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Report No: PAD00202

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF JPY 13,083,100,000 (US\$ 92,430,000 equivalent)

TO THE

REPUBLIC OF KAZAKHSTAN

FOR A

KAZAKHSTAN DIGITAL ACCELERATION FOR AN INCLUSIVE ECONOMY (DARE) PROJECT
(P179204)

FEBRUARY 2, 2024

Digital Development
Europe and Central Asia

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CURRENCY EQUIVALENTS

(Exchange Rate Effective as of January 31, 2024); US\$ 1 = JPY 141.545

FISCAL YEAR

January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

APDC	Agency for Protection and Development of Competition
CAPEX	Capital Expenditures
CBA	Cost Benefit Analysis
CEM	Country Economic Memorandum
DARE	Kazakhstan Digital Acceleration for an Inclusive Economy
DKSP	“Digital Kazakhstan” State Program
DPO/F	Development Policy Operation/Financing
ESMF	Environmental and Social Management Framework
ESRS	Environmental and Social Review Summary
EU	European Union
FM	Financial Management
FMC	Financial Management Consultant
FPIP	Fostering Productive Innovations Project
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GoKZ	Government of Kazakhstan
GRID	Green, Resilient, and Inclusive Development
GRM	Grievance and Redress Mechanism
ICT	Information and Communication Technologies
IFR	Interim Financial Reports
IPF	Investment Project Financing
IRR	Internal Rate of Return
ISP	Internet Service Providers
IT	Information Technologies
ITU	International Telecommunications Union
KT	Kazakhtelecom
LMP	Labor Management Plan
M&E	Monitoring & Evaluation
MDDIAI	Ministry of Digital Development, Innovations and Aerospace Industry
MGM	Matching Grants Manual
MNE	Ministry of National Economy
MNO	Mobile Network Operator
NDC	Nationally Determined Contribution
NDP	National Development Plan
NPV	Net Present Value
OPEX	Operational Expenditures
PCM	Private Capital Mobilisation
PIU	Project Implementation Unit
POM	Project Operations Manual
PP	Procurement Plan
PPSD	Project Procurement Strategy for Development
Q	Quarter
SCD	Systematic Country Diagnostic
SEP	Stakeholder Engagement Plan
TA	Technical Assistance

TBDIS	Technological Breakthrough through Digitalization, Innovation and Science
TC	Republican State Institution "Telecommunications Committee of MDDIAI"
telecom	telecommunications
USF	Universal Service Fund



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DATASHEET

BASIC INFORMATION

Project Beneficiary(ies) Kazakhstan	Operation Name Kazakhstan Digital Acceleration for an Inclusive Economy (DARE) Project		
Operation ID P179204	Financing Instrument Investment Project Financing (IPF)	Environmental and Social Risk Classification Moderate	

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternative Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Expanded Implementation Support (HEIS)

Expected Approval Date 22-Feb-2024	Expected Closing Date 31-Dec-2028
Bank/IFC Collaboration No	

Proposed Development Objective(s)

To provide access to high-quality and climate resilient broadband infrastructure in selected unserved and underserved areas of Kazakhstan.

Components



Component Name	Cost (US\$)
Resilient Digital Infrastructure	126,000,000.00
Project Management and Implementation Support	2,430,000.00

Organizations

Borrower: Republic of Kazakhstan
 Implementing Agency: Republican State Institution Telecommunications Committee of MDDIAI

PROJECT FINANCING DATA (US\$, Millions)

Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)? Yes
 Is this project Private Capital Enabling (PCE)? No

SUMMARY

Total Operation Cost	128.68
Total Financing	128.68
of which IBRD/IDA	92.43
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	92.43
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Non-World Bank Group Financing

Commercial Financing	36.00
Unguaranteed Commercial Financing	36.00
Counterpart Funding	0.25
Borrower/Recipient	0.25



Expected Disbursements (US\$, Millions)

WB Fiscal Year	2024	2025	2026	2027	2028
Annual	0.00	20.00	50.00	22.43	0.00
Cumulative	0.00	20.00	70.00	92.43	92.43

PRACTICE AREA(S)

Practice Area (Lead)

Digital Development

Contributing Practice Areas

CLIMATE

Climate Change and Disaster Screening

Yes, it has been screened and the results are discussed in the Operation Document

SYSTEMATIC OPERATIONS RISK- RATING TOOL (SORT)

Risk Category

Rating

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



POLICY COMPLIANCE

Policy

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

Yes No

Does the project require any waivers of Bank policies?

Yes No

ENVIRONMENTAL AND SOCIAL

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

E & S Standards	Relevance
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS 10: Stakeholder Engagement and Information Disclosure	Relevant
ESS 2: Labor and Working Conditions	Relevant
ESS 3: Resource Efficiency and Pollution Prevention and Management	Relevant
ESS 4: Community Health and Safety	Relevant
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not Currently Relevant
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not Currently Relevant
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
ESS 8: Cultural Heritage	Relevant
ESS 9: Financial Intermediaries	Not Currently Relevant

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

LEGAL

Legal Covenants

Sections and Description



Financing Agreement, Schedule 2, Section 1, A.1.(d). The Borrower shall cause the Project Implementing Entity to, not later than thirty (30) days after Effective Date, hire an environmental specialist and a social specialist in accordance with terms of reference acceptable to the Bank

Financing Agreement, Schedule 2, Section 1, A.1.(e). The Borrower shall cause the Project Implementing Entity to, not later than sixty (60) days after the Effective Date, install accounting software capable to support the Bank’s financial reporting and accounting requirements under the Project

Financing Agreement, Schedule 2, Section 1, C.1.(a). The Borrower shall cause the Project Implementing Entity to not later than thirty (30) days after the Effective Date, appoint or hire an additional dedicated staff as part of the PIU, to work directly with the PIU staff to perform core functions related to the implementation of Sub-projects (including coordination and monitoring and evaluation of Sub-projects), satisfactory to the Bank

ESCP, ESS1, 1.2 and ESS2, 2.1. The Borrower shall cause the Project Implementing Entity to within three (3) months after the Effective Date adopt an Environmental and Social Management Framework and Labor Management Procedures

Financing Agreement, Schedule 2, Section 1, C.1.(b). The Borrower shall cause the Project Implementing Entity to not later than sixty (60) days after the Effective Date, establish, and thereafter maintain throughout the duration of the Project, a Selection Committee, with composition satisfactory to the Bank, to assess Matching Grants applications and select ISPs

Conditions

Type	Citation	Description	Financing Source
Effectiveness	5.01.(a)	(a) the Project Implementing Entity established a Project Implementation Unit for the Project ("PIU"), and recruited a PIU head, a coordinator for Part 1 of the Project, a financial management specialist, and a procurement specialist; each on the basis of terms of reference, qualification and experience acceptable to the Bank	IBRD/IDA
Effectiveness	5.01.(b)	(b) the Project Implementing Entity adopted a Project Operations Manual and a Matching Grants Manual, both in form and substance acceptable to the Bank	IBRD/IDA





I. STRATEGIC CONTEXT

A. Country Context

1. **Landlocked country located at the crossroads of Europe and Asia, Kazakhstan is a resource-rich, upper-middle-income economy that – prior to the Coronavirus (COVID-19) pandemic – demonstrated robust economic growth and poverty reduction but remained largely dependent on its natural resources.** The country has vast natural resource wealth, being one of the world’s most mineral-rich nations and among the top 15 in terms of oil reserves. It has been the economic success story of Central Asia, transitioning from a lower-middle-income to upper-middle-income status in less than two decades.¹ Its gross domestic product (GDP) per capita climbed from US\$5,292 in 2006 to US\$10,041 in 2021,² while the poverty rate fell from 36 to 12 percent over the same period.³ However, productivity growth has declined steadily over the past two decades, shifting to a contraction since 2010. This reflects the approaching limits of what an oil-dominated and export-oriented economy with little progress towards diversification can deliver.⁴ The underlying factors are also rooted in structural bottlenecks and a substantial presence of the state in the economy that stifle the private sector and impede enhanced competitiveness.^{5,6} However, given its geographic location as well as its growing economic ties to the European Union (EU), Kazakhstan lies at the heart of trade and investment opportunities linked to Eurasian connectivity.

2. **Socioeconomic vulnerabilities have been exacerbated due to the instability, and Russia’s invasion of Ukraine, which have all had serious repercussions for Kazakhstan.** Since 2008 average growth has slowed to less than 4 percent a year as productivity gains have stalled. In recent years, coupled with rising living costs, this lackluster economic performance has fostered public discontent, culminating in protests in January 2022. Russia’s invasion of Ukraine has increased uncertainty and introduced new risks, given Kazakhstan’s close economic ties to Russia. The economy grew by 5.1 percent in Q1 2023, driven by exports and fiscal stimulus. The influx of an estimated 150,000 Russian migrants bolstered domestic demand and brought a significant increase in registration of new businesses, which has grown by over 20 percent to June 2023. Robust growth of retail trade (8.8 percent in real terms), and car sales (11.1 percent) in Q1 indicate strong consumer spending, while investment, driven by rising FDI, has also strengthened. Growth in production was broad-based, including mining and machinery manufacture, basic metals, and chemical products. The unemployment rate declined slightly to 4.7 percent in Q2 2023, from 4.9 percent in 2022. Economic growth and an above-inflation increase in minimum wages drove up real wages by 1.2 percent in Q2 of 2023. In August 2023, inflation slowed to 14 percent from a peak of 21.3 percent in February 2023, still well above the National Bank of Kazakhstan (NBK) 4-6 percent target range. Food price inflation decelerated to 13.5 percent, while services inflation was 13.9 percent.⁷ Certain gender inequalities remain and, despite close to parity in educational attainment and health indicators, there continue to be gaps in labor force participation (63.3 percent for women versus 75.5 percent for men), estimated earned incomes and representation in high-level political posts, with Kazakhstan ranking 65th out of 146 countries in the 2022 Global Gender Gap Index.⁸

¹ World Bank, 2020. Kazakhstan Country Partnership Framework 2020-2025 (Report No. 143372). Available at: <https://www.worldbank.org/en/country/kazakhstan/publication/cpf-2020-2025>.

² GDP per capita (current US\$), as reported by the World Development Indicators based on World Bank national accounts data. Available at: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=KZ>

³ Based on the middle-income countries (MIC) poverty line of US\$5.5 / day (2011 PPP).

⁴ As highlighted in the 2018 Kazakhstan Systematic Country Diagnostic (SCD) and the 2019 Country Economic Memorandum (CEM).

⁵ World Bank, 2018. Kazakhstan - Systematic Country Diagnostic: A New Growth Model for Building a Secure Middle Class (Report No. 125611). Available at : <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/664531525455037169/kazakhstan-systematic-country-diagnostic-a-new-growth-model-for-building-a-secure-middle-class>.

⁶ World Bank, 2019. Kazakhstan: Reversing Productivity Stagnation – Country Economic Memorandum (Report No. 134720). Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/615051550479498194/kazakhstan-reversing-productivity-stagnation-country-economic-memorandum>.

⁷ WDI, Macro Poverty Outlook, and official data.

⁸ World Economic Forum, 2022. Global Gender Gap Report. Available at: https://www3.weforum.org/docs/WEF_GGGR_2022.pdf.



3. **At the same time, Kazakhstan demonstrates an increased understanding that economic diversification and more efficient and transparent public service delivery supported by digitalization are critical to support the country's green, resilient, and inclusive development (GRID).** The Government of Kazakhstan (GoKZ) has placed innovation and digitalization at the heart of its 2025 National Development Plan (NDP) developed in 2018 to implement the country's long-term development Strategy "Kazakhstan-2050" that identifies "accelerated technological modernization" as one of the five priorities for a knowledge-based, diversified, and private-sector-led economy. The NDP was revised in 2020 to reflect a new COVID-19 reality, including digital technologies becoming a key factor for enterprise competitiveness and for improved public service delivery. Adopted in December 2017, the "Digital Kazakhstan" State Program (DKSP) and its successor "Technological Breakthrough through Digitalization, Innovation and Science" (TBDIS) national project adopted in November 2021 are supporting a successful implementation of the 2025 NDP, including through the development of a vibrant information and communication technologies (ICT) services sector and broader digital economy. The ICT sector in 2021 is estimated at roughly US\$2.3 billion, representing 3 percent of GDP (4.2 percent of non-oil GDP),⁹ with the telecommunications (telecom) sector, accounting for 66 percent of the total ICT sector.¹⁰ In this context, closing the digital access gap becomes critical to build back and forward better as universal access to broadband can catalyze the shift towards a more sustainable and competitive economic model, less reliant on fossil fuels and underpinned by a thriving private sector. Indeed, emerging evidence suggests that digitalization not only provides an effective means to switch to an online modus operandi, but also brings opportunities to accelerate economic growth, boost productivity, create jobs, and reduce poverty.¹¹

4. **Climate change presents a substantial and immediate risk to Kazakhstan's economic development.** According to the 2020 Notre Dame-Global Adaptation Initiative (ND-GAIN) Index,¹² which ranks Kazakhstan 46th out of 181 countries, the country is currently at a high risk of climate change-related hazards, including river and urban floods and mudflows, droughts, landslides, extreme heat, and strong winds,¹³ which disproportionately hit poor households, rural communities, and other vulnerable populations. Climate projections show that, under current greenhouse gas (GHG) emission trends, climate change is expected to intensify over the coming decades, leading to higher temperatures, more frequent and severe droughts and extreme weather events, thus increasing pressure on natural resources and assets and threatening the lives and livelihoods of the poorest and most marginalized communities in Kazakhstan.¹⁴ Extreme climate events such as intense rainfall, storms, and floods can adversely affect physical, including digital, infrastructure, elevating the risks of network outages for communities.¹⁵ Kazakhstan does not have a policy document that specifically addresses climate adaptation and disaster risk reduction. However, Kazakhstan is increasingly recognizing the importance of reducing the country's vulnerability to climate change. The incorporation of climate adaptation into policy documents is supported by the inclusion of a legal framework for adaptation in the new 2021 Environmental Code.¹⁶ In this regard, the Project will

⁹ According to the Kazakhstan National Bureau of Statistics.

¹⁰ US International Trade Administration, 2022. Kazakhstan – Country Commercial Guide. Available at: <https://www.trade.gov/country-commercial-guides/kazakhstan-information-and-communication-technologies>

¹¹ ITU. 2020. How Broadband, Digitization and ICT Regulation Impact the Global Economy. Available at: https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.BDR-2020-PDF-E.pdf. Katz, R., and Fernando C., 2019. "Economic contribution of broadband, digitization and ICT regulation: Econometric modelling for Africa." ITU Publications. Geneva: ITU. Bahia, K., Castells, P., Cruz, G., Masaki, T., Pedrós, X., Pfitze, T., Rodríguez-Castelán, C. and Winkler, H., 2020. "The Welfare Effects of Mobile Broadband Internet." Policy Research Working Paper 9230.

