Key messages:

• Countries around the world are looking for ways to anticipate and respond to disasters with minimal damage and to integrate disaster risk reduction actions into their development plans.

• COVID-19 has put the economy under deep pressure, despite resolute action taken by the Government of Mongolia to contain the virus.

• During the COVID-19 pandemic, digital technology has become a critical tool for all sectors, including health, education, and other economic sectors. It also presents a reason to accelerate the digital transformation.

• The Government of Mongolia launched the "Digital Nation" initiative, which aims to apply information technology as a development accelerator and digital development with the concept of the 2030 SDG pledge of "leave no one behind".

• Currently, 97% of soum (rural administrative unit) centres in Mongolia have connected to fibre-optic network. 4G network covers more than 90% of the Mongolian population. Now, in rural areas, 100% of the soums have mobile broadband coverage.

• More than 60 companies have been providing internet service; and outbound transit network traffic reached 155.2 Gbps.

• The frequency of 4-magnitude earthquakes increased 7.5 times compared to the same period last year in Mongolia. The recorded heavy rains and floods (62) in 2021 were three times more than the recorded cases in 2011.

MONGOLIA: THE E-RESILIENCE READINESS

Introduction

COVID-19 has put the economy under deep pressure, despite resolute actions taken by the Government of Mongolia to contain the virus. Gross domestic product contracted by 5.3% in 2020 [1]. Globally every country is facing negative effects from natural disasters resulting from geographical features, climate change, human factors, and rapid industrialization, and the damage is increasing drastically in recent years.

Therefore, countries around the world are looking for ways to anticipate and respond to disasters with minimal damage, and are incorporating disaster risk reduction into their development plans.

The ESCAP designed and launched the toolkit "E-Resilience Monitoring Dashboard" in 2021. Through online visualization, the E-resilience monitoring framework and dashboard aim to inform the policymakers and professionals about the available and relevant e-resilience indicators and help assess digital performances across the region, which ensures the availability of safe, affordable, and reliable digital connectivity to manage future crises. In Mongolia, over 32 earthquakes were registered in June 2020, and in June of this year this number increased to 242. There were 18 cases of heavy rains and floods in 2011, while in June 2021 the number was 21 and in July 2021 it arose rose to 41 cases[2].

COVID-19 lockdowns lead citizens to use the E-Mongolia system. The statistics show that 1,500 citizens on average used government services from the E-Mongolia system per day in November 2020.

The number of users of the E-Mongolia application has increased to 4500 per day on average at the beginning of December 2020 due to the strict COVID-19 pandemic lockdown[3]. Receiving online services has many direct and indirect positive impacts on citizens. It shows that digital transformation, e-services, and e-business can be the engine for balancing economies in times of disaster.

The present policy brief presents findings and recommendations of the studies on the effectiveness of the use of this dashboard in Mongolia and highlights the infrastructure indices that are most vulnerable in the above mentioned types of disasters. This policy brief also includes the online tools and their advantages for ICT co-deployment with other infrastructure e.g. roads, railways, power lines, oil and gas pipelines.

Where Mongolia stands with e-resilience readiness?

ESCAP within the RECI project has developed an e-resilience readiness measurement tool, held dedicated surveys and developed analytical reports on e-resilience readiness of Kazakhstan, Kyrgyzstan and Mongolia[4], as well as of the entire SPECA region[5].

Four-pillar measuring through the ICT related country policy for various sectors of the economy, the ICT role in developing new systems and products in COVID-19 e-adapting and recovery, the role of the ICT in data gathering and management, those driving respective policies, decisions, and actions, and the existing ICT infrastructure as a physical foundation for all of the above was proposed and used.

The set of quantitative indicators and indices gathered as the result of the above-mentioned surveys and the use of valid international data sources e.g. ITU ICT Development Index (IDI)[6] and E-Government Development Index (EGDI) of the UN DESA.[7] were used to build each pillar.

