tracks the increase in user satisfaction with digital services. The data will be collected directly through specially integrated multilingual beneficiary feedback features of the portal(s) that offer these digital services to citizens and businesses. Gender impact will be measured by disaggregating women beneficiaries, including the number of female beneficiaries of skills development initiatives launched under the project.

43. **Table 1 highlights the key PDO indicators.** The results chain figure at the end of annex 2 depicts in more detail the key results chain and key indicators for the project.

Table 1. Outcome Indicators

- People provided with access to Internet (Number), Internet penetration sub-indicator (%)
- International Internet Bandwidth per Capita (kbps)
- Average retail price for 1 GB prepaid mobile data package (US$)
- E-services and applications utilizing the shared services platforms (Number)
- Private sector investments committed through the project (US$)

III. PROJECT DESCRIPTION

A. Summary of Regional Program Description (Program level)[17]

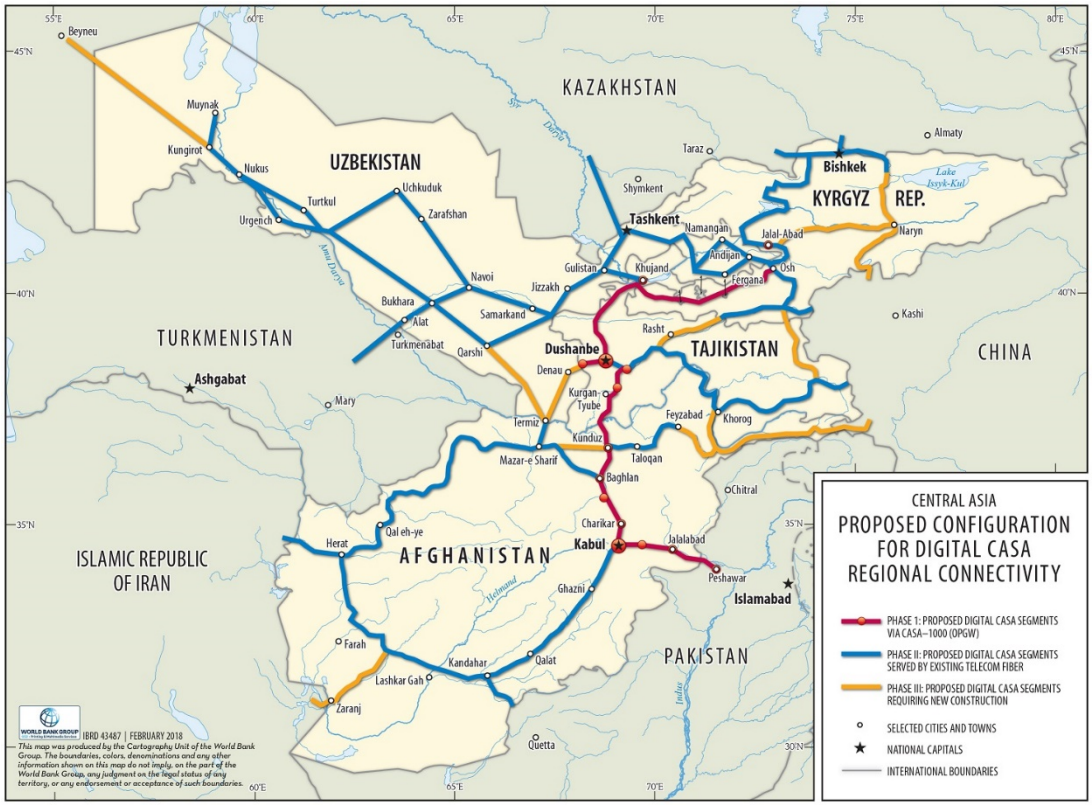
44. **At the programmatic (regional) level, the proposed Digital CASA Regional Program aims to implement a regional, cross-border approach to transform the region into a global transit hub for Internet traffic, and improve broadband Internet connectivity in Central Asia and parts of South Asia.**

[17] See annex 1 for a more detailed description of the regional program.

This will be done by catalyzing private sector investments and cross-sector infrastructure sharing and by modernizing relevant policies and regulatory frameworks. The aim is to bring reliable and affordable Internet services to the citizens of the region, link small and medium enterprises (SMEs) and workers to the regional and global digital economy, and catalyze innovations in the delivery of public and private services. The first operation in the SOP under the proposed Digital CASA Regional Program will be Digital CASA – Kyrgyz Republic, followed immediately by Digital CASA - Afghanistan. Country-specific projects would be financed by a combination of private sector investments and catalytic/complementary public financing, including possible contributions from development partners (DPs). In the Kyrgyz Republic, such DPs may include the European Commission (EC), U.K. Department for International Development (DFID), the Embassy of India in the Kyrgyz Republic, the Soros Foundation-Kyrgyzstan, the Aga Khan Development Network, Korea International Cooperation Agency (KOICA), Japan International Cooperation Agency (JICA), United Nations Children's Fund (UNICEF), United Nations Development Programme (UNDP), and so on. Specifically, dialogue is ongoing with the EC for potential co-financing for the Kyrgyz Republic in the area of rural connectivity the broader digital agenda for rural development.

45. The Digital CASA Regional Program meets regional IDA eligibility criteria as follows: (a) number of countries joining at the initial stage is two, both being IDA countries and one classified as fragile; (b) spillover benefits over country boundaries in terms of improved regional connectivity and provision of solutions for regional needs in data hosting; (c) confirmed commitment of the first two participating countries; and (d) country is part of a regional strategy. Eligibility requirements and options for coordination mechanisms were discussed by high-level representatives from the Kyrgyz Republic and Afghanistan during Digital CASA meetings in May–June 2017. Both the Kyrgyz Republic and Afghanistan are planning to interconnect their national telecommunications networks via China under this project, on the basis of private arrangements with Chinese service providers, which in itself would improve Internet traffic flow in the region. Furthermore, both the Kyrgyz Republic and Afghanistan participate in the CASA-1000 regional power transmission network, which includes a fiber optic network, through which direct connectivity between both countries can be organized. Therefore, regardless of the decision of other neighboring countries with respect to joining Digital CASA, both countries are expected to benefit from lower Internet prices as they will be connected with each other and with the rest of the world via these indirect connectivity options. Uzbekistan has recently confirmed its interest in joining Digital CASA, and project preparation is set to start in early 2018. Dialogue is also ongoing with Tajikistan. Both countries have existing and planned new links with their neighbors (in particular, China and Kazakhstan). Thus, when Uzbekistan or Tajikistan (or both) come on board, the additional connectivity via China, CASA-1000 and Kazakhstan will contribute to increasing the availability and diversity of routes, thus yielding more competitive wholesale prices and improving the overall reliability of the regional telecommunications network in the region. Having alternative routes means improved resilience and security for any telecom network.

Figure 1. Proposed Configuration of Digital CASA Regional Connectivity (adapted from Terabit Consulting, 2016)



B. Project Description

46. **The Digital CASA - Kyrgyz Republic Project will support four key components**: (a) Regional Digital Connectivity Infrastructure (US$21 million), promoting more affordable, high-quality Internet access for citizens, businesses, and Government by incentivizing private sector network infrastructure development and service provision at the regional and national level; (b) Regional Datacenters, Digital Platforms, and Smart Solutions (US$18 million), building cloud-based shared datacenter infrastructure and platforms for the Government and the private sector to securely deliver better services to citizens; (c) Enabling Environment for Digital Economy (US$8.5 million), strengthening and harmonizing the laws and regulations related to the digital economy across the region, including in the context of the EAEU, development of policies and strategies, digital leadership, digital economy skills, and strategic communications; and (d) Project Management (US$2.5 million), to support effective project activities and strong delivery of results.

47. **A number of studies have supported project preparation**. The following studies have been conducted in parallel with project preparation, and their findings incorporated into the project design: (a) Digital CASA connectivity pre-feasibility study; (b) Smart Nation assessment of readiness for Digital Transformation; (c) cloud readiness assessment; (d) transport data innovations readiness assessment; and (e) Cybersecurity Capacity Maturity Assessment in collaboration with Oxford University. All these studies

identified specific activities that the project could potentially support, some of which were prioritized jointly with the client and incorporated into the project design.

48. **Contingent financing**. During project preparation, the client did not have access to resources to conduct two crucial feasibility studies to inform the detailed design of subcomponents 1.1 and 2.1, as further described in the paragraphs below: (a) feasibility study for the expansion of the Kyrgyz portion of the regional backbone network; and (b) feasibility study for attracting private investment towards the creation of a proposed regional Eurasia Cloud datacenter network. These feasibility studies will be launched with the support of the Europe and Central Asia: Capacity Development Trust Fund (ECAPDEV) Grant and will be completed during the first six months of project implementation. In order to avoid delays in the implementation of the rest of the project, it was decided to reserve under special contingent financing arrangements (total amount of US$ 27.6 million equivalent) the activities of these two subcomponents that directly rely on the feasibility studies. On the basis of the results of the respective feasibility studies, the World Bank and the client will agree on either (i) unlocking the respective contingent financing, or (ii) triggering a restructuring of the project to reallocate or cancel the contingent funds.

Component 1: Regional Digital Connectivity Infrastructure (US$21 million)

49. This component will support targeted public sector financing aimed at catalyzing private sector investments in the deployment of additional domestic and regional digital connectivity infrastructure and creating a more competitive environment in the sector, while also providing connectivity services for the Government's own internal use. The Government will not directly own any public networks, other than those already owned through Transcom (a subsidiary state-owned enterprise [SOE] under the SCITC), but connectivity services will be provided for targeted institutions such as local municipalities, hospitals, schools, police stations, post offices, and citizen service centers. Connectivity services may be provided on an Indefeasible Right of Use (IRU) basis. A 'cascade' MFD approach has been adopted in the way project activities are structured, with a focus on attracting private sector investment through a variety of PPP arrangements and innovative financing mechanisms as outlined in the following sections.

Subcomponent 1.1: Improving Regional Connectivity

50. **This subcomponent will improve regional digital connectivity by supporting, through a competitive bidding process, the establishment of a redundant and resilient regional backbone network, consisting of both existing and new networks, that provides multiple cross-border connectivity alternatives and reaches every region within the country.** The project will focus on attracting private investment to enable sector operators and service providers to expand and share their existing regional and domestic fiber optic links, establish new cross-border fiber optic links to strengthen the connectivity with neighboring countries, and deploy high-capacity, domestic fiber optic and wireless networks. The project will also support infrastructure sharing arrangements with other infrastructure sector providers, such as electricity transmission companies (for example, CASA-1000 and Kyrgyz Energy Holding) and railways. It is expected that the backbone will reach every district and most municipalities with the exact details to be provided through the feasibility study.

51. Specifically, this subcomponent will finance: (a) consulting services to conduct a feasibility study on the backbone and services requirements, as well as detailed design including development of tender documentation for the selection of operators to provide communications services in selected locations that will lead to the expansion of the Kyrgyz portion of the regional backbone network and provision of last mile connectivity services for public institutions.

52. Subject to confirmation in the feasibility study referred to in 51 (a) that deployment of the backbone as described in this subcomponent is feasible according to the parameters described in this subcomponent and confirmation of the need to provide support for the further development of the regional backbone, this subcomponent is also expected to support, among others: (b) consulting services to support in the tendering process for the selection of operators; (c) the Government's pre-purchase of communications services in selected locations from the selected operators that will lead to the expansion of the Kyrgyz portion of the regional backbone network and provision of last mile connectivity for public institutions; and (d) consulting services for third-party verification of the infrastructure deployed.

Subcomponent 1.2: Increasing the Security, Capacity and Reach of the Government Network (G-Net)

53. This will support increased security, capacity, and geographic reach of the Government's internal digital network 'G-Net' used exclusively for the purposes of official Government and municipal communications. G-Net will be established as a hybrid physical/virtual network, as it will leverage the already existing physical network owned and operated in Bishkek by Transcom, which provides connectivity for central ministries, and will expand it throughout the country on a virtual basis by purchasing capacity on the networks of commercial operators. The list of public institutions and target municipalities under subcomponents 1.1 and 1.2 will be the same, and will include schools, post offices, police stations, local government offices, hospitals/clinics, as well as service centers of the State Registration Service (SRS), among others.

54. Specifically, this subcomponent will finance: (a) consulting services for the detailed design of G-Net and development of the tender documentation for the selection of a vendor to deploy the necessary hardware and software in target institutions; and (b) provision of specialized networking and cybersecurity equipment, cabling, and IT infrastructure as necessary to increase the security, capacity, and reach of G-Net to connect public sector institutions across the country.

Component 2: Regional Datacenters, Digital Platforms, and Smart Solutions (US$18 million)

55. This component will focus on establishing solid technology foundations for the digital economy and digital government including regionally integrated shared datacenter infrastructure and digital platforms that can be reused at regional and national levels. The project will also support the development of a select number of innovative citizen/business-facing digital applications leveraging shared digital infrastructure, platforms, and data (including open data), to offer 'quick-win' smart solutions at regional and national levels.

Subcomponent 2.1: Eurasia Cloud Regional Datacenter Network and G-Cloud

56. This subcomponent will focus on attracting private investment towards the creation of a proposed privately owned and operated Eurasia Cloud, a 'green' regional datacenter network. It will also provide limited support for creating a mini Government Cloud (G-Cloud) which will use existing datacenter infrastructure. The vision is to help position the Kyrgyz Republic as the digital hub of the Central Asia and Eurasia regions to take advantage of its central location, relatively cheap energy resources, climate conducive for establishing 'green' datacenters, improved connectivity, and a strong political will. The regional datacenter will be implemented through PPP or other private sector participation arrangements, with the GoKR being the first anchor client and with private clients and other governments of a wider Eurasian region expected to follow. The Government is not expected to participate in the ownership of the regional datacenter, but will act as an end-user and 'anchor tenant'. Afghanistan has already indicated its interest in making use of this regional facility. Early indications from other Digital CASA participating countries demonstrate that there is a willingness to utilize the services of a privately owned and operated regional cloud infrastructure and shared services for the purposes of ensuring the resilience and security of their domestic systems.

57. Specifically, this subcomponent will finance: (a) feasibility study for attracting private investment for the creation of the proposed regional Eurasia Cloud datacenter network by exploring PPP and other private participation options; (b) detailed design for establishing the mini G-Cloud; and (c) upgrading the existing datacenter facilities, including equipment and related services for the creation of the mini G-Cloud.

58. Subject to confirmation in the feasibility study referred to in 57 (a) that a regional datacenter network as contemplated in this subcomponent is feasible and confirmation of the need to provide support for the establishment of such regional datacenter network, this subcomponent is also expected to support, among others: (d) consulting services to support in the tendering process for the selection of the cloud service providers; and (e) the Government's pre-purchase of data hosting capacity and cloud services from the selected service providers which will support the establishment of the proposed Eurasia Cloud datacenter network.

Subcomponent 2.2: Digital Platforms, Shared Services, and Smart Solutions

59. This subcomponent will support the further development of regionally integrated digital platforms including shared services such as secure identification, authentication, and authorization; the e-services development platform; and other provisions to enable efficient and cost-effective digital services development by line ministries across the region. Using the 'build once, reuse always', 'digital by default and by design', 'user-centric by design', and 'open and secure by design' approaches will ensure speedy, future-proof, user-friendly and cost-effective roll-out of digital services, and creation of mechanisms and standardized processes for seamless and secure data sharing and digital services interoperability, which may possibly be reused and scaled up within the region. A special focus will be on establishing the infrastructure and related technology acquisition for improved cybersecurity and associated capacity building, delivered wherever possible jointly with other Digital CASA participating countries. A national Government website and e-services portal will be further developed and integrated to provide a multilingual single point of entry ('one-stop-shop') for citizens, businesses, and Government

officials to easily access information about the Government and public services and receive interactive and transactional digital services, anywhere and anytime via secure and reliable digital channels, including mobile devices. The quality of these services will be constantly checked through a specialized citizen engagement and beneficiary feedback platform which will help enhance the design and usability of the digital platforms, as well as through outreach activities including semi-annual user-surveys. An Open Data portal to be launched under the parallel Trust Fund for Statistical Capacity Building (TFSCB) Open Data Grant will be also further developed under this project. The project will also support a select number of regionally replicable sectoral quick wins (high-value and low-cost 'smart' data-driven solutions) leveraging the use of shared digital platforms, open data, and targeted digitalization efforts. These smart solutions will help address the most critical needs of citizens, businesses, and Government authorities by addressing urgent problems such as road safety and traffic management among others.

60. Specifically, this subcomponent will finance: (a) consulting services for detailed design and tender documentation for further development and integration of shared digital public service delivery platforms; (b) procurement of digital platforms and shared services such as authentication and identity management, e-signature, unified notification and payment platforms, interoperability, cybersecurity, and application/data-sharing platforms; (c) digitization of paper records; (d) development of a selected number of quick-win smart solutions (data-driven services); (e) further enhancement of the Government website, State E-Services Portal and Open Data portal; and (f) development of a multi-channeled, interactive and responsive citizen engagement and beneficiary feedback platform.

Component 3: Enabling Environment for Digital Economy (US$8.5 million)

61. This component is designed to strengthen and harmonize—at the regional and national levels—the laws, regulations, institutional, and human capacity, and develop a variety of partnerships that will be needed to take full advantage of the rapidly evolving digital technologies, infrastructure, and platforms, improve market competitiveness, incentivize innovation, and job creation. It will also support digital leadership, skills and capacity development, as well as strategic communications.

Subcomponent 3.1: Legal, Regulatory and Institutional Foundations for Digital Economy

62. There is a need to strengthen the legal, regulatory and institutional capacity to respond to evolving technological innovations and to establish a progressive and future-ready regulatory environment. This subcomponent will support establishing a harmonized and regionally interoperable domestic legal and regulatory environment for the digital economy on the basis of an initial gap analysis. Special attention will be given to the harmonization of legislation and regulatory policies at the regional level for facilitating regional integration and cross-border trade, including data transfers. Considering the Kyrgyz Republic membership in the EAEU, this subcomponent will support harmonization of the legal and regulatory framework for secure cross-border electronic commerce and online transactions, digital authentication, protection of intellectual property rights, cross-border taxation of digital business and incoming/outgoing traffic, secure information and data exchange, data protection and data sharing across borders, interconnection rules, licensing frameworks, interoperability of critical national information systems such as customs, electronic payment systems, cybersecurity and cyber threat management, spectrum management, and related issues.

63. Specifically, this subcomponent will finance: (a) consulting services to conduct a gap analysis of the legal and regulatory framework for the digital economy, aimed at identifying potential barriers at the regional and national levels for implementation of components 1 and 2, on the basis of which the remaining activities under this component will be based; (b) consulting services for further development of the legal and regulatory framework and training[18] in the field of electronic communications to promote competition in the telecom market, facilitate cross-border connectivity, including legal and regulatory issues related to cross-border and domestic IRUs, facilitate the establishment of PPPs in the sector, and create a regionally harmonized enabling environment for open access and cross-sector infrastructure sharing; (c) consulting services and training for digital economy policy, strategy and action planning, standards and legal and regulatory development for the digital economy (including digital government enterprise architecture and interoperability framework, ICT procurement for state institutions, datacenter infrastructure, shared platforms including electronic identification and authentication and other common services, and smart solutions, smart city, intellectual property, personal data protection, cross-border data transfer and hosting, emerging technologies, and others); and (d) consulting services and training for cybersecurity policy, strategy, and regulatory development, for institutional strengthening and capacity building in the area of cybersecurity.

Subcomponent 3.2: Regional Partnerships for Digital Economy Skills, Jobs and Innovations

64. The project proposes to leverage a variety of partnerships and co-financing as the primary mechanisms to help address the current lack of human capacity for digital transformation at the regional and national levels, bridge the ICT literacy divide, and develop new skills needed in the digital economy. It will also support regional partnerships for applied research and development to facilitate digital innovations using 'breakthrough' digital technologies to create new 'smart' jobs and improve regional and global competitiveness of local innovative firms and youth.