¹² The ND-GAIN Index ranks 181 countries using a score which calculates a country's vulnerability to climate change and other global challenges as well as their readiness to improve resilience. Available at: <https://gain.nd.edu/our-work/country-index/>.

¹³ World Bank, 2022. Country Report on Kazakhstan. Available at: <http://thinkhazard.org/en/report/132-kazakhstan>.

¹⁴ Climate Risk Country Profile: Kazakhstan (2021): The World Bank Group and the Asian Development Bank. Available at: <https://www.adb.org/publications/climate-risk-country-profile-kazakhstan>

¹⁵ As part of Concept Note elaboration, the team has conducted a climate and disaster risk screening, whose findings have informed the Project design.

¹⁶ Kazakhstan's Environmental Code, serving as the primary supporting legislation for environmental protection and updated in 2021, contains Kazakhstan's NDC commitment and establishes a national carbon budget that is sufficient to meet the country's Paris commitment. The Code



address the specific climate risks by deploying climate-resilient digital infrastructure and developing a crisis management plan for the telecom sector nationwide, which would include a modernized emergency management system to respond to climate and disaster risks.

B. Sectoral and Institutional Context

5. **Kazakhstan’s approach to digitalization is strategically balanced but the country needs to accelerate efforts in areas where its digital performance is lagging.** The TBDIS national project was adopted in November 2021 to support implementation of the 2025 NDP, with the following key objectives: foster digital transformation of economic sectors, leverage data for better lives and better public services, increasing supply of labor with advanced digital skills, transforming national innovations ecosystem, and creating better conditions for venture capital, protecting critical digital infrastructure and cybersecurity. The country is showing good progress in e-government (28 rank in E-Government (EGRI) index by UN),¹⁷ information technology (IT) sub-sector development (since 2017, IT market tripled to USD 3,5 billion in 2021; IT export constitute USD 60 million) and actively growing its digital labor force. Seeking acceleration of its digital economy, Kazakhstan has started taking steps to address an increasing acute demand for IT labor through several measures, such as support to IT start-ups and firms. According to the 2021 demand forecast for IT labor across all economic sectors until 2025, the current unmatched demand is approximately 1000 annually. Cognizant of these challenges, the GoKZ launched the first national initiative to address the lack of the IT labor in 2021 (with private sector firms in the advisory role) by providing pre-qualified IT schools with grants issued against the number of trainees that the schools commit to train. By contrast, until recently less prioritized, telecom sector became a key constraint to accelerating all those efforts because of suboptimal performance towards achieving affordable broadband for all.

6. **The GoKZ, through the Ministry of Digital Development, Innovations and Aerospace Industry (MDDIAI), seeks to eliminate digital inequality and improve broadband quality** to ensure 100 Megabits per second (Mbps) internet connectivity for all households, as part of the TBDIS objectives.¹⁸ Until recently, the country was operating without a national broadband strategy and a dedicated national broadband program was only adopted in 2023. Nevertheless, on the supply side progress was made across all four segments of the broadband network value chain that are needed for developing universal, affordable, and good quality high-speed internet but more remains to be done to achieve the TBDIS objectives. These segments are: first mile (where the internet enters the country), middle mile (where the internet passes through a country), last mile (where the internet reaches the end-user), and invisible mile (legal and regulatory framework, including access to spectrum and rights of ways for deploying infrastructure).¹⁹ On the demand side, by contrast, the level of basic digital skills is already high to foster productive use of the internet (see paragraph 16).

7. **Digital economy is global in nature and resilient and affordable broadband access is also a key pre-requisite for accelerating digitalization and attract large Foreign Direct Investments (FDIs) such as Business Process Outsourcing (BPO) or Data center/Cloud.** Investors would simply choose a better-connected country to invest in. For instance, Sri Lanka’s (comparable country in size) industry has set a target of USD 5 billion in export revenue from IT BPO sector by 2025. The BPO industry in Sri Lanka is being driven by several factors out of which two major factors are: English proficiency of the labor force and widespread good quality broadband access. Both make it easier for companies to set up BPO operations in the country. More recent example, in terms of the economic impact is South Africa (population 60,1 million) which after improving its broadband connectivity attracted major investments from cloud providers. For instance, Amazon Web Service’s (AWS) investment in South Africa from 2018-2022 has contributed US\$640 million in GDP, while supporting

identifies key sectors vulnerable to climate change, including water, agriculture, forest, and disaster risk management (DRM).

Country Climate and Development Report: KAZAKHSTAN

<https://documents1.worldbank.org/curated/en/099420411012246024/pdf/P1773690ad92b401b089700f5be8659ecf0.pdf>

¹⁷ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/87-Kazakhstan>

¹⁸ As reported by Minister of Digital Development Mussin on October 29, 2021. <https://primeminister.kz/ru/news/reviews/tehnologicheskij-proryv-za-schet-cifrovizacii-nauki-i-innovaciy-b-musin-dolozhil-ob-osnovnyh-napravleniyah-nacproekta-2992948>

¹⁹ https://broadbandcommission.org/Documents/working-groups/DigitalMoonshotforAfrica_Report.pdf



an estimated average of 5,700 full-time equivalent jobs locally on an average annual basis. This includes local vendors in construction, engineering, energy consulting, plumbing, maintenance, and security. AWS operations will add an estimated US\$3.6 billion more to South Africa's GDP by 2029. Google has announced its investment in South Africa this year estimating that it will contribute more than a cumulative US\$2.1 billion to the country's GDP and will support the creation of more than 40,000 jobs by 2030. Data center/Cloud market is nascent in Central Asia and has substantial potential for growth.

Supply side of broadband for all

First mile

8. **Kazakhstan has multiple international gateways provided competitively, ensuring sufficient international capacity for current needs, but the capacity would need to quadruple to enable 100 Mbps internet connectivity for all households.** The state-backed fixed network operator Kazakhtelecom (KT) operates international gateways to all bordering countries: Russia (via four gateways), China (three), Uzbekistan (two), Kyrgyzstan (one), and Turkmenistan (one). Competitors to KT include Transtelecom, KazTransCom, and Beeline's sister company TNS-Plus. In terms of the international connectivity pricing, Kazakhstani operators enjoy the lowest tariffs in Central Asia region and supply international connectivity to surrounding countries. Kazakhstan seeks to further diversify and strengthen its international connectivity through a Caspian subsea cable connection with Azerbaijan. The 2020 international bandwidth was 3510 Gigabits per second (Gbps), or 98 kilobits per second (kbps) per user, which is higher than the average of 69 kbps across key comparators (International Telecommunication Union (ITU), 2021 dataset).²⁰ Current international bandwidth is adequate to guarantee 10-20 Mbps connection speeds; however, reaching the speed of 100 Mbps would require international bandwidth to quadruple from its current level to 14201 Gbps.²¹ In addition to the domestic use of international connectivity, Kazakhstan has also an opportunity to provide international transit for terrestrial Europe-to-Asia internet traffic. China is currently a minor customer for bandwidth via Kazakhstan to Europe (predominantly through China Telecom's "Transit Silk Road", operating in partnership with KT). The demand, however, is expected to grow significantly in the coming years due to ongoing diversification of international connectivity routes, which traditionally transited through Russia.

Middle mile and Last mile

9. **The telecom market is liberalized but remains dominated by state-backed operators.** The market has been liberalized with 589 registered telecom operators, 524 of them being active. According to Telegeography, KT has a dominant position in all fixed network market segments with a 65.4-percent market share in terms of subscribers in June 2023 (down from 70 percent in 2020). KaR-Tel (branded as Beeline) is the second biggest fixed operator, claiming approximately 22.6 percent of all subscribers. Other smaller operators are splitting the remaining 12 percent of the market, with their cumulative share being stable.²² In terms of growth dynamics, it is anemic, potentially revealing the limits of commercial viability reached by the market. With respect to the mobile market, it used to be split between three mobile network operators (MNOs) – Tele2-Altel, Kcell (with two associated brands – Kcell and Activ), and KaR-Tel, until June 2019, when KT completed a 100-percent takeover of Tele2-Altel, having already acquired Kcell in December 2018. As a result, three out of four mobile brands in the market are now under the control of KT. In terms of market structure, KaR-Tel holds the biggest share of the market (42.8 percent as of June 2023), which has increased 1.8 percent compared to the last year. KT brands share the remaining part of the market (KCell – 31.9 percent and Tele2-Altel – 25.3 percent). In terms of growth dynamics, it is negative with an average annual growth of ~2 percent during the last six years and below 1

²⁰ Key comparators include Azerbaijan, Brazil, Mexico, Malaysia, Singapore, and Thailand.

²¹ At contention ratio of 10:1.

²² Telegeography, March 2022.



percent during Q1 and Q2 of 2023.²³ In April 2022 the MDDIAI announced that plans were ‘underway to de-monopolize the KT group of companies’²⁴ and that ‘a number of legislative initiatives would be adopted to improve the competitive environment’. Some of such initiatives are supported through the Inclusive and Sustainable Economic Growth DPF operation (P178303) (DPF operation) under preparation.²⁵

10. **The GoKZ has been able to achieve some progress in improving affordability of digital connectivity; however, sizable access and quality challenges persist.** Affordability is less of an issue (see para. 15 below). Access, on the other hand, is a real challenge for the country with 42 percent of the population residing in rural areas and one of the lowest population densities globally (7 persons per sqkm).²⁶ Telecom operators in Kazakhstan are facing high network deployment costs per household, resulting in a significant urban - rural digital divide. National fixed high-speed broadband household penetration stood at 37.4 percent in June 2023, which is over 28 percentage points (p.p.) below the regional average and slightly over a third of the level observed in countries with a similar GDP per capita.²⁷ In relation to mobile internet, unique subscriptions per 100 inhabitants are low (at 57 percent)²⁸ even though reported penetration is high (128.3 percent).²⁹ According to the ITU, the fourth-generation mobile technology (4G) coverage reaches 84 percent of the population (as of 2021). Even though number of mobile cells per capita in Kazakhstan is higher (comparing to regional peers) only ~13 percent are equipped with 4G technology.³⁰ 5G services are not commercially launched in Kazakhstan yet. The quality of internet services remains unreliable and has been put under further pressure in the wake of Covid-19 and the subsequent shift to teleworking, with more than 30 percent of users suffering internet outages in 2020. Furthermore, on the sub-national level, internet quality analysis³¹ revealed that even in regions with large cities, such as Akmola region, the quality of internet is low, which could be explained by a large number of small villages. In terms of internet quality on the regional level, there is a slow but consistent improvement across half of the regions, especially for the mobile segment. In terms of Kazakhstan’s ambition to ensure 100 Mbps for all households, internet quality analysis revealed that network readiness may be lacking as most of the connections being 10 Mbps or lower (Figure 2) while at present there are few connections with download speed of over 100 Mbps (Figure 3).

²³ This could be explained by the fact that many who have had multiple SIM cards with different operators are reducing number of SIM cards as number of operators on the market is decreasing.

²⁴ Kcell, Tele2-Altel and parent company KT.

²⁵ See section on Invisible mile below.

²⁶ 2021, World Bank

²⁷ Telegeography, 2022. Global Comms Database. Available at: <https://www.telegeography.com/products/globalcomms/data/country-profiles/as/kazakhstan/kazakhstan.pdf>.

²⁸ Global System for Mobile Communications Association (GSMA) for 2022.

²⁹ Ibid.

³⁰ Lower than in case of some regional peers, e.g., in Kyrgyzstan and Tajikistan 17 percent, World Bank based on OpenCallID data accessed in October 2022, <https://www.opencellid.org/#zoom=16&lat=37.77889&lon=-122.41942>

³¹ About 17.9 million Ookla Speed tests were analyzed between the beginning of 2020 and the end of June 2022.



Figure 1. Evolution of the median download Internet speed in Kazakhstan by region, Mbps, 2020-2022

Client Region Name	Connection / Test Date					
	Fixed			Mobile		
	2020	2021	2022	2020	2021	2022
Kostanay Region	23.54	22.26	27.98	9.24	13.57	17.32
Karagandy Region	33.88	30.95	35.54	8.98	15.01	16.49
Mangystau Region	26.95	29.49	34.70	8.46	12.23	15.27
Pavlodar Region	39.26	34.85	34.36	10.17	14.92	15.05
Almaty	21.21	28.26	29.12	9.97	13.43	14.92
East Kazakhstan Region	26.01	23.88	23.96	8.56	12.89	14.28
Astana	28.59	38.25	34.10	6.87	12.02	13.85
North Kazakhstan Region	13.88	18.69	18.51	9.19	13.30	13.65
Jambyl Region	15.49	14.82	14.94	6.88	12.22	12.61
Aktobe Region	15.17	20.36	25.17	7.20	10.31	12.03
Kyzylorda Province	8.42	9.94	13.38	6.39	10.38	11.23
Almaty Region	14.73	16.29	21.85	8.02	9.36	11.06
Atyrau Region	7.96	18.06	15.01	8.77	10.38	10.93
West Kazakhstan Province	19.57	22.23	23.36	7.43	9.87	10.26
Shymkent	13.88	12.25	16.42	6.55	8.66	9.86
Akmola Region	14.66	14.25	15.75	6.96	10.08	8.96
South Kazakhstan Region	8.30	8.70	11.87	4.57	6.45	8.17
Baikonur	1.98	1.95	3.11	6.69	8.29	7.47

Figure 2. Speed tests of 100 Mbps and greater, median, 2020-2022

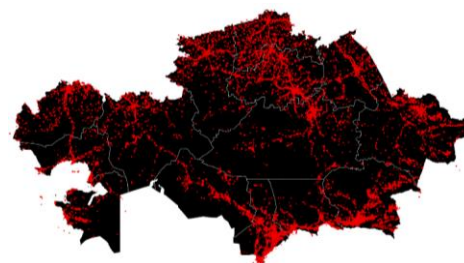
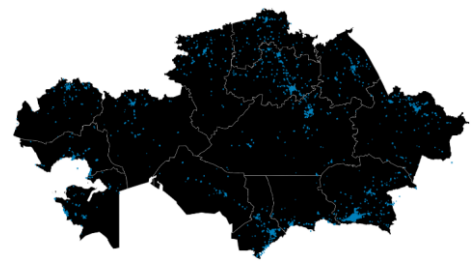


Figure 3. Speed tests with download speed below 10 Mbps, median, 2020-2022



Source: World Bank analysis based on Ookla Speedtest data, 2022

11. **The GoKZ has deployed various instruments to address digital connectivity gaps and ensure universal service, however, those do not address last mile connectivity needs and continuous efforts are needed to achieve the ambition of 100 Mbps per household.** Between 2020-2022, the GoKZ ran a program “250+” to connect villages with the population of over 250 people to national backbone networks.³² Two national backbone operators were tasked with its implementation. This program brought backbone connectivity deeper into the regions, however, it had several limitations: (i) it did not address last mile connectivity needs within the villages; (ii) did not target smaller villages,³³ and (iii) did not improve mobile connectivity (connectivity of mobile towers). To facilitate access to service for relevant vulnerable groups, Kazakhstan has a universal service fund (USF), which was recently modernized to include compensation for the provision of basic internet access service. Like the European Union (EU), USF is designed to compensate universal service operator(s) for losses incurred while providing universal service,³⁴ and doesn’t finance infrastructure deployment by telecom operators. Since the completion of the “250+” program, households within targeted villages connected to backbone networks remain unconnected revealing deep market failure exhibiting itself through the persisting lack of commercial supply.³⁵ Despite the GoKZ’s efforts, 28.2 percent of the population (or 5.4 million people) continue to live in unserved or underserved areas, out of which 1.7 million living in unserved areas with no access to 4G or fiber infrastructure. These people are spread in various geographical locations across the country, however, based on the Ookla’s internet quality analysis and MDDIAI data, nearly half (46 percent or 775,000 people) of all unserved population is concentrated in four regions: Akmola, South Kazakhstan, West Kazakhstan, and East Kazakhstan. Addressing connectivity constraints caused by the market failure in those four regions is the priority for the GoKZ, which the Project will aim to support.

