DIGITAL INFRASTRUCTURE IMPROVEMENTS FOR CONNECTIVITY AND RESILIENCE IN AFGHANISTAN

GUIDING PRINCIPLE 2: RESPONSIVE, RESILIENT, AND FLEXIBLE SERVICE PROVISION

Infrastructure planning and development should be based on a good understanding of infrastructure service needs and informed by the diverse options available to meet those needs. This includes understanding and managing the changing demand, and meeting needs through renovating or rehabilitating existing infrastructure before investing in new infrastructure. Systems-level planning of Infrastructure projects should promote synergies for improved connectivity, which can lead to improved productivity, efficiency, sustainability, and spillover benefits of investment. Flexibility and resilience should be built into infrastructure plans to allow for changes and uncertainties over time, and plans should be updated.

BACKGROUND

As a landlocked and mountainous country, Afghanistan faces significant connectivity challenges. Around three quarters of the population live in rural and often remote areas (World Bank 2019), and only 11 per cent of the population use the internet (World Bank 2017). The cost of the internet itself also represents an ongoing issue. Since Afghanistan is landlocked and without submarine cables, it has been subject to transaction fees from neighbouring countries: Pakistan, Iran and Turkmenistan (International Telecommunication Union [ITU] 2018).

After decades of protracted conflict and limited access to markets, many citizens cannot access government services, and face limited livelihood options. In recent years, in an effort to meet service needs and provide economic opportunities, Afghanistan has begun integrating digital infrastructure into strategic national planning and has taken steps to increase connectivity. In contexts of crisis – including conflicts

and pandemics – digital infrastructure holds the potential to provide sustainable and flexible solutions and foster resilience if developed in a sensitive and culturally appropriate fashion.

Improvements in digital infrastructure in Afghanistan feed into the wider "Digital Silk Road" concept – a thread of the BRI which seeks to improve connectivity across continents through infrastructure investments. The Digital Silk Road aims to expand the regional knowledge economy in Central, South and Southwest Asia. In Afghanistan, through government planning and implementation of projects such as "Digital CASA", the focus of "hard" and "soft" digital infrastructure improvements is on four components (Afghanistan, Ministry of Communications and Information Technology 2019a): domestic and regional connectivity, e-government, enabling environment (policy and regulatory frameworks) and strengthening institutions.

ADDRESSING THE NEED FOR CONNECTIVITY

The region's economic and political actors have established that cross-border trade in knowledge, e-commerce and services across Central and South Asia holds significant economic potential. However, these economic activities require supporting digital infrastructure. Afghanistan has identified the need to connect priority sub-national regions and groups to affordable internet, bring down the overall cost of internet services and connect public institutions digitally (Afghanistan, Ministry of Communications and Information Technology 2019a). One short-term goal has been to connect the remote Badakhshan and Bamyan Provinces with the national Optical Fiber Cable (OFC) Network.

Importantly, to take advantage of new digital infrastructure, citizens and small and medium-sized enterprises (SMEs) also require the necessary education and skills, after consultation. Currently, Afghanistan's adult literacy rate is only 31.7 per cent (UNDP 2020). At the end of 2019, the Ministry of Communications and Information Technology launched an "Empowerment Training Program for Women in the Digital Era" through collaboration with universities, to equip women with digital skills and knowledge and to enhance economic opportunities (Afghanistan, Ministry of Communications and Information Technology 2019b).

Afghanistan's mountainous and inaccessible landscape, and lack of transport infrastructure, also call for flexible solutions for public services and government operations. E-government forms a key component of Afghanistan's digital infrastructure improvement plans. The plans focus on establishing common e-services enablers to offer communities and SMEs access to information and government services through their mobile devices (Afghanistan, Ministry of Communications and Information Technology 2018, pp. 16-19). Similarly, the "Electronic Government Resource Center Phase II" project has already enhanced the policymaking capabilities of Afghanistan's Ministry of Communications and Information Technology. Through this project, the government has used information and communications technology (ICT)

to improve operations, increase transparency, and promote efficient service delivery. The e-government solutions have made government offices more competent to respond to citizens' service requests, and allowed them to implement key legislative, policy and strategic reforms needed for a more vibrant private sector. The project has trained 300 Afghan government employees in e-government and information technology (United States Agency for International Development [USAID] 2019).

INTEGRATING DIGITAL INFRASTRUCTURE INTO STRATEGIC NATIONAL PLANNING

Afghanistan's infrastructure needs are well reflected in its national plans. ICT and regional connectivity stand as central pillars of the Ministry of Finance's national infrastructure plan (Afghanistan, Ministry of Finance 2016). The latest "ICT Policy for Afghanistan (2018-2022)" sets a "digital agenda for development and social change", laying out multiple uses for digital solutions – not only e-business and e-government, but also e-environment and natural resources management, e-agriculture, e-health and e-education (Afghanistan, Ministry of Communications and Information Technology 2018). This emphasizes an integrated approach, with digital solutions mainstreamed across multiple sectors. It represents progress from earlier ICT policies which did not, for example, detail environmental and natural resource applications (Afghanistan, Ministry of Communications and Information Technology 2008).