65. Specifically, this subcomponent will finance: (a) support for establishing a Regional Center of Excellence for Digital Development, as part of a regional network of such centers, which will lead the implementation of the majority of the activities listed here; (b) support for national and regional innovation challenge competitions, hackathons, and pitching events aimed at stimulating youth entrepreneurship; (c) support for innovative job creation initiatives, such as through paper records digitalization programs, microwork, and others that are aimed at creating jobs for youth and women; (d) piloting digital innovations using latest technologies (such as big data, blockchain, drones) to develop practical, highly valued exportable skills and replicable use cases and smart solutions; (e) assistance in the design of academia-industry partnerships, including internship and practical training programs for young graduates and twinning arrangements with various educational and research organizations; (f) consultants to develop the Digital Economy Competency Framework and the initial offering of courses and workshops and for training of trainers; and (g) hiring of world-class trainers and instructors for leadership and technical training to enable Government leaders, officials, ICT professionals, and other citizens, especially women, youth, and disadvantaged groups to acquire digital economy competencies.

[18] Training under this subcomponent will involve internationally accredited training in the respective fields for institutional strengthening of the SCITC, including the SCA.

Subcomponent 3.3: Digital Leadership and Strategic Communications

66. To drive massive digital transformation of the region and the country, there is an urgent need for strong digital leadership and constant communication activities to ensure effective and coordinated actions across the public sector at regional, national, subnational, and local levels and broad stakeholder ownership of the transformation agenda**.** This subcomponent will support a number of activities in the area of digital leadership development and strategic communications.

67. Specifically, this subcomponent will finance: (a) local and international consultants and technical assistance (TA) to the Secretariat of the E-Governance Council; (b) recruitment of a program coordinator for partnerships, outreach, and communications with responsibility for networking and crowdsourcing in skills and innovation resources for the Kyrgyz Republic; (c) development and implementation of a strategic communications program including hiring consultants for the organization of public information and awareness building campaigns, knowledge-sharing seminars, workshops, and conferences; and (d) creation and management of strategic partnerships with local and foreign government agencies, donors, nongovernmental organizations (NGOs), and other entities, to raise and manage additional funding and other resources.

Component 4: Project Management (US$2.5 million)

68. This component will finance project management activities and associated institutional capacity building. This will sustain a Project Implementation Unit (PIU), institutional strengthening, M&E activities as well as office equipment, various operating costs, training for PIU staff as well as funding for audits, logistics, and operational overhead. The project will also finance the Kyrgyz Republic's participation in regional coordination mechanisms and related regional consultations. The project will finance the core team of the Digital CASA Kyrgyz Republic PIU, including specialized support for project management, M&E, change management, and technical specialists to coordinate different activities under the Digital CASA Project.

C. Project Cost and Financing

69. **National IDA financing is estimated at US$20 million, to be complemented with regional IDA in the amount of US$30 million.** Since this is a regional program with significant spillover benefits across countries, supplementary regional IDA financing is expected to complement national IDA allocations for up to two-thirds of the total IDA financing of the regional activities. This US$50 million is subject to a 50:50 split between IDA credit and IDA grant. Table 2 shows illustrative financing breakdown between national and regional IDA.

Table 2. Project Cost and Financing (in US$, millions equivalent)

Components		Description	Total Project Cost	IDA Financing		% Financing
				Regional	National	
Component 1: Regional Digital Connectivity Infrastructure	**1.1.**	Improving regional connectivity	18.00	12.00	6.00	
	1.2.	Increasing the security, capacity and reach of the government network «G-Net».	3.00	0.00	3.00	
		Total Component 1	**21.00**	**12.00**	**9.00**	100
Component 2: Regional Datacenters, Digital Platforms and Smart Solutions	**2.1.**	Eurasia Cloud Regional Datacenter and G-Cloud	14.00	9.33	4.67	
	2.2.	Digital Platforms, Shared Services and Smart Solutions	4.00	2.00	2.00	
		Total Component 2	**18.00**	**11.33**	**6.67**	100
Component 3: Enabling Environment for the Digital Economy	**3.1.**	Legal, regulatory and institutional foundations for digital economy	3.60	2.40	1.20	
	3.2.	Regional partnerships for digital economy skills, jobs and innovations	3.00	1.50	1.50	
	3.3.	Digital leadership and strategic communications	1.90	1.27	0.63	
		Total Component 3	**8.50**	**5.17**	**3.33**	100
Component 4: Project Management	**4.1.**	Support for PIU (including M&E)	2.50	1.50	1.00	
		Total Component 4	**2.50**	**1.50**	**1.00**	100
		Total Project Costs	**50.00**	**30.00**	**20.00**	**100**

D. Series of Projects Objective and Phases

70. **The Digital CASA Regional Program will be implemented as a SOP sharing a common framework, but with each country's project independent of the others in the program.** According to section II.A, the PDO of the Digital CASA Program is to increase access to more affordable Internet, crowd-in private investment in the ICT sector, and improve participating governments' capacity to deliver digital services in Central Asia and parts of South Asia, through the development of a regionally integrated digital infrastructure and enabling environment. Each phase/project under the program will be based primarily on country readiness. Eligibility criteria to participate in Digital CASA are as follows: (a) existence of a

regulatory authority for the sector that is independent from the operators in the market (and/or relevant WTO commitment to establish such regulator); (b) adherence to open access principles; and (c) full liberalization of both domestic and international Internet connectivity, or a time-bound action plan to achieve such liberalization by the midterm review of the project. The status of the project is as follows:

(a) In Afghanistan, the Open Access Policy (OAP) to liberalize the fiber optic network both at the domestic and international levels was approved in October 2016. Further, a national PPP policy and associated regulations are under review by the Ministry of Justice. The Government and the World Bank team are closely monitoring the progress with both, and TA is being mobilized to support the Government.

(b) The Kyrgyz Republic has a sector regulator, the SCA. However, recent reform has weakened the SCA's independence. Policy reforms will be needed to strengthen the agency's mandate and position it as a strong independent regulator, strengthen policy and regulatory frameworks to fully liberalize domestic and international connectivity, and promote private sector participation. Several of these regulatory reforms are under discussion as part of a proposed Development Policy Operation (DPO) program led by the Governance Global Practice, and any remaining gaps will be addressed through Component 3.

71. **The proposed operations in the Kyrgyz Republic and Afghanistan are confirmed to be first and second in a series for the proposed Digital CASA Regional Program.** Other countries remain unconfirmed at this stage, though dialogue is ongoing (see table 3) and Uzbekistan has recently confirmed interest. Country-specific projects would be financed by a combination of private sector investments and catalytic/complementary public financing, including possible contributions from DPs (for example, Asian Infrastructure Investment Bank, New Development Bank, Eurasian Development Bank, Islamic Development Bank, Afghanistan Reconstruction Trust Fund [ARTF], and bilateral development agencies).

Table 3. Tentative Program Phasing and Estimated Project Costs

Phase	Country	Status/Issues	Estimated Project Costs
Participating Countries			
1	Kyrgyz Republic (P160230)	PCN review took place on January 23, 2017. QER took place on April 26, 2017, jointly with Digital CASA Afghanistan (P156894). Decision meeting took place on November 28, 2017 and negotiations on February 8-9, 2018. The project is scheduled to be delivered to the Board on March 20, 2018.	US$50 million. A mix of regional/national IDA credit and grant. Co-financing partners are being explored.
2	Afghanistan (P156894)	Project Concept Note (PCN) review took place on June 19, 2016. A Quality Enhancement Review (QER) jointly with Digital CASA Kyrgyz Rep. (P160230) took place on April 26, 2017. The decision meeting took place on December 4, 2017 and negotiations are planned for end February 2018. The project is scheduled to be delivered to the Board on March 28, 2018.	US$51 million. A mix of regional and national IDA grants. Possible co-financing by DFID, ARTF, and so on.

Phase	Country	Status/Issues	Estimated Project Costs
Potential Countries			
3	Uzbekistan (P166615)	A delegation from Uzbekistan participated in Bishkek Digital CASA Forum in May 2017. A formal request to join the program was received in September 2017. Initial concept brief was prepared and shared with the Government in October 2017. Project preparation started with an identification mission in February 2018.	US$100–120 million (tentative). Estimated mix of regional/national IDA credits.
4	Kazakhstan (P159139)	The World Bank engaged with the Government through Joint Economic Research Program focused on Digital Strategy. A request was received for partial participation in Digital CASA through a subset of subcomponents within the broader Digital Kazakhstan Project. Project preparation start is currently planned for FY18–19.	US$100–200 million. IBRD loan.
5	Tajikistan	Formal request yet to be received. WTO compliance of setting up of an independent sector regulator is not yet achieved. Briefing package on Digital CASA shared with the Executive Office of the President in March 2016 and updated package shared in November 2017.	US$30–50 million. A mix of regional/national IDA credits. Co-financing partners to be explored.
6	Pakistan	Exploratory stage.	TBD

Note: Other countries in the broader Eurasian region could join the program in the future, based on expressed interest and compliance with eligibility criteria.

72. **The regional program and the Kyrgyz project are being designed in close collaboration with IFC with the aim to maximize private sector participation.** The project design is envisioned to be consistent with the OAP, ensuring the country's fiber networks are made available to multiple parties on a non-discriminatory basis at reasonable prices, allow for the full liberalization of both domestic and international connectivity, and create an enabling environment for cross-sector infrastructure sharing.

E. Lessons Learned and Reflected in the Project Design

73. **Since 2007, the World Bank has approved PPP-based regional connectivity programs amounting to US$1.2 billion involving more than 30 countries, including a number of fragile and conflict-affected states.** Digital CASA will consider experiences from the regional connectivity projects such as the Regional Communications Infrastructure Program in Eastern and Southern Africa (RCIP), West Africa Regional Communications Infrastructure Program (WARCIP), Central Africa Backbone Program, the Caribbean Regional Communications Infrastructure Program (CARCIP), and the Pacific Regional Connectivity Program.

74. For example, in East Africa, the World Bank and IFC financing supported the installation of the East African Submarine Cable System (EASSy) that connected 23 countries from South Africa to France under a private consortium led by Orange Telecom, which includes a group of 16 African and international

telecommunications operators and service providers. EASSy links South Africa with Sudan through landing points in Mozambique, Madagascar, the Comoros, Tanzania, Kenya, Somalia, and Djibouti. The system is owned and operated by partnerships established between the consortium and the landing parties with catalytic World Bank funding utilized for small, fragile, and landlocked states along the coast of Africa.

75. **The proposed program will consider all these experiences and lessons learned.** There is a number of lessons learned on a variety of PPP options that can be effectively leveraged for broadband development in a country as well as benefits from cross-sector infrastructure sharing. The project will aim to leverage as much private investment as possible into the regional fiber optic infrastructure, complemented with targeted catalytic public sector investments. Fiber optic infrastructure already in place in the focus countries or scheduled to be put in operation over the next decade or so will be the basis for the planning of domestic, regional, and international routing, and will take advantage of optical fiber infrastructure available on power transmission networks (optical ground wire) including that of currently installed domestic power networks or foreseen for CASA-1000 as well as the optical fiber owned by railways and other infrastructure service providers.

76. **This project will be designed in a way to incrementally support the Kyrgyz Republic in this important area of digital development.** Sequencing key interventions will also help reduce some of the implementation risks inherent to a complex, comprehensive operation. This initial phase will include a smaller set of adequately funded activities, focused on investments into foundations for digital economy, such as affordable broadband infrastructure, shared digital platforms such as G-Cloud, creating a favorable enabling environment for digital economy development, creating the next generation of digital leaders, and finding effective ways to leverage partnerships. The activities included in this project are easily scalable and can accommodate additional funding as it becomes available.

77. A summary of key lessons learned includes the following:

(a) Investors will likely have different incentives, requiring extensive upfront consultations and legal/transactional support to ensure that the final institutional model adequately addresses the expectations of different players.

(b) Legal and regulatory reforms go hand-in-hand with infrastructure investments, and regulatory institutions need to be empowered to protect the interests of consumers.

(c) Project stakeholders need to anticipate possible changes in technology that might alter the business case for investment in a communications infrastructure.

(d) Project design needs to account for limited institutional and technical capacity, minimizing the number and complexity of contracts and ensuring that adequate resources are available for technical, transactional, and managerial support.

(e) Despite the high costs associated with hiring quality people, a strong operating/management team is critical to project success.

(f) Targeted community mobilization efforts are needed to ensure that female youth are encouraged and supported by their families to participate in skills development programs and digital entrepreneurship activities.

78. **The Regional Datacenters, Digital Platforms, and Smart Solutions component of the project builds on a number of lessons learned from similar components implemented in Moldova, Mongolia, Vietnam, Sri Lanka, and Ghana, among others.** A common finding was that while innovative and ambitious targets can be set, the design needs to be balanced and carefully aligned against the client's absorptive capacity and readiness to execute. Following are key lessons learned from such projects:

(a) It is important to introduce legislation/regulation/policy similar in scope to 'Cloud First' Policy and 'Open by Default'.

(b) Use only Open Standards.

(c) Ensure cybersecurity of all shared infrastructure, platforms, and solutions ('Secure by Design').

(d) Adopt a phased approach to the development of complex projects (such as the proposed Eurasia Cloud and G-Cloud).

(e) Give priority to mobile channels ('Mobile First').

(f) Try to leverage solutions that already exist and have been proven to work, whenever possible.

(g) Give preference to developing government-wide shared infrastructure and centralized solutions, versus working on sector-specific solutions.

(h) Undertake turnkey solutions only (when procuring vendors).

(i) Find a good balance between quick wins (highly visible e-services) and less visible components such as back-end infrastructure.

(j) Building shared Government infrastructure will take time and effort and will not bring visible results for the first few years, so there is a need to think of smartly spaced out highly visible smaller initiatives in the first couple of years and beyond to ensure stakeholder/political confidence.

79. The skills and innovation subcomponent will draw on the World Bank's international experience in implementing digital inclusion and IT industry development projects, including in Mexico, Ghana, Bangladesh, Kosovo, Pakistan, and West Bank and Gaza, and the nascent experience of NGOs and donors in the last decade, which have connected young people—especially the 'bottom 40 percent' and women and socially vulnerable individuals (for example, people with disabilities, widows)—to digital work opportunities. The experience suggests that implementation will require targeted training and access to

infrastructure, along with strong quality assurance and significant demand-side interventions to source digital work and employment links.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

80. The Ministry of Finance will be the borrower for the proposed Digital CASA - Kyrgyz Republic Project and the SCITC the implementing agency. Considering the multifaceted scope of the Digital CASA Project as outlined above, it is envisioned that various other Government agencies of the Kyrgyz Republic will play advisory and/or beneficiary roles under individual components of this project.

81. The SCITC will serve as the implementing agency for the Digital Transformation Strategy, currently under preparation to support the Government's 5-Year Development Plan (40 Steps to a New Era), including the Digital CASA - Kyrgyz Republic Project as its key implementation vehicle. The SCITC also acts as the Secretariat of the E-Governance Council established in accordance with the E-Governance Law to coordinate digital transformation and the transition to e-government in the Kyrgyz Republic. The Government has recently appointed a new Deputy Head of Administration in the PM Office in charge of Digital Transformation as of February 6, 2018, who will be supported by SCITC in the finalization of the Digital Transformation Strategy, development of implementation plans, setting targets, monitoring progress, ensuring effective oversight, coordination, and change management, and securing adequate funding by coordinating the work not only of the Government agencies but also of other DPs.

82. The project will be supported by a strong Digital CASA PIU that will have core personnel such as PIU director, project manager, senior procurement specialist, procurement specialist and procurement assistant, financial manager and disbursement specialist. The PIU will be supported by additional specialists and staff, including technical coordinators for each project component with relevant technical skills; three specialists for the subcomponents under Component 3; specialist on building of digital skills, communications specialist (partnerships, communications, and public information and awareness building), legal and institutional foundations specialist, M&E specialist, office manager, translator, and driver. This team of specialists will be responsible for coordination and reporting on different activities under the Digital CASA Project. The PIU has been established through SCITC Order #128 of August 3, 2017, and the core staff selected with the support of the ECAPDEV Grant. The Project Operational Manual (POM), currently in draft and to be finalized and adopted by effectiveness, lays out the detailed operational procedures for project implementation, including the institutional, disbursement, procurement and financial management arrangements**.**

83. In addition, the participating countries are considering the creation of regional coordination mechanisms to align implementation of the various Digital CASA projects at the regional level. Initial discussions on ways to ensure regional coordination were launched at the first Digital CASA workshop that took place in Bishkek in June 2017. It was hosted by the GoKR and attended by delegations from Afghanistan, Uzbekistan and Kazakhstan. Options that are currently being discussed include: (a) multilateral memoranda of understanding between countries, with a specific mandate to work on projects across countries; (b) leverage existing regional institutions where the participating countries are already members or actively engaged (for example, Central Asia Regional Economic Cooperation [CAREC], Central

Asia Research and Education Network [CAREN], International Telecommunication Union [ITU], Regional Commonwealth in the Field of Communications [RCC], Eurasian Economic Commission, Aga Khan University of Central Asia, American University of Central Asia); and (c) regional centers of excellence and others.

B. Results Monitoring and Evaluation

84. M&E of Digital CASA will be embedded in the various components of the project, and TA provided through the project will include support for M&E. The SCITC will submit biannual progress reports detailing project implementation and progress against the identified indicators. A midterm review will be carried out at the end of the third year of project implementation to provide an in-depth review of the status of progress against the indicators and identify any adjustments needed in the Results Framework or overall project design. An Implementation Completion and Results Report will be prepared by the World Bank within six months of project closing, in consultation with key Government counterparts.

C. Sustainability

85. While some of the core public services needs such as connectivity, digital infrastructure, and e-services will continue to require public financing beyond the life of the Digital CASA - Kyrgyz Republic Project, significant efforts will be made to transition specific activities toward self-sufficiency and to minimize costs. The sustainability of the project's benefits will depend on the Government's commitment to maintaining an open, competitive, private sector-driven fiber optic and broadband sector, and the project's success in catalyzing sufficient demand for e-services that will continue beyond the project duration. Specific measures for each component are outlined in Table 4.

Table 4. Sustainability Mechanisms

Component	Sustainability Mechanisms
Component 1: Regional Digital Connectivity Infrastructure	On the supply side, public sector low-cost and long-term financing is needed in areas that are deemed commercially unviable; however, private sector participation will be vital through a competitive enabling environment that will allow a variety of smaller operators to compete for building and operation of the network infrastructure. By acting as a bulk purchaser of connectivity services, the government will promote further competition in the market, both at the regional and national levels. A feasibility study will be launched to conduct the detailed design of this mechanism. In addition, through the SCA, infrastructure sharing and other regulatory arrangements will be enforced. This will create a more competitive environment with multiple market players that is expected to lead to decreased tariffs that are both sustainable and affordable to a wider population.
Component 2: Regional Digital Platforms and Smart Solutions	The whole-of-government shared infrastructure and services approach will allow for significant savings versus current practices of investing into stand-alone IT silos, though continuous funding will be needed for operations, maintenance, and upgrading. Development of future digital services offerings could target revenue/fee-generating services, the partial proceeds of which can be used for IT needs. As demand is created through e-services, and digital skills and jobs creation, it is expected to pull for further supply of ICT services, ensuring a self-feeding virtuous cycle of ICT investment and growth in the region.

Component	Sustainability Mechanisms
	A variety of private sector partnership options will be explored for developing shared digital infrastructure to minimize financial burden on the Government and maximize sustainability. 'Cloud first' type of policies will be introduced to ensure that line ministries are not allowed to invest in additional datacenters but make use of the national cloud-based infrastructure financed under this project. A detailed feasibility study will be carried out to study a variety of private sector participation options for regional datacenter development to ensure that the interests of the Government are protected and to confirm the willingness of other countries to cohost non-sensitive data in the envisioned regional datacenter which is built and operated by the private sector. Initial discussions with the private sector providers are ongoing.
Component 3: Enabling Environment for the Digital Economy	The enabling environment component is designed to implement legal and regulatory frameworks that are conducive to enable sustainability of the financed infrastructure. Partnerships with private sector technology companies will facilitate most capacity and skills development, innovation, and entrepreneurship activities. This can be continued after project closure as relevant. TA is being provided to improve sustainability through capacity building of Government leadership and technical personnel.