12. **Private internet service operators are more active in rural than in urban areas and are ready to scale up investments given some regulatory reforms are implemented and gap financing would be available.** For instance, in all four priority regions number of private sector footprint is steadily increasing and its cumulative market share in each of

³² According to MDDIAI, by the end of 2020, all urban areas (118 cities) and 4,235 rural settlements in the country (out of the total 6,341 villages with a population of over 250 people) were connected to the country’s fiber backbone networks. An additional 928 villages were reportedly connected in 2022, increasing accessibility to the fiber backbone networks.

³³ Around one-sixth (or more than 1,000) of rural settlements with population below 250, some in remote and sparsely populated areas remained out of the scope of the program.

³⁴ Losses are compensated retrospectively for the basic internet access requested to be provided by the end user. The provides compensations towards provision of services to population groups that cannot afford such service at commercial price. USF applies to all territory of the Kazakhstan and is not limited to Project areas. The USF thus serves as a safeguard for least advantaged groups.

³⁵ despite overall improving market efficiency (e.g., infrastructure sharing policies, etc.)



the regions (approximately 30 percent) is near three times higher than its national average (approximately 12 percent).³⁶ Regions as less attractive for bigger operators and those less commercially attractive areas are left for smaller operators to share. Consultations with private internet service operators from different regions of Kazakhstan³⁷ confirm readiness to step up investments in case gap financing would be available and given that regulatory reforms related to infrastructure sharing (see para. 13 below) are implemented. Per four priority regions there are 1214 villages which were attended by the “250+” program (connected to backbone network) but access network there (connecting households and institutions) was never developed due to lack of commercial viability pointing to clear market failure. Preliminary analysis and experience of small operators themselves indicate that at least 50% of subscribers will be connected, which will ensure a stable cash flow from customers to the operators in such areas where public catalytic funding would be provided under the Project. Operators will be interested in providing high-quality communications on competitive market conditions. On expected profitability of network operators, it is expected to that according to small operators’ calculations payback period for the Project is 1-2 years in a case of at least 50% subscribers connect.

Invisible mile

13. **The GoKZ is working to improve telecommunications market’s efficiency through several reforms.** With respect to the legal framework, the country’s main telecom sector law was enacted in 2004³⁸ and is largely outdated compared to good international practices, albeit some reforms are being introduced.³⁹ There is no independent sectoral regulator in Kazakhstan, as the telecom market is overseen by MDDIAI and its subordinate institutions (such as the Telecommunications Committee, the Information Security Committee, the Public Services Committee, and the State Radio Frequency Service) established in June 2019, collectively acting as a policymaker and sector regulator. At the same time, competition in telecommunications market is under the authority of the Committee for Regulation of Natural Monopolies within the Ministry of National Economy (MNE) and the Agency for Protection and Development of Competition (APDC) of the Republic of Kazakhstan. The Agency created in late 2020 and reports directly to the President; it holds the power to tackle anti-competitive practices and make decisions on mergers. In a context of state-backed operators dominating the fixed market (65.2-percent market share) and the mobile market (57.2 percent market share), improvements are focused on policy reforms having a significant impact on pushing the market frontier. Reforms supported by the DPF operation under preparation aim to decrease the cost of deploying broadband networks (through infrastructure sharing and efficient spectrum assignment) whilst infrastructure deployment financed by the Project aims to utilize those reforms to improve quality and access to broadband services in rural and remote areas.⁴⁰

14. **Kazakhstan’s legal and regulatory environment for a broader digital economy, despite recent enhancements, also has scope to be further improved.** Kazakhstan has recently amended its data protection and cybersecurity legislation, notably through the Law on Amendments and Additions to Some Legislative Acts of the Republic of Kazakhstan on the Regulation of Digital Technologies.⁴¹ The Personal Data Law was adopted in 2013 and now features internationally

³⁶ Telecommunications Committee under MDDIAI, 2023

³⁷ Consultations were conducted during the preparation mission in February 2023 and during the follow up consultations implemented by MDDIAI. Most recent consultation was conducted in October 2023. Consultations specifically targeted private sector operators providing services in rural areas in all regions of the country. Objectives of consultations were to understand the willingness to invest and under what condition. Private Capital Mobilization approach proposed under this Project was discussed, endorsed, and adjusted based on the consultations. Proposed regulatory reforms proposed under this Project were also discussed and considered during Project preparation.

³⁸ Law of the Republic of Kazakhstan of July 5, 2004, No. 567-II "About communication" (as amended on 02.07.2020) (“Communications Law”) (unofficial translation). Available at: <https://cis-legislation.com/document.fwx?rgn=6622>

³⁹ For instance, the latest change introduced cross-sector infrastructure sharing provisions with the electricity sector.

⁴⁰ The spectrum assignment rules have changed from direct assignment to competitive auction; introduced the obligation of operators of the electricity market to share infrastructure assets for the deployment of telecommunications networks on a transparent and non-discriminatory basis and the obligation of telecom operators to share assets of underground infrastructure for the deployment of telecommunications networks on a transparent and non-discriminatory basis.

⁴¹ Law on Amendments and Additions to Some Legislative Acts of the Republic of Kazakhstan on the Regulation of Digital Technologies. Available (in Kazakh) at: <https://adilet.zan.kz/kaz/docs/Z2000000347>.



recognized principles, obligations, categories of sensitive data, and rights, whereas the Cybersecurity Law defines ‘critical infrastructure’ and obligations. Even with such important progress, however, the legal framework features gaps critical to the free flow of domestic and cross-border data. For data protection, the legal framework still lacks essential obligations, and a data localization mandate hinders cross-border data flows.⁴² For cybersecurity, while the GoKZ is developing a cybersecurity strategy,⁴³ the legal framework will require amendments to facilitate public-private and international cooperation. Moreover, Kazakhstan’s framework for open data could be strengthened, in line with studies showing that the reuse of public sector data yields significant economic gains.⁴⁴ The country’s laws governing the digital economy require guidance and subordinate instruments. As many digital laws are intentionally broad to promote principles-based and risk-based approaches, the oversight and regulatory bodies must promulgate guidance for compliance. In terms of telecom regulatory reforms, regulatory environment for project implementation is already in place. As a part of the DPF operation under preparation, the GoKZ is implementing a package of policy reforms to reduce barriers to entry for new market entrants and encourage competition. Following the decision to assign spectrum competitively, the GoKZ launched a competitive auction for 5G spectrum in December 2022, which was the first of its kind in Central Asia. After approval of the Law of the Republic of Kazakhstan No. 141-VII ZRK, operators in the telecom sector started to share electricity infrastructure assets for the deployment of digital connectivity. The amendments to the Law “on Informatization” complete this package of telecom reforms by establishing transparent and non-discriminatory rules for fiber-optic network deployment using electricity infrastructure. The second DPF will support a policy package of reforms that includes: (i) the adoption of legislation to release and reassign additional spectrum resources; (ii) the sharing of infrastructure for telecommunications in apartment buildings; and (iii) regulations on requirements for network construction, such that telecommunications infrastructure is part of planned engineering works to facilitate urban planning.

Demand side of broadband for all

15. **Affordability is less of an issue for the demand side in Kazakhstan.** Kazakhstan ranks 40st in the affordability subcategory of the 2023 Inclusive Internet Index by the Economist Intelligence Unit (EIU). Importantly, it ranks 7th globally in sub-category “fixed line monthly broadband cost” and 8th globally for “mobile phone cost”. Regarding the affordability of mobile Internet services, according to the latest Internet Accessibility Index for 2022, Kazakhstan took 8th place in terms of the lowest Internet tariffs. Kazakhstanis pay only US\$0.8 for 1 GB of mobile data, a decrease compared to US\$0.9 a year earlier. In neighboring countries, the price is US\$1.3 per 1 GB per month in Uzbekistan, US\$3.5 in Tajikistan, and US\$17.5 in Turkmenistan. Kazakhstan is also located in the lower half of the ranking (67th place out of 75) in terms of the high cost of fixed-line Internet according to Speedtest: for 100 Mbit/s on average US\$9.8 per month is paid. Among Kazakhstani Internet providers, this connection speed is also the most popular, as is the global average.

16. **Kazakhstan has taken systematic actions to improve digital skills of the population and achieved substantial progress in this area; this will be fully leveraged for villages to be newly connected under the Project.** DKSP included improvement of basic digital skills of the population among its key initiatives. A multi-agency digital literacy program implemented in Kazakhstan has covered such areas as basic digital skills, e-government services usage, open government, e-commerce, and cybersecurity skills. Approximately 1.53 million people were trained between 2018 and 2020. As a result, according to the National Bureau of Statistics, the level of digital literacy in Kazakhstan grew from 77.3% in 2018 to 85.3% in 2021, even though the situation varies across the regions, with the level of literacy ranging from 76.5% and 76.8% in North-Kazakhstan and West-Kazakhstan oblasts, respectively, to 94.6% in Astana.⁴⁵ In the Wiley 2021 Digital Skills Gap Index, Kazakhstan ranked 43rd out of 134 countries assessed globally and 24th out of 45 Europe and Central Asia countries.⁴⁶

⁴² Data localization provisions are currently being revised towards more flexible approach based on data classification.

⁴³ Resolution of the Government of the Republic of Kazakhstan No. 407 of 30 June 2017.

⁴⁴ For example, the reuse of public sector information in the European Union (EU) is estimated to have generated € 45 billion of annual gains.

⁴⁵ Kazakhstan National Bureau of Statistics. Statistics of Information and Communication Technologies. Available at:

<https://stat.gov.kz/official/industry/29/statistic/7>

⁴⁶ Wiley, 2021. The Digital Skills Gap Index (GSGI). Available at: <https://dsqi.wiley.com/global-rankings/>



To sustain the progress in digital skills improvements, the GoKz currently continues investing in respective programs, including improvements in computer skills teaching in secondary schools, mandatory IT courses in universities, and special outreach to adult population through a digital skills YouTube channel and TV programs. Even though the current level of digital skills is high, the Government discusses new more inclusive initiative for basic digital skills development which will be implemented in partnership with Kazakhstan Post (“KazPost”). “KazPost” has local presence in most of the villages in the country. New program thus holds the promise to be even more inclusive. Coverage of the program will be coordinated with network roll out under the Project, with the Project making sure that awareness information campaign on available courses be conducted when the villages are covered with the internet.

17. **In Kazakhstan there are no observable gender gaps when it comes to internet usage and mobile phone ownership;⁴⁷ yet there is a gender data gap when it comes to experiences (challenges or positive experiences) of female-led households.⁴⁸** The Project will contribute to closing the gender data gap. Environments that are supportive for women’s access to jobs, credit, voice, and agency are important for poverty and inequality reduction. More and better sex-disaggregated data and statistics are required to profile female led households and to design policies to enhance women’s opportunities in Project areas. It is safe to assume that female-led households are likely to face greater challenges in accessing economic opportunities based on available gender disaggregated statistics for rural areas. However, Kazakhstan currently does not produce statistics about performance of female-led households, e.g., access to employment and other economic opportunities, which the Project will address (see Annex 3).

C. Relevance to Higher Level Objectives

18. **Consistent with the GoKZ’s strategic priorities, the Project is fully aligned with the World Bank Group (WBG) Country Partnership Framework (CPF) for Kazakhstan for the period FY20-25⁴⁹ discussed at the Board on December 12, 2019 (with the adjustments resulting from the Performance and Learning Review completed in 2023).⁵⁰** The Project supports two focus areas identified by the CPF that remain critical for the economic recovery following COVID-19: (i) promoting inclusive growth; (ii) securing sustainable, resilient, and low carbon growth. Under CPF Focus Area 1 (Promoting Inclusive Growth) the Project underpins Objective 1 (Strengthen Environment for Private Sector Development) and Objective 3 (Strengthen Connectivity Infrastructure) by improving digital connectivity and broadband service delivery. Under Objective 6 (Strengthen Climate Resilience and Restore Natural Capital) of CPF Focus Area 3 (Securing Sustainable, Resilient, and Low-Carbon Growth), the Project will enhance the resilience of the digital connectivity infrastructure.

19. **The Project supports the implementation of the WBG regional strategy for ECA⁵¹ and fits well within the existing WB portfolio in Kazakhstan.** In support of the ECA Strategy, the Project will unlock private sector investments in the digital sector with a focus on closing gaps in digital connectivity; facilitate green transition through building resilience to climate shocks and strengthening energy efficiency of broadband infrastructure. Importantly, informed by long-standing policy dialogue and analytical engagements, the Project leverages the findings of several recent analytical engagements such as

⁴⁷ Indeed, the share of internet users among men was 88.5 percent in 2020 versus 88.0 percent among women (National Bureau of Statistics), with slight variance across the regions, as the gender gap was positive for women in Astana (93.2 percent of women using internet versus 92.7 percent of men), while being negative and noticeable in Atyrau (77.9 percent for women vs. 80.6 percent for men). Similarly, mobile phone ownership for both men and women stood at parity, at around 90 percent (ITU, 2021).

⁴⁸ In rural areas percentage of women who are long term unemployed is 3,8% which is higher than men (2,2%). Women is much less likely to head a company in rural areas than men: 27,6% for small; 36,7% for medium and 19,4% for large.

⁴⁹ World Bank Group, 2019. Kazakhstan Country Partnership Framework for 2020-2025. Available at: <https://www.worldbank.org/en/country/kazakhstan/publication/cpf-2020-2025>.

⁵⁰ World Bank Group, 2023. Kazakhstan - Performance and Learning Review of the Country Partnership Framework for the Period FY2020-FY2025 (English). Available at: <http://documents.worldbank.org/curated/en/099071323155575409/BOSIB072bc56d50a9093980632d07d94d0f>.

