

An In-Depth Study on the Broadband Infrastructure in South and West Asia (Abridged Draft Version 1.0)

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Table 1: Overview of Broadband Status by Country

| | GDP per Capita, YE 2012 (PPP, USD) | Int'l. Band-width per Capita (Kbps) | Int'l. Connectivity | Domestic Connectivity | IP Transit Price | Competitive -ness of Telecom Market | Fixed and Mobile Broad-band Infra-structure | Annual 1 Mbps Broadband Subscription + Installation as % of Nominal GDP per Capita |
|---------------------------------|------------------------------------|-------------------------------------|---------------------|-----------------------|------------------|-------------------------------------|---|--|
| Bangladesh | \$2,200 | 0.3 | Weak | Moderate | Expensive | Somewhat Competitive | Limited | Very Expensive |
| Bhutan | \$7,000 | 7.6 | Weak | Limited | Expensive | Less Competitive | Limited | Reasonable |
| India | \$4,000 | 1.0 | Excellent | Moderate | Moderate | Competitive | Limited | Reasonable |
| Islamic Republic of Iran | \$14,300 | 1.5 | Excellent | Limited | Expensive | Less Competitive | Limited | Somewhat Expensive |
| Maldives | \$10,200 | 24.0 | Sufficient | Moderate | Expensive | Less Competitive | Limited | Reasonable |
| Nepal | \$1,600 | 0.7 | Weak | Limited | Expensive | Less Competitive | Limited | Very Expensive |
| Pakistan | \$3,800 | 1.7 | Somewhat Weak | Moderate | Expensive | Somewhat Competitive | Limited | Somewhat Expensive |
| Sri Lanka | \$8,100 | 2.2 | Sufficient | Moderate | Expensive | Less Competitive | Limited | Affordable |
| Turkey | \$16,900 | 30.7 | Sufficient | Moderate | Very Reasonable | Less Competitive | Limited | Extremely Affordable |

Table 2: Summary and Analysis of International Internet Bandwidth by Country

| Country | International Internet Bandwidth (YE 2013) | 10-Year CAGR (2003-2013) | Int'l. Internet Band-width per Capita (Kbps) | Evaluation |
|---------------------------------|---|--------------------------|--|------------------|
| Bangladesh | 50 Gbps – As of March, 2014 Bangladesh's total international bandwidth, including both Internet and voice, was reported to be 58 Gbps, with 25 Gbps provided by Bangladesh Submarine Cable Company Ltd. (BSCCL) via the Sea-Me-We-4 cable and 33 Gbps provided by the six international terrestrial cable (ITC) licensees. | 100% | 0.3 | Very Weak |
| Bhutan | 5.7 Gbps – In 2008 Bhutan Telecom established a DS-3 connection via the London Internet Exchange (LINX), which it supplemented with a DS-3 from Reliance Globalcom via the Hong Kong Internet Exchange (HKIX). However, utilization rates of the country's international bandwidth were 98 percent, and both links were upgraded to STM-1 in 2010. In June of 2013 Bhutan Telecom's subsidiary DrukNet increased its international bandwidth from 1.3 Gbps to 3.1 Gbps. As of 2014 DrukNet's international bandwidth had been increased to 5.3 Gbps, with a peak utilization rate of approximately 50 percent, while Tashi Infocomm had 370 Mbps of international bandwidth and a utilization rate of approximately 60 percent. In addition to its POPs at LINX and HKIX, Bhutan Telecom intended to establish a third international POP in Singapore in 2014. | 98% | 7.6 | Moderate |
| India | 1.2 Tbps – As of year-end 2013, India's total international Internet bandwidth was 1,209 Gbps. During the first quarter of 2014 bandwidth grew an additional 7 percent, to 1,294 Gbps. BSNL reported peak-hour utilization of 81 percent, Bharti Airtel 67 percent, and Tata 58 percent, and Reliance 53 percent. | 58% | 1.0 | Weak |
| Islamic Republic of Iran | 113 Gbps – Iran's international bandwidth increased dramatically in 2013; in February of 2013 the Ministry of Communications announced an increase from 63 Gbps to 83 Gbps, and in October of 2013 the Telecommunication Infrastructure Company (TIC) announced a further increase to over 100 Gbps by year-end. | 60% | 1.5 | Weak |
| Maldives | 8 Gbps – Maldives' international Internet bandwidth doubled in 2013, following the implementation of a 1,253-kilometer domestic submarine cable network the previous year. The country's per-capita international bandwidth is among the highest for developing economies. | 88% | 24.0 | Strong |
| Nepal | 20 Gbps – As of year-end 2011 international bandwidth was 4.2 Gbps, with an upgrade to 10 Gbps planned for 2012. Sources in Nepal told Terabit Consulting that Nepal's international bandwidth as of mid-2014 was approximately 25 Gbps. | 92% | 0.7 | Very Weak |