D. Role of Partners

86. **Partnerships will be leveraged to complement and build upon the Digital CASA - Kyrgyz Republic Project.** The project is being coordinated closely with the IFC to introduce additional financing opportunities for operators looking to enter the market, expand existing infrastructure and operations, or to participate in the connectivity services tenders under the digital infrastructure component. Every effort is made to design the project in a manner that would maximize private sector participation. The Government showed commitment to have a project design that (a) is consistent with telecom networks' OAP ensuring the country's fiber networks are made available to multiple parties on a non-discriminatory basis at reasonable prices; (b) makes progress toward liberalization of both domestic and international connectivity; (c) creates an enabling environment for cross-sector infrastructure sharing; and (d) improves the independence of the regulator.

87. **Partnerships with other DPs are being explored.** The World Bank team initiated bilateral and multilateral meetings with other DPs, including the EC, the British Embassy/DFID, the Embassy of India in the Kyrgyz Republic, the Soros Foundation-Kyrgyz Republic, the Aga Khan Development Network, KOICA, JICA, UNICEF, UNDP, and others, to provide more details about the planned Digital CASA - Kyrgyz Republic Project in an effort to align funding for the digital agenda in the Kyrgyz Republic. The Government counterparts were also introduced to key partners and discussions around possible partnerships are now ongoing. Possibilities of co-financing and parallel financing are being explored.

88. **Partnerships with global technology companies will be fundamental to crowd-in resources and expertise under the Partnerships for ICT Skills Development, Job Creation and Innovation subcomponent.** Special efforts will be undertaken to establish fruitful collaboration between international and local technology firms, including from the broader Eurasia region and Silicon Valley, under their social corporate responsibility activities and initiatives in support of innovation and digital

skills agendas, with potential for expansion to other areas such as rural connectivity development, cybersecurity, smart cities, and others.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

89. The overall risk at the program level is considered to be Substantial at this stage, reflecting (a) political risks that could impact the project, including possible change in governments that could lead to weak regional coordination and/or withdrawal from Digital CASA; (b) governance concerns in the participating countries; (c) weak implementing capacity, particularly in government institutions that have limited experience with World Bank-financed projects; (d) overall lack of interest from the private sector; and (e) varying levels of understanding and appreciation for regional benefits from Digital CASA target countries.

90. The risk for the proposed project in the Kyrgyz Republic is also Substantial, which is due to (a) the country's environment which has had impact on the operations of the private sector; (b) delays in the implementation of OAP and full liberalization of international and domestic Internet connectivity; (c) frequent changes in institutional framework for ICT and low Government capacity to implement such a project that requires close coordination with the private sector at national and regional levels; (d) lack of clarity around PPP legislation which results in low private sector appetite to participate;[19] (e) resistance to introduction of digital services due to the perceived threat of job losses; and (f) overall fiscal uncertainties. Risk mitigation measures include, but are not limited to (a) close consultations with Government, at all levels, and coordination with the DPO program; (b) extensive consultations with the private sector and civil society at every stage of project preparation and implementation, including through focused discussions with individual market players, and beneficiaries, and joint missions with IFC, to ensure the project remains relevant and addresses any concerns from stakeholders; (c) mobilization of client-executed project preparation grants, ECAPDEV Grant and Open Data Grant, and their ratification by Parliament; (d) active collaboration with other DPs to mobilize additional funds to enhance World Bank's technical and operational assistance; and (e) ongoing facilitation of regional consultations with other Digital CASA participating countries, during regular Digital CASA meetings, such as the one organized in June 2017 in Bishkek together with IFC. This first formal consultation was hosted by the GoKR and attended by country delegations from Afghanistan, Uzbekistan, and Kazakhstan. The intention is to continue organizing regular and targeted project discussions to ensure coordination and learning between country participants.

91. Project complexity and limited capacity within the Government may present implementation challenges. To mitigate this risk, the proposed project design was reviewed during the pre-appraisal mission and the number of activities included in this project was reduced. It now includes a smaller set of adequately funded activities, focused on substantial investments into the key foundations for the digital economy, such as affordable broadband infrastructure, shared digital platforms such as G-Cloud, creating a favorable enabling environment and finding effective ways to leverage partnerships, including with the

[19] The Ministry of Economy of the Kyrgyz Republic is currently preparing a new version of the law on PPP, which provides for simplification of procedures and reduction of time for an agreement on PPP.

private sector. Likewise, the procurement plan has been informed by the learnings from other countries, such as Moldova, which implemented a similar World Bank-funded Governance e-Transformation project, the number of separate procurement packages was minimized where possible, with the focus on major procurements and working with other donors on small-scale, complementary interventions. Sequencing key interventions was thought through to help reduce some of the implementation risks inherent in a complex, comprehensive operation. Close supervision by the World Bank staff and bringing in additional technical experts through ECAPDEV recipient-executed TF and facilitating twinning arrangements with countries like Moldova, will also help to ensure that the project runs as smoothly as possible.

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

92. **Economic impact.** An economic impact assessment was carried out on the connectivity component of the project and separately on the digital platforms and solutions component.

93. **The connectivity assessment was done by applying an econometric model developed by the Global System for Mobile Communications Association (GSMA), which correlates the growth in mobile broadband penetration (3G and 4G) to increases in per capita income, and finds that a 10 percent increase in mobile broadband penetration increases GDP per capita by 0.15 percentage points.**[20] The mobile broadband subscriptions are estimated to increase from an estimated 2.7 million in 2017 to close to 7 million by 2026 due to lower prices and increased access to mobile broadband, triggered by the network infrastructure investments expected under the project.[21] Applying this growth to the United Nations (UN) population projections, mobile broadband penetration is expected to increase to around 102 percent of the population by 2026 (many users are likely to continue to hold more than one subscriber identity module card). This result is consistent with current achievements of such countries as Costa Rica (97.2 percent),[22] Ireland (98.2 percent), or Malaysia (91.7 percent).

94. The results suggest that the GDP per capita is expected to grow from US$952 to US$1,767 between 2016 and 2026, higher compared to US$1,743 which is estimated without the broadband effect. In addition, the broadband effect on the GDP of Kyrgyzstan over nine years (2018–2026), discounted at 12 percent,[23] is expected to result in an economic impact of US$280 million net present value (NPV), based on a total project investment of US$50 million assumed to be disbursed evenly during the five years of the project. This confirms that the project is economically viable and the result is considered robust, as verified by conducting a sensitivity analysis (a 20 percent reduction in the expected growth rate yields an almost equivalent reduction in NPV). A financial analysis could not be produced at this stage in light of the fact that a detailed feasibility study is yet to be conducted to define the exact configuration, costs and estimated revenues of the networks that will emerge as a result of the project. Nevertheless, it can be

[20] Model is based on a panel of 96 countries. See: GSMA. 2012. *What is the Impact of Mobile Telephony on Economic Growth?* http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf
[21] Terabit Consulting. 2016. *Regional Connectivity Pre-Feasibility Assessment: Afghanistan, Kyrgyz Republic, and Tajikistan*. p83.
[22] https://www.itu.int/net4/itu-d/icteye/CountryProfile.aspx
[23] The figure of 12 percent is based on the risk-free rate assumed at the domestic long-term depository rate. See https://www.adb.org/sites/default/files/linked-documents/47282-001-efa.pdf

safely argued that the project is financially viable and robust, due to a fully liberalized and commercially-oriented tariff regime.

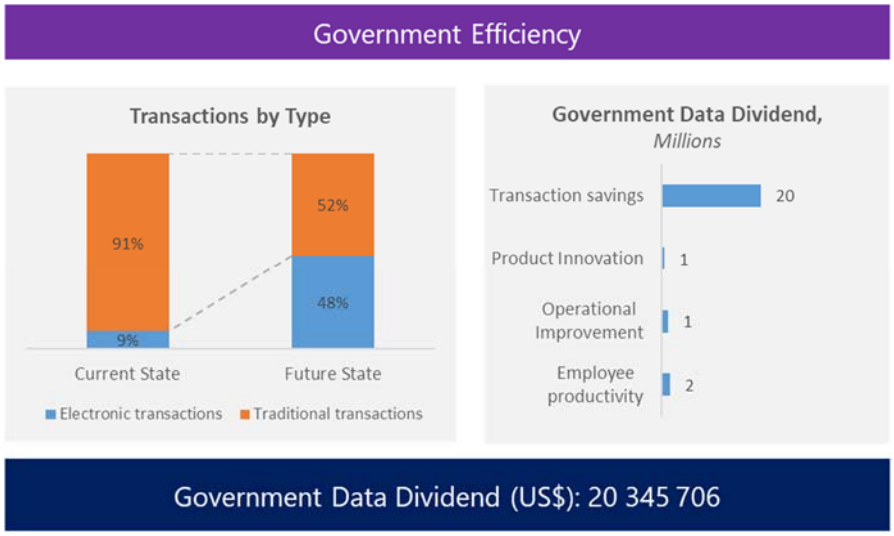
Table 5. Impact of Mobile Broadband Penetration Growth on Kyrgyz Republic's GDP

	Mobile Broadband Subscriptions		GDP Per Capita					GDP (US$, millions)		
	Per 100 People	Change (%)	US$	Growth (%)	Broadband Multiplier (starting 2018)	Total growth (%)	Revised with Broadband Effect (US$)	Without Broadband Effect (US$)	With Broadband Effect (US$)	Difference (US$)
2016	30.0		952							
2017	43.0	43	1011	6.2		6.20	1,011	6,149	6,149	0
2018	57.9	35	1077	6.5	0.5176	7.01	1,082	6,645	6,678	32
2019	71.7	24	1134	5.4	0.3574	5.73	1,144	7,102	7,161	59
2020	83.0	16	1202	6.0	0.2373	6.20	1,215	7,629	7,709	80
2021	91.3	10	1276	6.1	0.1507	6.30	1,291	8,205	8,304	98
2022	96.8	6	1355	6.2	0.0907	6.26	1,372	8,823	8,936	113
2023	100.1	3	1439	6.3	0.0501	6.31	1,459	9,489	9,615	126
2024	101.7	2	1530	6.3	0.0240	6.34	1,551	10,207	10,345	138
2025	102.2	1	1627	6.3	0.0076	6.33	1,649	10,973	11,122	149
2026	102.1	0	1743	7.1	−0.0021	7.10	1,767	11,878	12,039	161
Total 2017–2026										958
NPV										280

95. **The digital platforms and solutions economic assessment was done using the Digital Government Maturity Model Tool developed by Microsoft.** It shows that the Government will reap cost savings from the project by developing bundled and shared IT infrastructure and services for public institutions throughout the country. Bundling and sharing IT infrastructure and services will allow the Government to reduce IT-related expenditures. Sharing and bundling connectivity costs for the Government, universities, and other public institutions will result in savings between 10 percent and 20 percent, as illustrated in figure 2. In addition, the cost for the Government to retain technical expertise to operate a network will be reduced between 2.5 percent and 10 percent. Over the next five years, when the Government transitions from traditional paper-based transactions to electronic transactions, there will be an expected US$20.3 million in savings.[24] This assumes that 39 percent of all Government transactions will move to an electronic platform by 2022.

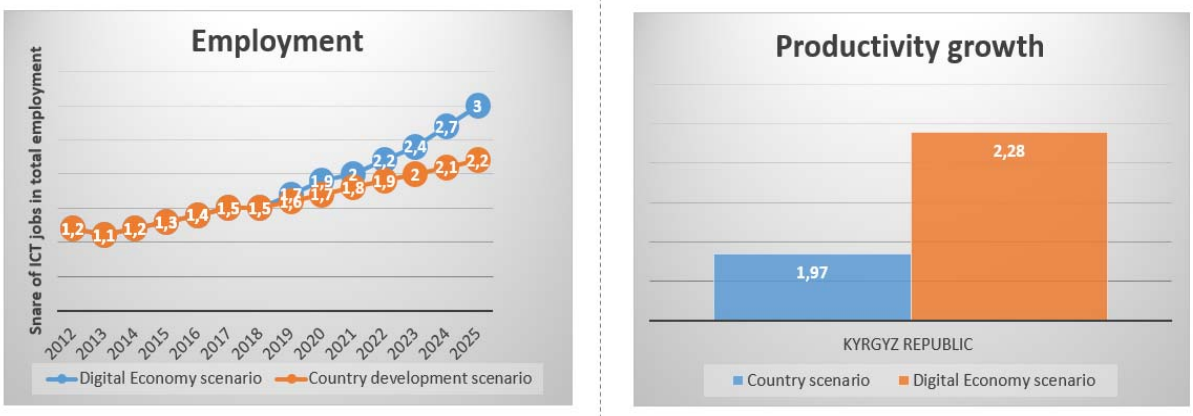
[24] Microsoft Tool, "Digital Government Maturity Model" (estimated savings are based on reaching an anticipated e-government maturity level in five years, starting 2017).

Figure 2. Estimated Savings from e-government Services



96. **Impact on labor productivity and employment in the Kyrgyz Republic is based on World Bank experts' estimations conducted under a study developed for the Eurasian Economic Commission.**[25] Applying those calculations to the project, it can be estimated that without the project (country development scenario), the potential total employment growth by 2025 in the Kyrgyz Republic will be 1.3 percent to 2 percent, while under the digital economy scenario, growth will be 1.5 percent to 2.3 percent. In terms of labor productivity growth, the without project scenario shows a gain by 2025 in potential labor productivity growth in the Kyrgyz Republic of 1.97 percent and under the digital economy scenario growth might reach 2.28 percent.

Figure 3. Estimated Growth on Employment and Productivity Growth in the Kyrgyz Republic



B. Technical

97. The Digital CASA - Kyrgyz Republic Project was designed as an integrated and interlinked program, to ensure long-term economic viability of the infrastructure, to maximize the development impact of the

[25] http://www.eurasiancommission.org/ru/act/dmi/SiteAssets/Обзор%20ВБ.pdf

investments, and to enable the initial investment costs to be recovered. Investments are being complemented by TA to ensure that access to these networks is done on an open access basis, and at a reasonable and affordable level.

98. The technical design is consistent with international best practice, including similar regional connectivity programs/projects in Africa (RCIP, WARCIP), Caribbean (CARCIP), and in the Pacific (Pacific Regional Connectivity Program) as well as similar e-government projects in Moldova and Mongolia. The design of the project is based on a model of competitive, private sector delivery wherever possible. This is fully consistent with international experience which shows that this is a more cost-effective way of delivering ICT services than the Government becoming involved in service delivery itself.

C. Financial Management

99. The financial management (FM) arrangements in place at the SCITC were reviewed in September 2016 as part of the FM assessment for the Open Data Grant and a more detailed assessment was done in April 2017. The overall FM risk is assessed as substantial. The staff of the Finance and Accounting Department (FAD) of the SCITC will bear overall responsibility for the Project FM arrangements. The assessment of existing FM arrangements that include budgeting and planning, accounting and reporting, flow of funds, internal control procedures, staffing of FM function, and external audit, established that those arrangements are not in full compliance with the World Bank requirements. The SCITC that was established in July 2016 does not have experience and knowledge of the World Bank FM and disbursement procedures and requirements.

100. The ECAPDEV recipient-executed TF has supported the establishment of a PIU staffed with experienced FM professionals. It is planned that the internal control procedures for the project will be documented in the Financial Management Section of the Project Operational Manual (POM), also planned to be developed with technical support of a Financial Management Consultant (FMC) financed from a recently approved ECAPDEV TF. It is also planned that the accounting software capable of supporting the World Bank's reporting and accounting requirements for the project (Grant) will be purchased and installed during the Grant implementation. Thus, by the commencement of implementation of the Digital CASA - Kyrgyz Republic Project, the accounting software and FM section of the POM will be in place. In addition, full-time FMC and accounting/disbursement consultants, currently contracted for project preparation under the ECAPDEV Grant, will be available to support the staff of the FAD during implementation; thus, the FM function will be fully staffed by the beginning of Project implementation.

101. Annual audits of the project financial statements will be submitted to the World Bank within six months after the end of each fiscal year as well as the project closing date. The borrower will have to disclose audit reports for the project within one month of their receipt from auditors in a manner agreed with the World Bank. Following the World Bank's formal receipt of these reports from the borrower, the World Bank will make them publicly available in accordance with the World Bank Policy on Access to Information. As part of the project implementation support and supervision, quarterly interim unaudited financial reports (IFRs) will be reviewed and regular risk-based FM reviews will be conducted. More details on the FM arrangements are provided in annex 3.

102. According to the latest Doing Business Survey 2017, the Kyrgyz Republic was among the bottom-rated Commonwealth of Independent States countries and scored modestly in comparison to many other developed and developing countries (75th out of 190)[26] on the ease of doing business. Meanwhile, according to 2016 Transparency International's Corruption Perception Index, the Kyrgyz Republic was ranked 136th[27] in the list of 176 countries. The latest Public Expenditure and Financial Accountability report (conducted in 2014) found that several critical Public Financial Management (PFM) elements including internal controls, external audit (Supreme Audit Institution [SAI]), and financial reporting remain weak. While some elements of the country PFM, such as the country's budgeting system, will be used for the project, for other PFM elements (accounting, financial reporting, internal controls, funds flow, and external audit under the project), the project-specific arrangements will apply. The project's Designated Account (DA) will be opened in a commercial bank acceptable to the World Bank.

D. Procurement

103. The activities under the project will be subject to the New Procurement Framework. All procurement of contracts will be conducted through the procedures as specified in the World Bank's Procurement Regulations for IPF Recipients -Procurement in Investment Project Financing Goods, Works, Non-Consulting and Consulting Services, dated July 2016, revised November 2017 (Procurement Regulations). The procurement and contract management processes will also be tracked through the Systematic Tracking of Exchanges in Procurement (STEP) system.

104. The overall procurement risk under the project is currently assessed as High. The Project Procurement Strategy Document (PPSD) has been prepared by the SCITC of the Kyrgyz Republic with the support of the World Bank's team. The PPSD has identified the key issues and risks concerning procurement including the following: (a) limited technical/procurement expertise within the SCITC to develop and implement ICB requirements for complex and high-value contracts—the SCITC staff might not be able to provide quality preparation, review, and comments on the commercial part of the procurement packages; (b) in the past, procurement in the country has not attracted adequate competition due to the unfavorable business environment and slow private sector growth; (c) the Tender Committee members, which would be involved in project procurement through tender committees, may not be familiar with international procurement procedures and may not speak good English to be effective in the evaluation of offers from international vendors; (d) limited contract monitoring and management skills and tools to ensure efficient and timely contract implementation; and (e) overall high public procurement risk environment. The ECAPDEV recipient-executed TF will finance the recruitment of a procurement specialist experienced with World Bank rules and procedures.

E. Social (including Safeguards)

105. Digital CASA is expected to have many positive social impacts by improving access to digital services, communications, the development of an IT industry, and improved Government service delivery. Particularly, Digital CASA is expected to (a) enable ICT to become a driver for sustainable economic growth; (b) increase employment opportunities through the development of an IT industry and ICT-enabled job opportunities; (c) enable the Government to use ICT to provide public services; (d) improve

[26] http://www.doingbusiness.org/data/exploreeconomies/kyrgyz-republic
[27] http://www.transparency.org/news/feature/corruption_perceptions_index_2016

access and quality of ICT services for the population, business, and Government; (e) reduce isolation and enhance economic activities in rural areas for women and the poor; and (f) create additional opportunities for women entrepreneurs to develop ICT-related SMEs through targeted skills development and relevant business development support.

106. The creation of fiber optic network infrastructure, in Component 1, will take advantage of optical fiber infrastructure available on power transmission networks including that of currently installed domestic power networks or foreseen for CASA-1000 as well as the optical fiber owned by railways and other infrastructure service providers. In this way, the project will, as much as possible, avoid the need for land acquisition. Where existing infrastructure is unavailable, existing rights-of-way will be utilized to the greatest extent possible.