⁵¹World Bank, 2022. Regional Strategy for ECA. Available at: <https://www.worldbank.org/en/region/eca/overview#2>.



the CEM, the Human Capital Diagnostic,⁵² and the Gender Assessment,⁵³ Joint Economic Research Program (JERP), as Reimbursable Advisory Services (RAS), on “Technical assistance in digital economy regulatory environment analysis” (P173717, completed in 2021) and earlier JERP activities,⁵⁴ as well as lessons learned from ongoing and planned WB lending operations.

20. **Underpinning World Bank Group’s (WBG) goals of reducing poverty on a livable planet, the Project supports green, resilient and inclusive development (GRID) as well as the WBG Climate Change Action Plan and specifically the 35 percent WBG climate financing target.**⁵⁵ The rapid adoption of digital technologies around the world has meant their benefits are widely dispersed and their indirect aggregate growth impacts are difficult to estimate, as they have effectively become a factor of production.⁵⁶ Overall, emerging empirical evidence suggests that affordable access to broadband connectivity – the main focus of the Project – can not only help respond to emergencies but also stimulate long-term, economy-wide, inclusive productivity growth, poverty reduction, and job creation (as elaborated in the economic analysis section below). In support of the GRID agenda, the Project will aim to (i) enhance climate change mitigation and adaptation, addressing country-specific climate risks across various activities; (ii) strengthen the country’s resilience to emergencies, including health pandemics; and (iii) accelerate inclusive development through more affordable digital connectivity with a focus on digital inclusion of rural communities.

21. **The Project is consistent with Kazakhstan’s Nationally Determined Contribution (NDC),**⁵⁷ that mentions the country’s long-term objective to become one of the 30 most developed countries in the world by 2050 while following a path of low-carbon economy growth. Kazakhstan has pledged to reduce its emissions by 15-25 percent below 1990 levels by 2030, with the energy and waste sectors making up majority of these emissions. With the energy sector alone accounting for 77.6 percent of the emissions, the NDC document mentions adoption of two laws “On energy saving and energy efficiency” and “On Supporting the Use of Renewable Energy Sources”. This Project contributes to the country’s overall low-carbon growth objective by (i) deploying climate-resilient digital infrastructure; (ii) promoting the use of renewable energy for digital infrastructure; and (iii) integrating energy efficiency measures in the deployment of broadband connectivity infrastructure and ICT equipment. The Project also proposes to identify renewable energy solutions (e.g., solar, or other renewables and battery storage) to power the digital infrastructure to be built/upgraded, to the extent possible.

22. **Finally, the Project also supports the Maximizing Finance for Development (MFD) principles.**⁵⁸ Under Component 1, the Project will seek to mobilize private capital for digital connectivity investments through the matching grants scheme, wherein qualified internet service providers (ISPs) that have been selected competitively will contribute an amount, matching GoKZ contribution towards the deployment of broadband access networks in selected unserved and underserved areas of the country. The Project was developed in close collaboration with the International Finance Corporation (IFC).

⁵² World Bank, 2020. COVID-19 and Human Capital, Europe and Central Asia Economic Update, Office of the Chief Economist. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/153851602018677461/covid-19-and-human-capital>.

⁵³ World Bank, 2020. Gender in Kazakhstan: A Background Note; completed as part of the Central Asia Poverty and Equity Program – P174603 (unpublished).

⁵⁴ Strategy for creating a unified state information-analytical environment – P170040, completed in 2019; and support to the design of the Digital Kazakhstan State Program – P159783, completed in 2016.

⁵⁵ World Bank Group. 2021. World Bank Group Climate Change Action Plan 2021–2025: Supporting Green, Resilient, and Inclusive Development. Available at: <https://openknowledge.worldbank.org/handle/10986/35799>.

⁵⁶ World Bank, 2016. World Development Report – Digital Dividends. Available at: <https://www.worldbank.org/en/publication/wdr2016>.

⁵⁷ Ministry of Ecology and Natural Resources of the Republic of Kazakhstan. Updated Nationally Determined Contribution of the Republic of Kazakhstan to the global response to climate change. Astana, 2023. <https://unfccc.int/documents/630387>

⁵⁸ The MFD objective is to mobilize private finance enabled by upstream reforms and public funding, where necessary, to address market failures and other constraints to private investments.



II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

To provide access to high-quality and climate resilient⁵⁹ broadband infrastructure in selected unserved and underserved areas of Kazakhstan.

PDO Level Indicators

The achievement of the PDO will be measured by the results indicators below:

- i. Households that subscribe to high-quality⁶⁰ broadband in the project areas⁶¹ (Percentage);
- ii. Newly built or upgraded broadband infrastructure that is resilient to climate-related hazards (%) – climate indicator.
- iii. Private Capital Mobilized in selected unserved and underserved areas of Kazakhstan (million) – PCM indicator.

B. Project Components

23. **The Project will contribute to the GoKZ’s long-term GRID objectives, including accelerating economic diversification underpinned by climate resilient and affordable digital infrastructure.** The Project will finance under Component 1 infrastructure investments to address market failures in rural areas (where there is no economic rationale for private sector to expand broadband network alone) with a proven approach to provide public catalytic funding. Reforms supported by the Inclusive and Sustainable Economic Growth (P178303, Kazakhstan, DPF) operation under preparation aim to decrease the cost of deploying broadband networks (through infrastructure sharing and efficient spectrum assignment) whilst infrastructure deployment financed by the Project aims to utilize those reforms to improve quality and access to broadband services in rural and remote areas.

Table 1. Project Components and Tentative Budget Allocations

Components	IBRD, Allocated Financing (US\$ million)	Unguaranteed Commercial Financing (US\$ million)	Total Financing (US\$ million)
Component 1: Resilient Digital Infrastructure	90	36	126
Component 2: Project Management and Implementation Support	2,43	0	2,43
TOTAL	92,43	36	128,43

⁵⁹ "Climate resilient infrastructure" is defined as "planned, designed, built and operated in a way that anticipates, prepares for, and adapts to changing climate conditions". See OECD, 2018, Climate-Resilient Infrastructure. Policy Perspectives. OECD Environment Policy Paper No. 14. Available at: <https://www.oecd.org/environment/cc/policy-perspectives-climate-resilient-infrastructure.pdf>.

⁶⁰ Subscriptions with download connection speed 10 Mbps or higher.

⁶¹ Indicator measures adoption of equitable access to high-speed broadband while Project ensures that each household is offered such access.



Component 1: Resilient Digital Infrastructure (IBRD: US\$90 million; PCM: US\$ 36 million)

This component aims to finance the rollout of high-quality climate-resilient and low carbon digital infrastructure in villages covered under the GoKZ “250+” program⁶² and will first cater to four unserved and underserved regions⁶³ of Kazakhstan (Akmola, Turkestanakaya, West Kazakhstan, and East Kazakhstan), connecting households, public institutions, businesses to broadband. The component will seek to leverage private capital for infrastructure investments towards deploying climate-resilient, low-carbon measures and future-proof digital connectivity infrastructure. To do so, matching grants will be provided on competitive basis to qualified ISPs towards equitable access to digital infrastructure – deploying backhaul and access broadband networks (*Last mile*) to households, businesses, and public institutions in selected areas.

Broadband infrastructure built under this component will be subject to quality standards, including compliance with requirements for climate resilience, disaster response and international best practices on energy efficiency. The broadband infrastructure will have energy efficiency levels that meet best international practices by integrating resource-use efficiency measures and adopting energy-efficiency standards and plans⁶⁴ such as Green ICT standards.⁶⁵ Energy intensive radio links will be replaced with highly energy efficient fiber optics that will significantly reduce GHG emissions associated with the data traffic as optical fiber is 2 to 3 times more efficient than radio for backhauling (radio consumes 79% more energy than fiber).⁶⁶ The Project will also support infrastructure sharing for active and passive elements to reduce energy use and GHG emissions. Climate resilience measures for the digital infrastructure will include deployment of weather-resistant fiber optic and choosing underground electrical lines/cables (based on site-specific climate risk assessment) so that they are less likely to be impacted by adverse climate events than aerial or over-the ground radio/microwave links, weather-proofing the ducts, poles, switches, sockets and appliances in the network, embedding elevation in the communication towers to prevent damage from floods and heavy precipitation.

Component 2: Project Management and Implementation Support (IBRD: US\$2,43 million; PCM: US\$ 0 million)

24. This component will support the project management and implementation of project-associated activities, including procurement, financial management (FM), monitoring and evaluation (M&E), project communications, as well as environmental and social safeguards and citizen engagement. It will cover the operating costs of the Project Implementation Unit (PIU). This component will also help strengthen the technical and functional capacity of the PIU,

⁶² In 2020, a project was implemented aimed at providing Kazakhstanis with services access to the Internet and providing coverage with broadband access services to all settlements with a population of more than 250 people. According to the Ministry of Digital Development, there are currently 6,459 settlements in the country, including 118 cities and 5,214 rural settlements, provided with broadband Internet access services using ADSL technologies, FttN, 3G and 4G. As a result of this program, all 4,137 settlements with a population of 250 people or more were provided with broadband access.

⁶³ Component 1 will prioritize climate ‘hotspots’ in rural areas of the regions Akmola, South Kazakhstan, West Kazakhstan, and East Kazakhstan that are characterized by high levels of such climate shocks and where digitally enabled responses to climate events are limited both by a lack of climate-resilient digital infrastructure, and poor digital connectivity, exacerbating existing vulnerabilities and limiting adaptation capacity connecting vulnerable communities to digital infrastructure in these regions would allow people to have connectivity during and after extreme climate events, thus helping them receive early warning/weather forecast in time

⁶⁴ Relevant energy efficiency strategies or best practices/international standards on energy efficiency, such as those on compliance with green ICT standards (ITU-T, Green ICT Standards and Supplements (<https://www.itu.int/net/ITU-T/lists/standards.aspx?Group=5&Domain=28>), IEEE 802.3az Energy Efficient Ethernet standard, ISO 14001 v2015: Environmental Management Standard, ISO 50001 v2011: Energy Management Standard, ISO/TR 14062 v2002 : Environmental Management); Operational Energy Efficiency for Users (OEU); Technical Global KPIs for Fixed Access Networks (ETSI), (https://www.etsi.org/deliver/etsi_gs/OEU/001_099/012/01.01.01_60/gs_OEU012v010101p.pdf), ETSI ES 203 228 V1.2.1 (2017-04); Environmental Engineering (EE); Assessment of mobile network energy efficiency (ETSI), available at https://www.etsi.org/deliver/etsi_es/203200_203299/203228/01.02.01_60/es_203228v010201p.pdf.

⁶⁵ (ITU-T, Green ICT Standards and Supplements (<https://www.itu.int/net/ITU-T/lists/standards.aspx?Group=5&Domain=28>

⁶⁶ Operators in Kazakhstan generally use radio links (current practice) for deploying backhaul and access broadband networks. Adopting optical fiber allows for power savings from 54% to 94% on the backhaul deployment (<https://europacable.eu/wp-content/uploads/2022/07/Politecnico-di-Milano-for-Europacable-Energy-efficiency-of-fiber-on-mobile-networks-December-2021-2.pdf>)



including the recruitment of expert consultants in key areas and the facilitation of on-the-job learning and competency transfer, including in disaster and climate risk management skills. It will also support M&E, including a study on gender-disaggregated welfare effects on households in Project areas, and quality assurance to ensure compliance with best procurement and FM practices.

25. This component will also finance under communications the awareness information campaigns on available digital skills courses to be conducted when the villages are covered with the internet (see paragraphs 15 and 59).

C. Project Beneficiaries

26. The beneficiaries in the Project will include citizens, public institutions, and businesses – all of which will benefit from improved access to high-speed, affordable broadband internet. Moreover, the Project is expected to benefit ISPs by enabling the expansion of their footprint and subscriber base. The number of people being targeted under the Project is planned to be above 1 million people in rural areas. The Project may indirectly benefit other individuals, public institutions, and firms, for example, by integrating the product and process innovations of direct Project beneficiaries (e.g., high-speed broadband users) into their own economic activities or leveraging them to generate new innovations as employees of individuals/firms/public institutions.

D. Results Chain

27. The Theory of Change is provided in Figure 1 below.

Figure 1. Theory of Change

Challenges	Project Interventions	Outputs	Outcomes	
			Short-term (PDO level)	Long-term
<ul style="list-style-type: none"> Low quality of Internet with absence or limited access in rural areas Limited private capital investments in telecom infrastructure in rural areas 	<p>Component 1: Resilient Digital Infrastructure</p> <ul style="list-style-type: none"> Finance the roll-out of high-quality resilient digital infrastructure in four unserved and underserved regions of Kazakhstan (Akmola, Turkestan, West Kazakhstan and East Kazakhstan), connecting households, public institutions, businesses and mobile towers 	<ul style="list-style-type: none"> Backhaul and access networks to households, businesses and public institutions in selected rural areas deployed Mobile infrastructure improved and launched Private capital from telecom operators mobilized to co-finance roll-out of high-quality digital infrastructure 	<p>Expanded access to affordable high-speed broadband connectivity with a focus on rural areas:</p> <ul style="list-style-type: none"> Household broadband penetration (% households that subscribe to high-quality broadband) in the project areas, of which female-led households Newly built or upgraded broadband infrastructure that is resilient to climate-related hazards (%) Number of beneficiaries satisfied with the quality of access to digital infrastructure, of which women (%) Private capital mobilized through project interventions 	<p>Improved coverage, quality and affordability of broadband services in rural areas, leveraging increased private investment</p>

Critical Assumptions:

- Government willingness to continue pursuing key digital economy, telecom and data governance reforms and enact necessary changes to the regulatory acts.
- Readiness and willingness of ISPs and mobile operators to co-invest (participate in the matching grants' scheme) in the roll-out of broadband infrastructure.
- Interest of individuals and businesses to subscribe to high-speed broadband internet in project areas.



E. Rationale for Bank Involvement and Role of Partners

29. **The rationale for Project intervention is the market failure in providing broadband to remote sparsely populated areas of Kazakhstan. Because of the lack of economies of scale, commercial ISPs have under-invested in these remote communities, which resulted in an uneven distribution of high-speed broadband connectivity between the rural and urban areas of Kazakhstan.** Given Kazakhstan’s geography, vast sparsely populated rural areas often lack affordable high-speed broadband. The Project seeks to remedy the broadband connectivity gaps in Kazakhstan and eliminate the digital divide through expanding the broadband infrastructure, which will be complemented with the activities financed outside of the project by the GoKZ to enhance citizens’ digital skills needed to benefit from such infrastructure (the demand side).