The E-resilience readiness monitoring dashboard[8] shows that Mongolia illustrates a decent e-resilience readiness of ICT infrastructure. The mobile cellular subscriptions and tariffs demonstrate high scores; the data also shows that the most fixed-broadband services provide high speed internet access, which is over 10 mbit/s in Mongolia. The number of households that cannot access to internet is high. Therefore, better e-resilience readiness may support the foundations of the digital economy. Specifically, the internet and mobile network mostly spread to individuals and households shows the high e-resilience in ICT infrastructure. However, the necessity of addressing the quality and affordability of internet connections still remains with comparably high prices of fixed broadband subscriptions and handsets.

Meanwhile, a significant proportion of all households in Mongolia live in rural areas as nomads, far from any fixed infrastructure, and herder households mainly rely on mobile and broadband services.

---

[3] https://cabinet.gov.mn/wp-content/uploads/MT2020-5-last-compressed.pdf
[4]https://www.unescap.org/sites/default/d8files/knowledge-products/ASSESSING%20E-RESILIENCE%20%20in%20Kazakhstan%2C%20Kyrgyzstan%20%20and%20Mongolia.pdf
[5]https://www.unescap.org/sites/default/files/Understanding%20of%20the%20E-

Resilience%20Framework%20for%20Crises%20Preparedness%20in%20RECI%20and%20SPECA%20countries%2C%20Ms.%20Aida%20Karazhanova_0_0.pdf
[6] https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx
[7] https://www.un.org/development/desa/publications/publication/2020-united-nations-e-government-survey
[8]

Figure 1: ICT infrastructure status in Kazakhstan, Kyrgyzstan and Mongolia

ICT infrastructure as a physical foundation	Kazakhstan	Kyrgyzstan	Mongolia
Mobile cellular subscriptions per 100 inhabitants (0-100 max)	120	120	120
Percentage of Individuals using the Internet (0-100 % max)	78.9	38	47.16
Fixed (wired) broadband subscriptions per 100 inhabitants	13.44	5.64	9.66
Active mobile-broadband subscriptions per 100 inhabitants (0-100 % max)	77.57	94.03	83.72
Mobile tariffs (%monthly GDP per capita) (0-100 % max)	93.53	33.43	48.92
Handset prices (%monthly GDP per capita) (0-100 max)	55.61	16.35	30.46
Computer software spending (0-100 % max)	0.02	0.09	0.13
Percentage of households with Internet access at home (0-100 % max)	87.59	21.11	22.99
Percentage of Households with a computer (0-100 % max)	80.53	23.29	30
4G mobile network coverage (0-100 % max)	75.3	70	45
Fixed-broadband subscriptions, >10 Mbit/s, % of total fixed-broadband subscriptions, (0-100 % max)	51.83	64.27	0.58
International Internet bandwidth per Internet user (kbit/s)	55,067.84	47,863.64	22,399.44
Internet access in schools (0-100 % max)	n/a	41.37	70.66

Source: ESCAP (2021), [E-resilience Monitoring Dashboard | ICT & DRR Gateway](#),

What benefits can be gained from infrastructure co-deployment?

The Government of Mongolia makes significant efforts to build land transport infrastructure crossing the country and to connect it to the main international transport corridors. Roads, railways, and power transmission lines are interlinked within the country, and distant provinces and cities are connected. Plans to build a gas pipeline, laid from north to south across the country, were announced.

There is a growing demand to build ICT infrastructure and laid FOCLs to successfully implement the country's plans in building its digital economy.

The infrastructure co-deployment significantly reduces the construction cost and increases the efficiency of the investments.

To enable ICT co-deployment with the other infrastructure there is a need to frame up the legal and policy bases, develop regulations and co-deployment standards, and motivate cross-sector interests and programmes.