| Country | International Internet Bandwidth (YE 2013) | 10-Year CAGR (2003-2013) | Int'l. Internet Band-width per Capita (Kbps) | Evaluation |
|------------------|--|--------------------------|--|---------------|
| Pakistan | 300 Gbps – Sources in Pakistan told Terabit Consulting that bandwidth as of mid-2014 was between 300 Gbps and 500 Gbps, with approximately 60 percent of this capacity provided by PTCL via its three submarine cables (Sea-Me-We-3, Sea-Me-We-4, and I-Me-We), and the remaining 40 percent provided by the Transworld Associates' TW-1 submarine cable. | 95% | 1.7 | Weak |
| Sri Lanka | 45 Gbps – Sri Lanka Telecom's bandwidth in 2012 was reported to be 23 Gbps. In 2013 the Lanka Education And Research Network (LEARN) said that it purchased 1.5 Gbps of international capacity from SLT; the capacity represented approximately 1/30 th of the country's total international bandwidth. | 86% | 2.2 | Weak |
| Turkey | 2.3 Tbps – Turkey's international bandwidth is robust, and the country's position as a transit hub for other markets in the region is likely to assure the continued growth of its international connectivity. | 100% | 30.7 | Strong |

Table 3: Summary and Analysis of International Connectivity by Country

| Country | International Connectivity | Evaluation |
|------------|---|--|
| Bangladesh | <ol style="list-style-type: none"> 1. Bangladesh's primary international link is the Sea-Me-We-4 Europe-to-Asia cable, which was activated in Jhilingja, Cox's Bazar in May of 2006 (the cable was significantly delayed due to the construction of the Chittagong-Cox's Bazar fiber link; the Bangladeshi landing point entered service seven months after the rest of the cable's landing points and a year after Alcatel-Lucent completed installation of the Bangladeshi segment and construction of the cable landing station). The cable was upgraded in 2012, providing its Bangladeshi landing party, the Bangladesh Submarine Cable Company Ltd., with 200 Gbps, of which it reported a utilization rate of only 20 percent. BSCCL's largest customer is BTCL. 2. Six "International Terrestrial Cable" (ITC) operators were licensed in 2012: 1Asia-AHL Joint Venture, BD Link Communication, Fiber@Home, Mango Teleservices, Novocom, and Summit Communications. 3. The interconnection of BTCL's network with that of Indian operator BSNL was completed via a terrestrial cable that entered service in late-2010, connecting Chuadanga to Kolkata via a new 25-kilometer link between Darshana, Bangladesh and Krishna Nagar, India. 4. A cable linking Bangladesh to the Bharti Airtel network in India entered service in July of 2013, linking Benapole, Bangladesh and Petrapole, India. 5. Tata Communications is reportedly in the process of implementing an India-Bangladesh connection in partnership with Bangladeshi ITC operator BD Link, connecting Benapol, Bangladesh to Bangaon (West Bengal), India. 6. The Sea-Me-We-5 Europe-to-Asia cable, expected to enter service in 2016, will land at Kuakata in the southern district of Patuakhali. BSCCL invested BDT 560 crore (USD\$72 million) and will receive 1.4 Tbps of capacity. 7. Myanmar Posts and Telecommunications (MPT) and BSCCL are implementing a terrestrial link between Myanmar and Bangladesh in order to provide Bangladesh with connectivity to Sea-Me-We-3 and Myanmar with connectivity to Sea-Me-We-4. The Bangladesh Submarine Cable Company Ltd. (BSSCL) has reportedly budgeted \$2.75 million for their share of the project, which would include a 50-kilometer link between its Cox's Bazar landing station and the Myanmar border. | <p>Weak – With only one submarine cable and limited terrestrial connectivity to India, the country is extremely vulnerable to outages, particularly those caused by cable disruptions in Egypt.</p> |

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Connectivity

national terrestrial fiber optic cables to India. The first, connecting Phuentsholing to Jaigaon, India, was activated in 2007 and the second, connecting the Phuentsholing to Assam, India, entered service in 2011. However, both fiber paths converge in Jaigaon where they are then routed to the submarine cable gateway in Mumbai, raising the vulnerability of the country's international connectivity.

The Regional Economic Cooperation (SASEC) program is in the process of implementing a regional Highway network connecting Bangladesh, India, Bhutan, and Nepal; the network also includes the implementation of submarine cable connectivity via the Cox's Bazar, Bangladesh to India. As part of the SASEC project, in June of 2014 Railtel Corporation of India activated a 10 Gbps link from Thimphu to Phuentsholing and Gelephu.

Evaluation

Weak – Although the SASEC Information Highway will improve connectivity, Bhutan's international connectivity is fragile and dependent upon the vulnerable submarine connectivity of its neighbors.