F. Lessons Learned and Reflected in the Project Design

30. **Informed by long-standing policy dialogue and analytical engagements, the Project leverages the findings of several recent analytical engagements as well as lessons learned from ongoing and planned WB lending operations.** Beyond the CEM, the Human Capital Diagnostic,⁶⁷ and the Gender Assessment,⁶⁸ they include:

- The Kosovo Digital Economy IPF (P164188), approved in 2018, which has supported deployment of a fiber optic network to increase access to high-speed broadband internet for unconnected or underserved settlements and public institutions by ‘crowding-in’ private investments in areas that would not have been served by the market itself, through a matching grants arrangement that the Project will replicate. The activities related to the connectivity of rural areas have been successfully completed, with the last village connection inaugurated in March 2023, resulting in the growth in the number of people connected to the Internet in the project areas by over 68 per cent and in 100 public institutions being connected to the high-speed Internet, as of September 2023.
- The Log-in Georgia IPF (P169698), approved in 2020, is currently financing rural broadband infrastructure by “crowding-in” private investment, while boosting its adoption in project areas. The infrastructure deployment under this project is progressing successfully, which further demonstrates the viability of the similar design envisaged for the Project.
- Similarly, several regional projects in Africa recently approved or to be approved soon employ PCM approach proposed for the Project. For instance, Eastern Africa Regional Digital Integration Project, (EA-RDIP SOP-2, PI80931) and Eastern and Southern Africa: Eastern Africa Regional Digital Integration Project (P176181) employ PCM approach not only for last mile but also for international and backbone segments of the networks. The Project will leverage the lessons learned from preparation of matching grants mechanisms that were further enhanced throughout the years of discussion with private sector and application in practice.
- Joint Economic Research Program (JERP), as Reimbursable Advisory Services (RAS), on “Technical assistance in digital economy regulatory environment analysis” (P173717, completed in 2021) and earlier JERP activities.⁶⁹ In particular, the technical assistance completed in 2021 strongly focused on improvement of data protection legislation in Kazakhstan by relying on EU and other relevant international benchmarks. This area that will be further supported by the DARE project, building upon the progress achieved by Kazakhstan so far.
- Advisory Services and Analytics (ASA) activity on the “Assessment of the digital enabling environment”, including a Telecom Policy Note (P173418), primarily aimed at contributing to the design of the national project (TBDIS, see para. 3) by providing good international practices.

⁶⁷ World Bank, 2020. COVID-19 and Human Capital, Europe and Central Asia Economic Update, Office of the Chief Economist. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/153851602018677461/covid-19-and-human-capital>.

⁶⁸ World Bank, 2020. Gender in Kazakhstan: A Background Note; completed as part of the Central Asia Poverty and Equity Program – P174603 (unpublished).

⁶⁹ Strategy for creating a unified state information-analytical environment – P170040, completed in 2019; and support to the design of the Digital Kazakhstan State Program – P159783, completed in 2016.



- The Project design and implementation arrangements incorporate lessons learned from the recent project implementation experience in Central Asia. For instance, simplicity and clarity of design and sufficient technical skills relevant to project activities within the PIU (from the Central Asia: Digital CASA - Kyrgyz Republic (P160230) project).
- A Private-Sector Led and More Sustainable Economic Recovery Development Policy Financing (DPF) operation (P174367) and DPF operation– synergetic with Component 1.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

31. **The Project will be implemented by the Republican State Institution “Telecommunications Committee of MDDIAI”** (Telecommunications Committee, TC).⁷⁰ TC (a separate legal entity from MDDIAI) will act as an implementing agency. The Bank and TC will sign a Project Agreement relating to the implementation of the Project.

32. **The PIU will be set up in TC by effectiveness and will be responsible for the implementation of the Project.** The PIU will provide support to the fiduciary and safeguards functions. The PIU will hire by effectiveness through a process and with terms of reference that are acceptable to the Bank the following personnel: (a) the head of the PIU who will be serving as the main counterpart for the WB; (b) Component 1 coordinator; (c) procurement specialist; (d) FM specialist. An environmental specialist and a social specialist shall be recruited within thirty (30) days after the Project’s effectiveness. Not later than thirty (30) days after the effectiveness, TC will hire dedicated staff related the implementation of Sub-projects. Exact composition of the PIU will be defined in the Project Operations Manual (POM). Not later than sixty (60) days after the effectiveness, TC will establish, and thereafter maintain throughout the duration of the Project, a selection committee, with composition satisfactory to the WB, to assess matching grant applications for sub-projects and select ISPs.

33. **The Project will be implemented in accordance with the POM and Matching Grants Manual (MGM) both to be adopted by TC by effectiveness.** POM will include: (a) a detailed description of Project components and their implementation arrangements; (b) detailed Project cost estimates; (c) procurement, financial management and disbursement arrangements; and (d) composition of, roles and responsibilities of staff working in the PIU. The POM will be amended as needed to incorporate adjustments during Project’s implementation, in agreement with the Bank. The MGM that will outline implementation of the Component 1 and will include: (a) the eligibility criteria for ISPs; (b) the application, evaluation, selection, award, and management procedures for the selection of Sub-projects; (c) the criteria for Matching Grants disbursements, monitoring, evaluation, and reporting; and (d) mandatory provisions that shall exclude the financing of activities that: (A) involve land acquisition and (B) may aggravate and/or impact existing environmental conditions.

B. Results Monitoring and Evaluation Arrangements

34. **The Project will use Bank-financed M&E arrangements.** Progress toward the achievement of the PDO will be monitored by the PIU based on the Results Framework that outlines indicators. The PIU will be responsible for collecting data, monitoring, and reporting the project result indicators presented in Section VII. The PIU will assign staff who will effectively monitor projects and prepare reports in a timely manner. M&E of the project will be embedded in the various project components. The PIU will submit biannual progress reports detailing project implementation and progress against the identified indicators. The Results Framework will be updated in these progress reports, in conjunction with the World Bank’s implementation support missions. Additionally, the project will finance under Component 2 impact evaluation

⁷⁰ <https://www.gov.kz/memleket/entities/telecom/about?lang=en>



activities to track welfare effects of the infrastructure investments financed under Component 1 (see Annex 3 for more details).

C. Sustainability

35. **The Project has a high degree of ownership by MDDAI, TC and private sector.** The Project is integral part of the national program “Internet for all”. There are only four national programs, whose implementation is curated by President’s office. The ownership of nongovernment stakeholders around various elements of the Project was consistently nurtured in 2022-2023 through public consultations (with ISPs), expert group discussions, numerous one-on-one meetings, and public conferences. The input and feedback received during these events was incorporated into the Project design. The citizenry at-large was informed about the planning of the Project activities through several communications materials.

36. **The design of the Project builds in several mechanisms to ensure sustainability,** as indicated in Table 2 below. The sustainability of the proposed investments will be ensured through co-financing from the Project, a guarantee of investment from the operators themselves. TC will also provide attractive conditions for the uninterrupted provision of access points from large operators on backbone networks. Preliminary analysis and experience of small operators themselves indicate that at least 50% of subscribers will be connected, which will ensure a stable cash flow from customers to the operators themselves. Operators will be interested in providing high-quality communications on competitive market conditions. On expected profitability of network operators, it is expected to that according to small operators, calculations payback period for the Project is 1-2 years in a case of at least 50% subscribers’ connection. There is also a USF within which it is possible to subsidize tariffs for subscribers in rural areas attributable to relevant vulnerable groups. All this together increases the project sustainability.

Table 2. Sustainability Mechanisms by Project Component

Component	Sustainability Mechanisms
Component 1. Resilient Digital Infrastructure	<p>(a) The financing model adopted for connectivity expansion will mobilize additional financing through competitive bidding among network operators, ensuring value for money, while shifting the financial risk associated with operation/maintenance of infrastructure to ISPs.</p> <p>(b) The activity will focus on supporting the settlements with no (or low) penetration of high-speed broadband internet. To ensure adoption of broadband services, ISPs are committed to implement their own marketing activities while project will compliment those efforts. Specifically, the Project will collaborate with the ISPs on providing inputs to their marketing campaigns which will contain knowledge on the productive usage of broadband for information, services, learning, and revenue generation.</p> <p>(c) Importantly, broadband networks deployment is characterized by relatively low carbon footprint and overall high resilience to external shocks. Potentially adverse effects of broadband infrastructure deployment will be further minimized under this Project by strict adherence to environmental safeguards procedures and by choice of future-proof technologies. In addition, expansion of high-speed broadband connectivity across the Project regions may enable improvements in the reach and usage of early warning systems and disaster evacuation, thus helping to minimize climate risks and generating climate change adaptation and mitigation co-benefits.</p> <p>(d) Level of digital skills in Kazakhstan is high and will contribute to sustainable adoption of broadband service in project areas. Coverage of the ongoing digital skills programs will be coordinated with network roll out under the Project, with the project making sure that awareness information campaign on available courses be conducted when the villages are covered with the internet.</p>
Component 2. Project Management and Implementation Support	Capacity building within the Government through experience gained because of project implementation will allow for sustainable continuation of the activities beyond the project life cycle.



IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis (if applicable)

37. **The cost-benefit analysis (CBA) suggests that the Project is feasible and delivers the net present value (NPV) of benefits to society worth US\$ 8.99 million., with internal rate of return (IRR) of 20% on investment of US\$ 90 million.** Only direct benefits are quantified, within the 10-year project implementation horizon. In the context of NPV model, direct benefits are quantified. To account for indirect benefits and the long-term impact on GDP, we quantify societal welfare effects arising from long-term productivity gains due to improved broadband penetration. Using the average coefficient estimates from prior empirical studies of broadband impact on GDP, we estimate the long-term impact of the project (including productivity effects, societal welfare effects, and labor market effects) to be US\$ 2.77 billion. over the long-term horizon.

38. **The CBA model quantifies the Project impact by comparing the Project-related net benefits to the counterfactual “no project” scenario.** This approach involves calculating the Project costs and the benefits that accrue to households, educational institutions, and healthcare institutions. The model compares the stream of net benefits under the project scenario to those under private provision of a similar project. We show that under “no project” scenario (i.e., in the absence of Government incentives), the NPV to commercial ISPs would be negative (- US\$ 29.57 million). To address the failure of the private sector to deliver broadband access in less densely populated areas of Kazakhstan, the Government may consider provide public catalytical funding to some of the initial investments in broadband network expansion. The amount of public catalytic funding in this case should be just enough to incentivize the ISPs to invest, but not exceed the minimum efficient threshold. See Annex 4 for more details.

2. Value added of the Bank's support

39. **The World Bank is well-positioned to support digital economy development in Kazakhstan with a focus on the enabling regulatory environment and digital connectivity given its technical expertise in those domains and extensive experience in leading similar projects around the world.** The WBG is home to dedicated Communities of Practice on Digital Infrastructure 2.0, Cybersecurity, and Digital and Climate Change, which can draw on experts in the field, cutting edge research and mobilize support from partners in industry and academia. Moreover, the WB has a widely recognized track-record of designing and delivering similar projects around the world and in Central Asia region by supporting digital connectivity agenda for the past decades. The Digital CASA - Kyrgyz Republic Project (P160230) and the Log-in Georgia Project (P169698) are currently financing rural broadband infrastructure, while boosting its adoption in project areas. The Kosovo Digital Economy Project (P164188) connected all villages in the country to fiber optic infrastructure in collaboration with the private sector and is financing IT skills training for youth while specifically targeting women. The Albania Fiscal Sustainability and Growth Development Policy Financing DPF (P169524) unlocked infrastructure sharing with the electricity sector. Other relevant projects that the team will learn from include Ghana Digital Acceleration Project (P176126), Digital Rwanda (P173373) under implementation as well as Pakistan: Digital Economy Enhancement Project (P174402) and Philippines Digital Transformation Project (P176317) under preparation.

40. **The operation is aligned with the goals of the Paris Agreement on both mitigation and adaptation.** The proposed project is focused on financing climate-resilient and low carbon digital infrastructure which is universally aligned. The Project’s activities do not pose a risk to Kazakhstan’s low-carbon development pathway goals; they rather contribute to reduction in GHG emissions through implementation of resource-use efficiency measures and of energy-efficiency plans by adopting best-available energy efficiency standards in ICT such as Green ICT standards in the development of broadband infrastructure.



41. **Assessment and reduction of adaptation risks:** The main climate risks likely to impact the project’s investments are floods, mudflows, landslides, extreme heat, and strong winds. The project will address these climate risks by creating a climate-informed legal, regulatory, and institutional framework for the digital economy through the introduction of resilient uniform requirements and climate design standards for infrastructure construction (with a focus on reducing/adapting to potential climate change impact and guidelines on embedding climate resilience for connectivity infrastructure). The Project aims to connect vulnerable communities to digital infrastructure in climate “hotspots” in rural areas of the regions Akmola, South Kazakhstan, West Kazakhstan, and East Kazakhstan, which would allow people to have connectivity during and after extreme climate events, thus helping them receive early warning/weather forecast in time. The project also contributes to enhancing crisis preparedness of the telecom sector, including conducting a detailed risk assessment and developing a crisis management plan for the telecom sector nationwide, including to ensure mobilization and emergency response to climate and disaster risks.

B. Fiduciary

(i) Financial Management

42. TC with support from the Financial Management Consultant (FMC) who will be a part of the PIU will be responsible for implementing the project’s FM functions, including budgeting, flow of funds and disbursements, accounting, financial reporting, internal controls, and auditing. While the TC does not have experience in implementing the WB-financed projects, the MDDIAI itself is currently satisfactorily implementing the Fostering Productive Innovations Project (FPIP) and have knowledge of the Bank financial management and disbursement procedures.

43. The FM arrangements are considered to be overall acceptable to the Bank after implementation of the following actions: (a) contracting experienced qualified FMC on the terms of reference agreed with the Bank by effectiveness, (b) developing project-specific FM arrangements, as a section of the Project Operations Manual (POM) by effectiveness; and (c) installing accounting software that will support accounting and financial reporting under the Project within 60 days after the Project effectiveness.

47. The audit of the Project’s financial statements will be conducted (a) by independent private auditors acceptable to the World Bank, on terms of reference acceptable to the World Bank and (b) according to the International Standards on Auditing, issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants. Annual audited project financial statements will be submitted to the World Bank within six months after the end of each fiscal year, and at project closing. The Borrower will disclose audit reports for the project within one month of their receipt from the auditors, by posting the reports on TC’s website. Following the World Bank’s formal receipt of these reports from the borrower, the World Bank will make them publicly available according to the World Bank Policy on Access to Information. The cost of the audit will be covered from the Republican Budget, and auditors will be selected and contracted by the Ministry of Finance as part of the portfolio audit.

48. The Interim Unaudited Financial Reports (IFRs) will include, at minimum, a Statement on Sources and Uses of Funds, Statement with Detailed Project Expenditures as well as Statement on Designated Account. The sample IFRs will be included as an attachment to the POM. The PIU will produce IFRs on a quarterly basis and submit them to the World Bank no later than 45 days after a calendar quarter end.