Moreover, Afghanistan has strived to create an enabling environment for these applications of digital solutions and ICT markets. This includes measures to harmonize regulations with neighbouring countries, removing monopolies and assessing and modernizing existing ICT legal frameworks, to "crowd in" private investment in the sector. The ongoing conflict, however, presents a significant challenge in achieving these aspirations, and continues to discourage investment and disrupt the implementation of projects (Asian Development Bank [ADB] 2020).

ENVIRONMENTAL MANAGEMENT AND RESILIENCE

The e-environment and natural resources management plans focus on applying digital infrastructure to enhance the planning, management and monitoring capacity of the Ministry of Mines and the Ministry of Environment (Afghanistan, Ministry of Communications and Information Technology 2018). The plans also set out objectives to develop environmental databases and Geographic Information Systems (GIS) repositories and maps for use across government, with a view to managing the country's natural resources more efficiently.

Digital infrastructure brings its own environmental sustainability challenges, including those associated with increased demand for natural resources such as lithium (needed for mobile device batteries), energy requirements, e-waste and the potential environmental impacts of cable networks. In developing the required "hard" digital infrastructure, OFC networks were designed to be co-located among existing and future roads. This has minimized the development of physical assets in new areas, avoiding potential negative environmental impacts such as vegetation removal, biodiversity loss and interruption of hydrological regimes and animal migratory routes, as well as damage to Afghanistan's rich cultural heritage sites (Cabral 2017). Overall, the plans for OFC networks in the Digital CASA project cover 3,132 km of cable, consisting of 1,401 kilometres for provincial connectivity and redundancy in the domestic network, and 1,731 kilometres to provide network redundancy for regional connectivity (Cabral 2017, pp. 88-89). This built-in redundancy is an important aspect of resilience to shocks and crises, in a context where physical infrastructure is often damaged by climate-related hazards and conflict.
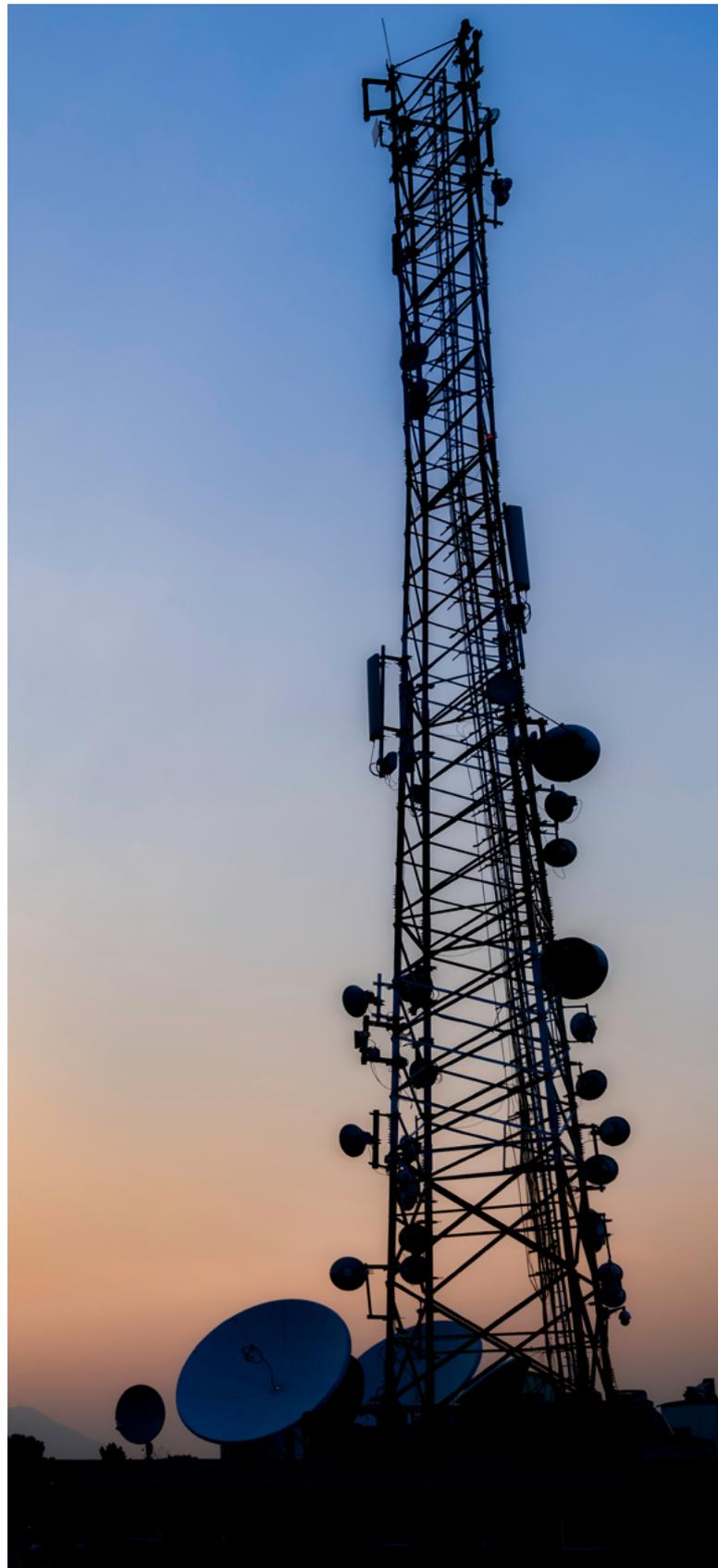
REPLICABILITY