107. Fiber optic networks will require narrow strips of land which, with careful routing design utilizing right of way, should avoid significant impacts whenever possible. It is expected that if there is any land acquisition it will be small portions which will not cause long-term adverse impacts. During the establishment of centers and hubs efforts will be made to find locations which capitalize on unused land owned by the government or local authorities, repurpose existing structures, or access land through the open market of willing buyer-willing seller.

108. Although it is unlikely that there will be impacts which cause involuntary land acquisition, until project activities complete the detailed designs, it cannot be known yet whether the policy would be triggered. As a result of the potential for involuntary land acquisition, the World Bank's OP 4.12 (Involuntary Resettlement) has been triggered. As it is unknown where the digital infrastructure will be located during project preparation, a Resettlement Policy Framework (RPF) has been prepared in the event that land acquisition is unavoidable. Once design alignment of fiber optic networks is confirmed, and location of centers and hubs are known, the RPF will guide the PIU in the preparation of a Resettlement Action Plan (RAP), if and where it is deemed necessary, will be reviewed, and cleared by the World Bank and implemented before causing impact on individual assets.

109. The RAP will include, but will not be limited to (a) a census and socioeconomic baseline information on impacted persons, households, and businesses; (b) a consultation process which ensures impacted persons are active participants in the RAP process; (c) a grievance redress mechanism (GRM) that can effectively address and resolve complaints; (d) mitigation measures; and (e) a monitoring system that can track impacted persons to ensure that their standard of living has not been negatively impacted due to project activities. The RPF provides guidance on preparation of the RAPs. Each RAP will be reviewed and cleared by the World Bank, and mitigation measures implemented prior to civil works commencing within the areas covered by each RAP. Impacts are expected to be minimal and easily mitigated.

110. As the civil works will likely involve an influx of labor to install the fiber optic network, contractors will be expected to establish essential worker safety measures while also ensuring outside laborers are aware of appropriate interaction and conduct within nearby communities. Appropriate 'Workers Code of Conduct' language will be inserted into civil works contracts.

111. **Citizen Engagement**. The project has included a substantive and multi-faceted set of activities to engage with citizens and businesses as users of digital services and providers of feedback on the quality

of the services provided and overall project results achieved. This includes: participatory needs assessments and identification of priorities; beneficiary feedback (on the design/usability of portals, speed and access to Internet, relevance of training services); and capacity building. The project will employ a number of innovative tools to obtain this feedback and ensure responsiveness (multilingual feedback features on services portals and mobile-based platforms) as well as traditional survey tools to reach non-users. The satisfaction of users of digital services established by the project will be measured through an indicator in the results framework with a target of 80% by project completion.

F. Environment (including Safeguards)

112. Component 1 of the project will include physical works that may lead to adverse environmental and social impacts including occupational health and safety issues. Such works include, but are not limited to (a) completion of the regional backbone consisting of the existing regional fiber optic networks, newly laid backbone, and newly established cross-border fiber optic links; and (b) construction of additional infrastructure such as datacenter (which includes servers, data storage equipment, power, and conditioning/cooling systems), junction centers, and hub stations. Therefore, the project was assigned Category B according to World Bank OP 4.01 (Environmental Assessment).

113. Environmental and health and safety impacts of the activities under the project are expected to be low. They mainly relate to earthworks and associated dust, noise, and vibration, occupational health and safety risks during minor construction/rehabilitation of hub stations, and risks associated with transportation and storage of construction materials. These risks can be managed by following good construction practices and site-specific environmental management plans.

114. Since the project locations are unknown at the stage of the official project appraisal by the World Bank, it is impossible to define the site-specific environmental impacts and mitigation measures. The borrower has developed an Environmental and Social Management Framework (ESMF) which includes (a) generic guidelines and procedures to avoid, mitigate, or minimize adverse environmental and social impacts of the potential activities; (b) description of the environmental and social screening process that will help to define the environmental category of site-specific activities; and (c) the requirements for site-specific environmental assessment and management plans. The ESMF, considered acceptable to the Bank, was disclosed on the SCITC website and a public consultations meeting was conducted in Bishkek on July 13, 2017.

G. Other Safeguard Policies (if applicable)

H. World Bank Grievance Redress

115. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints

may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY : Kyrgyz Republic
Digital CASA - Kyrgyz Republic

Project Development Objectives

Digital CASA - Regional Program PDO: The proposed regional program PDO is to increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve participating governments' capacity to deliver digital government services in Central Asia and parts of South Asia, through the development of a regionally integrated digital infrastructure and enabling environment.

Digital CASA - Kyrgyz Rep. PDO: The proposed country-specific PDO for the Kyrgyz Republic is to increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve the government's capacity to deliver digital government services in the Kyrgyz Republic, by contributing to the development of a regionally integrated digital infrastructure and enabling environment.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: People provided with access to the Internet		Number	0.00	1563000.00	Annual	Project data	SCITC/SCA
Internet penetration (%)		Percentage	34.50	60.00	Annual	Project data	SCITC/SCA

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: Corporate Results Indicator: Number of people provided with access to Internet services through the operation supported by the World Bank. Data is cumulative. Supported through Component 1. Baseline is for year-end 2017 (assumed zero, as project has not started, target values estimated assuming 2016 population of 6.13 million). Collected by SCITC/SCA. Includes access from any device, including mobile and fixed connections.							
Name: International Internet bandwidth per capita (kilobit per second per person)		Number	21.30	60.00	Annual	Project data	SCITC
Description: This indicator measures the increased Internet bandwidth through improved regional fiber-optic connectivity.							
Name: Average retail price for 1 GB prepaid mobile data package (US$)		Amount(USD)	4.65	2.50	Biannual	Project data	SCITC
Description: This indicator measures the affordability of broadband services using the retail price of typical entry-level broadband package as a proxy. Supported through Component 1. Baseline is for year-end 2017.							
Name: E-Services and applications utilizing the shared services platforms		Number	0.00	20.00	Biannual	Project data	SCITC
Description: This indicator measures the capacity of government entities to deliver services through digital means by utilizing the shared services platforms developed and integrated under the project. Supported through Component 2.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Private sector investments committed through the project (US$)		Amount(USD)	0.00	60000000.00	Biannual	Project data	SCITC
Description: This indicator measures the private sector investment in optical fiber networks, data centers, ICT training and innovation facilities.							

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Length of fiber-optic network		Kilometers	16281.00	17281.00	Biannual	Project data	SCITC
Description: This indicator measures the total length of fiber optic networks in the country. Supported by subcomponent 1.1: Improving Regional Connectivity.							
Name: Number of cross-border fiber-optic links		Number	7.00	10.00	Biannual	Project data	SCITC
Description: This indicator measures the number of cross-border fiber-optic links in the country. Supported by subcomponent 1.1: Improving Regional Connectivity.							
Name: Internet bandwidth pre-purchased by		Number	0.00	10.00	Biannual	Project data	SCITC

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Government (Gbps)							
Description: Measures total amount of Internet bandwidth pre-purchased by the Government under subcomponent 1.1, in Gigabits per second.							
Name: Wholesale Transit Pricing per Mbps per month		Amount(USD)	22.00	10.00	Biannual	Project data	SCITC
Description: Measures wholesale cost of Internet transit bandwidth per Mbps per month in US$							
Name: Institutions and Government agencies connected to the Government Network (G-Net)		Number	34.00	134.00	Biannual	Project data	SCITC
Description: This indicator is supported by subcomponent 1.2: Increasing the security, capacity and reach of the government network “G-Net”.							
Name: Number of government agencies using the G-Cloud shared infrastructure		Number	0.00	30.00	Biannual	Project data	SCITC
Description: This indicator is supported by subcomponent 2.1: Eurasia Cloud Regional Datacenter and G-Cloud.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of visitors per year to State Portal of E-Services		Number	0.00	1000000.00	Biannual	Tracked through web analytics feature	SCITC
Description: This indicator is supported by subcomponent 2.2: Digital Platforms, Shared Services and Smart Solutions.							
Name: Digital transactions conducted on the State Portal of E-Services per year		Number	0.00	1000000.00	Biannual	Tracked through web analytics feature.	SCITC
Description: This indicator is supported by subcomponent 2.2: Digital Platforms, Shared Services and Smart Solutions.							
Name: "Smart" data-driven solutions developed under the project		Number	0.00	5.00	Biannual	Project data	SCITC
Description: This indicator is supported by subcomponent 2.2: Digital Platforms, Shared Services and Smart Solutions.							
Name: Policy, legal and regulatory documents developed and submitted to the Government under the project (new and amended)		Number	0.00	30.00	Biannual	Project data	SCITC

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: This indicator is supported by subcomponent 3.1: Legal, Regulatory and institutional foundations for digital economy.							
Name: People trained under the project		Number	0.00	5000.00	Biannual	Project data	SCITC
of which government officials		Number	0.00	3000.00	Biannual	Project data	SCITC
of which female		Percentage	0.00	50.00	Biannual	Project data	SCITC
Description: This indicator is supported by the various training initiatives under all subcomponents of Component 3: Enabling Environment for the Digital Economy.							
Name: Partnerships formed under the project		Number	0.00	30.00	Biannual	Project data	SCITC
Description: This indicators is supported by subcomponent 3.2: Regional partnerships for digital economy skills, jobs and innovations.							
Name: Communication and public outreach events		Number	0.00	50.00	Biannual	Project data	SCITC
Description: This indicator is supported by subcomponent 3.3: Digital leadership and strategic communications.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: M&E Surveys		Number	0.00	10.00	Biannual	Project data	SCITC
Description: This indicator is supported by Component 4: Project Management.							
Name: Users satisfied with digital services supported by the project		Percentage	0.00	80.00	Biannual	Tracked through web analytics feature	SCITC
of which satisfied with broadband services		Percentage	0.00	80.00	Biannual	Project data	SCITC
of which satisfied with e-services		Percentage	0.00	80.00	Biannual	Project data	SCITC
Description: This indicator is supported by subcomponent 2.2: Digital Platforms, Shared Services and Smart Solutions.							
Name: Direct project beneficiaries		Number	0.00	1000000.00	Biannual	Project data	SCITC
Of which female (%)		Number	0.00	50.00	Biannual	Project data	SCITC
Description: This indicator measures beneficiaries who are directly deriving benefits from an intervention.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection

Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
People provided with access to the Internet	0.00	30000.00	337000.00	643000.00	950000.00	1563000.00	1563000.00
Internet penetration (%)	34.50	35.00	40.00	45.00	50.00	60.00	60.00
International Internet bandwidth per capita (kilobit per second per person)	21.30	25.00	30.00	40.00	50.00	60.00	60.00
Average retail price for 1 GB prepaid mobile data package (US$)	4.65	4.00	3.50	3.00	2.50	2.50	2.50
E-Services and applications utilizing the shared services platforms	0.00	0.00	10.00	16.00	18.00	20.00	20.00
Private sector investments committed through the project (US$)	0.00	2000000.00	5000000.00	10000000.00	30000000.00	60000000.00	60000000.00

Intermediate Results Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Length of fiber-optic network	16281.00	16281.00	16281.00	16681.00	16981.00	17281.00	17281.00

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Number of cross-border fiber-optic links	7.00	7.00	7.00	8.00	9.00	10.00	10.00
Internet bandwidth pre-purchased by Government (Gbps)	0.00	0.00	2.00	4.00	7.00	10.00	10.00
Wholesale Transit Pricing per Mbps per month	22.00	20.00	17.00	14.00	12.00	10.00	10.00
Institutions and Government agencies connected to the Government Network (G-Net)	34.00	34.00	40.00	60.00	80.00	100.00	134.00
Number of government agencies using the G-Cloud shared infrastructure	0.00	0.00	5.00	10.00	20.00	30.00	30.00
Number of visitors per year to State Portal of E-Services	0.00	20000.00	100000.00	200000.00	600000.00	1000000.00	1000000.00
Digital transactions conducted on the State Portal of E-Services per year	0.00	0.00	30000.00	100000.00	500000.00	1000000.00	1000000.00
"Smart" data-driven solutions developed under the project	0.00	0.00	3.00	5.00	5.00	5.00	5.00
Policy, legal and regulatory documents developed and submitted to the Government under the project (new and amended)	0.00	5.00	15.00	20.00	25.00	30.00	30.00
People trained under the project	0.00	200.00	500.00	2000.00	2500.00	5000.00	5000.00

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
of which government officials	0.00	100.00	300.00	1500.00	2000.00	3000.00	3000.00
of which female	0.00	30.00	35.00	40.00	45.00	50.00	50.00
Partnerships formed under the project	0.00	5.00	10.00	15.00	20.00	30.00	30.00
Communication and public outreach events	0.00	10.00	20.00	30.00	40.00	50.00	50.00
M&E Surveys	0.00	2.00	4.00	6.00	8.00	10.00	10.00
Users satisfied with digital services supported by the project	0.00	0.00	50.00	60.00	70.00	80.00	80.00
of which satisfied with broadband services	0.00	0.00	50.00	60.00	70.00	80.00	80.00
of which satisfied with e-services	0.00	0.00	50.00	60.00	70.00	80.00	80.00
Direct project beneficiaries	0.00	0.00	200000.00	600000.00	800000.00	1000000.00	1000000.00
Of which female (%)	0.00	50.00	50.00	50.00	50.00	50.00	50.00

ANNEX 1: Digital CASA Regional Context and Program Description

A. Regional Context - Central Asia and South Asia

1. **All five Central Asian countries including the South Asian country of Afghanistan, are landlocked—and a significant part of their economies continue to depend on the large neighboring economies of China, Russia, and the Middle East.** The gross national incomes (GNIs) per capita of the Kyrgyz Republic and Tajikistan remain low at US$1,250 and US$1,080, respectively (Atlas method), which are among the poorest in Central Asia. Afghanistan, just south of Central Asia and historically linked to Central Asia, has a much larger population (31 million), and a substantially larger economy, but fragile political and security situations have taken a heavy toll on poverty reduction, growth, and development. Afghanistan's GNI per capita was US$680 in 2014, significantly lower than South Asia's average of US$1,496 and lower than the poorest countries in Central Asia.[28]

2. **Central Asian countries have made significant progress with regards to implementing the 2003 UN-endorsed Almaty Programme of Action for improving competitiveness, but closer regional coordination efforts are needed.** The increased trade between Europe and Asia, which reportedly accounted for 42.5 percent of European Union (EU) trade in 2011,[29] has created an unprecedented opportunity for landlocked countries in Central Asia to emerge as hubs for trade and commerce, but the opportunities have yet to materialize. The countries' lack of direct access to the sea have resulted in isolation from an increasingly connected global market. High transport costs have limited potential exports of goods and resources. Similarly, trade in services has been constrained by limited international connectivity and high Internet access prices. Sustained and diverse approaches are needed to facilitate regional integration and achieve the untapped potential.

3. **Trends in the large neighboring economies, including China, Russia, and the Middle East have had major effects on the Central Asian countries.** Particularly, in the past two years, they have been affected by lower oil prices and slower growth in Russia and China. The deterioration of labor market conditions in Russia and Kazakhstan underscores the vulnerability of remittance inflows.[30] These developments add urgency to addressing in-country structural and regional issues to find alternative sources of growth and competitiveness, strengthen institutions, and improve the business environment.

4. **World Bank support for regional integration has spanned across water, energy, trade facilitation, health, among other sectors.** Notably, the Central Asia Regional Trade activity, launched in 2013, has been informing governments and stakeholders to develop a successful trade agenda in the region, including analysis of policies and recommendations to make trade integration more effective. Further, the CASA-1000 Project is helping to make the most efficient use of clean hydropower resources of the Central Asian countries by enabling them to transfer and sell their electricity surplus during the summer months to the deficient countries in South Asia, including Afghanistan and Pakistan. The World

[28] World Bank indicators.
[29] http://fride.org/download/PB_13_EU_Asia_trade.pdf
[30] http://www.worldbank.org/en/country/kyrgyzrepublic/publication/economic-update-fall-2015

Bank is also resetting its engagement with the CAREC Program that was established in 1997 with support from the Asian Development Bank.

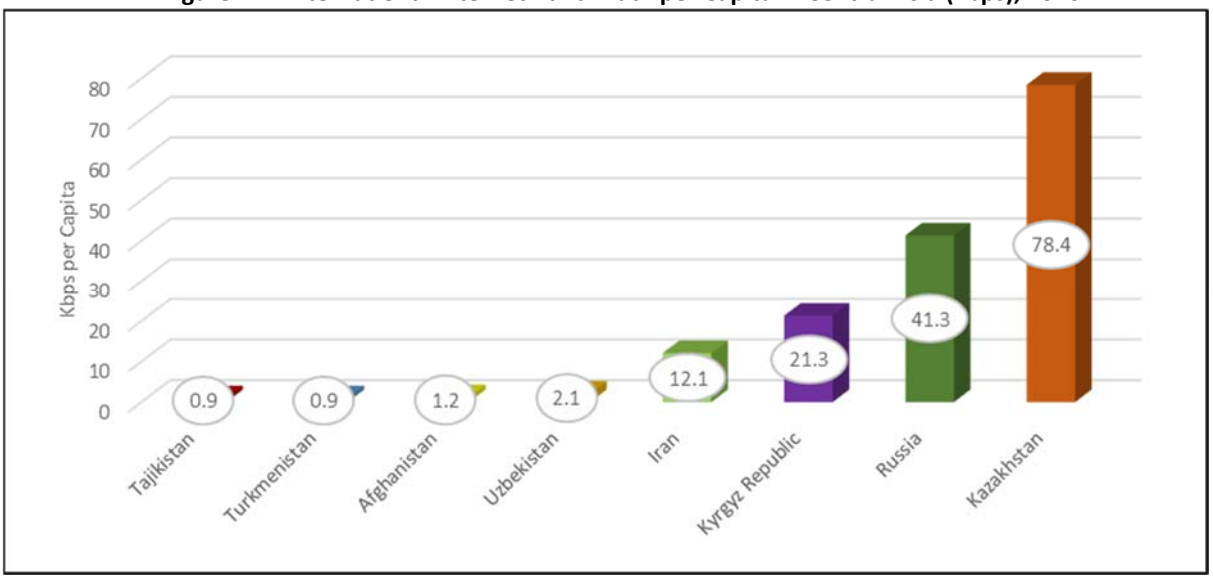
5. **There is a strong political will for regional integration.** There is a strong political will demonstrated at the highest levels by the governments of the region, notably Afghanistan, the Kyrgyz Republic, and Uzbekistan, toward greater regional integration and appreciation of the fact that individual countries can achieve higher growth, more jobs, and more services by working together than if they act alone. Countries in the region are looking for ways to improve their economies, including by leveraging the promise of the digital economy and the multiplier effects from regional integration. There are positive developments in relationship between the Kyrgyz Republic and Uzbekistan, with a high-level visit by both presidents in the fall of 2017, as well as between Tajikistan and Uzbekistan. This could potentially foster further regional collaboration on a number of initiatives. But a significant amount of work will need to be done collectively, with regional partners. The proposed Digital CASA Regional Program will allow linking CASA with its major neighbors to create the shortest route between Europe and Asia, address demand for cross-border broadband connectivity, and provide solutions for regional needs in data hosting.

B. Regional Sectoral Context - Central Asia and South Asia

6. **While the telecommunications sector in the landlocked countries of CASA has been improving, access to high-speed Internet is still limited and costly for individuals and businesses.** Much of the global Internet traffic passes through undersea fiber optic cables that bypass the landlocked countries of Central and South Asia, which as a result end up paying very high international transit prices to their neighbors. A Digital CASA pre-feasibility study indicated that the international Internet bandwidth per capita in the Central and South Asia region[31] is extremely low, with Turkmenistan and Tajikistan at 0.9 Kbps, Afghanistan at 1.2 Kbps, Uzbekistan at 2.1 Kbps, and the Kyrgyz Republic having now reached 21.3Kbps (it was around 5 Kbps in 2015),[32] while wholesale international bandwidth costs remain expensive, particularly in Tajikistan (US$100+ per Mbps per month), Afghanistan (US$25 per Mbps per month), and the Kyrgyz Republic (US$22 per Mbps per month). By comparison, per capita bandwidth in many Organisation for Economic Co-operation and Development countries exceeds 100 Kbps, while wholesale bandwidth costs in Europe and the United States are as low as US$1 per Mbps per month. Figure 1.1 and Figure 1.2 illustrate these points.