49. Disbursements from the Loan Account will follow the transaction-based method, that is, traditional World Bank procedures, including advances to the Designated Account, Direct Payments, and Special Commitments. Details of disbursement arrangements will be provided in the Disbursement and Financial Information Letter. The adequacy of FM arrangements will be continuously monitored during project implementation, and adjustments will be made when necessary to ensure fiduciary compliance.

50. The overall residual FM risk rating after implementation of recommended actions is assessed as **Moderate**.

(ii) Procurement



53. Procurement under the Project will be governed by the World Bank’s Procurement Regulations for Investment Project Financing (IPF) (July 2016, revised September 2023) (Procurement Regulations), and will also be subject to the World Bank’s Anti-Corruption Guidelines (dated July 2016). The procurement approach, procurement risks, arrangements and procurement plan for the Project duration recommended by the Borrower will be presented in the Project Procurement Strategy for Development (PPSD). The PPSD is being prepared by the Borrower with the support of the Bank’s team. The PPSD and the Procurement Plan will be updated during the project implementation to reflect any substantial changes in procurement approaches and methods to meet the actual project needs. Matching Grants (catalytic public funding) will follow commercial procurement practice as agreed upon in the Project Operational Manual (POM) and MGM.

54. Procurement activities and packages envisaged under the project are mainly consulting services contracts of low value.

55. The TC has overall management capabilities, established fiduciary arrangements but lacking the experience in implementation of the World Bank funded projects. All procurement is being conducted on e-platform supporting public procurement. Therefore, Project’s implementation following Procurement Regulations will require further strengthening of implementation capacity of the TC and devoting additional resources to support the project oversight and procurement. A Procurement Specialist shall be hired as part of the PIU by effectiveness.

56. The overall procurement risk under the project is currently assessed as Moderate. The key issues and risks concerning procurement include: (i) inadequate level of competition; (ii) procurement and implementation delays due to limited procurement capacity and lack of knowledge and experience of TC with Bank’s Procurement Regulations. The proposed mitigation measures: (i) hiring the qualified technical experts to assist the TC in preparation of TORs; (ii) conducting a streamlined market analysis before launching procurement processes; (iii) preparing procurement documents in advance following the Bank procurement regulations and as proposed by the PPSD; (iv) continuous monitoring of contracts implementation (quality, time, and cost) with agreeing on actions to expedite the payment process.

57. With these mitigation measures implemented, the residual risk for Procurement is assessed as **Moderate**.

C. Legal Operational Policies

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

D. Environmental and Social

58. The Environmental and social risks rating is **Moderate** at this stage due to the project scope and financing activities. Activities under Component 1 are small matching grants to qualified ISPs for deploying backhaul and access networks to households, businesses, and public institutions. The scale of the proposed civil works are small and the general construction-related impacts such as dust and noise pollution, traffic management and OHS are only temporary and can be easily managed by known mitigation measures. The potential environmental risks associated with management of e-waste. Social risks include: (i) Exclusion of vulnerable sections of society from project benefits and opportunities; (ii) Data protection and Privacy and the fundamental rights and freedoms of persons that are related to that data; and (iii) Lack of meaningful and effective stakeholder engagement, public and beneficiary outreach. The Project is rated low for SEA/SH risks. The expectation is that most of the labor will be locally hired, so labor influx is not envisaged. The project recognizes



the following standards as relevant: ESS 1, ESS 2, ESS 3, ESS 4, ESS8 and ESS 10. To address E&S risks, the Borrower has prepared, disclosed, and consulted upon SEP prior to the Project Appraisal. ESMF and LMP will be prepared within three months after the effectiveness. The E&S Commitment Plan will include appropriate actions with time-bound commitments related to implementation of these documents and other institutional arrangements.

59. **Gender.** Various activities in the Project support key areas of the WB's Gender Equality Strategy for FY16-23⁷¹ and the Digital Development Note on Gender Equality⁷² that responds to this strategy, including (a) reducing barriers to ICT access and use for women through improved accessibility and affordability of high-quality digital infrastructure; and (b) seeking to embed women's voice in monitoring of Project impact, through gender-disaggregated results indicators. The Project will contribute to closing the gender data gap. Environments that are supportive for women's access to jobs, credit, voice, and agency are important for poverty and inequality reduction. More and better sex-disaggregated data and statistics are required to profile female led households and to design policies to enhance women's opportunities in project areas. However, the country currently does not produce statistics about performance of female-led households, e.g., access to employment and other economic opportunities. At the same time is it safe to assume that female-led households are likely to face greater challenges in accessing economic opportunities based on available other gender disaggregated statistics for rural areas. The Project will allocate US\$200,000 to close the gender data gap by conducting a study on welfare effects in project areas (Annex 3). This will provide information for the country to understand where the gender gaps may lie on the household level and design evidence-based policies, regulations, and other measures to address such gaps. The results framework includes relevant indicator to monitor progress.

60. **Citizen Engagement.** The Project will develop a program of citizen engagement through consultations, beneficiary satisfaction surveys, and a grievance redress mechanism to respond to stakeholder feedback or concerns related to Project-financed activities. In relation to inclusion, the Project can be instrumental in promoting digital inclusion (as part of Component 1), thus mitigating the adverse effects of exclusion, improving the livelihoods of the vulnerable by enhancing the coverage and the quality of broadband infrastructure in Project-supported unserved and underserved areas. In this context, citizen engagement (CE) will be crucial. CE activities will include the following: (i) inclusive awareness campaign and outreach on the various project interventions, to inform the population, especially women and youth, on the benefits of improved digital connectivity in terms of better availability of service delivery, education and employment opportunities in the digital economy, as well as the GoKZ's broader digital economy development agenda; ; (ii) surveys will be administered using digital tools, such as GEMS and the Kobo toolbox, on the efficacy project interventions as part of Component 1; one-stop citizen service centers that are spread over the country could serve as a key entry point for the administration of the surveys; (iii) the World Bank-led "Listening to Kazakhstan" survey that uses monthly, nationally representative surveys of the Kazakhstan population to monitor rapidly changing situations, with a focus on wellbeing and public opinion,⁷³ will be leveraged to include questions related to quality and frequency of Internet use in Project-supported areas, disaggregated by gender and women-led households; (iv) the Maslikhat, local self-government institutions in Project-supported areas that provide various services and support to local communities, can carry out information campaigns regarding the importance of improved digital connectivity; Special attention will be paid to the engagement of women and other vulnerable groups, relying on female members of the Maslikhat, who would serve as "project ambassadors"; and (v) a Grievance Redress Mechanism (GRM) will be established, relying on adequate protocols and staffing to receive and respond to beneficiary feedback within set standards and reasonable timeframe. The project's GRM will leverage and rely on existing national and local grievance redress mechanisms to enhance sustainability, avoid

⁷¹ World Bank Group. 2015. World Bank Group Gender Strategy (FY16-23): Gender Equality, Poverty Reduction, and Inclusive Growth. Available at: <https://openknowledge.worldbank.org/handle/10986/23425>.

⁷² World Bank Group. 2021. "Accelerating Gender Equality in Digital Development" Available at: <https://thedocs.worldbank.org/en/doc/61714f214ed04bcd6e9623ad0e215897-0400012021/related/Digital-Development-Note-on-Gender-Equality-November2021-final.pdf>.

⁷³ World Bank. Listening to Kazakhstan. Available at: <https://www.worldbank.org/en/country/kazakhstan/brief/l2kaz>



duplicative processes. and facilitate the smooth integration of project activities. The project will monitor the level of satisfaction with the GRM among the beneficiaries who used it.

V. GRIEVANCE REDRESS SERVICES

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

VI. KEY RISKS

63. **The overall risk rating for the project is Moderate.** Key risks, notes, and mitigation measures where identified are provided in the Table below.

Risk Category/Rating	Notes, including mitigation measures
Political and Governance: Substantial	Political and governance factors can adversely impact the PDO. Political context in Kazakhstan is relatively stable and the GoKz has developed a set of development priorities, which are generally supported across the political spectrum and are consistent with the WB’s program. Adequate anti-corruption and public sector ethics regulations exist and are generally enforced, including in the sectoral ministry. Most political decisions underpinning the operation have been taken and could not be reversed easily. Yet, there is a risk that change in MDDIAI leadership can occur suddenly and provoke change in priorities and subsequent lack of support to PIU. This may significantly affect project implementation. This risk will be mitigated through proactive implementation support and communications campaign. Both shall seek to solidify popular support for the Project. The residual risk is considered Substantial.
Macroeconomic: Moderate	While there may be macroeconomic risks in Kazakhstan, the residual risk to the PDO is deemed Moderate. While the project does not rely on any counterpart funding, and that the risk that macroeconomic instability directly affects the operation remains low, there is still a risk that uncertainties related to the global and Kazakhstan-specific economic outlook affect the appetite of private sector companies (ISPs) to participate in the matching grants scheme of the infrastructure expansion envisaged under Component 1.
Sector Strategies and Policies: Substantial	While sector strategies and policies appear adequate in Kazakhstan, one of the key risks in project implementation is the dominance of the fixed and mobile markets by SOEs. The risk is that the infrastructure investment targeted in the project design may end up subsidizing the operations of the incumbents. This risk is mitigated through the transparent and inclusive design of component 1 of that promotes participation of alternative market players, with clear conditions formulated in the Matching Grants Manual to this effect. These may include (a) obliging the winning operators



	to maintain wholesale access to the infrastructure co-financed through the project; (b) by maintaining small size of the lots and only allowing limited number of lots per tender to be won by the same operator. The residual risk is considered Substantial.
Technical Design of Project or Program: Moderate	Project’s biggest infrastructure component (Component 1) was substantially discussed with the market players (ISPs) in Kazakhstan and was successfully tested before that through other Bank’s projects (see Lessons Learned section). Residual risks in design will be mitigated by having diligent and continuous discussion with the market players throughout implementation, preparing required project documents in advance and piloting component activities early during the project implementation, as well as collaborating with IFC on the market sounding for Component 1. The project duration is currently 4 years as discussed with the GoKZ, which will consider an extension should Component 1 not be completed by the project closing date (as most WB projects are approved with a 5 year). Residual risk is therefore Moderate.
Institutional Capacity for Implementation and Sustainability: Moderate	TC has no experience in WB projects’ implementation. However, MDDIAI is currently implementing a WB project. There is an ongoing exchange of relevant project implementation experience among TC and MDDIAI. Additionally, this risk will be mitigated through hiring experienced PIU which is fully staffed and active at the outset of Project implementation. The WB will provide capacity building to TC. Residual risk is deemed Moderate.
Fiduciary: Moderate	The overall fiduciary risk is assessed as Moderate due to the Moderate standalone residual financial management risk and Moderate standalone procurement risk. For the Financial Management, the risk is assessed as Moderate as MDDIAI has current experience in implementing the WB-financed Projects, including components on matching grants management. To mitigate the riskiest area related to matching grants, the following mitigation measures will be agreed with the Implementing Agency – Matching Grants Manual that will include specific FM arrangements under Component 1 of the Project. Development of the POM acceptable to the Bank will be an effectiveness condition for the Project. The Project will follow the Bank’s Procurement Regulations for IPF Borrowers the latest edition. The possible risks related to various aspects of the procurement cycle will be carefully managed by utilizing the Bank’s enhanced procurement principles. Needs and risks of the Project will be analyzed through a PPSD to be ready by negotiations. The extensive market analysis will ensure that procurement processes are appropriate to the size, value, and risk of the Project. Matching Grants will follow procurement commercial practice as explained in the POM and Matching Grants Manual.
Environment & Social: Moderate	The Environmental and social risks rating is Moderate. The potential environmental risks associated with the other components include management of e-waste. Social risks include: (i) Exclusion of vulnerable sections of society from project benefits and opportunities; (ii) Data protection and Privacy and the fundamental rights and freedoms of persons that are related to that data; and (iii) Lack of meaningful and effective stakeholder engagement, public and beneficiary outreach.



VII. RESULTS FRAMEWORK AND MONITORING

PDO Indicators by PDO Outcomes

Baseline	Period 1	Closing Period
To provide access to high-quality and climate resilient broadband infrastructure		
Households that subscribe to high-quality broadband in the project areas (Percentage)		
Jun/2024	Jun/2026	Jun/2028
37	40	45
Newly built or upgraded broadband infrastructure that is resilient to climate-related hazards (Percentage)		
Jun/2024		Jun/2028
0		100
Private Capital Mobilized in in selected unserved and underserved areas of Kazakhstan (Amount(USD))		
Jun/2024		Jun/2028
0		36000000

Intermediate Indicators by Components

Baseline	Period 1	Closing Period
Resilient Digital Infrastructure		
Sex-disaggregated data on the impact of investments on households in project areas collected (Yes/No)		
Jun/2024		Jun/2028
No		Yes
➤ Identification of gender disparity issues in project areas based on analysis estimating the Impact of the Project on Household Welfare (Yes/No)		
No		Yes
Beneficiaries satisfied with the quality of access to digital infrastructure (Percentage)		
Jun/2024	Jun/2026	Jun/2028
0	70	70
➤ of which women (Percentage)		
Jun/2024	Jun/2026	Jun/2028



0	70	70
Project Management and Implementation Support		
All received complaints and grievances are addressed (Yes/No)		
Jun/2024		Jun/2028
No		Yes



Monitoring & Evaluation Plan: PDO Indicators by PDO Outcomes

To provide access to high-quality and climate-resilient broadband infrastructure	
Households that subscribe to high-quality broadband in the project areas (Percentage)	
Description	This indicator measures the value of the households that have chosen to subscribe to the access to high-quality Internet in the project areas as percentage of all households in the project areas.
Frequency	Annual
Data source	ISPs operating in project areas; project data
Methodology for Data Collection	Absolute value of households in project areas is established during the identification of project areas; absolute value of households that signed contracts for provision of the internet in project areas is collected from the ISPs operating in project areas
Responsibility for Data Collection	TC / PIU
Newly built or upgraded broadband infrastructure that is resilient to climate-related hazards (Percentage)	
Description	This indicator measures the the share of the digital infrastructure deployed in project areas under the project which meets the standards for climate resilience and low carbon emissions of all digital infrastructure deployed in project areas under the project.
Frequency	Data is collected following the implementation of Component 1.
Data source	Project data
Methodology for Data Collection	Data is collected from the project documentation related to the infrastructure deployment, including acceptance of work protocols.
Responsibility for Data Collection	TC / PIU
Private Capital Mobilized in in selected unserved and underserved areas of Kazakhstan (Amount(USD))	
Description	Amount of private capital mobilized for digital infrastructure deployment in project areas under Component 1
Frequency	Data is collected following the implementation of Component 1.
Data source	Project data
Methodology for Data Collection	Data is collected from the project documentation related to the infrastructure deployment, including acceptance of work protocols and financial management documentation.
Responsibility for Data Collection	TC / PIU

Monitoring & Evaluation Plan: Intermediate Results Indicators by Components

Resilient Digital Infrastructure	
Sex-disaggregated data on the impact of investments on households in project areas collected (Yes/No)	
Description	This indicator will measure the impact of investments on households in project areas based on the collected sex-disaggregated data
Frequency	Annually
Data source	Surveys
Methodology for Data Collection	Methodology is outlined in Annex 3 of this document
Responsibility for Data Collection	TC / PIU
Identification of gender disparity issues in project areas based on analysis estimating the Impact of the Project on Household Welfare (Yes/No)	
Description	This indicator will measure completion of analysis on identification of gender disparity issues in project areas based on analysis estimating the Impact of the Project on Household Welfare.
Frequency	At the end of the project



Data source	Sex-disaggregated data on the impact of investments on households in project areas
Methodology for Data Collection	Methodology is outlined in Annex 3 of this document
Responsibility for Data Collection	TC / PIU
Beneficiaries satisfied with the quality of access to digital infrastructure (Percentage)	
Description	This indicator measures percentage of beneficiaries satisfied with the quality of access to the Internet in the project areas out of a representative sample of beneficiaries.
Frequency	Annual
Data source	Beneficiaries residing in project areas
Methodology for Data Collection	Survey of beneficiaries in project areas.
Responsibility for Data Collection	TC / PIU
of which women (Percentage)	
Description	This indicator represents a gender disaggregation of the beneficiary satisfaction indicator.
Frequency	Annual
Data source	Female beneficiaries residing in project areas
Methodology for Data Collection	Survey of beneficiaries in project areas.
Responsibility for Data Collection	TC / PIU
Project Management	
All received complaints and grievances are addressed	
Description	This indicator will assess the PIU's project's management capacity in dealing with complaints under the project.
Frequency	Anually
Data source	Project data
Methodology for Data Collection	Analysis of the complaints received and adherence of their investigation to the GRM procedure
Responsibility for Data Collection	PIU



ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Republic of Kazakhstan
Kazakhstan Digital Acceleration for an Inclusive Economy (DARE) Project

Figure 1.1. Implementation Arrangements



Note: Composition of the PIU will be elaborated fully in POM

1. The implementation support strategy was developed considering the nature of the Project activities and the risks identified in the systematic operations risk-rating tool and targets the provision of timely and efficient implementation support to the client.

