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Economic and Social Commission for Asia and the Pacific

**An In-Depth Study on the Broadband Infrastructure in
Afghanistan and Mongolia
April 2015**

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I. EXECUTIVE SUMMARY

Between February and April, 2015, Terabit Consulting performed a detailed analysis of telecommunications and Internet markets and broadband infrastructure in Afghanistan and Mongolia.

The analysis followed three previous studies carried out between 2012 and 2014 covering South & Southwest Asia, North & Central Asia, and Southeast Asia, for a total of 27 countries across the continent.

Table 1: Overview of Broadband Status by Country

	GDP per Capita, YE 2014 (PPP, USD)	Int'l. Bandwidth per Capita (Kbps)	Int'l. Connectivity	Domestic Connectivity	IP Transit Price	Competitiveness of Telecom Market	Fixed and Mobile Broadband Infrastructure	Annual 1 Mbps Broadband Subscription + Installation as % of Nominal GDP per Capita
Afghanistan	\$1,900	0.5	Moderate	Moderate	Expensive	Somewhat Competitive	Limited	Very Expensive
Mongolia	\$12,000	10.3	Moderate	Moderate	Moderate	Competitive	Limited	Very Expensive

Table 2: Summary and Analysis of International Bandwidth by Country

Country	International Internet Bandwidth (YE 2013)	10-Year CAGR (2003-2013)	Int'l. Internet Bandwidth per Capita (Kbps)	Evaluation
Afghanistan	15 Gbps – The Ministry of Communications and Information Technology (MCIT) reported that the country's international Internet bandwidth increased from 8 Gbps in 2013 to 15 Gbps in 2015. According to the MCIT, "since there is no single gateway in Afghanistan, every ISP is using its own gateway."	81%	0.5	Very Weak
Mongolia	30 Gbps – The Communications Regulatory Commission (CCR) reported that Mongolia's international bandwidth was 28.270 Gbps as of mid-2014. By the end of 2014 it was estimated to have increased to 30 Gbps. Bandwidth grew 24-fold between 2008 and 2011, when it increased from 1.248 Gbps to 30.004 Gbps, according to the CCR; however, the regulator reported that bandwidth decreased in 2012 and by mid-2014 it still had not returned to the level of 2011, leading some sources to speculate that there may have been reporting issues in the collection of the bandwidth data, since no other market had seen its 2014 international bandwidth decrease from 2011 levels.	101%	10.3	Moderate

Table 2a: Historical International Bandwidth Demand (Gbps)
(International Internet, International Corporate Data, & International Voice), 2003-2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Afghanistan	0.1	0.1	0.4	0.7	1.1	1.4	2.1	2.8	3.9	5.2	10.7
Mongolia	0.1	0.1	0.2	0.8	1.2	1.6	9.2	19.2	33.3	25.5	29.8

Table 2b: Forecasted International Bandwidth Demand (Gbps)
(International Internet, International Corporate Data, & International Voice), 2014-2024

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Afghanistan	153	221	319	460	665	962	1,391	2,014	2,915	4,222	6,116
Mongolia	15	23	34	51	76	114	171	256	384	577	865

Table 3: Summary and Analysis of International Connectivity by Country

Country	International Connectivity	Evaluation
Afghanistan	<ol style="list-style-type: none"> 1. Afghanistan is connected to all of its neighbors via terrestrial fiber connections, with the exception of China. 2. Afghanistan has dual fiber links to Pakistan and Turkmenistan, as well as links to Iran, Tajikistan, and Uzbekistan. 3. Afghan Telecom's correspondents for transborder fiber connectivity are Telecom Infrastructure Company (Iran), PTCL (Pakistan) Tajiktelecom, Turkmentelecom, and Uzbektelecom. 	Somewhat Weak – Although the geographic coverage of Afghanistan's international connectivity is strong, with connections to all neighbors, the country has yet to implement a solution for high-volume, affordable international bandwidth.
Mongolia	<ol style="list-style-type: none"> 1. Mongolia is considered to be in a prime geographic position to capture Europe-to-Asia traffic; it benefits from some of the lowest latencies between East Asian and European markets. Consequently, multiple Russian operators including TransTelekom, MegaFon, and Rostelecom, as well as Chinese operators including China Unicom and China Telecom, have formed partnerships with the Mongolian operators Railcom, Gemnet, and Mobicom to provide Europe-to-Asia connectivity. 2. The concentration of the country's international connectivity within a single geographic corridor is a source of concern. 	Somewhat Weak – The participation of multiple operators in the provision of trans-Mongolian connectivity is favorable, however development of redundant international gateways will be necessary to ensure high reliability.

Survey and Analysis of Domestic Connectivity by Country

Connectivity	Evaluation
<p>Optical Fiber Network consists of a backbone built along the country's circular Highway 1, also known as the Ring Road, with branches to other provinces and transborder connections to Pakistan, Iran, Turkmenistan, Uzbekistan, and China. Construction was begun in 2007; current plans call for completion of a network that will span 4,400 kilometers at a cost of USD\$130 million. Partial financing was provided by the World Bank Group.</p> <p>The Fiber Network is governed by the Open Access Policy of the Afghanistan Ministry of Communications and Information Technology, which was enacted in 2012 in order to "make sure that all telecommunications providers each have access to the network, such as high speed fiber, enabling all providers to compete at the lowest possible price and still turn a profit." The policy sets forth core principles of non-discrimination, transparency, and cost-based pricing.</p> <p>Netcom, the National Communications Company operates a 2,500-kilometer domestic microwave network.</p> <p>Domestic fiber optic networks span more than 33,300 kilometers. Fiber deployment tripled between 2009 and 2014.</p> <p>Netcom, a government-owned Information Communication Technology company, also known as Netcom, covers 16,556 kilometers and accounts for half of the country's total fiber network.</p> <p>Three private Sky Networks (Skytel) each operate networks of approximately 7,000 kilometers in length.</p> <p>China Mobile subsidiary of Mongolian Railway, operates a 1,400-kilometer network along the country's primary north-south corridor.</p>	<p>Limited – Although there is strong connectivity in the east of the country, the country's national fiber optic ring has yet to be completed.</p> <p>Moderate – Multiple operators provide fiber connectivity, although most network infrastructure is concentrated along the country's north-south railway corridor.</p>

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