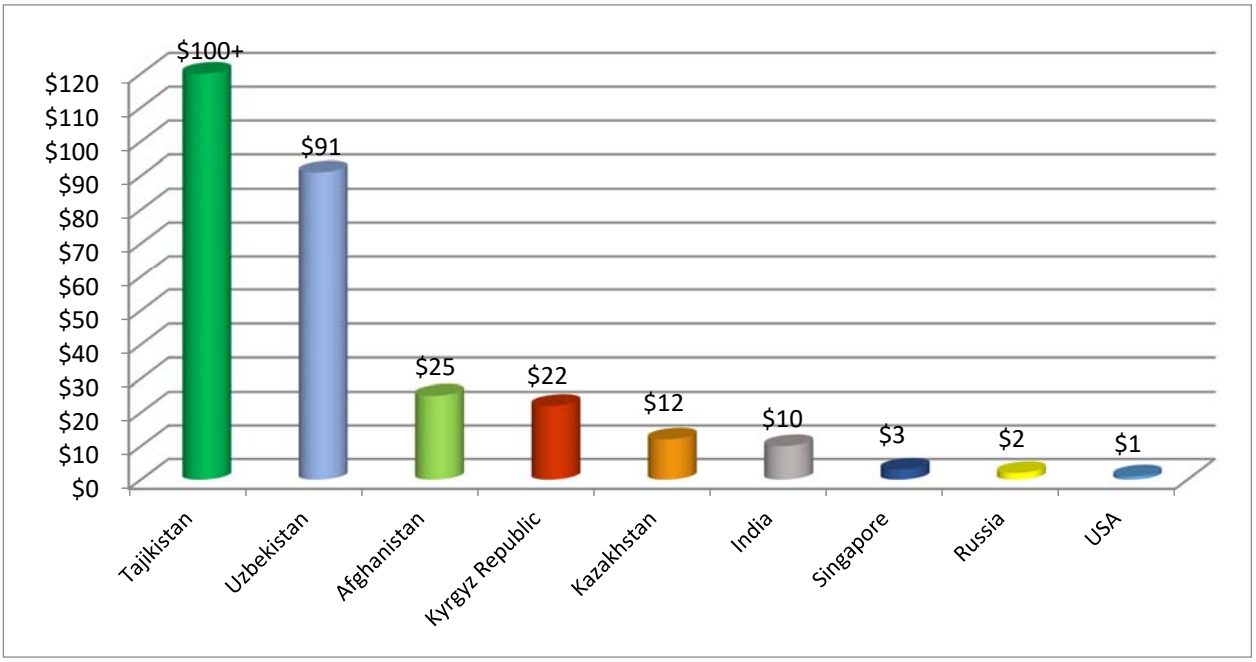
[31] Digital CASA Program countries in the context of this document refers to the five Central Asian countries (Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan), and Afghanistan.
[32] Strategic Evaluation of the Kyrgyz Republic Broadband Market, July 2017, Terabit Consulting Inc.

Figure 1.1. International Internet Bandwidth per Capita in Central Asia (kbps), 2016



Source: Digital CASA Technical Pre-feasibility study, Terabit Consulting, 2016 (updated 2017).

Figure 1.2. Wholesale Transit Pricing per Mbps (US$)



Source: Digital CASA Technical Pre-feasibility study, Terabit Consulting, 2016 (updated 2017).

7. **Despite the high levels of mobile telephony penetration, Internet penetration remains low across the landlocked countries of Central and South Asia.**[33] Internet user penetration, including mobile broadband is 34.5 percent in the Kyrgyz Republic, 18 percent in Turkmenistan, and 10.6 percent in

[33] Digital CASA focuses initially in the landlocked countries of Afghanistan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan, but remains open to other countries in the broader Central and South Asia region.

Afghanistan (Table 1.1). Fixed broadband penetration is nearly 0 percent in Afghanistan, Tajikistan, and Turkmenistan, and remains a mere 4.1 percent, 13.7 percent and 9.1 percent in the Kyrgyz Republic, Kazakhstan, and Uzbekistan, respectively. It is evident that the region's limited international broadband connectivity has led to delayed adoption of broadband technologies and lower Internet usage, especially in rural areas which is also inhibited by unreliable electricity supplies.

Table 1.1. Mobile and Internet Penetration in Landlocked Countries of Central and South Asia, 2016

	Afghanistan	Kyrgyz Republic	Tajikistan	Turkmenistan	Uzbekistan	Kazakhstan
Mobile cellular penetration (per 100 people)	85.0	131.0	107.0	158.0	77.0	150.0
Internet users, including mobile broadband (per 100 people)	10.6	34.5	20.5	18.0	46.8	76.8
Fixed broadband (per 100 people)	0.03	4.1	0.07	0.07	9.1	13.7

Source: World Bank Data, ITU, Ministry of Communications and Information Technology.

C. Digital CASA Regional Program

8. **The ultimate goal of Digital CASA is to integrate the landlocked countries of Central Asia and parts of South Asia into the global and regional digital economy thereby helping each to reap its digital dividends.** This will be achieved by enabling inclusive access by citizens and businesses to digital services through the development of a regionally integrated digital infrastructure, catalyzing private sector investment and innovations in the delivery of public and private services, and modernizing relevant policies and regulatory frameworks. The approach is three-fold, based on successful experiences in other regions including Africa, the Caribbean, and the Pacific:

(a) **Supply side (digital connectivity).** This includes activities conducted in collaboration with the private sector under appropriate PPP frameworks, to finance and operate the deployment of high capacity, cross-border fiber optic networks across the region, helping position the region as a digital hub for the Eurasian continent. This will generate revenues for participating countries that will accrue in much larger measure than if done individually. This is supported by the fact that operators have continuously sought alternative routes to the current concentration of Europe-to-Asia transit submarine cables passing through limited choke points such as the Strait of Malacca, the Red Sea, and the Strait of Sicily, among others. Digital CASA will support the continued increase in the availability, use, and development impact of regional and national broadband communications infrastructure, including, as required, deployment of a regional backbone network made up of multiple cross-border fiber optic links, domestic backbone networks, and Government Intranets (G-Net). Cross-border transmission links will be coordinated among participating countries and with neighboring countries (such as China, Iran, Pakistan, and Russia) to guarantee Internet connectivity to all destinations and services. The activities will require adherence to 'open

access' principles to ensure robust sector competition while also seeking to capture synergies through cross-sector infrastructure sharing.

(b) **Demand side (digital government and digital economy).** This includes activities aimed at encouraging greater and more productive use of enhanced connectivity by Government, business, and citizens. Digital CASA will support the delivery of transformative digital government infrastructure, platforms and services (including data-driven innovations and solutions across sectors), as well as ICT skills development to facilitate digital job opportunities. The focus will be on creating standards-based regional assets which will benefit all the participating countries, such as regional datacenters and cloud infrastructure, regionally integrated digital platforms such as secure identification, e-services development platforms, and other components that can be reused at regional and national levels. Increased demand within the region can lead to a virtuous circle by generating the scale necessary to significantly lower the unit costs of investment for providers and bandwidth for consumers, thus encouraging more investment and more uptake of the services.

(c) **Enabling environment (policy and regulation, institutions and skills).** This includes activities aimed at updating and harmonizing policy and regulatory frameworks at national and regional levels to foster competitive and fair broadband markets of regional scale, stimulate private sector investment, and increased uptake by citizens and businesses at both the regional and national levels. Digital CASA will support strengthening and harmonization at the regional level of policies, laws, regulations, as well as institutional and human capacity, including measures to strengthen the digital leadership of the region and create partnerships, such as through the support to regional capacity building centers.

9. **The combined Program activities will enhance regional public goods through the development of a highly interconnected regional broadband infrastructure which facilitates infrastructure sharing; joint deployment and transfer of experience in electronic services and content; and institution building at the regional level to ensure sustainability and further regional integration.** Specifically, the program will deliver (a) lower prices for international connectivity and improved geographic reach and reliability of broadband networks; (b) enhanced Government efficiency and transparency through expanded availability of digital infrastructure and services; and (c) improved legal and regulatory environment needed to attract private sector investments, both at the national and at the regional level.

10. **The conditions seem to be ideal for such a regional program to take off.** There is a strong political will demonstrated at the highest levels by the governments of Afghanistan, the Kyrgyz Republic, and Uzbekistan toward greater regional integration and appreciation of the fact that through regional cooperation, an individual country can achieve higher growth, and create more jobs and more services than if they were to act alone. Countries in the region are looking for ways to improve economic situation, including by leveraging the promise of the digital economy and multiplier effects from regional integration. This regional program will allow to link Central and South Asia to its major neighbors to allow for the shortest route between Europe and Asia, address demand for cross-border connectivity, and provide solutions for regional needs in data-hosting solutions. A series of consultations have been carried out during regular Digital CASA meetings, such as the one organized in June 2017 in Bishkek jointly with IFC. This first formal consultation was hosted by the GoKR and attended by country delegations from

Afghanistan, Uzbekistan, and Kazakhstan. Private sector participants suggested that a market-neutral approach for structuring Government support to broadband infrastructure deployment under Digital CASA would be for the governments to enter into agreements with one or more wholesale operators on an IRU basis with an upfront payment, which would lower the price of connectivity and free up capital for investing in capex for expanding broadband networks. The intention is to continue organizing regular and targeted project discussions to ensure coordination and learning between country participants.

11. **Significant regional spillover benefits are expected under the Digital CASA - Kyrgyz Republic Project and the broader Digital CASA Regional Program.** The concept of a regional Internet transit hub goes beyond connectivity. It will also enable the creation of new business models in the region, such as IT-enabled services outsourcing, digitally enabled jobs, and increased opportunities for exchange of goods and services. This in turn could trigger economies of scale for large regional Internet exchange points (IXPs), lowering bandwidth costs, improving quality of service, and opening the possibility for developing major regional datacenters and cloud services providers to be established. For a smaller market, such as in the Kyrgyz Republic, benefits are expected from combining demand at the regional level and hence increasing negotiation power. Improved access to affordable Internet would facilitate greater interaction among the countries thereby leading to increased regional trade through electronic business-to-business, business-to-consumer, and consumer-to-consumer transactions for digital and physical products, as well as financial transactions through electronic banking services.[34]

12. **The Digital CASA Regional Program will be implemented as an SOP and each phase/project will be based primarily on country readiness.** Eligibility criteria to participate in Digital CASA are as follows: (a) existence of a regulatory authority for the sector that is independent from the operators in the market (and/or relevant WTO commitment to establish such regulator); (b) adherence to open access principles; and (c) full liberalization of both domestic and international Internet connectivity, or a time-bound action plan to achieve such liberalization by the midterm review of the project. Afghanistan and the Kyrgyz Republic will be the first to be delivered in early 2018. Kazakhstan is also expected to join in 2018/2019 through a separate Digital Kazakhstan project. Uzbekistan has formally requested to join in the fall of 2017. Tajikistan and Turkmenistan may join in subsequent phases depending on their interest and readiness.

13. **The first two countries, the Kyrgyz Republic and Afghanistan, are planning to interconnect their national telecommunications networks via China under this project, on the basis of private arrangements with Chinese service providers, which in itself would improve Internet traffic flow in the region.** Furthermore, both the Kyrgyz Republic and Afghanistan participate in the CASA-1000 regional power transmission network, which includes a fiber optic network, through which direct connectivity between both countries can be organized. Therefore, regardless of the decision of other neighboring countries in respect to joining Digital CASA, both countries are expected to benefit from lower Internet prices as both will be connected with each other via these indirect connectivity options. Uzbekistan has recently confirmed its interest in joining Digital CASA, and project preparation is set to start in early 2018. Dialogue is also ongoing with Tajikistan. Both countries have existing and planned new links with their

[34] In the EU, 17 percent of enterprises and 16 percent of individuals carried out e-commerce with other EU countries in 2015. See the "Digital economy and society" database at: http://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database

neighbors (in particular, China and Kazakhstan). Thus, when Uzbekistan or Tajikistan (or both) come on board, the additional connectivity via China, CASA-1000 and Kazakhstan will contribute to increasing the availability and diversity of routes, thus yielding more competitive wholesale prices and improving the overall reliability and resilience of the regional telecommunications network.

14. **Implementation of the program will involve a two-tier structure, with a network of strong country-level PIUs, supported at the program level by a regional institution.** Implementation of Digital CASA will rely primarily on country-level PIUs, which manage the funds at the national level and engage in ongoing bilateral coordination with other participating countries within a regional network of Digital CASA implementation units. However, to enhance the regional sharing of experiences and additional resources aimed at policy harmonization, capacity building, and joint action at the regional level, it is expected that the program will be supported by an existing regional specialized agency or academic institution (for example, CAREC, CAREN, universities, ITU, RCC, Eurasian Economic Commission). The team notes that UN agencies are typically not eligible to implement regional IDA projects. Discussions are ongoing with candidate institutions and the participating countries with the aim to identify an optimum option or combination of options regarding the most appropriate regional anchor for this Digital CASA Regional Program.

ANNEX 2: Digital CASA - Kyrgyz Republic Project

1. **The Digital CASA - Kyrgyz Republic Project, within the context of the Digital CASA Regional Program, has as its key development objective to "increase access to more affordable internet, crowd-in private investment in the ICT sector, and improve the government's capacity to deliver digital government services in the Kyrgyz Republic, by contributing to the development of a regionally integrated digital infrastructure and enabling environment."** The successful implementation of the project should be reflected in increased economic growth, improved employment opportunities, better service delivery by the Government and the private sector, and a more favorable investment climate, thus creating the foundations for the development of a digital economy in the Kyrgyz Republic and the region as a whole. The project will support the development of a reliable, cost-effective, high-bandwidth international and domestic broadband connectivity infrastructure and help develop shared digital government infrastructure and platforms, digital services, institutions, and skills.

2. The Digital CASA - Kyrgyz Republic Project will support four key components: (a) Regional Digital Connectivity Infrastructure (US$21 million), promoting more affordable, high-quality Internet access for citizens, businesses, and Government by incentivizing private sector network infrastructure development and service provision at the regional and national level; (b) Regional Datacenters, Digital Platforms and Smart Solutions (US$18 million), building cloud-based shared datacenter infrastructure and platforms for the Government and the private sector to securely deliver better services to citizens; (c) Enabling Environment for Digital Economy (US$8.5 million), strengthening and harmonizing the laws and regulations related to the digital economy across the region, including in the context of the EAEU, development of policies and strategies, digital leadership, digital economy skills, and strategic communications; and (d) Project Management (US$2.5 million), to support effective project activities and strong delivery of results.

Component 1: Regional Digital Connectivity Infrastructure (US$21 million)

3. This component will support targeted public sector financing aimed at catalyzing private sector investments in the deployment of additional domestic and regional digital connectivity infrastructure and creating a more competitive environment in the sector, while also providing digital connectivity services for the Government's own internal use. As a result, the Government will not own public networks, but will be a user of connectivity services that will be delivered to targeted institutions such as local municipalities, hospitals, schools, police stations, post offices, and Service Centers of the SRS. The proposed domestic and cross-border network will serve three key overlapping purposes: (a) expand the Kyrgyz portion of a redundant and integrated Central/South Asian regional backbone; (b) serve the purposes of national backbone providing high quality connectivity services to all parts of the country; and (c) serve as the underlying infrastructure for provision of last mile connectivity services to public institutions throughout the country. The network will be created as a collection of networks owned by telecommunications market participants, where the Government will act as a bulk purchaser of connectivity services to encourage private sector investment in building and operating missing links or expanding the capacity of existing links where needed. A 'cascade' MFD approach has been adopted in the way project activities are structured, with a focus on attracting private sector investment through a variety of PPP arrangements and innovative financing mechanisms as outlined in the following sections.

This component is structured along two main subcomponents: (a) Improving Regional Connectivity; and (b) Increasing the Capacity and Reach of the Government Network (G-Net).

Subcomponent 1.1: Improving Regional Connectivity

4. This subcomponent will improve regional digital connectivity by supporting, through a competitive bidding process, the establishment of a redundant and resilient regional backbone network, consisting of both existing and new networks, that provides multiple cross-border connectivity alternatives and reaches every region within the country. The Government will achieve this not by procuring directly the establishment of networks, but by acting as a long-term purchaser of connectivity services in the form of bundles of services, including IRUs, in target locations. The project will therefore strive to attract private investment to encourage private sector operators and service providers to expand and share their existing regional and domestic fiber optic links, establish new cross-border fiber optic links to strengthen the connectivity with neighboring countries, and deploy of high-capacity, domestic fiber optic and wireless networks. The project will also support infrastructure sharing arrangements with other infrastructure sector providers, such as electricity transmission companies (for example, CASA-1000 and Kyrgyz Energy Holding) and railways. It is expected that the backbone will reach every district and most municipalities with the exact details to be provided through the feasibility study. Figure 2.1 depicts the main domestic and cross-border links which will support the creation the regional connectivity infrastructure:

Figure 2.1. Overall Schematic Map of Kyrgyz Portion of Regional Connectivity Infrastructure (SCITC)

5. Figure 2.2 depicts the existing and planned networks, including other sector-specific infrastructure, in particular roads (depicted in black) and power transmission lines (depicted in blue color). The aim is to avoid building where the networks already exist but rather find incentives and regulatory mechanisms for infrastructure sharing and encourage the private sector to collaborate and innovate, including though indirectly financing of new network build-out where gaps exist. The envisioned proposed dual national and regional backbone is presented in Figure 2.2.

Figure 2.2. Detailed Map of Proposed Connectivity Infrastructure

6. Financing under the project will support Government pre-purchase of bundles of communications services, including international and, where applicable, domestic capacity (in the form of IRUs) to satisfy the aggregate demand of public institutions at the target municipalities, including schools, post offices, police stations, local government offices, hospitals/clinics, as well as the service centers of the SRS, among others. The private operators will be selected through a competitive procurement process that will include multiple lots (tentatively, four lots, each with different geographic scope). It is estimated that at least two of the lots will also incorporate the creation of an IXP within their scope to enable all interested operators and service providers to exchange traffic freely. Initial consultations with the private sector took place and are encouraging. Private sector participants suggested that a market-neutral approach for structuring Government support to broadband infrastructure deployment under Digital CASA would be for the governments to enter into agreements with one or more wholesale operators on an IRU basis with an upfront payment, which would lower the price of connectivity and free up capital for investing in capex for expanding broadband networks. By acting on the demand side, the project is expected to crowd-in additional private investment into the domestic and regional backbones, thereby fostering competition in the wholesale markets through greater supply of capacity. This approach, combined with regulated

access to cross-sectoral fiber infrastructure (see component 3), will lead to more affordable prices to end users.

7. It must be noted that this subcomponent is expected to support only backbone deployment (indirectly, as mentioned above, through pre-purchase of services) with all the necessary wholesale points of presence but without last mile access networks, except for public institutions. In each target location, a point of presence with a specific bundle of services will be required, which will be designed in such a way that the infrastructure gaps will be filled by the private operators that win the tenders. It is expected that by bringing the backbone closer to the population centers, the private sector will be able to finance the last mile on its own. A detailed feasibility study will be launched in early 2018, with partial support from the ECAPDEV Grant and to be completed during the first six months of project implementation, to identify the gaps, determine the exact locations and bundles of services, select the most appropriate combination of areas to be included in each lot, estimate the Government connectivity needs, and level of public funding required to make it attractive for the private sector to bid.

8. In advance of the feasibility study, the SCITC estimates that through the support of the project, an additional 1000 km in new fiber optic networks will be deployed, connecting the following localities: Talas - Kyzyljyldyz (120 km), Torken - Akterek (70 km), Uchterek - Ozgorush - Jetigen (40k m), Tashkumyr - Alabuka - Kanyshkuya (275 km), Uzgen - Karakulja (35 km), Mailuusuu - Kadjysai Kochkor, Chaek - Jalalabad (317 km), and Batken - Kulundu (135 km). Also, Kyrgyzstan will have three new cross-border connections (one each with China, Tajikistan, and Uzbekistan). More accurate data will be provided after the completion of the feasibility study.