- **Technical:** Technical consultants will be financed by the Project to aid on the implementation of various activities and ensure appropriate coordination and linkages among them. In addition, Bank staff and consultants will provide strategic support and advice to TC to assist it in technical issues, and to provide guidance on international best practices, as needed.
- **Procurement:** The procurement-related implementation support will include (i) timely advice on various procurement-related issues and guidance on the Bank’s Procurement Framework to apply to the project financed activities; (ii) technical support in reviewing Requests for Proposals, amendments, evaluation reports, and other procurement-related documents; (iii) monitoring of procurement progress against the procurement plan; and (iv) post-review of contracts.
- **Financial management:** As part of its Project implementation support and supervision missions, the Bank will conduct risk-based financial management implementation support and supervision within 6 months from the first disbursement, and then at appropriate intervals. During the Project implementation, the Bank will supervise the Project’s financial management arrangements in the following ways: (a) review the Project’s quarterly IFRs as well as the Project’s annual audited financial statements and auditor’s management letters and remedial actions recommended in the auditor’s management letters; and (b) during the Bank’s on-site missions, review the following key areas (i) project accounting and internal control systems; (ii) budgeting and financial planning arrangements; (iii) disbursement arrangements and flow of funds, including counterpart funds, as applicable; and (iv) any incidences of corrupt practices involving project resources. As required, a Bank-accredited Financial Management Specialist will participate in the implementation support and supervision process. TC will prepare and furnish to the Bank not later than September 15 of each year during the implementation of the Project, a proposed Annual Work Plan and Budget containing: (i) all activities



to be carried out under the Project during the following year and (ii) a proposed financing plan for expenditures required for such activities, setting forth the proposed amounts and sources of financing.

- **Environmental and social safeguards:** The Bank's environmental and social specialists will provide support to the TC on (i) arranging timely preparation and updates of applicable the Environmental and Social Framework documents; and (iii) consultation and disclosure of safeguards documents. The Bank team will support the timely resolution of safeguards issues, timely response and clarifications on safeguards-related questions and issues, and implementation of a stakeholder engagement plan.
- **Public communication:** The Bank's communication specialist will provide support to the implementing entity on matters related to consultation on safeguards documents preparation and benefit-sharing mechanism development and on public disclosure of information related to various project aspects, details on GRM and how the cases were resolved, communication with NGOs, and others.

Financial Management

2. The FM arrangements of the TC were found to be overall adequate and acceptable to the World Bank. The overall FM risk for implementation of the project was assessed to be Moderate as: (a) the MDDIAI has experience in implementing the World Bank-financed Project, (b) regular risk-based FM supervisions of the existing project in MDDIAI confirmed satisfactory FM arrangements in place; and (c) knowledge of the FM systems of the Governmental Agencies confirms adequate budgeting, internal controls accounting and financial reporting capacity and arrangements.

3. The World Bank will continue to apply a risk-based approach when planning FM Implementation Support and Supervision Missions, with the first one to be conducted within six months after the first disbursement. The adequacy of FM arrangements will be continuously monitored during risk-based missions, and adjustments will be made when necessary to ensure fiduciary compliance.

4. **Staffing of FM function.** The PIU that will be established under the Implementing Agency includes qualified FM Specialist/Consultant (FMS).

5. **Budgeting.** The Implementing Agency will follow the government budget cycle for preparation and submission of annual budgets, based on the Procurement Plan and operating cost estimates. The approved budgets will be entered into the project accounting software and used for monitoring of variance between planned and actual expenditures.

6. **Accounting.** The PIU will maintain accounting records in the automated accounting system that meets the World Bank and Government accounting and financial reporting requirements, which should be procured and installed within 60 days of the project effectiveness. The project accounting records will be maintained in accordance with the IPSAS (cash basis).

7. **Financial reporting.** The PIU will prepare IFRs, starting with the quarter in which the first disbursement occurs. The IFRs will be submitted to the World Bank on a quarterly basis within 45 days after the end of each calendar quarter and will include information on the sources and uses of funds, detailed use of funds by each activity and the budget category, as well as movements and balances in the Designated Account. The format of IFRs will be included in the POM. The IFRs will be automatically generated by the project accounting software.

8. **Internal controls.** The PIU will establish an internal control system capable of providing reliable and adequate controls over FM and disbursement processes and procedures. These include controls for safeguarding of assets, due and balanced segregation of duties, authorization of transactions, review and approval of invoices, and contract management. The internal control system to be implemented and maintained by the Implementing Agency, including the budgeting, planning, financial reporting and accounting, and auditing requirements, will be documented in the POM, which will be



adopted in the form and substance acceptable to the World Bank. The FM procedures related to matching grants will be also documented.

9. External audit. In compliance with the practice in Kazakhstan, the Ministry of Finance of the GoKZ will be responsible for arranging an independent annual audit of the project’s financial statements as part of the Portfolio audit arrangements. Audit of the proposed project will be conducted (i) by an independent auditor acceptable to the World Bank under terms of reference acceptable to the World Bank and (ii) in accordance with International Standards on Audit issued by the International Auditing and Assurance Standards Board. The annual audited project financial statements will be submitted to the World Bank within six months of the end of each fiscal year and at the closing of the project. The audited project financial statements will be publicly disclosed in accordance with the World Bank’s Access to Information Policy.

Flow of Funds and Disbursement Arrangements.

10. Disbursements from the Loan funds will follow the transaction-based method, that is, traditional World Bank procedures, including advances to the Designated Account, Direct Payments, Special Commitments, and Reimbursements (with full documentation and against Statements of Expenditures). The funds will flow from the Bank directly to the Designated Account opened by the TC in the Treasury, or via direct payment procedure based on withdrawal applications to be prepared by the TC. More details on disbursement arrangements and flow of funds will be provided in the Disbursement and Financial Information Letter.

Procurement.

11. Procurement under the proposed project will be governed by the World Bank’s Procurement Regulations for IPF (July 2016, revised September 2023) (Procurement Regulations), and will also be subject to the World Bank’s Anti-Corruption Guidelines (dated July 2016).

12. The overall procurement risk under the Project is currently assessed as Moderate. The possible risks related to various aspects of the procurement cycle will be carefully managed by utilizing the Bank’s enhanced procurement principles. The needs and risks of the Project will be analyzed through a PPSD to be ready by negotiations. The extensive market analysis will ensure that procurement processes are appropriate to the size, value, and risk of the Project. Matching Grants will follow procurement commercial practice as explained in the Project Operation Manual and Matching Grants Manual.

13. Staffing of procurement function. The PIU that will be established under the Implementing Agency includes a qualified Procurement Specialist.

14. PPSD and Procurement plan. The procurement approach, procurement risks, arrangements, and procurement plan for the project duration recommended by the Borrower will be presented in the PPSD. The PPSD is being prepared by the Borrower with the support of the Bank’s team. The PPSD and the Procurement Plan will be updated during the project implementation to reflect any substantial changes in procurement approaches and methods to meet the actual project needs.

15. Establishing Tender and other Committees. The Tender Committees for different Project’s activities, including committees under Component 1 such as matching grant application selection and acceptance of work committees, will be established by the Order of the Implementing Agency consisting of specialists who oversee relevant Project’s activities and headed by the Chairperson.

16. Organization of Procurement Process. Once the Procurement Plan is approved, it needs to be uploaded into the electronic system of procurement monitoring – STEP (Systematic Tracking of Exchanges in Procurement). The whole



procurement cycle for project activities until contract completion will be processed through STEP and its Contract management module.

17. Contract Management. TC and PIU shall ensure that in their own organization, all required internal conditions for contract management are properly created, including assigning contract management specialists for each contract under the project, establishment of internal procedures, risk assessment related to contract execution, and identification of corrective and mitigation measures, establishing coordination with the third parties (other entities, end-users, recipients, etc.).



ANNEX 2: Detailed Description of Component 1

Component 1: Resilient Digital Infrastructure (IBRD: US\$90 million; PCM: US\$ 36 million)

The following describes implementation arrangements for this Component 1:

- 1. Target beneficiary groups.** Unconnected households, public institutions, businesses in villages covered under the GoKZ “250+” program.
- 2. Objective.** The population living in non-covered villages have the same rights as the rest of the population for access to high-speed broadband networks. Rolling out high-speed broadband infrastructure will improve the quality of life in these areas, while allowing local population to have better access to new sources of information and knowledge, services, and revenue-generating opportunities (e.g., online work). It may even help hinder depopulation of some of these areas. There is conclusive evidence that broadband connectivity is of strategic importance to growth and innovation in all sectors of an economy as well as for social and territorial cohesion. Fast and widely available broadband is therefore key ingredient to local growth and prosperity. The Project strives to make high-speed broadband infrastructure deployment faster and easier, while aiming for the highest impact on the everyday life of the population living in the non-covered villages.
- 3. Approach.** The Project will allocate grants to qualified⁷⁴ ISPs through a competitive matching grants arrangement. The grants will be awarded per lots; each lot will be grouping several villages. The TC has conducted preparatory work to identify and group the villages into potential lots for the first 24 months of the Project. ISPs with the most economically advantageous proposal will build, manage, and commercially exploit publicly co-financed broadband networks. This means that the Project, on competitive basis, will select those ISPs that will provide the most efficient technical solution, incl. in terms of budget, and will request the least amount of grant to connect the selected villages within the specific lot. After the completion of the broadband infrastructure deployment, the state will not assume any role in the ownership or operation of the networks. Operators will assume several obligations that are aligned with the best practice for the regulation of publicly co-funded broadband projects (see 4. Safeguards below). The disbursement of the matching grant amount to the selected ISPs will be linked to completion of deployment. At the inception of the project, matching grant will reimburse 50% of CAPEX related expenses including but not limited to civil works, costs of cable, equipment, ducts, and poles. Exact Implementation details will be established in MGM.
- 4. Safeguards.** Relevant safeguards will be put in place to ensure that awarded public co-financing does not distort the competition and, at the same time, public objectives are delivered. Such safeguards include limiting the size of the matching grant to US\$500,000, limiting the possibility of single ISP to be awarded more than two lots (including when part of the consortium), establishing obligation to share access to publicly co-financed infrastructure with other ISPs and others. TC is working to incorporate said safeguards into Matching Grants Manual. Most of the obligations were already discussed and validated with the ISPs during public consultations during the past year. All information pertaining to the awards will be publicly available on TC website.
- 5. Identification of non-covered villages.** Project will target villages covered under the GoKZ “250+” program in all territory of Kazakhstan. Additionally, TC collected via desk research and frequent consultations with ISPs needed information to ensure that there is no room for private investments in these villages outside the Project in the next three years. TC has identified around 1400 villages, which are non-covered with broadband infrastructure. The process of identification of non-covered villages was conducted in accordance with the best practices; the process also

⁷⁴ Means appropriately licensed/registered with TC.



requires that TC verify each lot with ISPs closer to the announcement of the lots. This procedure will be outlined in detail in MGM.

6. **Prioritization of investments.** The Project will address the needs of the worst connected regions of Kazakhstan first: Akmola, Turkestanskaya, West Kazakhstan, and East Kazakhstan. Project will also address other regions of the country.
7. **Technology choice.** The Project aims to achieve guaranteed high-speed broadband connections in non-covered areas of at least 100 Mbps. In doing so, the Project will respect the principle of technological neutrality.
8. **Civil engineering works.** To lower the costs of civil engineering works of broadband deployment (which usually take up to 80% of the cost of the entire project), the Project will, whenever possible, coordinate with civil engineering works, planned or ongoing in the target areas (e.g., works concerning roads, gas, water, or electricity maintenance or provision), to deploy ducts to facilitate further installation of fiber optic cables.



ANNEX 3: Estimating the Impact of the Project on Household Welfare

1. The Project includes financing of surveys for data collection and associated analysis to estimate the impact of its investments on beneficiaries, with a focus on economic impact, as part of Component 1. It will also close gender data gap as analysis will be disaggregated by gender. The focus will be on the impact of improved connectivity on beneficiary households' welfare considering that the Project collaborate with ISPs on provision of awareness raising activities that help beneficiaries close information gaps related to employment. This Annex provides an overview of the mechanism of this estimation, along with a discussion on some of the potential risks and challenges. The WB team will provide ongoing technical assistance and capacity building support to the PIU and other stakeholders in this analysis.

Theory of Change

2. The long-term outcome of interest is the Project's impact on household welfare and poverty. Household welfare is a general concept, but it is often operationalized by the value of per capita consumption. Female and male led households may differ in terms of welfare effects. A positive, long-term impact of this Project would be an increase in the average value of per capita consumption in those areas that benefit from the Project. Understanding whether and how welfare effects vary will help to profile female led households and to design policies to enhance women's opportunities in project areas. The assumptions are that any increase in consumption would be driven by increases in labor market income and, to a lesser extent, improved access to government services. Hence, the causal impact of this Project will be to increase household welfare and reduce poverty will operate through three channels: employment (trade in services), information access for jobs and services, and education.