Co-deployment Partnership Portal

The Partnership Portal on Co-deployment[9] is a generic online facility to assess co-deployment opportunities, set up bilateral and multilateral partnership communication, and generate interests and commitments, as well as initiate co-deployment projects. The essence of the tool is in its powerful technical and substantial backup with pre-assessed measurement, background database and programmed calculating algorithms, which are being elaborated and serviced by a highly professional team of ICT and infrastructure co-deployment experts.

The ESCAP Secretariat invited the ITTLLDC to collaborate on disseminating it among target countries and their interested institutions and to, ultimately, train experts. Experts representing ICT, road (transport), railway and energy sectors in the Government, specialized state-owned institutions and enterprises, private sector, universities took part in the online Workshop "ESCAP Web-Toolkit for Integrated Planning of Infrastructure Corridors" for Mongolia, held on May 19, 2021. The ITTLLDC employed its expertise to test the portal and share the experts' views on possible improvements of the co-deployment portal.

Simulator of the Integrated Infrastructure Corridors

The Simulator of the Integrated Infrastructure Corridors[10] is logically bound with the above co-deployment portal and serves as an in-depth assessing and justifying benefits of the infrastructure co-deployment within agreed and planned integrated corridors. The Simulator includes three corridors connecting Kazakhstan with Kyrgyzstan (**Almaty – Cholpon-Ata),** with China (**Urzhar – Chugunchak**) and with the Russian Federation (**Semei - Rubtsovsk**). The integrated transport corridors were proposed by experts from Kazakhstan and Kyrgyzstan at the

joint workshop of the RECI project in October, 2019. Following the proposal of country experts at abovementioned workshop, the ESCAP Secretariat held an in-depth study[11] on these model corridors for infrastructure co-deployment.

The ITTLLDC consultants tested the Simulator and communicated the benefits of using it among relevant government agencies, as well as research and development institutions, and private companies.

---

[9] https://drrgateway.net/partnership-portal-co-deployment

[10] https://broadband.shinyapps.io/SmartCorridorsSimulator/

[11] https://www.unescap.org/sites/default/d8files/knowledge-products/Output%201%20Analysis%20of%203%20corridors_Part_I_EN_1.pdf

Conclusions and Recommendations

The way ahead with the e-resilience readiness monitoring dashboard

➢ The e-resilience dashboard, developed by ESCAP, is a well-researched and advanced work that integrates the indicators of many sources related to e-resilience and optimizes the criteria. (Indices and indicators that are well-known and accepted by UN member states)

➢ E-resilience is considered to be very important as it combines key indicators that countries need to invest efforts to ensure readiness in the future. Policymakers can reduce disaster related damages and overcome disaster risks by paying more attention to these indicators, and develop and effectively implement respective policies.

➢ The development of dashboards in future will allow each country to calculate the share of sub-indicators in accordance with its specifics and policy environment, which enables the country to analyze and use them in its policy and planning.

➢ Mongolia and other countries of the region may need to take measures to further improve network quality, especially fixed broadband network quality, if it's not addressed immediately the affordability of devices to enhance substantial internet penetration will hamper the building of a full-fledged e-resilient society.

➢ In addition, it is concluded that the use of this dashboard in line with the specifics of the country will provide an opportunity to overcome disasters, build resilience to disaster risks, and overcome risks with minimal damage.

Infrastructure co-deployment

➢ The studies[12] and online tools developed by the ESCAP Secretariat provide the basic knowledge and generate interest and technical support for co-deployment infrastructure both within Mongolia and with neighboring countries in planning the joint development of cross-border integrated corridors. Therefore, these online tools should be scaled up in ESCAP member countries for regional cooperation in building a co-deployment of infrastructure.

➢ The use of the co-deployment portal is to foster political will and development of the co-deployment policies, regulations and strategies, programmes and projects. The Simulator, meanwhile, would visibly and thoroughly demonstrate the benefits of the co-deployment upon reaching the pre-feasibility and feasibility phases of the co-deployment.

---

[12] https://www.unescap.org/sites/default/d8files/knowledge-products/Output%203%20Calculus%20Part_III_EN_2.pdf

Acknowledgement