9. Specifically, this subcomponent will finance: (a) consulting services to conduct a feasibility study on the backbone and services requirements, as well as detailed design including development of tender documentation for the selection of operators to provide communications services in selected locations that will lead to the expansion of the Kyrgyz portion of the regional backbone network and provision of last mile connectivity services for public institutions.

10. Subject to confirmation in the feasibility study referred to in 9 (a) that deployment of the backbone as described in this subcomponent is feasible according to the parameters described in this subcomponent and confirmation of the need to provide support for the further development of the regional backbone, this subcomponent is also expected to support, among others: (b) consulting services to support in the tendering process for the selection of operators; (c) the Government's pre-purchase of communications services in selected locations from the selected operators that will lead to the expansion of the Kyrgyz portion of the regional backbone network and provision of last mile connectivity for public institutions; and (d) consulting services for third-party verification of the infrastructure deployed.

Subcomponent 1.2: Increasing the Security, Capacity and Reach of the Government Network (G-Net)

11. This subcomponent will build on the digital connectivity infrastructure established under subcomponent 1.1 to support increasing the security, capacity, and geographic reach of the Government's internal digital network 'G-Net' used exclusively for the purposes of official Government and municipal communications. G-Net will be established as a hybrid physical/virtual network, as it will leverage the already existing physical network owned and operated in Bishkek by Transcom (a subsidiary SOE

established under the SCITC which operates a small network comprised of approximately 60 km fiber optic lines in Bishkek connecting 34 central Government institutions around the city) and will expand it throughout the country on a virtual basis by purchasing capacity on the networks of commercial operators. In addition to these last mile connectivity services, which will be procured on a bundled basis for cost-saving and overall efficiency purposes with the creation of the backbone network (and are therefore included under subcomponent 1.1), G-Net will require the procurement of specialized networking and cybersecurity equipment, cabling, and IT infrastructure. This specialized hardware and software will be provided to the target institutions that will be connected to this network, including limited end-user computing equipment for selected target institutions, as needed. The list of public institutions and target municipalities under subcomponents 1.1 and 1.2 will be the same, and will include schools, post offices, police stations, local government offices, hospitals/clinics, as well as the service centers of the SRS, among others.

12. Specifically, this subcomponent will finance: (a) consulting services for the detailed design of G-Net and development of the tender documentation for the selection of a vendor to deploy the necessary hardware and software in target institutions; and (b) provision of specialized networking and cybersecurity equipment, cabling, and IT infrastructure as necessary to increase the security, capacity, and reach of G-Net to connect public sector institutions across the country.

Component 2: Regional Datacenters, Digital Platforms and Smart Solutions (US$18 million)

13. This component will focus on establishing solid foundations for the digital economy and digital government including regionally integrated shared datacenter infrastructure and digital platforms that can be reused at regional and national levels. Key among them will be a regional datacenter capable of serving the entire region, both for public and private sector clients, including for the purposes of creating dedicated G-Clouds for the participating countries, shared Government infrastructure, digital platforms, and other digital enablers to allow participating governments to significantly reduce the cost and time taken to develop and maintain new digital services. Early indications from other Digital CASA participating countries demonstrate that there is a willingness to utilize the services of a privately owned and operated regional cloud datacenter network and shared services for the purposes of ensuring the resilience and security of their domestic systems.

14. Currently, at the national level, most of the line ministries operate stand-alone IT systems and spend considerable financial and human resources to develop, implement, and operate each agency's e-services. This same picture is replicated at the regional level in each of the participating countries. In the future, they could significantly speed up the deployment of digital services and cut costs by leveraging a standardized shared infrastructure and modular services platform for their data storage, hosting, security, data sharing, citizen access, e-payment, professional IT support, and other agency or citizen needs. This approach would allow the ministries/agencies to focus on their core business requirements and objectives, rather than issues related to IT infrastructure, besides allowing for agile service design and deployment.

15. While the focus will be on establishing shared digital infrastructure and platforms, the project will also support the development of a select number of innovative citizen/business-facing digital applications leveraging shared digital infrastructure platforms, data (including open data), to offer 'quick-win' smart

solutions at regional and national levels. The development of smart solutions will be done in a way that also develops Kyrgyz capabilities in the use of data analytics and AI. In doing so, partnerships with leading countries like Singapore, the Republic of Korea and others will be systematically pursued.

Subcomponent 2.1: Eurasia Cloud Regional Datacenter Network and G-Cloud

16. This subcomponent will focus on attracting private investment towards the creation of a proposed privately owned and operated Eurasia Cloud regional datacenter or datacenter network. It will also provide limited support for creating a mini G-Cloud which will use existing datacenter infrastructure as a complement.

17. The vision of the proposed Eurasia Cloud regional datacenter network is to help position the region as the digital hub of the broader Eurasia continent. Within this context, the Kyrgyz Republic can take advantage of its central location in the region, relatively cheap energy resources, climate conducive for establishing datacenters, improved connectivity, and a strong political will. The regional datacenter will be fully implemented through a partnership with the private sector such as PPP[35] or outsourcing arrangements, with the GoKR being the first anchor client, with private clients and other governments of the wider Eurasian region expected to follow. The Government is not expected to participate in the ownership of the regional datacenter, but will act as the end-user and 'anchor tenant'. This will provide confidence to the private sector to invest in meeting the demand not only of the government but of private sector companies in the region as well. Such a Eurasian regional datacenter, jointly with smaller national datacenters mostly focused on disaster recovery and confidential national digital assets, will operate as a cluster network and provide high capacity and performance regional cloud services. The proposed regional Eurasia Cloud datacenter network is envisioned to attract international technology companies and smaller businesses and will create increased data traffic flows throughout the region, thus leading to increased economic opportunities for businesses and the population as well as fiscal revenues for the participating governments, while at the same time further bolstering the feasibility and increasing the utilization of the regional backbone supported under Component 1. It is expected that the project financing will be used to pre-pay for multiyear use of the regional hosting facilities, initially as a disaster recovery option, after signing service-level agreements with the private sector partner(s)/consortium that will operate this regional datacenter. A detailed feasibility study will be launched in early 2018 as the first step and will take into account the eventual establishment of an IoT data platform.

18. This subcomponent will also finance the creation of the mini G-Cloud for processing, storage, exchange of data, development of architectural solutions, purchase of supporting infrastructure including for improved ability to address cyber-security threats, and related training of civil servants. This will be done by upgrading the existing datacenter of Transcom, a state-owned ICT provider, which can serve for developing a short-term to midterm cloud computing solution, which could subsequently be expanded and used as a backup facility for disaster recovery and continuity purposes. Transcom also has a second facility—much smaller, that is connected via redundant fiber optic lines, which could serve as a potential short-term solution for rapidly decommissioning mission critical datacenters located across various public

[35] Please note that for the most part, the term 'PPP' is used in this document to refer to a broad range of mechanisms where the Government plays a role in encouraging private sector investment in infrastructure, including by acting as a bulk purchaser of services, and is not necessarily limited by the definition of PPP in the local legislation.

institutions and which may be at risk of imminent collapse. The project will finance the cost for upgrading these existing facilities to meet power distribution and IT needs (including servers, storage, switching equipment, and licenses). These two facilities will be considered as a short- to medium-term solution, until the regional datacenter is built and subsequently will continue to host the most sensitive Government data and information and serve as a backup facility in the long term. The Transcom data center will be developed to offer complementary services for the Eurasia Cloud – for example in helping transition data/applications to the Eurasia Cloud by providing a safe and trusted environment for testing of cloud services.

19. Specifically, this subcomponent will finance: (a) feasibility study for attracting private investment for the creation of the proposed regional Eurasia Cloud datacenter network by exploring PPP and other private participation options; (b) detailed design for establishing the mini G-Cloud; and (c) upgrading the existing datacenter facilities, including equipment and related services for the creation of the mini G-Cloud.

20. Subject to confirmation in the feasibility study referred to in 19 (a) that a regional datacenter network as contemplated in this subcomponent is feasible and confirmation of the need to provide support for the establishment of such regional datacenter network, this subcomponent is also expected to support, among others: (d) consulting services to support in the tendering process for the selection of the cloud service providers; and (e) the Government's pre-purchase of data hosting capacity and cloud services from the selected service providers which will support the establishment of the proposed Eurasia Cloud datacenter network.

Subcomponent 2.2: Digital Platforms, Shared Services and Smart Solutions

21. This subcomponent will support the development of regionally integrated digital platforms including shared services such as secure identification, authentication, and authorization; and development by line ministries across Central Asia and the broader Eurasian region, including the Digital Agenda of the EAEU. Using the 'build once, reuse always', 'digital by default and by design', 'user-centric by design', and 'open and secure by design' approaches will ensure speedy, future-proof, and cost-effective roll-out of digital services, creation of mechanisms, and standardized processes for seamless and secure data sharing and digital services interoperability, which may possibly be reused and scaled up within the region. A special focus will be on establishing the infrastructure and related technology acquisition for improved cybersecurity and associated capacity building, delivered wherever possible jointly with other Digital CASA participating countries. Initial efforts are already under way, with the GoKR having established 'Tunduk', a prototype of a set of interoperable web services used to integrate e-services from eight ministries/agencies. In addition, the Government is in the process of establishing e-payment and short message service gateways. However, additional efforts and funding are required to unleash the potential of 'build once, reuse always' approach.

22. A national Government website and e-services portal will be further developed and integrated to provide a multilingual single point of entry ('one-stop shop') for citizens, businesses, and Government officials to easily access information about the Government and public services and receive interactive and transactional digital services, anywhere and anytime via secure and reliable digital channels including mobile devices. Project funds will be used to enhance and upgrade the portal including by adding new e-

services. Accessibility of the portal by vulnerable populations will be enhanced through the connectivity and digital literacy support provided under components 1 and 3, respectively. An Open Data portal to be launched under the parallel Open Data Grant will be also further developed under this project. It is expected that through outsourcing contracts signed at the same time by more than one participating country, additional regional economies of scale will be achieved for the digitization of paper records.

23. The project will also support targeted digitization of paper records to enable migration of selected Government, business, and citizen services to an automated storage and retrieval capability. The Government has identified a list of priority e-services which require digitization of paper-based documents and records.

24. The project will also support a select number of regionally replicable sectoral quick wins (high-value and low-cost 'smart' data-driven solutions) leveraging the use of shared digital platforms, open data, and targeted digitalization efforts. These smart solutions will help address the most critical needs of citizens, businesses, and Government authorities by addressing urgent problems such as road safety and traffic management, among others. One such smart solution could be related to the creation of a regional disaster preparedness and emergency response network in collaboration with other participating countries for the purposes of improving the region's resilience to natural disasters, including climate-related events. These smart solutions will aim to take advantage of new technologies such as Big Data analytics, AI, blockchain, drones, IoT, sensors, and so on. Another smart solution could take advantage of open transport data to support Bishkek Smart City vision (a mini feasibility study has been conducted to identify possible data-driven urban transport smart solutions under a grant from the Korean Government). There may be other smart solutions to be identified through a stand-alone recipient-executed TFSCB Grant on Implementing Open Data Action Plan which could be financed through this project. It is expected that some of these smart solutions can be easily transferred to other Digital CASA participating countries, and therefore this activity will be coordinated closely at the regional level.

25. Possible criteria for prioritizing quick-win smart solutions to be implemented through this project are (a) urgency and relevance; (b) support by leadership and political will; (c) low cost (for example, preferably under US$100,000 but no more than US$200,000) and short implementation timeframe (for example, up to 12 months); (d) focused on Government-to-citizen or Government-to-business interactions, rather than Government-to-Government; (e) not requiring significant reengineering of business processes; and (f) scalable both within the Kyrgyz Republic and throughout the region, or focused on the needs of regional cooperation. Further priority shall be given to solutions characterized by considerable (a) readiness of key enablers, including back office readiness; (b) data availability, including open data; (c) existence of legal and regulatory framework; (d) user readiness; (e) sustainability; and (f) favorable external factors (such as support of other donors, and so on). While developing smart solutions, potential partnerships with leading countries (e.g. Singapore for data analytics) will be explored to facilitate development of local capacity based on international expertise.

26. The project will emphasize the importance of timely and regular citizen engagement throughout implementation. To collect feedback from users on an ongoing basis, this subcomponent will develop a multilingual, multi-channeled, interactive and responsive citizen engagement and beneficiary feedback platform, which will be based on the following premises: (i) it will leverage and continue to improve the user feedback features of portal(s) that deliver digital services to citizens and businesses. This direct and

timely feedback will be used to identify emerging needs and prioritize the development of new, and enhancements to existing, digital services. The data obtained through the portal will also: (ii) provide semi-annual readouts on user satisfaction with the digital services provided under the project, including overall satisfaction, access and affordability of high-speed Internet services. Support will also be provided to (iii) develop a mobile-based platform as a mechanism for beneficiary feedback from Internet users on satisfaction with the digital services provided under the project. Moreover, to ensure that the project promotes active participation of all citizens, and takes into account the needs of a full range of users, the project will also conduct stakeholder outreach on a regular basis to enhance the participation and inclusion of underserved populations. This outreach will both provide men and women in rural areas with information, and also obtain their feedback on digital services needs and priorities. This will not only support the targeting of implementation but also ensure that skills development trainings financed by the project are needs-based.

27. Specifically, this subcomponent will finance: (a) consulting services for detailed design and tender documentation for further development and integration of shared digital public service delivery platforms; (b) procurement of shared services such as authentication and identity management, e-signature, unified notification and payment platforms, interoperability, cybersecurity, and application/data-sharing platforms; (c) digitization of paper records; (d) development of a selected number of quick wins (smart, data driven services, with examples being road safety, traffic management, online medical appointments, criminal records certification, unified notifications, and so on); (e) further enhancement of the Government website, State E-Services Portal, and Open Data portal; and (f) development of a multi-channeled, interactive and responsive citizen engagement and beneficiary feedback platform.

Component 3: Enabling Environment for Digital Economy (US$8.5 million)

28. This component is designed to strengthen and harmonize at the regional and national levels the laws, regulations, institutional, and human capacity and a develop a variety of partnerships that will be needed to take full advantage of the digital economy opportunities, improve regional competitiveness, and incentivize innovation and job creation. It will also support strategic communications. The project will finance the development and enhancement of legal and regulatory instruments to ensure regional integration including through harmonization of legal and policy environments. This component will also support significant skills and job creation development initiatives and set up of the proper institutional arrangements needed to move the Digital Agenda forward at the regional and national levels:

Subcomponent 3.1: Legal, Regulatory and Institutional Foundations for the Digital Economy

29. There is a need to strengthen the legal, regulatory and institutional capacity to respond to evolving technological innovations and to establish a progressive and future-ready regulatory environment. While the Kyrgyz Republic's legislation for the electronic communications sector[36] and its underlying regulatory framework are among the most liberal in the region, the constant evolution of telecommunications technologies means that the legal and regulatory framework needs to keep evolving

[36] Law of the Kyrgyz Republic "On Electric and Postal Communications" dated 2nd April,1998 (with the latest amendments as of 11th July 2013).

as well. In the broader digital economy space, in the context of the DPO program, a package of laws was approved in July 2017, including new laws on Electronic Governance and on Electronic Signatures, as well as various amendments to existing laws, such as the law on Personal Information and laws on state and municipal services, among others.

30. This subcomponent will support establishing a harmonized and regionally interoperable domestic legal and regulatory environment for the digital economy on the basis of an initial gap analysis. Special attention will be given to the harmonization of legislation and regulatory policies at the regional level for facilitating regional integration and cross-border trade, including data transfers. Considering the Kyrgyz Republic membership in the EAEU, this subcomponent will support harmonization of the legal and regulatory framework for secure cross-border electronic commerce and online transactions, digital authentication, protection of intellectual property rights, cross-border taxation of digital business and incoming/outgoing traffic, secure information and data exchange, data protection and data sharing across borders, interconnection rules, licensing frameworks, interoperability of critical national information systems such as customs, electronic payment systems, cybersecurity and cyber threat management, spectrum management, and related issues.

31. Specifically, this subcomponent will finance: (a) consulting services to conduct a gap analysis of the legal and regulatory framework for the digital economy, aimed at identifying potential barriers at the regional and national levels for implementation of components 1 and 2, on the basis of which the remaining activities under this component will be based; (b) consulting services for further development of the legal and regulatory framework and training[37] in the field of electronic communications to promote competition in the telecom market, facilitate cross-border connectivity, including the procurement of cross-border and domestic IRUs, facilitate the establishment of PPPs in the sector, and create a regionally interoperable enabling environment for open access and cross-sector infrastructure sharing; (c) consulting services and training for digital economy policy, strategy and action planning, standards and legal and regulatory development for the digital economy (including digital government enterprise architecture and interoperability framework, ICT procurement for state institutions, datacenter infrastructure, shared platforms including electronic identification and authentication and other common services, and smart solutions, smart city, intellectual property, personal data protection, cross-border data transfer and hosting, emerging technologies, and others); and (d) consulting services and training for cybersecurity policy, strategy, and regulatory development, for institutional strengthening and capacity building in the area of cybersecurity.

Subcomponent 3.2: Regional Partnerships for Digital Economy Skills, Jobs and Innovations

32. The project proposes to leverage a variety of partnerships and co-financing as the primary mechanisms to help address the current lack of human capacity for digital transformation at the regional and national levels, bridge the ICT literacy divide, and develop new skills needed in the digital economy. It will also support regional partnerships for applied research and development to facilitate digital innovations using 'breakthrough' digital technologies to create new 'smart' jobs and improve regional and global competitiveness of local innovative firms and youth. In this context, considering the common

[37] Training under this subcomponent will involve internationally accredited training in the respective fields for institutional strengthening of the SCITC, including the SCA.

interests and needs of the Digital CASA participating countries the project will support a Regional Center of Excellence for Digital Development, as part of a regional network of such centers. Furthermore, this subcomponent will include support for establishing partnerships with a variety of DPs, NGOs, and the private sector—including regional and global technology companies—to launch or scale up ICT awareness as well as ICT innovation support and ICT skills development programs, with a focus on new technologies such as blockchain, AI, big data analytics, predictive analysis, IoT, and others. This project will capitalize on the willingness of private sector providers to develop the next generation of digitally native population and testing new approaches for development, including through their social corporate responsibility programs. Partnerships and other support for skills development and innovation under this subcomponent will emphasize digital inclusion, targeting youth and women.

33. **It is crucial to develop new skills needed to drive digital transformation and implement innovative digital government and digital economy programs and projects both in the Kyrgyz Republic and the region by bringing about mindset changes for government officers to support and to provide e-services effectively.** The project will help develop a Digital Economy Competency Framework to identify the skills necessary for Government leaders, civil servants, and other citizens, especially women, youth, and disadvantaged groups to acquire digital economy competencies to be proficient in various digital environments through any combination of online learning, self-study, professional training, or other modular coursework.

34. This subcomponent will support the establishment of the Regional Center of Excellence for Digital Development, with the vision to serve the need of the wider Eurasia region to develop the new type of leaders who are to drive digital economy development. This institution, which can be built on the basis of an existing university or related organization with a presence across the participating countries, will provide both in person and remote training services. The Center will also be a platform for learning and testing new technologies and for effective knowledge exchange by practitioners. Based on the needs assessment, the center will provide the following:

(a) **Training for Government and private sector leaders.** This will target minister- and deputy minister-level officials, Parliament members, agency heads, department heads, and other key staff in central government and local governments across the region as well as prominent private sector leaders. This will include high-level, multilingual seminars with practitioners from digitally more advanced countries and study visits to countries that are leaders in leveraging ICT for development.

(b) **Training of Government officials.** This will target civil servants in line ministries and municipalities in charge of delivering e-services to citizens. The focus will be on change management to motivate and engage each one of the individuals and obtain their buy-in to leverage technology for improved service delivery in key sectors.

(c) **Training of private sector and civil society representatives, and other citizens, especially women, youth, and disadvantaged groups.** The focus will be on building most valuable ‘smart’ skills for employment in the digital economy and creating ‘smart’ job opportunities.