Afghanistan's digital infrastructure projects are in the process of implementation and face significant challenges, but the good practices in its national plans and systems-level interventions also have broader relevance. Many countries in the world still lack digital infrastructure and internet coverage; in some, just 1 per cent of individuals use the internet (World Bank 2017). This greatly constrains the types of jobs available to citizens, but also determines the flexibility of those jobs as well as of services such as education and healthcare.

The COVID-19 pandemic has underlined the importance of integrated planning for resilience, and demonstrates the value of investing in digital infrastructure for flexible working arrangements, among other benefits. Globally, millions of occupational and educational activities have successfully shifted onto virtual platforms, allowing people to continue to pursue livelihoods while potentially reducing the need for forms of built infrastructure with larger ecological footprints such as offices and transport infrastructure.

Digital infrastructure improvements can be incorporated further into countries' strategic plans as part of a green and resilient economic recovery from COVID-19. With rigorous sustainability and viability assessments, digital solutions may offer alternatives to physical infrastructure assets. At the same time, the potential negative environmental and social impacts associated with digital solutions – such as consumption of natural resources and energy, or loss of traditional jobs and practices – must also be fully assessed and mitigated in Afghanistan and other countries.

KEY INSIGHTS

> Amid challenges, Afghanistan has understood the shifting landscape of trade and education, and identified digital infrastructure as a critical foundation for economic opportunity across and within regions. The government has launched a digital training programme for women while also promoting e-government that is accessible to SMEs and citizens with mobile devices.

> The ICT Policy for Afghanistan sets a digital agenda for the country, promoting connectivity and synergies across multiple sectors.

> Afghanistan is harmonizing digital regulations with those of neighbouring countries, and has encouraged private investment in the sector. OFC networks will be co-located along existing and future roads, reducing environmental impacts while also contributing to a more resilient system.

REFERENCES

Afghanistan, Ministry of Communications and Information Technology (2008). *Information and Communication Technology 1387-1391* (2007/08 -2012/13). https://mcit.gov.af/sites/default/files/2018-12/ICT%20Sector%20 Strategy%20-%20English%20final%20Singed.pdf.

Afghanistan, Ministry of Communications and Information Technology (2018). *ICT policy for Afghanistan: a digital agenda for development and social change 2018-2022, draft.* https://mcit.gov.af/sites/default/ files/2018-12/information%20and%20communications%20technology%20Policy%20of%20MCIT%20.pdf.

Afghanistan, Ministry of Communications and Information Technology (2019a). Digital CASA Afghanistan project. https://mcit.gov.af/DigitalCASA. Accessed 20 October 2020.

Afghanistan, Ministry of Communications and Information Technology (2019b). Ministry of Communications and Information Technology launches empowerment training program for women in digital era. https://mcit. gov.af/ministry-communications-and-information-technology-launches-empowerment-training-program-women. Accessed 12 October 2020.

Afghanistan, Ministry of Finance (2016). *National Infrastructure Plan: 2017-2021*. http://policymof.gov.af/home/ wp-content/uploads/2019/01/Natioal-Infrastructure-NPP.pdf.

Asian Development Bank (2020). Afghanistan's economic growth to remain sluggish amid challenges, 3 April. https://www.adb.org/news/afghanistans-economic-growth-remain-sluggish-amid-challenges-adb. Accessed 8 January 2021.

Cabral, J. (2017). *Environmental and Social Management Framework for Digital CASA Afghanistan Project.* Ministry of Communications and Information Technology. https://mcit.gov.af/sites/default/files/2018-11/ ESMF%20FOR%20DIGITAL%20CASA.pdf.

International Telecommunication Union (2018). Improving technical infrastructure in Afghanistan: H.E. Shahzad Gul Aryobee, 7 November. https://news.itu.int/internet-infrastructure-in-afghanistan/. Accessed 10 October 2020.

United Nations (2020). Sustainable Development Goals. https://sdgs.un.org/goals. Accessed 10 October 2020.

United States Agency for International Development (2019). Electronic Government Resource Center Phase II. https://www.usaid.gov/sites/default/files/documents/1871/Electronic_Government_Resource_Center_ Phase_II.pdf.

World Bank (2017). Individuals using the Internet (% of population) – Afghanistan. World Bank DataBank. https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=AF. Accessed 18 October 2020.

World Bank (2019). Rural population (% of total population) – Afghanistan. World Bank DataBank. https://data. worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=AF. Accessed 17 October 2020.