3. Both the employment and information access channels (for jobs) operate through the labor market. The employment channel refers to remote employment in services enabled by access to broadband connectivity. Information access for jobs refers to efficiency gains in access to the existing labor market through reduced job search costs and better matching of employees with employers. Improved information access also has implications for access to public services. Households with broadband access may be able to find information and apply for services directly from their home.

4. The final causal channel is education. Broadband connectivity enables people to connect to a large network of remote learning opportunities. Changes in consumption caused by increased access to education would be a long-term outcome of this Project, and likely outside the scope of this evaluation. However, changes in participation in online learning may be observed.

Data collection

5. In addition to basic demographic information, the Project will finance a survey that would collect information on the outcomes on which the Project is expected to have an impact in the short, medium, and long-term. Survey questions will be drawn from relevant national surveys wherever possible, to simplify survey construction, piloting, and translation, as well as to enhance the comparability of outcomes with the national population. Relevant surveys include the Labor Force Survey (LFS), Household Budget Survey (HBS), and the Survey on Use of Information and Communication Technology (SUICT).

6. While the objective is to analyze the Project's impact on welfare as measured by per capita consumption, it is not sure whether it is feasible to collect these data directly in the surveys. Because of the cost of collecting consumption data and the high variance of the resulting estimates, the concern is that good estimates could make the burden of data collection too high, both in terms of length of survey and sample size. Hence, it would be more likely that proxies would be collected, drawing on standard practices (e.g., using an asset index) or could draw on newer estimation techniques being piloted elsewhere.

7. A second concern of analyzing consumption outcomes is the time frame of the evaluation. A household may experience improved labor market outcomes quickly but might not use additional income for immediate consumption. If



an asset index is used instead of collecting consumption data directly, this could lead to a problem of timing. This is because in the case of an asset index, predicted consumption of a household will increase only if household members purchase additional durable goods. This will probably change more slowly than non-durable consumption. The Project may face certain difficulties observing any change in consumption in the evaluation time frame of one year, even if the Project has had the desired impact.

Timeline

8. A baseline survey is planned for soon after the Project is in implementation (possibly mid-2024). During this phase, the survey questionnaire will be tested. Moreover, all other activities such as sampling and training of the field staff for the actual survey will be finalized. Subsequent follow-up surveys will be conducted each year in spring (the first envisaged for the beginning of 2025) and finishing with the closing of the DARE Project.

Treatment Effects Estimation Strategy

9. The estimation strategy is essentially a comparison of relevant outcomes (or changes in those outcomes) between two groups, the treatment group, and the control group. Both groups will be gender disaggregated. The treatment group will be defined as those households that received high-speed broadband access (the treatment) because of the Project interventions (Component 1). The control group is chosen to be as similar as possible to the treatment group, in terms of both observable and unobservable characteristics.

10. The villages targeted in this intervention share the characteristic of not having access to broadband internet. Furthermore, all villages that have positively been identified as having no broadband internet, are included in this Project. The control group, then, must be drawn from the same villages as the treatment group. The evaluation will take advantage of the phased rollout of the broadband expansion, which is planned to take place over 4 years. After the first year, roughly 1/4 of the villages should have completed broadband access. To evaluate this first phase of the intervention, outcomes of the 1/4 of villages that have access to broadband will be compared to the outcomes of the villages that are scheduled to receive broadband access in following years.

11. The choice of specific villages to be included in the control group for a given round will depend on the details of the Project implementation. Because the broadband rollout does not occur randomly, the villages that receive broadband access in the first year will be different from those that receive it in the final year of the Project. Due to the nature of network expansion, the first villages selected will likely be those closest to existing network infrastructure. To maintain comparability, the control group for a given year should be those villages that are scheduled to receive broadband access in the following year.

12. Like most Project evaluations, this evaluation will calculate average treatment effects by comparing outcomes between groups; all groups will be gender disaggregated. The challenge is often in defining these groups. Another challenge is to identify enough females led households which may be less numerous. Because the evaluation will be ongoing as the Project progresses, membership of the treatment and control groups will change over time.

13. **Analysis Groups:** These refer to the treatment and control groups that are defined for a particular estimation of treatment effects. Assignment of villages to treatment or control groups will change with each survey round, and when looking at different treatment time frames. Most analyses will not include all villages in the treatment or control group.

14. Treatment Households in villages that have received access to the broadband network under Component 1.

15. Control Households in villages that have not yet received access to the broadband network, but that are part of the Project areas (Component 1).



16. **Evaluation Groups:** Evaluation groups are defined by the survey-year in which they receive access to the broadband network. Membership in a particular evaluation group does not change, but membership is not known at the outset of the Project.

EG 1 Completion of broadband network in Year 1 of the Project; Primarily composed of villages from planned to attend during the year 1.

EG 2 Completion of broadband network in Year 2 of the Project; Mixture of villages from planned to attend during the year 1 and 2.

EG 3 Completion of broadband network in Year 3 of the Project; Primarily composed of villages from planned to attend during the year 2 and 3.

EG 4 Completion of broadband network in Year 3 of the Project; Primarily composed of villages from planned to attend during the year 3.

Identification Assumptions

17. Validity of treatment effect estimates depends on the comparability of outcomes between the treatment and control groups. The goal of a robust evaluation is to compare outcomes between two groups for whom it could be argued that, in the absence of the Project under consideration, relevant outcomes of the two groups would be identical. Looking at the 2-year treatment effects, the main limitation of this evaluation approach is apparent. There is an unavoidable trade-off between length of treatment effects and comparability between groups.

18. The longest-term treatment effect that could be calculated would be 3-years. This estimate would be calculated after the 2025 survey. The treatment group would be EG1, and the control group would be EG4. While this comparison would be possible, it is not recommended, and any results would have to be treated with caution. The treatment group would be composed of relatively large villages with schools and health centers, while the control group would be composed of small villages likely without schools.

Target Population

19. It is recommended to maintain a consistent survey population, consisting of the households in all villages, across all survey rounds. This condition will be guaranteed by a regular and thorough listing exercise of the villages of interest. It is also recommended that for each treatment arm, the same number of households are sampled (and the same number of female and male-led households within each group) over time and between the control and treatment groups. It may be possible to reduce the burden of data collection by limiting the target population for certain survey rounds based on the villages required for that evaluation round. That is the villages that have already received last mile broadband access, and those scheduled to receive it in the following 12 months. This approach, though, may incur additional costs of survey design and introduces the risk of irrecoverable lapses in data collection.

20. The precise membership of the control group in any given survey year will not be known. Membership in the control group in each year is determined by completed broadband connectivity in the following year. There will likely be a schedule in place to provide guidance on control group membership, but villages could enter or exit the control group, if network provision proceeded faster or more slowly than expected. Survey data may also be useful to collect purely for descriptive purposes. In the final survey year, for example, there will not be any available control group. Evaluation using this framework may not be possible after the final year of the Project. The status of households in the Project, though, will certainly be of interest after the Project has completed. This final survey round, then, would only be used for descriptive purposes. For these reasons, it is recommended that each round of the survey cover all villages in the Project.

Sample Design



21. The total target population consists of approximately X households that will be randomly selected from the X villages targeted by the Project. Sample shall allow for gender disaggregated analysis. There will be 4 rounds of data collection. A panel design is preferred to repeated cross-sections. Panel data will enable the investigation of welfare dynamics, provide more precise Project estimates by controlling for household-specific baseline covariates, and improve the identification of control group households for Treatment on the Treated (TOT) estimates (described below). Sample size calculations are underway, so some details of the sample design are not currently available. Use of existing survey data will be critical in designing and drawing a suitable sample of households. Statistical parameters for key outcomes will be calculated from LFS, HBS, and ICT surveys. Data from the Census will be critical for use as a sampling frame and will be sought from the National Statistical Agency.

Econometric Analysis

22. Once the treatment and control groups are identified, the treatment effects of the Project will be estimated by comparing average household outcomes between the two groups and between female and male led households within each group. Note that households in “treatment” villages will be included in the treatment group, regardless of whether they choose to subscribe to the newly available broadband service. Defining the treatment and control groups by villages will produce an Intent to Treat (ITT) estimate of Project effects. Analysis will also calculate a TOT estimate of Project effects. This is the effect of having broadband internet in the household. To calculate TOT estimates, outcomes of households who subscribed to broadband access will be compared to the outcomes of appropriate control households. Again, control households will be chosen to be as similar as possible to treatment households.

23. The ideal control group would be households who do not have access to broadband internet, but who would subscribe if they were given the option. These households can be difficult to identify because we cannot observe their decision about if they would subscribe to broadband, given the opportunity. One approach to identifying control households is propensity score matching. A control group of households is constructed from the control group of villages. These households are selected to have similar observable characteristics as those households that chose to subscribe to broadband in the treatment regions. Due to the phased rollout of the current Project, the control group of households can be observed in subsequent rounds of evaluation. After the second round of broadband rollout, the first-round control group will become the second-round treatment group. After the second-round follow-up survey, the households that chose to subscribe to broadband can be identified. If the PIU has collected panel data, they can then identify those households in the first-round follow-up survey and use their first-round responses to calculate TOT estimates. This means that TOT estimates using the control group identified by observed broadband choices will not be available until after the following year’s data collection has been completed.

Potential for bias

24. In an ideal Project evaluation, treatment and control group will be randomly chosen from the same initial population. The goal is that the observed outcomes of the control group can be used to estimate the counterfactual outcomes of the treatment group. Random assignment is not possible in the current Project, due to the nature of fixed-line network expansion. Out of necessity, fixed-line access will reach communities that are more centrally located, close to existing networks, than more remote rural communities.

25. Because of this phenomenon, villages in the treatment group will always be, on average, larger, more centrally located, and have greater access to public resources (schools and health centers). Villages in any given control group will be smaller, more remote, with fewer public resources. It is reasonable to assume that the characteristics of the treatment group would be associated with higher economic growth than the characteristics of the control group, even in the absence of access to broadband internet. Estimation of treatment effects based on these two groups is likely to lead to positively biased estimates. The estimated effect of the broadband rollout is likely to be greater than the true effect. This problem



is unavoidable. It cannot be prevented, but it can be addressed through various approaches, which will be developed once the Project is in implementation and details on the rollout plans are drawn up.



ANNEX 4: Summary of Cost-Benefit Analysis (CBA)

1. The rationale for Project intervention is the market failure in providing broadband to remote sparsely populated areas of Kazakhstan. Because of the lack of economies of scale, commercial ISPs have under-invested in these remote communities, which resulted in an uneven distribution of high-speed broadband connectivity between the rural and urban areas of Kazakhstan. Given Kazakhstan's geography, vast sparsely populated rural areas often lack the of affordable high-speed broadband. The Project seeks to remedy the broadband connectivity gaps in Kazakhstan and eliminate the digital divide through expanding both the broadband infrastructure (the supply side) and the digital skills needed to benefit from such infrastructure (the demand side).
2. The CBA suggests that the project is feasible and delivers the net present value (NPV) of benefits to society worth US\$ 8.99 million, with internal rate of return (IRR) of 20% on investment of US\$ 90 million. Direct benefits are quantified, within the 10-year project implementation horizon. Because the potential project benefits may continue for a longer time span than 10 years, we also implement the multiples approach to estimate long-term GDP impact of the project (related to, e.g., productivity gains impact on societal welfare). Using the average coefficient estimates from prior empirical studies of broadband impact on GDP, we estimate the long-term impact of the project (including productivity effects, societal welfare effects, and labor market effects) to be US\$ 2.77 billion. over the long-term horizon.
3. The CBA model quantifies the project impact by comparing the project-related net benefits to the counterfactual "no project" scenario. This approach involves calculating the project costs and the benefits that accrue to households, educational institutions, and healthcare institutions. The model compares the stream of net benefits under the project scenario to those under private provision of a similar project. We show that under "no project" scenario (i.e., in the absence of government incentives), the net present value (NPV) to commercial ISPs would be negative (- US\$ 29.57 million). To address the failure of the private sector to deliver broadband access in less densely populated areas of Kazakhstan, the government may consider subsidizing some of the initial investments in broadband network. The amount of government subsidy in this case should be just enough to incentivize the ISPs to invest, but not exceed the minimum efficient threshold.
4. Several versions of NPV are computed, as we consider the social and financial discount rates. The social discount rate (6.25%) is calculated to reflect the opportunity cost of capital from the society perspective; the financial discount rate (8.29%) is calculated to reflect the riskiness of the project from the commercial perspective. The NPV calculations in the COB model consider both benchmark discount rates – the social discount rate and the financial discount rate. When the social discount rate is used, the resulting NPV calculation implicitly assumes that the cost of capital invested in the project should be seen as the opportunity cost to Kazakhstan's society. When the financial discount rate is used, the NPV reflects the riskiness of broadband infrastructure projects from the perspective of commercial investors. Note that we report the conservative (lower) NPV figure as a baseline, relying on the financial discount rate.
5. The project benefits accrue to households, educational institutions, healthcare institutions, and ISPs. The value to households arises due to consumer surplus associated with broadband prices being lower than the maximum price which households would be prepared to pay for the service (the latter is set as current market price). The value to public institutions arises due to cost savings (under the project) relative to current prevailing prices. The value to ISPs arises due to 50-50 infrastructure cost sharing, with 50% contribution of the public money. We conservatively assume 3 percentage points difference between broadband price decreases without the project and with the project.
6. The Project investment of US\$ 90 million finances 50% of total CAPEX and OPEX expenditures over four years (the remaining 50% are financed by the private ISPs). Beyond the four-year horizon, maintenance costs are financed by the private ISPs. The implementation mechanism assumes the public-private implementation, with the auction-based mechanism determining the contribution of the private sector.



7. The “no project scenario” assumes that a similar project is undertaken through private ISPs, but at a lower scale. The counterfactual scenario without public investments assumes that the ISPs invest at 50% the project CAPEX scale and reach 50% the beneficiaries (households and institutions) compared to the scenario with the project. The NPV to ISPs would be negative in such a project, which suggests that the project would not be financially viable for ISPs to undertake without the public sector involvement.

8. The project is not viable to be undertaken on a commercial basis, because the NPV to private providers would be negative (- US\$29.57 million). The commercial NPV to ISPs is negative under private provision of the backhaul connectivity, as the revenues per household do not justify substantial CAPEX per household. This reflects the lack of economies of scale in providing backhaul connectivity to relatively small rural communities. The connectivity to public institutions is only viable through public-private provision.

9. The sensitivity analysis with respect to the discount rate suggests that the project is viable under cost of capital up to 20%, which is the internal rate of return. Given that the financial discount rate for the project (8.29%) is below IRR (20%), this confirms the project viability as a stand-alone investment.