(d) **Training of ICT professionals.** This will focus on more advanced technical training in cutting edge technology areas.

(e) **Training of trainers.** This will ensure sustainability and efficiency in delivering, replicating, and scaling training programs.

35. **The project will finance one or several existing education institutions (state and private) to establish and run the Center of Excellence as well as development of curriculum and the cost of trainers.** The vision is for the center to eventually become self-sustainable by the end of the project. Detailed design study will be conducted to help ensure sustainability.

36. **A Strategic Partnership Framework will be developed and will cover longer-term partnerships with a diverse set of institutions both domestic and foreign, both public and private, commercial and non-profit, and bilateral and multilateral.** This would include both funding and in-kind partnerships with development banks, donors, academic and research institutions, think tanks, consulting firms, industry associations, IT vendors, telecom providers, social media platforms, e-commerce, and e-banking platforms.

37. **This subcomponent will also support a number of innovative initiatives that will look into ways to develop ICT skills jointly with other participating countries and create replicable ICT-enabled employment opportunities for citizens with a special focus on youth, disabled, and women, leveraging virtualized job opportunities, and stimulation and creation of the app economy by creating an innovative and regionally integrated ecosystem.** For sustainable ICT skills development, the project will provide assistance to ongoing efforts under a parallel project to update the curricula for schools and universities to support the national digital transformation objectives. This component will support hi-tech park initiatives in the areas of public-private dialogue, job creation for youth and women, and IT education. It will finance the scale up and dissemination at the regional level of the pilot initiative ran by the SRS that focused on job creation for youth and women in the context of digitalization of the Government's paper records needed to launch e-services. It will also support the development of innovative solutions including by leveraging open data and harnessing the potential of big data and analytics. Hackathons or partnerships with local and regional private sector and technology hubs may also be used to incentivize local content creation, development of digital solutions, mobile based apps, and e-services that address local problems. Skills development and efforts in support of job creation and entrepreneurship promotion will have a spillover effect on private sector investment and vice versa.

38. Specifically, this subcomponent will finance: (a) support for establishing a Regional Center of Excellence for Digital Development, as part of a regional network of such centers, which will lead the implementation of the majority of the activities listed here; (b) support for national and regional innovation challenge competitions, hackathons, and pitching events aimed at stimulating youth entrepreneurship; (c) support for innovative job creation initiatives, such as through paper records digitalization programs, microwork, and others that are aimed at creating jobs for youth and women; (d) piloting digital innovations using latest technologies (such as big data, blockchain, drones) to develop practical, highly valued exportable skills and replicable use cases and smart solutions; (e) assistance in the design of academia-industry partnerships, including internship and practical training programs for young graduates and twinning arrangements with various educational and research organizations; (f)

consultants to develop the Digital Economy Competency Framework and the initial offering of courses and workshops and for training of trainers; and (g) hiring of world class trainers and instructors for leadership and technical training to enable government leaders, officials, ICT professionals, and other citizens, especially women, youth, and disadvantaged groups to acquire digital economy competencies.

Subcomponent 3.3: Digital Leadership and Strategic Communications

39. To drive massive digital transformation of the region and the country, there is an urgent need for strong digital leadership and constant communication activities to ensure effective and coordinated actions across the public sector at regional, national, subnational, and local levels and broad stakeholder ownership of the transformation agenda**.**

40. This subcomponent will support a number of activities in the area of digital leadership development and strategic communications. This will include support for the E-Governance Council, which is the supreme body for coordinating digital transformation and the transition to e-government in the Kyrgyz Republic in accordance with the Law of the Kyrgyz Republic “on electronic governance” dated July 19, 2017, No.127, and has been mandated with driving the digital transformation agenda at the national level and ensuring a whole-of-government/joined up approach for digital transformation while at the same time ensuring the sustainability of the project beyond its completion. The SCITC also acts as the Secretariat of the Council. This subcomponent will therefore also include capacity building and advisory support to the Council by international consultants (or a resident advisor), including support to the Secretariat in developing a Digital Transformation Strategy that includes a detailed implementation roadmap.

41. Furthermore, a transformation of this magnitude needs to be properly communicated to citizens and businesses, to obtain their support for the program to put pressure on departments that are reluctant to embrace it. It is also important to alert the population when new e-services become available and explain how to take advantage of them. Communication and engagement activities with internal and external stakeholders should be strengthened through effective communication channels, including beneficiary feedback mechanisms. Setting up clear internal processes and tools to conduct timely communications allows for the efficient implementation, including timely course corrections as needed, ensures that duplication of efforts is avoided, and that a coherent message is delivered to stakeholders. Work under this subcomponent on beneficiary feedback is expected to provide insights on the design of regulatory amendments introducing provisions on mandatory and regular collection of user satisfaction feedback via the portal by all government agencies providing e-services. The provisions on mandatory disclosure of user satisfaction survey results and government agency plans on service improvement would be part of these amendments.

42. Specifically, this subcomponent will finance: (a) local and international consultants and technical assistance (TA) to the Secretariat of the E-Governance Council; (b) recruitment of a program coordinator for partnerships, outreach, beneficiary feedback and strategic communications with a responsibility for networking and crowdsourcing in skills and innovation resources for the Kyrgyz Republic; (c) development and implementation of a strategic communications program including hiring consultants for the organization of public information and awareness building campaigns, knowledge-sharing seminars, workshops, and conferences; and (d) creation and management of strategic partnerships with local and

foreign government agencies, donors, NGO,s and other entities, to raise and manage additional funding and other resources.

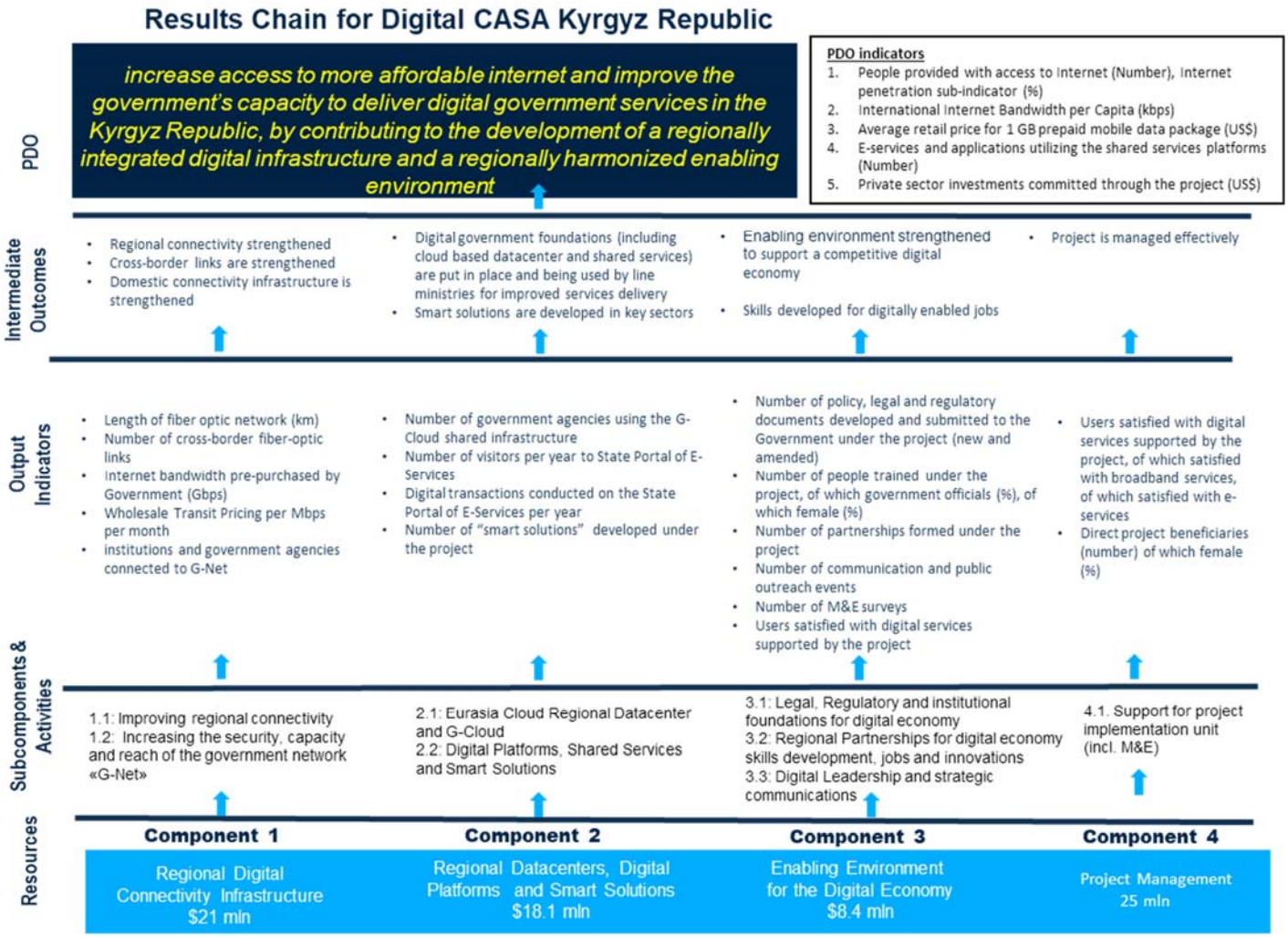
Component 4: Project Management (US$2.5 million)

43. **This component will finance project management activities and associated institutional capacity building.** This will sustain a PIU, institutional strengthening, M&E activities as well as office equipment, various operating costs, training for PIU staff, as well as funding for audits, logistics, and operational overhead. This component will also finance the Kyrgyz Republic's participation in regional coordination activities and related consultations at the regional level.[38] The project will finance the core team of the PIU of the Digital CASA - Kyrgyz Republic Project, including specialized support for project management, M&E, change management, and technical specialists to coordinate different activities under the Digital CASA Project.

44. **The results chain is represented in Figure 2.3**. The figure depicts the key results chain and key indicators for the project.

[38] A regional institution is expected to be selected to manage and coordinate all the regional coordination activities and will be financed through a separate IDA grant.

Figure 2.3. Results Chain for Digital CASA - Kyrgyz Republic



ANNEX 3: IMPLEMENTATION ARRANGEMENTS

Digital CASA - Kyrgyz Republic

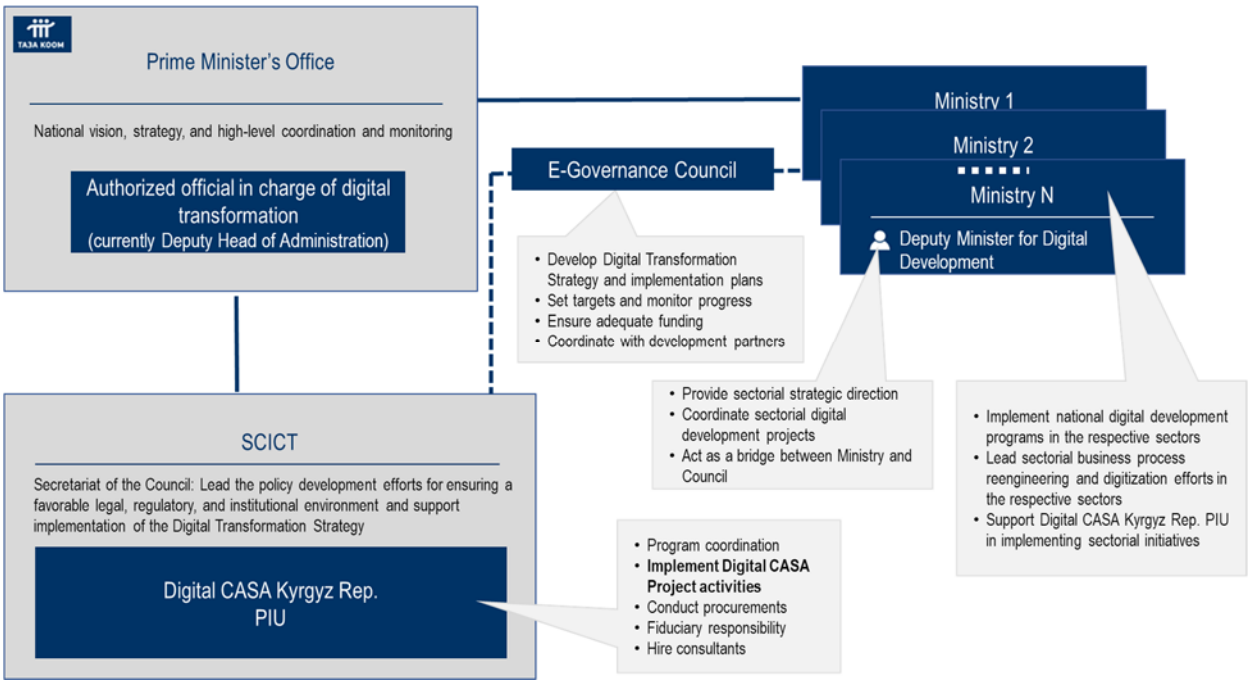
Project Institutional and Implementation Arrangements

Project Implementing Entity

1. The Ministry of Finance will be the borrower for the proposed Digital CASA - Kyrgyz Republic Project and the SCITC will serve as the project implementing entity. The SCITC was created under the Resolution of the Cabinet of Ministers of the Kyrgyz Republic No. 402, dated July 15, 2016, with a mandate to play a coordination and policy making role in ICT sector in the Kyrgyz Republic. It was created through the merger of various authorities and institutions in ICT area previously dispersed among a number of Government agencies including the Telecommunications Directorate under the Ministry of Transport and Communications, the Center of Electronic Governance, the Ministry of Economy, the SCA, and various e-governance departments from other public agencies.

2. The SCITC will serve as the implementing agency for the Digital Transformation Strategy, currently under preparation, to support the Government's 5-Year Development Plan (40 Steps to a New Era), including the Digital CASA Project as its key implementation vehicle. The SCITC is the executive body (Secretariat) of the E-Governance Council established in accordance with the E-Governance Law to coordinate digital transformation and the transition to e-government in the Kyrgyz Republic. The Government has recently appointed a new Deputy Head of Administration in the PM Office in charge of Digital Transformation as of February 6, 2018, who will be supported by SCITC in the finalization of the Digital Transformation Strategy, development of implementation plans, setting targets, monitoring progress, ensuring effective oversight, coordination, and change management, and securing adequate funding by coordinating the work not only of the Government agencies but also of other DPs. The project will therefore also include capacity building and advisory support to the Council by international consultants (or a resident advisor), including support to the Secretariat in developing a Digital Transformation Strategy that includes a detailed implementation roadmap. Furthermore, Deputy Ministers of Digital Development have been appointed at each of the line ministries, who will be responsible for strategic use of ICT for sectoral transformation in their respective sectors. Considering the multifaceted scope of the Digital CASA Project as outlined above, it is envisioned that various Government agencies of the Kyrgyz Republic will play advisory and/or beneficiary roles under individual components of this project, but responsibility for project implementation is circumscribed to SCITC and its PIU. presents the overall digital transformation agenda implementation structure.

Figure 3.1. Overall Digital Agenda Implementation Structure



Staffing

3. The SCITC is governed by the chairman appointed by the Prime Minister of the Kyrgyz Republic. The SCITC has a total of 75 staff including administrative personnel, engineers, and technical personnel. Two deputy chairmen have been appointed as focal points for Digital CASA on behalf of the Government; one of them is in charge of digital infrastructure and enabling environment for the Digital Economy, and the other one is in charge of digital platforms and smart solutions. There are five permanent employees in finance/accounting department (head of finance/accounting department, two senior specialists, and two specialists [all are permanent staff]). The SCITC has a PIU within its organizational structure responsible for implementing projects financed by the Government, international financial institutions, and other sources. The current FM arrangements in the SCITC do not fully meet the requirements of the World Bank for projects, since the SCITC does not have experience in implementing World Bank projects. To implement the project activities, the SCITC is hiring the experienced staff under the PIU. Project FM function will be assigned to the PIU, which will maintain satisfactory project accounting systems capable of tracking all project resources and costs and compiling regular financial statements. It is expected that the FM function is fully staffed by the project implementation.

4. The project will be supported by a strong Digital CASA PIU that will have core personnel such as PIU director, project manager, senior procurement specialist, procurement specialist and procurement assistant, financial manager and disbursement specialist. The PIU will be supported by additional specialists and staff, including technical coordinators for each project component with relevant technical

skills; three specialists for the subcomponents under Component 3; specialist on building of digital skills, communications specialist (partnerships, communications, and public information and awareness building), legal and institutional foundations specialist, M&E specialist, office manager, translator, and driver. This team of specialists will be responsible for coordination and reporting on different activities under the Digital CASA Project. The PIU has been established through SCITC Order #128 of August 3, 2017, and the core staff selected with the support of the ECAPDEV Grant. The Project Operational Manual (POM), currently in draft and to be finalized and adopted by effectiveness, lays out the detailed operational procedures for project implementation, including the institutional, disbursement, procurement and financial management arrangements.

5. **SOE Transcom and SOE Infosistema—organizations subordinated to the SCITC—will provide the operational TA needed for successful project implementation.** SOE Transcom will serve as technical operator for infrastructure-related projects and products while SOE Infosistema will serve as technical operator for digital platforms. Also, the SRS under the GoKR will be the main public sector partner and its subordinated organizations will serve as technical operator for public service delivery (that is, front office, client support and call center infrastructure, document delivery, and so on).

6. **Project activities, especially those focused on quick wins and smart solutions, will be implemented by joint teams comprised of personnel from the SCITC, Digital CASA PIU, and project owners at the beneficiary ministries.** The PIU's technical personnel will serve as the leads on technical matters for components and activities within their purview and ensure that all procurements are carried out in accordance with the World Bank rules and procedures. The stakeholders at beneficiary ministries will be responsible for providing strategic direction, provision of inputs into the design and planning, lead business processes reengineering if needed and provide oversight, while the SCITC and PIU staff will continue to lead on ICT-related issues, procurement, and fiduciary functions. The working relationships are expected to be collaborative given the need for close cooperation and some areas of joint responsibility. This will include joint development of the Terms of Reference (TOR), technical specifications and functional requirements, evaluation functions, contractor selection, and supervision of implementation. This will help strengthen sustainability of sector-specific interventions after project completion.

Budgeting and Flow of Funds

7. The SCITC prepares a yearly budget and submits it to the Ministry of Finance for approval. The annual budget for the following year must be submitted before May 31 of the current year. After approval, the Ministry of Finance transfers funds to the Treasury on a quarterly basis. The annual budget is divided into quarters and funds are received on a quarterly basis. Based on the agreed budget, the SCITC is entitled to use funds from the account kept in the Treasury, where all payments are conducted. For the purposes of this project, the SCITC will follow the same procedure which is considered to be adequate. Budgets will be prepared on the basis on approved procurement plans.

Accounting and Financial Reporting

8. The SCITC keeps its accounting records in the accounting system-1C version 8.2. The accounting system was purchased from a local IT firm. It is tailored to meet national accounting standards for budget

organizations and reporting is tailored to meet reporting requirements of tax authorities, the Treasury, and the Ministry of Finance. Regular set of financial statements and reports (balance sheet, statement of capital investments, cash flows, list of debtors and creditors, actual versus budgeted comparison) are presented for the periods ended June 30, September 30, and for the year ended December 31, in accordance with the requirements of national legislation and submitted to the Ministry of Finance. For the purposes of the project, a dedicated software (compatible with the one used by the SCITC) will be purchased and installed during project preparation and will be fully operational by the commencement of project implementation. This software should meet the World Bank's reporting and accounting requirements. The project will apply cash basis International Public Sector Accounting Standards (IPSAS) for accounting purposes in line with acceptable practice in the Kyrgyz Republic. IFRs will be prepared on a quarterly basis, and will include information on the sources and uses of funds, detailed use of fund by each activity, as well as movements and balances in the DA. Format of IFRs will be agreed with the World Bank before negotiations, and the reports will be submitted within 45 days from the end of each calendar quarter.

Internal Controls

9. The SCITC must comply with policies and procedures developed by the Ministry of Finance on budget organizations from internal controls and operations perspective. Although the Internal Audit function is envisaged by the legislation, it is not established within the SCITC due to limitations in staffing and budget. Thus, for the implementation purposes of this project, the internal control procedures will be documented in the Financial Management Section of the POM that will be developed during project preparation**.**

Auditing

10. Financial statements and operations of the SCITC are subject to audit by the Chamber of Accounts (SAI in the Kyrgyz Republic). Financial statements are not audited by independent external auditors. In addition, tax returns are reviewed by tax authorities according to the State Tax Service schedule. Also, operations are subject to review by Financial Inspection Department of the Ministry of Finance and/or Persecutors Office if there are allegation of wrongdoing, fraud, and corruption. The World Bank will not rely on those reviews and audits.

11. Annual audit of the project financial statements prepared in accordance with cash basis IPSAS and will be carried out by an eligible independent audit firm, in accordance with the TOR, agreed with the World Bank. Audit reports (except management letter) will be publicly disclosed by the SCITC and the World Bank on their respective websites.

Disbursements

12. The disbursement arrangements under the project will follow the traditional disbursement mechanism, including direct payments, advances to and replenishments of the DA, special commitments, and reimbursement. The minimum application size and DA ceiling will be specified in the Disbursement and Financial Information Letter. The SCITC will open a dedicated DA in U.S. dollar in a commercial bank acceptable to the World Bank in U.S. dollars. For local currency payments, they may open a transit account

in Kyrgyz soms. The SCITC, with the support of the FM and accounting/disbursement consultants, will be in charge of disbursements.

Procurement

13. The overall procurement risk under the project is currently assessed as High. The PPSD has been prepared by the SCITC with support from the World Bank's team. The PPSD has identified the key issues and risks concerning procurement including the following:

(a) There is limited technical/procurement expertise within the SCITC to develop TOR and bid specifications and to implement ICB requirements for complex and high-value contracts; the SCITC might not be able to provide quality preparation, review and comments on commercial part of the procurement packages.

(b) Procurement in the country has not attracted adequate competition due to unfavorable business environment and slow private sector growth.

(c) The Tender Committee members, who will be involved in project procurement through Tender Committees, may not be familiar with international procurement procedures.

(d) There is limited contract monitoring and management skills and tools to ensure efficient and timely contract implementation.

(e) Overall, there is high public procurement risk environment.

14. Given the above risks and based on the lessons learned from similar experiences, the following measures are proposed to strengthen SCITC capacity and ensure effective project implementation:

- Engagement of a qualified procurement consultant, who will assist the SCITC in the procurement activities
- Engagement of a panel of experts, who will advise the SCITC on the preparation and implementation of the technical aspects of the project
- Active participation by the World Bank team in assisting the SCITC in the planning and implementation of procurement activities
- Training of the SCITC in appropriate areas related to procurement, contract management and coordination, as well as contract management of large and complex projects

15. The activities under the project will be subject to the New Procurement Framework. All procurement of contracts will be conducted through the procedures as specified in the World Bank's Procurement Regulations for IPF Recipients - Procurement in Investment Project Financing Goods, Works, Non-Consulting and Consulting Services, dated July 2016, revised November 2017 (Procurement Regulations). The procurement and contract management processes will also be tracked through the STEP system.

16. **Use of National Procurement Procedures.** In accordance with paragraph 5.3 of the Procurement Regulations, when approaching the national market (as specified in the Procurement Plan tables in STEP), procurement under World Bank financed operations may be carried out in accordance with "Single-Stage Bidding" method set forth in the Public Procurement Law of the Kyrgyz Republic dated April 3, 2015 № 72 (the "PPL") with amendments dated November 18, 2016 N 182, December 10, 2016 N 195, February 14, 2017 N 25, May 30, 2017 N 93, provided that such arrangements continue to meet requirements of the paragraph 5.4 of the Procurement Regulations and the following conditions:

- The request for bids/request for proposals document shall require that bidders/proposers submitting bids/proposals present a signed acceptance at the time of bidding, to be incorporated in any resulting contracts, confirming application of, and compliance with, Bank Anti-Corruption Guidelines, including without limitation the Bank's right to sanction and the Bank's inspection and audit rights;
- Bidding documents, including contract forms, acceptable to the Bank shall be used.
- The Bidding process shall not be cancelled sole on the reason that minimum bid price is larger than the amount allocated by procuring entity for this procurement.
- There shall be no preference applied during procurement of goods and works.
- Implementing agency shall have an option to publish procurement notice without disclosing cost estimate.

17. When other national procurement arrangements other than national open competitive procurement arrangements are applied by the Borrower, such arrangements shall be subject to paragraph 5.5 of the Procurement Regulations. Other national procurement arrangements such as "Simplified Method" (Request for Quotation) may be applied on the same conditions stated above for procuring limited quantities of ready available off-the-shelf goods or simple civil works of small value. In addition, not less than three quotations shall be requested to ensure competition.

18. **Procurement approaches**. The procurement approaches for key packages has been determined in the PPSD as described in the following paragraphs.

19. **Procurement approach for key goods and non-consulting services contracts.** To achieve the project's objectives, the key considerations for determining of the procurement approach are the following:

- Connectivity services to support expansion of the Kyrgyz portion of the regional backbone network (cost estimate US$17,600,000) will be procured as non-consulting services for provision of IRUs. This will allow the client to focus on defining the communications services that need to be provided in the various locations without predefining a technical solution, which the operators are in a better position to propose. Another benefit of selected approach is the existence of multiple operators in the market with competing and sometimes complementary networks, which could promote healthy competition in the procurement process. Operators also have experience in managing the construction process, including obtaining the necessary environmental permits.

- Creation of Eurasia-Cloud (cost estimate US$10,000,000) will be procured as non-consulting services for provisions of hosting capacity and cloud services. The datacenter business is well-established and there are multiple vendors globally capable of supplying a full turnkey solution.

20. **Procurement approach for key consultancy contracts.** Consulting services for detailed technical design of G-cloud including bidding documents (BDs) for mini-cloud, feasibility study including business model and BDs for Eurasia-Cloud and support in the tender processes including the development of technical specifications, design estimates, and other necessary measures to determine the construction site (estimate cost US$500,000) will be selected through Quality- and Cost-based Selection (QCBS) method. Support to the Secretariat of the E-Government Council (estimate cost US$700,000) will also be selected through the QCBS method.

21. **Procurement risks analysis.** The World Bank supported the recipient in developing the PPSD. The PPSD and Procurement Plan will be finalized and agreed by the World Bank by completion of the project negotiations.

22. Considering the nature of IT procurement, the main risks associated with implementation of the project and the proposed mitigation measures are described in the risk management plan in table 3.1.

Table 3.1. Procurement Risk Analysis

Risk Description	Likelihood	Impact	Overall Risk	Description of Mitigation	Risk Owner
Limited technical/procurement expertise within the SCITC to develop TOR and technical specifications and to implement ICB requirements for complex and high-value contracts. The SCITC might not be able to provide quality preparation, review and comments on commercial part of the procurement packages.	5	5	25	Qualified consultants will be hired to support the SCITC in preparation of TOR and technical specifications, ad hoc trainings of experts involved in ICB processes.	SCITC
The concerned Government officials are not well aware of the competitive bidding procedures, as well as World Bank procedures; recent political developments may lead to the frequent turnover of tender committee members.	3	4	12	The project coordination team will arrange for relevant procurement training to be provided for the staff directly involved in procurement and also for members of Tender Committees.	SCITC
Potential procurement delays. Experience with the past and ongoing projects in the country show frequent procurement delays due to poor procurement planning and lack of appropriate market analysis.	5	5	25	Careful procurement planning based on the market analysis and realistic scheduling; advanced preparation of technical specifications or TOR; close World Bank supervision and monitoring,	SCITC

Risk Description	Likelihood	Impact	Overall Risk	Description of Mitigation	Risk Owner
				particularly from the country offices.	
Low level of competition. Past experience indicates the procurement in the country has not attracted adequate competition.	5	5	25	Careful procurement packaging to foster competition; wide and advanced advertising; proactive search and contact with potential suppliers, contractors, or consultants.	SCITC
Inadequate contract management and lower-than-required quality of procured equipment.	5	5	25	More emphasis and training on appropriate contract management or hiring an experienced contract manager; more emphasis on procurement of higher quality equipment or strict equipment acceptance requirements; regular physical inspections by World Bank supervision mission.	SCITC
Perceived high level of corruption as measured by Transparency International. Overall procurement environment is unsuitable for effective procurement.	3	5	15	World Bank Anticorruption Guidelines will be enforced. Close supervision by the World Bank staff.	SCITC

23. Key conclusions from the conducted market analysis:

- There is market capability to meet the procurement needs for the connectivity agenda; however, the regional aspects also make the local market more attractive for new, larger entrants who may be eager to establish a presence in Central Asia, starting from the Kyrgyz Republic. However, the Government should be cognizant of the fact that the tenders for shared Government platforms might need to be structured in a way to attract international players.

- The SCITC has limited experience with structuring and issuing BDs in accordance with the World Bank format. Both parties agreed on the need to bring in technical advisers with such experience as well as development of close relationships with the World Bank's technical and procurement specialists.

- Through extensive industry consultations, the Government realized that certain approaches to procurement will need to be aligned with the market capability. The Government plans to launch a feasibility study for connectivity subcomponent and make good use of the

twinning arrangements with the Moldova Government which is in a position to share experience with launching tenders for shared government infrastructure.

- The Government realized that additional efforts would be required in terms of continuous consultations with the industry, careful approach to development of procurement documentation, and deliberate efforts to widely advertise tenders to ensure appropriate levels of participation by both local and international vendors.

Table 3.2. Summary Procurement Plan

No.	Package	Estimated Cost (US$)	Procurement Method
1.	Connectivity services to support expansion of the Kyrgyz portion of the regional backbone network	17,650,000	RFB
2.	Creation of Eurasia-Cloud	10,000,000	RFP
3.	Procurement of specialized networking and cyber security equipment, cabling and IT infrastructure, works, office computers, printers, notebooks, maintenance training for G-Net.	2,850,000	RFB
4.	Hardware and software for modernization of the existing modernization of the existing Datacenter of Transcom for creation of G-Cloud	3,000,000	RFB
5.	SaaS package for Central Government Intranet (agendas, task management, collaboration and document management, Government dashboards, e-cabinet), including digital platforms	2,600,000	RFP
6.	Detailed technical design of G-cloud including BDs for mini-cloud, feasibility study including business model for PPP and BDs for Eurasia-Cloud and support in the tender processes (success fee is included in the contract) including the development of technical specifications, design estimates and other necessary measures to determine the construction site, estimate cost	500,000	RFB
7.	Other low-value goods and software	2,234,000	RFB, RFQ
8.	Other TA	5,710,000	QCBS, CQS, IC
9.	Project Management	926,000	IC

Note: CQS = Selection based on Consultants' Qualifications; IC= Selection of Individual Consultants; RFB = Request for Bids; RFP = Request for Proposals; RFQ = Request for Quotations.

Environmental and Social (including safeguards)

24. The PIU within the SCITC has hired an independent consultant to develop the ESMF and later, during the project implementation, screen the subprojects, prepare site-specific Environment and Social Management Plans (ESMPs), communicate the requirements of the ESMPs to the contractors, and monitor the contractor's performance. One PIU staff bears overall responsibility for environmental safeguards and is working closely with the consultant.

25. The ESMF describes the requirements for the site-specific ESMPs. The site-specific ESMPs will be included in the BDs for construction contractors. The site supervision will be implemented by the contractors' responsible people on-site and during the site supervision visits by the PIU consultant.

26. Table 3.3 shows the main distribution of environmental responsibilities between the involved stakeholders during the project implementation.

Table 3.3. Distribution of Environmental Responsibilities

Participant	Activity	Supporting Documentation
Construction contractor, site-specific	• Allocates adequate budget for environmental and social mitigation during the bidding process based on the ESMP • Assigns person responsible for environment health and safety at every site • Ensures the implementation of the site specific ESMP • Obtains clearance from authorized body or local executive authority if required • Obtains required permits/licenses • Reports regularly (once a month) to the PIU consultant on the implementation of the mitigation measures and immediately in case of incidents. • Ensures that complaints by the public are recorded and taken care of following the GRM	• Inclusion of the ESMP into the tender documents • Copies of the regular reports • Copies of permits, licenses • Clearance statements from the supervision contractor and the PIU Consultant • Periodic reports and subproject completion report • ESMPs/ESMP Checklists • Decision on the need for Environmental Impact Assessment from the authorized body or local executive authority (if applicable) • GRM instructions and log on-site
PIU safeguards consultant	• Develops site-specific ESMPs • Ensures the inclusion of the site-specific ESMPs into the BDs • Conduct regular site supervision (no less than once a month) • Provide quarterly reports to the World Bank on Environmental and Social Mitigation and Monitoring • Reviews project design and other documentation for required safeguards documentation and licenses/permits from the authorized body or local executive authority • Maintains complete files of safeguards documentation for review by the World Bank	• Copies of the ESMPs or ESMP checklists • Site supervision reports • Quarterly reports to the World Bank

Participant	Activity	Supporting Documentation
PIU Staff responsible for safeguards implementation	• Ensures that resources are allocated for safeguard supervision throughout the preparation and implementation of the project • Clears the ESMF documents and site-specific ESMPs • Ensures that ESMF and ESMPs are publicly disclosed and consulted upon	• Contract with safeguard consultant throughout the preparation and implementation of the project • Correspondence confirming that ESMF/ESMPs were reviewed and cleared • Internet links to the documents that were disclosed • Minutes of the public consultation meetings
World Bank	• Conduct on-the-job training for PIU staff and safeguard consultants on World Bank safeguards requirements • Identify problems/issues and propose solution • Review and clear ESMF documents • Review and clear selective site specific ESMPs	• Document status of project implementation in Implementation Status and Results reports and the mission Aide Memoires • Training records

Monitoring and Evaluation

27. The SCITC will be responsible for project M&E, and as such, will establish standard formats and guidelines for data collection and reporting, including coordination with key partners and other stakeholders. TA provided through the project will include capacity-building support for M&E. The SCITC will submit biannual progress reports detailing project implementation and progress against agreed indicators. A midterm review will be carried out at the end of the third year of implementation to provide an in-depth review of the status of progress against agreed project indicators and identify any adjustments needed in the Results Framework or overall project design.

Role of Partners (if applicable)

28. **Partnerships will be leveraged to complement and build upon the Digital CASA - Kyrgyz Republic Project.** The project is being coordinated closely with IFC to introduce additional financing opportunities for operators looking to enter the market, expand existing infrastructure and operations, or to participate in the connectivity services tenders under digital infrastructure component. Every effort is made to design the project in a manner that would maximize private sector participation. The Government showed commitment to have a project design that (a) is consistent with the OAP ensuring the country's fiber networks are made available to multiple parties on a non-discriminatory basis at reasonable prices; (b) makes progress toward liberalization of both domestic and international connectivity; (c) creates an enabling environment for cross-sector infrastructure sharing; and (d) improves the independence of the regulator.

29. **Partnerships with other DPs are being explored.** The World Bank team initiated bilateral and multilateral meetings with other DPs, including the British Embassy, the Embassy of India, the Soros Foundation - Kyrgyzstan, the Aga Khan Foundation, KOICA, JICA, UNICEF, U.S. Agency for International Development, and UNDP, to provide more details about the planned Digital CASA Project in an effort to

align funding for the digital agenda in the Kyrgyz Republic. The Government counterparts were also introduced to key partners and discussions around possible partnerships are now ongoing.

30. **Partnerships with global technology companies** will be fundamental to crowd-in resources and expertise under the Partnerships for ICT Skills Development, Job Creation and Innovation subcomponent. Special efforts will be undertaken to establish fruitful collaboration between international and local technology firms under their social corporate responsibility activities and initiatives in support of innovation and digital skills agendas, with potential for expansion to other areas such as rural connectivity development, cybersecurity, and others.

ANNEX 4: IMPLEMENTATION SUPPORT PLAN

Digital CASA - Kyrgyz Republic

Strategy and Approach for Implementation Support

1. The regional and complex nature of the Digital CASA - Kyrgyz Republic Project will require significant implementation support. The project and program span across a wide variety of technical areas and multiple stakeholders, and involve a combination of TA, reforms, change management, and investments. The relatively large number of project activities will require close monitoring and adherence to timelines to avoid implementation delays as well as careful sequencing of dependent activities. Partnerships with other countries, projects, donors, and private sector will also require ongoing support from the World Bank team and additional coordination of missions and interventions.

2. The Implementation Support Plan will focus on helping the clients to effectively implement all project activities and manage the risks identified in the Systematic Operations Risk-rating Tool for achieving the expected outcomes. Implementation support will be organized along two dimensions:

(a) Technical aspects, including (i) connectivity and broadband development including effective use of innovative PPP arrangements; (ii) digital platforms and e-services design and implementation; (iii) legal and regulatory support; and (iv) support of digital skills, jobs, and innovation-related activities and initiatives.

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

Implementation Support Plan and Resource Requirements

3. World Bank team members will be based either in Washington, DC, Bishkek, or any other regional country office (such as Brussels) and will be available to provide timely, effective implementation support to the clients in the Kyrgyz Republic. Formal supervision and field visits will be carried two to three times annually in the first two years, with a possibility for annual or biannual visits in later years of the project. The missions will be complemented with monthly video conferences and Webex sessions to discuss project progress.

(a) **Technical and operational aspects.** Technical, policy, and legal-/regulatory-related inputs will be required to review all TOR, technical specifications, and functional requirements and bid documents to ensure fair competition. The task team will provide day-to-day supervision of all operational aspects, as well as coordination with the clients, other DPs, and among World Bank team members.

(b) **Continuous fiduciary and compliance oversight.** This includes:

(i) **M&E.** The implementation support aims at reporting the progress, or lack thereof, toward achieving the PDO and component targets based on the Results Framework and other evidence (not only at reporting outputs) and agreeing with the client on the

actions to get the project on track when needed.

(ii) **Procurement.** Implementation support will include providing additional training as needed to the Project Management Office; reviewing procurement documents and providing timely feedback to the PIU; providing detailed guidance on the World Bank's Procurement Guidelines to the PIU; and monitoring procurement progress against the detailed Procurement Plan.

(iii) **FM.** Implementation support will include reviewing the project FM system, but not be limited to, budgeting, accounting, reporting, and internal controls; providing training to the clients on FM aspects of World Bank-financed operations during project launch, or as needed; and reviewing submitted unaudited financial and audit reports and providing timely feedback to the clients and providing guidance and support to address recommendations issued by the external audit team.

(iv) **Environmental and social safeguards.** The World Bank will supervise the implementation of the agreed ESMF, which includes the environmental and social frameworks, and the respective mitigation plans, if any.

Time	Focus	Skills Needed	Resource Estimate (Staff Weeks)
First twelve months	- BD preparation and hiring of implementation vendors - Scoping and launching of jobs and skills development program	- Technical skills in telecom and digital platforms, combined with operational knowledge - Innovations and skills development program	31
12–48 months	Supervision of major components; jobs creation initiates and skills development program	Technical knowledge and experience of working with vendors	25
Other	Fiduciary, safeguards and legal support		14

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leaders (connectivity, digital government and private sector specialists)	20 staff weeks	Minimum 2–3	Can be based in Washington, DC or other regional office
Digital government specialist	7 staff weeks	Minimum 2–3	Can be based in Washington, DC or other regional office
Skills and jobs specialist	2 staff weeks	Minimum 2–3	Can be based in Washington, DC or other regional office
Innovations and partnerships building	2 staff weeks	Minimum 2	Can be based in Washington, DC or other regional office
Procurement specialist	4 staff weeks	Minimum 1	Can be based in Washington, DC or other regional office
Financial management specialist	4 staff weeks	Minimum 1	Can be based in Washington, DC or other regional office
Social specialist	2 staff weeks	Minimum 1	Can be based in Washington, DC or other regional office
Environment specialist	2 staff weeks	Minimum 1	Can be based in Washington, DC or other regional office
Legal specialist	2 staff weeks	Minimum 1	Can be based in Washington, DC or other regional office